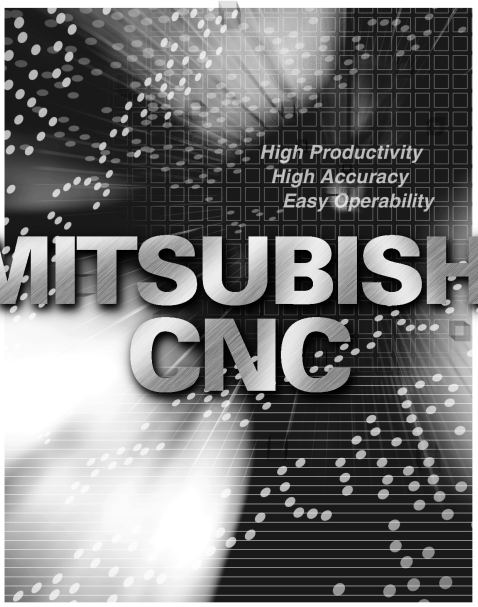
Changes for the Better

MITSUBISHI ELECTRIC

MITSUBISHI CNC

HANDBOOK

M700V/M70V Series



IB-1500928(ENG)-D

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I Alarms

1. Operation Errors (M)

M01 Dog overrun 0001

Details When returning to the reference position, the near-point detection limit switch did not stop over the dog, but overran the dog.

Remedy
- Increase the length of the near-point dog.
- Reduce the reference position return speed.

M01 Some ax does not pass Z phase 0002

Details One of the axes did not pass the Z-phase during the initial reference position return after the power was turned ON.

Remedy
- Move the detector one rotation or more in the opposite direction of the reference position, and repeat reference position return.

M01 R-pnt direction illegal 0003

Details When manually returning to the reference position, the return direction differs from the axis movement direction selected with the AXIS SELECTION key.

Remedy
- The selection of the AXIS SELECTION key's +/- direction is incorrect. The error is canceled by feeding the axis in the correct direction.

M01 External interlock axis exists 0004

Details The external interlock function has activated (the input signal is "OFF") and one of the axes has entered the interlock state.

Remedy
- As the interlock function has activated, release it before resuming operation.
- Correct the sequence on the machine side.
- Check for any broken wires in the "interlock" signal line.

M01 Internal interlock axis exists 0005

Details The internal interlock state has been entered.
The absolute position detector axis has been removed.
A command for the manual/automatic simultaneous valid axis was issued from the automatic mode.
The manual speed command was issued while the "tool length measurement 1" signal is ON.
A travel command has been issued to an inclined axis whose base axis is in control axis synchronization across part systems.

Remedy
- The servo OFF function is valid, so release it first.
- An axis that can be removed has been issued, so perform the correct operations.
- The command is issued in the same direction as the direction where manual skip turned ON, so perform the correct operations.
- During the manual/automatic simultaneous mode, the axis commanded in the automatic mode became the manual operation axis. Turn OFF the "manual/automatic valid" signal for the commanded axis.
- Turn ON the power again, and perform absolute position initialization.
- Turn OFF the "tool length measurement 1" signal to start the program by the manual speed command.
- Cancel the control axis synchronization across part systems, then issue a travel command to the inclined axis.

M01 H/W stroke end axis exists 0006

Details The stroke end function has activated (the input signal is "OFF") and one of the axes is in the stroke end status.

Remedy
- Move the machine manually.
- Check for any broken wires in the "stroke end" signal line.
- Check for any limit switch failure.

M01 S/W stroke end axis exists 0007

Details The stored stroke limit I, II, IIB or IB function has activated.

Remedy
- Move the machine manually.
- Correct any setting error of the parameters for the stored stroke limit.

M01 Chuck/tailstock stroke end ax 0008

Details The chuck/tail-stock barrier function turned ON, and an axis entered the stroke end state.

Remedy
- Reset the alarm with reset, and move the machine in the reverse direction.

M01 Ref point return No. invalid 0009

Details 2nd reference position return was performed before 1st reference position return has been completed.

Remedy
- Execute 1st reference position return.

M01 Sensor signal illegal ON 0019

Details The sensor signal was already ON when the "tool length measurement 1" signal was validated.
The sensor signal turned ON when there was no axis movement after the "tool length measurement 1" signal was validated.
The sensor signal turned ON at a position within 100 μm from the final entry start position.

Remedy
- Disable the "tool length measurement 1" signal and move the axis in a safe direction.
- Disabling the sensor signal also clears the operation alarm.

(Note) When the "tool length measurement 1" signal is disabled, the axis can be moved in either direction. Pay attention to the movement direction.

M01 Ref point retract invalid 0020

Details Reference position retract was performed while the coordinates had not been established.

Remedy
- Execute reference position return.

M01 Tool ofs invld after R-pnt 0021

Details Reference position return had been performed during the tool escape and return, which invalidated the tool compensation amount after the reference position return.

Remedy
- The error is cleared if the operation mode is changed to other than reference position return before the axis performs reference position return.
- The error is cleared when the tool return is completed.
- The error is cleared if reset 1 is input or the emergency stop button is pushed.

M01 R-pnt ret invld at abs pos alm 0024

Details A reference position return signal was enabled during an absolute position detection alarm.

Remedy
- Reset the absolute position detection alarm, and then perform the reference position return.

M01 R-pnt ret invld at zero pt ini 0025

Details A reference position return signal was input during zero point initialization of the absolute position detection system.

Remedy
- Complete the zero point initialization, and then perform reference position return.

M01 High-accuracy skip disabled 0028

Details The drive unit's hardware or software does not conform to the high-accuracy skip.

Remedy
- The software or hardware does not conform to the function. Contact service center.

M01 Hi-ac skip coord retrieval err 0029

Details Failed to retrieve the skip coordinate value from the drive unit.

Remedy
- Check the wiring.
- Check the parameters.

M01 Now skip on 0030

Details The "skip input" signal remains enabled when the operation has shifted from skip retract to measurement.

Remedy
- Increase the skip retract amount.

M01 No skip 0031

Details Even though the 1st skip was to the correct position, the 2nd skip could not be found.

Remedy
- Check whether the measurement target has moved.

M01 Rtn dir err in manual measure 0033

Details Return direction in manual measurement is the opposite of the parameter setting.

Remedy
- Check and correct the "#2169 Man meas rtrn dir (Return direction in manual measurement)" setting.
- Move the axis manually to a safe position in the direction set by "#2169 Man meas rtrn dir (Return direction in manual measurement)", then reset.

M01 Movement prohibited during tool retract 0035

Details An axis movement was attempted from the tool retract position.
The movement was attempted by a manual command in the tool return.

Remedy
It is not allowed to move an axis arbitrarily from the tool retract position. Take the following steps to move the axis.
- Cancel the program execution by reset.
- Use the tool escape and retract function and let the axis escape from the tool retract position.

The interruption by a manual command is not allowed in a tool return. Take the following step to move the axis.
- Cancel the program execution by reset.

M01 Chopping axis R-pnt incomplete 0050

Details Chopping mode has been entered while the chopping axis has not completed reference position return.
All axes interlock has been applied.

Remedy
- Reset the NC or disable the "chopping" signal, and then carry out the reference position return.

M01 Synchronous error excessive 0051

Details The synchronization error of the primary and secondary axes exceeded the allowable value under synchronous control. A deviation exceeding the synchronization error limit value was found with the synchronization deviation detection.

Remedy
- Select the correction mode and move one of the axes in the direction in which the errors are reduced.
- Increase "#2024 synerr(allowable value)" or set "0" to disable error check.
- When using simple C-axis synchronous control, set "0" for "synchronous control operation method".

M01 No spindle select signal 0053

Details Synchronous tapping command was issued when the "spindle selection" signals for all spindles were OFF in the multiple-spindle control II.

Remedy
- Turn ON the "spindle selection" signal for the tapping spindle before performing the synchronous tapping command.

M01 No spindle serial connection 0054

Details Synchronous tapping command was issued in the multiple-spindle control II, while the spindle with the "spindle selection" signal ON was not serially connected.

Remedy
- Make sure the "spindle selection" signal for the spindle is ON.
- Consider the machine construction when issuing the command.

M01 Spindle fwd/rvs run para err 0055

Details Asynchronous tapping command was issued when M code of the spindle forward/reverse run command, set by "#3028 sprcmm", was one of the followings in the multiple-spindle control II.
- M0, M1, M2, M30, M98, M99, or M198
- M code No. that commands to enable/disable the "macro interrupt" signal

Remedy
- Correct the "#3028 sprcmm (Tap cycle spindle forward run/reverse run M command)" setting.

M01 Tap pitch/thread number error 0056

Details The command for the pitch or the number of threads is not correct in the synchronous tapping command of the multiple-spindle control II.
The pitch is too small for the spindle rotation speed.
Thread number is too large for the spindle rotation speed.

Remedy
- Correct the pitch, number of threads or rotation speed of the tapping spindle.

M01 Wait for tap retract 0057

Details The axis travel command is interlocked in the part system where the "Tap retract possible" signal is ON.

Remedy
- If tap retract is necessary, perform it before issuing an axis travel command.
- If tap retract is not necessary, cancel the tap retract enabled state.

M01 Handle ratio too large 0060

Details
- The handle ratio is too large for the handle feed clamp speed.
(The handle feed clamp speed changes according to the rapid traverse rate, external feedrate, maximum speed outside the soft limit range and etc. (or external deceleration speed when external deceleration is valid))

Remedy
- Change the settings of the handle feed clamp speed or the handle ratio.

M01 R-pos offset value illegal 0065

Details At the start of reference position initial setting, "#2034 rfpofs (Distance-coded reference position detection offset) is not set to "0".

Remedy
- Set "#2034 rfpofs" to "0", then turn the power ON again to perform the reference position initial setting.

M01 R-pos scan distance exceeded 0066

Details Reference position could not be established within the maximum scan distance.

Remedy
- Check the scale to see if it has dirt or damage.
- Check if the servo drive unit supports this function.

M01 Illegal op in wk instl err cmp 0070

Details One of the following operations was attempted during workpiece installation error compensation.
- Manual interruption
- Automatic operation handle interruption
- MDI interruption
- PLC interruption

Remedy
- Return the operation mode to the original mode to remove the cause.

M01 No operation mode 0101

Details No operation mode

Remedy
- Check for any broken wires in the input mode signal line.
- Check for any failure of the MODE SELECT switch.
- Correct the sequence program.

M01 Cutting override zero 0102

Details The "cutting feed override" switch on the machine operation panel is set to"0".
The override was set to "0" during a single block stop.

Remedy
- Set the "cutting feed override" switch to a value other than "0" to clear the error.
- If the "cutting feed override" switch has been set to a value other than "0", check for any short circuit in the signal line.
- Correct the sequence program.

M01 External feed rate zero 0103

Details MANUAL FEEDRATE switch on the machine operation panel is set to "0" when the machine is in the JOG or automatic dry run mode.
"Manual feedrate B" is set to "0" during the JOG mode when manual feedrate B is valid.
"Each axis manual feedrate B" is set to "0" during the JOG mode when each axis manual feedrate B is valid.

Remedy
- Set the MANUAL FEEDRATE switch to a value other than "0" to release the error.
- If the MANUAL FEEDRATE switch has been set to a value other than "0" check for any short circuit in the signal line.
- Correct the sequence program.

M01 F 1-digit feed rate zero 0104

Details The F1-digit feedrate has been set to "0" when the F1-digit feed command was executed.

Remedy
- Set the F1-digit feedrate (from "#1185 spd_F1 (F1 digit feedrate F1)" to "#1189 spd_F5 (F1 digit feedrate F5)").

M01 Spindle stop 0105

Details The spindle stopped during the synchronous feed/thread cutting command.

Remedy
- Rotate the spindle.
- If the workpiece is not being cut, start dry run.
- Check for any broken wire in the spindle encoder cable.
- Check the connections for the spindle encoder connectors.
- Check the spindle encoder pulse.
- Correct the program. (commands and addresses)

M01 Handle feed ax No. illegal 0106

Details The axis, designated at handle feed, is out of specifications.
No axis has been selected for handle feed.

Remedy
- Check for any broken wires in the handle feed axis selection signal line.
- Correct the sequence program.
- Check the number of axes in the specifications.

M01 Spindle rotation speed over 0107

Details Spindle rotation speed exceeded the axis clamp speed during the thread cutting command.

Remedy
- Lower the commanded rotation speed.

M01 Fixed pnt mode feed ax illegal 0108

Details The axis, designated in the manual arbitrary feed, is out of specifications.
The feedrate in manual arbitrary feed mode is illegal.

Remedy
- Check for any broken wires in the axis selection signal line or the feedrate line for the manual arbitrary feed mode.
- Check the specifications for the manual arbitrary feed mode.

M01 Block start interlock 0109

Details An interlock signal has been input to lock the block start.

Remedy
- Correct the sequence program.

M01 Cutting block start interlock 0110

Details An interlock signal has been input to lock the cutting block start.

Remedy
- Correct the sequence program.

M01 Restart switch ON 0111

Details Restart switch has been turned ON and manual mode has been selected before the restart search is completed.

Remedy
- Search the block to restart.
- Turn the restart switch OFF.

M01 Program check mode 0112

Details The automatic start button was pressed during program check or in program check mode.

Remedy
- Press the reset button to cancel the program check mode.

M01 Auto start in buffer correct 0113

Details The automatic start button was pressed during buffer correction.

Remedy
- Press the automatic start button after the buffer correction is completed.

M01 In reset process 0115

Details The automatic start button was pressed during resetting or tape rewinding.

Remedy
- When rewinding the tape, wait for the winding to end, or press the reset button to stop the winding, and then press the automatic start button.
- During resetting, wait for the resetting to end, and then press the automatic start button.

M01 Playback not possible 0117

Details The playback switch was turned ON during editing.

Remedy
- Cancel the editing by pressing the input or previous screen key before turning ON the playback switch.

M01 Turn stop in normal line cntrl 0118

Details The turning angle at the block joint exceeded the limit during normal line control.
In normal line control type I:
"#1523 C_feed (Normal line control axis turning speed)" has not been set.
In normal line control type II:
When turning in the inside of the arc, the set value for "#8041 C-rot. R" is larger than the arc radius.

Remedy
- Correct the program.
- Correct the "#1523 C_feed (Normal line control axis turning speed)" setting.
- Correct the "#8041 C rot. R" setting.

M01 Reverse run impossible 0119

Details Either of the following conditions occurred:
- there is no block to run backward.
- eight blocks has been continued without any travel command.

Remedy
- Execute forward run to clear the alarm.
- Reset to clear the alarm.

M01 In synchronous correction mode 0120

Details The synchronous correction mode switch was pressed in non-handle mode.

Remedy
- Select the handle or manual arbitrary feed mode.
- Turn OFF the correction mode switch.

M01 No synchronous control option 0121

Details The synchronous control operation method was set (with R2589) while no synchronous control option was provided.

Remedy
- Set "0" for "synchronous control operation method".

M01 Computer link B not possible 0123

Details Cycle start was attempted before resetting was completed.
Computer link B operation was attempted at the 2nd or further part system in a multi-part system.

Remedy
- Perform the cycle start after resetting has been completed.
- Set "#8109 HOST LINK" to "0" and then set to "1" before performing the cycle start.
- Computer link B operation cannot be performed at the 2nd or further part system in a multi-part system.

M01 X/Z axes simultaneous prohibit 0124

Details The basic axis corresponding to the inclined axis was started simultaneously in the manual mode while the inclined axis control was valid.

Remedy
- Turn the inclined axis and basic axis start OFF for both axes. (This is also applied for manual/automatic simultaneous start.)
- Disable the basic axis compensation, or command it to axes one by one.

M01 Rapid override zero 0125

Details The RAPID TRAVERSE OVERRIDE switch on the machine operation panel is set to "0".

Remedy
- Set the RAPID TRAVERSE OVERRIDE switch to a value other than "0" to clear the error.
- If the RAPID TRAVERSE OVERRIDE switch has been set to a value other than "0", check for any short circuit in the signal line.
- Correct the sequence program.

M01 Program restart machine lock 0126

Details Machine lock was applied on the return axis being manually returned to the restart position.

Remedy
- Cancel the machine lock and resume the operation.

M01 Rot axis parameter error 0127

Details Orthogonal coordinate axis name does not exist.
Rotary axis name does not exist.
A duplicate name is used for the designated orthogonal coordinate axis.
The number of axes that were selected to change tool length compensation along the tool axis amount exceeds the maximum number of axes.
The designated orthogonal coordinate axis name is the same as the rotary axis name.

Remedy
- Correct the rotary axis configuration parameters.

M01 Restart pos return incomplete 0128

Details Automatic return was performed with an axis whose return to the restart position was not complete.

Remedy
- Perform restart position return manually.
- Enable "#1302 AutoRP (Automatic return by program restart)" before executing the automatic start.

M01 PLC interruption impossible 0129

Details After the automatic startup, the "PLC interrupt" signal was turned ON during buffer correction, program restart, arbitrary reverse run, tool escape and return, high-speed high-accuracy control II, or NURBS interpolation.

Remedy - By turning OFF the "PLC interrupt" signal, or by resetting the NC the error can be cancelled.

M01 Restart posn return disabled 0130

Details Restart position return was attempted in a mode where the return is disabled.

Remedy - Correct the program restart position.

M01 Chopping override zero 0150

Details The override became "0" in the chopping operation.

Remedy
- Correct the setting of "chopping override" (R2503).
- Correct the setting of "rapid traverse override" (R2502).

M01 Command axis chopping axis 0151

Details A chopping axis movement command was issued from the program during the chopping mode. (This alarm will not occur for the command with the movement amount "0".)
(All axes interlock state will be applied.)

Remedy - Press the reset button or turn OFF the "chopping" signal. When the "chopping" signal is turned OFF, the axis returns to the reference position and performs the movement command in the program.

M01 Bottom dead center pos. zero 0153

Details The bottom dead center position is set to the same position as the upper dead center position.

Remedy - Correct the bottom dead center position.

M01 Chopping disable for handle ax 0154

Details Chopping has been attempted while the chopping axis is selected as the handle axis.

Remedy - Select an axis other than the chopping axis as the handle axis, or start chopping after changing the mode to the other mode.

M01 No speed set out of soft limit 0160

Details The axis, without any maximum speed outside of the soft limit range set, was returned from the outside of the soft limit range.

Remedy
- Correct the "#2021 out_f (Maximum speed outside soft limit range)" setting.
- Correct the soft limit range (with "#2013 OT- (Soft limit I-)" and "#2014 OT+ (Soft limit I+)").

M01 Aux axis changeover error 0166

Details One of the following attempts was made on an axis that can be switched to NC/auxiliary axis.
- A command was issued to an auxiliary axis from machining program.
- When there were more than one NC axis having a same name, a command was issued to those axes from machining program.
- "NC axis control selection" signal was turned OFF while the NC axis was in motion.
- "NC axis control selection" signal was turned ON while the auxiliary axis was in motion.

Remedy
- Turn ON the "NC axis control selection" signal to set the auxiliary axis to NC axis when issuing a command to the axis from machining program.
- When more than one axis have a same name, let only one of the axes work as an NC axis.
- Do not change the "NC axis control selection" signal while the axis is in motion.

M01 Ill. op during T tip control 0170

Details Illegal operation was attempted during tool tip center control.

Remedy - Change the operation mode to the previous one and restart.

M01 Illegal OP in tilted face cut 0185

Details Any of the following illegal operations was attempted during inclined surface machining mode.
- Manual interrupt
- Handle interrupt in automatic operation
- MDI interrupt
- PLC interrupt
- Arbitrary reverse run

Remedy - Switch the operation mode back to the previous to remove the cause of this failure.

M01 Interference check invalidated 0200

Details The 3D machine interference check is invalidated. This alarm is output to NC alarm 5.

Remedy
- Validate all the interference check settings.
- If there is any axis which has not completed zero point return, establish the zero point first.

M01 Machine interference 1 0201

Details It was judged that an interference occurred in the No.1 step interference check and caused a deceleration stop.
When machine interference is detected, the interfered part is highlighted (yellow/red) and the part's name is displayed on the 3D monitor's model display.

Remedy
- Move the axis in a direction which does not cause interference.
- Press RESET to cancel the alarm.
- You can move the axis in the same travel direction as before the interference.
  But the axis movement is done using the 2nd step interference check distance.
  (In manual operation)

M01 Machine interference 2 0202

Details It was judged that an interference occurred in the No.2 step interference check and caused a deceleration stop.
When machine interference is detected, the interfered part is highlighted (red) and the part's name is displayed on the 3D monitor's model display.

Remedy
- Move the axis in a direction which doesn't cause interference.
- Press RESET to cancel the alarm.

M01 Manual feed for 5-axis machining/Simultaneous command to multiple axes 0230

Details More than one axis was designated simultaneously in manual mode while the manual feed for 5-axis machining was valid.

Remedy - Command the manual feed to each axis one by one.

M01 Manual feed for 5-axis machining/Selecting coordinate system illegal 0231

Details
- More than one of the three bits for selecting hypothetical coordinate system was turned ON.
- Hypothetical coordinate system was selected while the manual feed for 5-axis machining was invalidated by the parameter setting.

Remedy
- Check the sequence program.
- Validate the manual feed for 5-axis machining (parameter "#7912 NO_MANUAL").

M01 Illegal op in 5 ax tool R comp 0232

Details An illegal operation (such as manual interrupt) was attempted during tool radius compensation for 5-axis machining.

Remedy - Operations such as manual interrupt are disabled while the tool radius compensation for 5-axis machining is being performed.

M01 Machining surface operation disabled 0250

Details Machining surface operation (selection, indexing or cancel) was attempted while the operation is disabled.

Remedy
- Cancel the other modes so that the inclined surface machining command (G68.2), tool axis direction control (G53.1) and the inclined surface machining cancel command (G69) can be issued.
- Wait until the axes stop completely (until the smoothing for all axes reaches zero).
- Perform operation search for machining programs.

M01 APLC password mismatch 0280

Details The APLC authentication password is inconsistent.

Remedy - Contact the machine tool builder.

M01 Illegal movement command during superimposition 1003

Details
- A machine command was issued to the superimposing axis.
- Reference position return was attempted on the superimposing axis.
- Skip command was issued to the master or superimposing axis.
- Dog-type reference position return was attempted on the master axis.

Remedy - Correct the program.

M01 Superimposition command illegal 1004

Details
- Superimposition command (G126) was issued to the axis which is executing the following functions.
  Synchronization control
  Milling interpolation
- Superimposition start command was issued to the axis which was under superimposition control.
- The superimposition command was issued to an axis that belongs to the same part system as a basic or synchronous axis of synchronization across part systems.

Remedy - Correct the program.

M01 G114.n command illegal 1005

Details G114.n has been commanded during the execution of G114.n.
G51.2 has been commanded when G51.2 spindle-spindle polygon machining mode has been already entered at another part system.

Remedy
- Command G113 to cancel the operation.
- Turn ON the "spindle synchronization cancel" signal to cancel the operation.
- Command G50.2 to cancel the operation.
- Turn ON the "spindle-spindle polygon cancel" signal to cancel the operation.

M01 Spindle in-use by synchro tap 1007

Details The spindle is being used in synchronized tapping.

Remedy - Cancel the synchronized tapping.

M01 SP-C ax ctrl runs independntly 1026

Details C axis mode command has been issued for polygon machining spindle.
C axis mode command has been issued for synchronized tapping spindle.
Polygon command has been issued for synchronized tapping spindle.
Spindle is being used as spindle/C axis.

Remedy - Cancel the C axis command.
- Cancel the polygon machining command.
- Cancel the C axis with servo OFF.

M01 Synchronization mismatch 1030

Details Different M codes were each commanded as synchronization M code in each of the two part systems.
Synchronization with the "!" code was commanded in another part system during M code synchronization.
Synchronization with the M code was commanded in another part system during synchronization with the "!" code.

Remedy - Correct the program so that the M codes match.
- Correct the program so that the same synchronization codes are commanded.

M01 Multiple C axes select invalid 1031

Details The "C axis selection" signal has been changed when the multiple C axes selection is not available.
The selected axis by the "C axis selection" signal cannot be controlled for the multiple C axes selection.

Remedy - Correct the parameter settings and program.

M01 Tap retract Sp select illegal 1032

Details Tap retract has been executed with a different spindle selected. Cutting feed is in wait state until synchronization is completed.

Remedy - Select the spindle for which tap cycle was halted before turning ON the "tap retract" signal.

M01 Sp-Sp polygon cut interlock 1033

Details Cutting feed is in wait state until synchronization is completed.

Remedy - Wait for the synchronization to end.

M01 Mixed sync ctrl prmtr illegal 1034

Details There is a mistake in the settings of mixed control axis parameters (crsax [1] to [8]).
Mixed control was attempted within one and the same part system.
Any of the parameter settings is disabling mixed control.

Remedy - Correct the parameter settings for the mixed control (cross axis control).

M01 Mixed sync ctrl disable modal 1035

Details Mixed control (cross axis control) was commanded for a part system in which the mixed control (cross axis control) is disabled as shown below.
- During nose R compensation mode
- During pole coordinate interpolation mode
- During cylindrical interpolation mode
- During balance cut mode
- During fixed cycle machining mode
- During facing turret mirror image
- During constant surface speed control mode
- During hobbing mode
- During axis name switch

An axis was transferred to another part system, and mixed control was attempted with the part system's maximum number of control axes exceeded.
An axis was removed from the part system, and mixed control was attempted with the part system's number of axes zero.
Another axis exchange was attempted to the axis which was already transferred to another part system for mixed control.

Remedy - Correct the program.

M01 Synchro ctrl setting disable 1036

Details "Synchronous control operation method" was set (with R2589) when the mode was not the C axis mode.
"Synchronous control operation method" was set (with R2589) in the zero point not set state.
Mirror image is disabled.
External mirror image or parameter mirror image was commanded during facing turret mirror image.

Remedy - Set the contents of the R2589 register to "0".
- Correct the program and parameters.

M01 Synchro start/cancel disable 1037

Details Synchronous control start/cancel command was issued when the start/cancel is disabled.

Remedy - Correct the program and parameters.

M01 Move cmnd invld to synchro ax 1038

Details A travel command was issued to a synchronous axis in synchronous control.

Remedy - Correct the program.

M01 No spindle speed clamp 1043

Details The constant surface speed command (G96) was issued to the spindle which is not selected for the spindle speed clamp command (G92/G50) under Multiple spindle control II.

Remedy Press the reset key and carry out the remedy below.
- Select the spindle before commanding G92/G50.

M01 Sp synchro phase calc illegal 1106

Details Spindle synchronization phase alignment command was issued while the "phase shift calculation request" signal was ON.

Remedy - Correct the program.
- Correct the sequence program.

M80 POSITION ERROR

Details An axis position is illegal.
An alarm is displayed (AL4 is output) and a block stop is applied on the machining program. When the block stop is not allowed in the thread cutting cycle and the like, the stop is applied at the next position where allowed.

Remedy Carry out reset. Then confirm that the system starts the operation. If the alarm is displayed again, turn ON the emergency stop switch and turn the NC power OFF and ON.

M90 Parameter set mode

Details The lock for setup parameters has been released. Setting the setup parameters is enabled while automatic start is disabled.

Remedy Refer to the manual issued by the machine tool builder.

M91 INVALID MEASUR. 0002

Details Data is over the range
The measurement result exceeds the tool data setting range.

Remedy Correct the settings of "#2015 tlml- (Negative direction sensor of tool setter)" and "#2016 tlml+ (Positive direction sensor of tool setter or TLM standard length)".

M91 INVALID MEASUR. 0003

Details No corresponding No.
No measurement tool No. has been set.
The registered No. is out of the specifications.

Remedy Correct the measurement tool No.

M91 INVALID MEASUR. 0045

Details Measurement axis illegal
Sensor has been turned ON while two or more axes are moving.

Remedy Move a single axis when the sensor is contacted.

M91 INVALID MEASUR. 0046

Details Measurement axis has not returned to reference position
Reference position return has not been executed on a measurement axis in an incremental system.

Remedy Carry out the reference position return on the measurement axis before measuring the tool.

M91 INVALID MEASUR. 0089

Details Sensor signal illegal ON
Sensor has already been ON when TLM mode is turned ON. The travel amount was so small that the tool contacted the sensor.

Remedy All axes are interlocked when this alarm has occurred.
Turn the TLM mode OFF or use the interlock cancel signal to move the tool off the sensor.
Ensure at least 0.1mm for the movement to the sensor.

M91 INVALID MEASUR. 9000

Details Speed at contact is below minimum
The tool has contacted the sensor at the lower speed than set in "#1508 TLM_Fmin (Minimum speed toward tool setter)".

Remedy Correct the feed rate to the sensor.

M91 INVALID MEASUR. 9001

Details Speed at contact is over maximum
The tool has contacted the sensor at the higher speed than set in "#1509 TLM_Fmax (Maximum speed toward tool setter)".

Remedy Correct the feed rate to move the tool to the sensor.

M91 INVALID MEASUR. 9002

Details Change of compensation No. or sub-side selection during measurement
A compensation No. or sub-side valid signal state has been changed while a sensor signal is ON or a compensation amount is being written.

Remedy Carry out the measurement again.

M91 INVALID MEASUR. 9003

Details Error on response timing of sensor signal
A compensation No. has been changed at the same time as a sensor's response.

Remedy Carry out the measurement again.

M92 IGNORE INT.LOCK

Details Manual tool length measurement Interlock temporally canceled
"M01 Operation error 0005" and "M01 Operation error 0019", which occur at manual tool length measurement, are temporally canceled. When a tool has contacted a sensor and "M01 Operation error 0019" has occurred, tool escape is enabled by temporarily turning ON the interlock cancel request. This alarm notifies that the interlock is disabled in the meantime.

Remedy After carrying out the tool escape from the sensor, turn OFF the interlock temporary cancel signal for manual tool length measurement.

2. Stop Codes (T)

T01 Axis in motion 0101

Details Automatic start is not possible as one of the axes is moving.

Remedy - Try automatic start again after all axes have stopped.

T01 NC not ready 0102

Details Automatic start is not possible as the NC is not ready.

Remedy - Another alarm has occurred. Check the details and remedy.

T01 Reset signal ON 0103

Details Automatic start is not possible as the "reset" signal has been input.

Remedy - Turn OFF the "reset" signal.
- Check for any failure of the reset switch which has caused the switch's continuous ON.
- Correct the sequence program.

T01 Auto operation pause signal ON 0104

Details The feed hold switch on the machine operation panel is ON (valid).

Remedy - Correct the feed hold switch setting.
- The feed hold switch is B contact switch.
- Fix any broken wires in the feed hold signal line.
- Correct the sequence program.

T01 H/W stroke end axis exists 0105

Details Automatic start is not possible as one of the axes is at the stroke end.

Remedy - Manually move any axis whose end is at the stroke end.
- Check for any broken wires in the stroke end signal line.
- Check for any failure in the stroke end limit switch.

T01 S/W stroke end axis exists 0106

Details Automatic start is not possible as one of the axes is at the stored stroke limit.

Remedy - Move the axis manually.
- If the axis's end is not at the stroke end, check the parameters.

T01 No operation mode 0107

Details The operation mode has not been selected.

Remedy - Select automatic operation mode.
- Check for any broken wires in the signal line for automatic operation mode (memory, tape, MDI).

T01 Operation mode duplicated 0108

Details Two or more automatic operation modes have been selected.

Remedy - Check for any short circuit in the mode (memory, tape, MDI) selection signal line.
- Check for any failure in the switch.
- Correct the sequence program.

T01 Operation mode changed 0109

Details The automatic operation mode has changed to another automatic operation mode.

Remedy - Return to the original automatic operation mode, and execute automatic start.

T01 Tape search execution 0110

Details Automatic start is not possible as tape search is being executed.

Remedy - Wait for the tape search to be completed and then execute the automatic start.

T01 Cycle start prohibit 0111

Details Automatic start is disabled because restart search is in execution.

Remedy - Execute automatic start after the restart search is completed.

T01 CNC overheat 0113

Details Automatic start is not possible because a thermal alarm (Z53 CNC overheat) has occurred.

Remedy - Temperature of the control unit has exceeded the specified temperature.
- Take appropriate measures to cool the unit.

T01 Cycle st. prohibit(Host comm.) 0115

Details Automatic start cannot is not possible because the NC is communicating with the host computer.

Remedy - Wait for the communication with host computer to be ended and then execute the automatic start.

T01 Cycle st prohibit(Battery alm) 0116

Details Automatic start is not possible because the voltage of the battery in the NC control unit has dropped.

Remedy - Replace the battery of the NC control unit.
- Contact the service center.

T01 R-pnt offset value not set 0117

Details Automatic operation is not possible because no reference position offset value has been set.

Remedy - Perform the reference position initialization setting, then set "#2034 rfpofs(Distance-coded reference position detection offset)".

T01 Cycle start prohibit 0118

Details Tool retract position signal OFF
The axis was moved from the tool retract position. Tool retract position reached signal is OFF.

Remedy Once the axis has been moved off the tool retract position, resuming the program is not possible. Cancel the program by reset and then execute it from the start.

T01 In absolute position alarm 0138

Details A start signal was input during an absolute position detection alarm.

Remedy - Clear the absolute position detection alarm, and then input the start signal.

T01 In abs posn initial setting 0139

Details A start signal was input during zero point initialization in the absolute position detection system.

Remedy - Complete zero point initialization before inputting the start signal.

T01 Start during MDI operation at other part system disable 0141

Details In multi-part system, a start signal was input for MDI mode while the MDI operation was being carried out in another part system.

Remedy - End the other part system's operation before starting.

T01 Cycle start prohibit 0142

Details In manual coordinate system setting
Automatic start is not allowed during the manual coordinate system setting.

Remedy The system restarts after either of the manual coordinate system setting completion signal or the error end signal has been turned ON.

T01 In manual measurement 0143

Details Automatic start is disabled because manual measurement is in execution.

Remedy - Execute automatic start after the manual measurement is completed.

T01 APLC password mismatch 0160

Details The APLC authentication password is inconsistent.

Remedy - Contact the machine tool builder.

T01 Cycle start prohibit 0180

Details Automatic start became disabled while servo auto turning is enabled.

Remedy - Set "#1164 ATS" to "0" when the servo auto turning is not executed.

T01 Cycle start prohibit 0190

Details Automatic start is not possible because the setting of setup parameters is enabled.

Remedy - Refer to the manual issued by the machine tool builder.

T01 Cycle start prohibit 0191

Details Automatic start was attempted while a file was being deleted/written.

Remedy - Wait for the file to be deleted/written and then execute the automatic start.

T01 Cycle st. prohibit (Term exp'd) 0193

Details Automatic start is not possible because the valid term has been expired.

Remedy - Enter the decryption code and turn the power ON again.

T02 H/W stroke end axis exists 0201

Details An axis is at the stroke end.

Remedy - Manually move the axis away from the stroke end limit switch.
- Correct the machining program.

T02 S/W stroke end axis exists 0202

Details An axis is at the stored stroke limit.

Remedy
- Manually move the axis.
- Correct the machining program.

T02 Reset signal ON 0203

Details The reset has been entered.

Remedy
- The program execution position has returned to the start of the program. Execute automatic operation from the start of the machining program.

T02 Auto operation pause signal ON 0204

Details The "feed hold" switch is ON.

Remedy
- Press the CYCLE START switch to resume the automatic operation.

T02 Operation mode changed 0205

Details The operation mode has changed to another mode during automatic operation.

Remedy
- Return to the original automatic operation mode, and press the CYCLE START switch to resume the automatic operation.

T02 Acc/dec time cnst too large 0206

Details The acceleration and deceleration time constants are too large. (This alarm occurs with the system alarm Z59.)

Remedy
- Set a larger value for "#1206 G1bF(Maximum speed)".
- Set a smaller value for "#1207 G1btL(Time constant)".
- Set a lower cutting speed.

T02 Abs posn detect alarm occurred 0215

Details An absolute position detection alarm occurred.

Remedy
- Clear the absolute position detection alarm.

T02 Aux axis changeover error 0220

Details A travel command was issued to an auxiliary axis.

Remedy
- Turn ON the "NC axis control selection" signal and press the CYCLE START switch to re-start the automatic operation with.

T03 Single block stop signal ON 0301

Details The SINGLE BLOCK switch on the machine operation panel is ON.
The SINGLE BLOCK or MACHINE LOCK switch changed.

Remedy
- Press the CYCLE START switch to resume the automatic operation.

T03 Block stop cmnd in user macro 0302

Details A block stop command was issued in the user macro program.

Remedy
- Press the CYCLE START switch to resume the automatic operation.

T03 Operation mode changed 0303

Details Automatic mode changed to another automatic mode.

Remedy
- Return to the original automatic operation mode, and press the CYCLE START switch to resume the automatic operation.

T03 MDI completed 0304

Details MDI operation has ended the last block.

Remedy
- Set the MDI operation again, and press the CYCLE START switch to start the MDl operation.

T03 Block start interlock 0305

Details The interlock signal, which locks the block start, is ON.

Remedy
- Correct the sequence program.

T03 Cutting blck start interlock 0306

Details The interlock signal, which locks the block cutting start, is ON.

Remedy
- Correct the sequence program.

T03 Inclined Z offset change 0310

Details The "inclined axis control: No Z axis compensation" signal has turned ON or OFF during the program operation.

Remedy
- Press the CYCLE START switch to resume the automatic operation.

T03 Aux axis changeover error 0330

Details The "NC axis control selection" signal was turned OFF while a NC axis was traveling.

Remedy
- Turn the "NC axis control selection" signal ON and press the CYCLE START switch to resume the automatic operation.

T04 Collation stop 0401

Details Collation stop occurred.

Remedy - Execute the automatic start to resume the automatic operation.

T10 Fin wait (Factors for waiting completion)

Details The following Nos. are shown during the operation of the corresponding completion wait factor. The numbers will disappear when the operation is completed.
The completion wait factor is indicated with four digits (in hexadecimal).

Display format of completion wait factor
0___ ___ ___
(a)(b)(c)

Each of the hexadecimal numbers (a), (b) and (c) indicates the following details.

(a)
bit0: In dwell execution
bit3: Unclamp signal wait (Note 1)
(b)
bit0: Waiting for spindle position to be looped
bit3: Door open (Note 2)
(c)
bit0: Waiting for MSTB completion
bit1: Waiting for rapid traverse deceleration
bit2: Waiting for cutting speed deceleration
bit3: Waiting for spindle orientation completion
(Note 1) This shows the wait state for the unclamp signal's ON/OFF for the index table indexing.
(Note 2) This shows the door open state caused by the door interlock function.

T11 Fin wait 0010(Factors for waiting completion)

Details The following Nos. are shown during the operation of the corresponding completion wait factor. The numbers will disappear when the operation is completed.
The completion wait factor is indicated with four digits (in hexadecimal).

Display format of completion wait factor
0___ ___
(a)(b)(c)

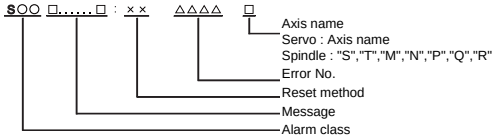
Each of the hexadecimal numbers (a), (b) and (c) indicates the following details.
bit0:Operation alarm display being postponed

Remedy The parameter "#1342 AlmDly" may be able to postpone displaying a part of an operation alarm, depending on the setting.
This stop code will remain displayed while any alarm is being postponed.
And it will disappear if the postponed alarm is displayed or canceled.

3. Servo/Spindle Alarms (S)

3.1 Servo Errors (S01/S03/S04)

Servo alarm is displayed in the following format.



Alarm class	Message	Reset method	Resetting methods
S01	Servo alarm	PR	After removing the cause of the alarm, reset the alarm by turning the NC power ON again.
S03	Servo alarm	NR	After removing the cause of the alarm, reset the alarm by inputting the NC RESET key.
S04	Servo alarm	AR	After removing the cause of the alarm, reset the alarm by turning the drive unit power ON again.

Error No. consists of four digits (0010 to). Servo alarms are explained in ascending order of the error No. The four digits on the left part of each alarm indicate the error No.

(Note) For the details of servo alarms, refer to your drive unit's instruction manual.

Drive unit alarms

0010 Insufficient voltage

Details A drop of bus voltage was detected in main circuit.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0011 Axis selection error

Details The axis selection rotary switch has been incorrectly set.
- Servo stop method: Initial error
- Spindle stop method: Initial error

0012 Memory error 1

Details A hardware error was detected during the power ON self-check.
- Servo stop method: Initial error
- Spindle stop method: Initial error

0013 Software processing error 1

Details An error was detected for the software execution state.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0016 Init mag pole pos detect err

Details In the built-in motor which uses the absolute position detector, the servo ON has been set before the magnetic pole shift amount is set.
The magnetic pole position, detected in the initial magnetic pole position detection control, is not correctly set.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0017 A/D converter error

Details A current feedback error was detected.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0018 Motor side dtc: Init commu err

Details An error was detected in the initial communication with the motor side detector.
- Servo stop method: Initial error
- Spindle stop method: Initial error

0019 Detector commu err in syn cont

Details An error of the shared detector on the machine side was detected on the secondary axis of the speed command synchronization control.
- Servo stop method: Dynamic stop

001A Machine side dtc: Init comu er

Details An error was detected in the initial communication with the machine side detector.
- Servo stop method: Initial error
- Spindle stop method: Initial error

001B Machine side dtc: Error 1

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- OSA105, OSA105-ET2, OSA166, OSA166-ET2(MITSUBISHI) Memory alarm
- OSA18() CPU alarm
- MDS-B-HR() Memory error
- AT343, AT543, AT545(Mitsutoyo) Initialization error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Initialization error
- MPRZ Series(MHI) Installation accuracy fault
- SR75, SR85, SR77, SR87, RU77(Magnescale) Laser diode error

[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Memory error
- MDS-B-HR() Initialization error
- OSA18() CPU error
- EIB Series(HEIDENHAIN) Initialization error
- MPCI scale(MHI) Installation accuracy fault

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

001C Machine side dtc: Error 2

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- OSA105, OSA105-ET2, OSA166, OSA166-ET2(MITSUBISHI) LED alarm
- AT343, AT543, AT545(Mitsutoyo) EEPROM error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) EEPROM error
- SR75, SR85, SR77, SR87, RU77(Magnescale) System memory error

[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Waveform error
- EIB Series(HEIDENHAIN) EEPROM error

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

001D Machine side dtc: Error 3

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- OSA105, OSA105-ET2, OSA166, OSA166-ET2(MITSUBISHI) Data alarm
- OSA18() Data alarm
- MDS-B-HR() Data error
- AT343, AT543, AT545(Mitsutoyo) Photoelectric type, static capacity type data mismatch
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Relative/ absolute position data mismatch
- MPRZ Series(MHI) Detection position deviance
- SR75, SR85, SR77, SR87, RU77(Magnescale) Encoder mismatch error
- SAM/SVAM/GAM/LAN Series (FAGOR) Absolute position detection error

[Detector alarm (Spindle drive unit)]
- MDS-B-HR() Data error
- OSA18() Data error
- MPCI scale(MHI) Detection position deviance

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

001E Machine side dtc: Error 4

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) ROM/RAM error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) ROM/RAM error
- MPRZ Series(MHI) Scale breaking
- SAM/SVAM/GAM/LAM Series (FAGOR) H/W error

[Detector alarm (Spindle drive unit)]
- MPCI scale(MHI) Scale breaking

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

001F Machine side dtc: Commu error

Details An error was detected in the communication with the machine side detector.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0021 Machine side dtc: No signal

Details In the machine side detector, ABZ-phase feedback cannot be returned even when the motor moves.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0022 Detector data error

Details An error was detected in the feedback data from the position detector.
- Servo stop method: Dynamic stop

0023 Excessive speed error

Details The state that there is a difference between the actual speed and command speed continued for longer than the excessive speed deviation timer setting.
- Spindle stop method: Coast to a stop

0024 Grounding

Details The motor power cable is in contact with FG (Frame Ground).
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0025 Absolute position data lost

Details The absolute position data was lost in the detector.
- Servo stop method: Initial error

0026 Unused axis error

Details In the multi-axis drive unit, there is an axis set to free, and the other axis detected a power module error.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0027 Machine side dtc: Error 5

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- MDS-B-HR() Scale not connected
- AT343, AT543, AT545(Mitsutoyo) CPU error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) CPU error
- MPRZ Series(MHI) Absolute value detection fault
- SAM/SVAM/GAM/LAN Series (FAGOR) CPU error

[Detector alarm (Spindle drive unit)]
- MDS-B-HR() Connection error
- EIB Series(HEIDENHAIN) CPU error

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

0028 Machine side dtc: Error 6

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) Photoelectric type overspeed
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Overspeed
- SR75, SR85, SR77, SR87, RU77(Magnescale) Over speed

[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Overspeed
- EIB Series(HEIDENHAIN) Overspeed

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

0029 Machine side dtc: Error 7

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) Static capacity type error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Absolute position data error
- MPRZ Series(MHI) Gain fault
- SR75, SR85, SR77, SR87, RU77(Magnescale) Absolute position data error

[Detector alarm (Spindle drive unit)]
- MPCI scale(MHI) Gain fault

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

002A Machine side dtc: Error 8

Details An error was detected by the detector connected to the machine side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) Photoelectric type error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Relative position data error
- MPRZ Series(MHI) Phase fault
- SR75, SR85, SR77, SR87, RU77(Magnescale) Relative position data error

[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Relative position data error
- EIB Series(HEIDENHAIN) Relative position data error
- MPCI scale(MHI) Phase fault

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

002B Motor side dtc: Error 1

Details An error was detected by the detector connected to the motor side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- OSA105, OSA105-ET2, OSA166, OSA166-ET2(MITSUBISHI) Memory alarm
- OSA18() CPU alarm
- MDS-B-HR() Memory error
- AT343, AT543, AT545(Mitsutoyo) Initialization error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Initialization error
- MPRZ Series(MHI) Installation accuracy fault
- SR75, SR85, SR77, SR87, RU77(Magnescale) Laser diode error

[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Memory error
- MDS-B-HR() Initialization error
- OSA18() CPU error
- EIB Series(HEIDENHAIN) Initialization error
- MPCI scale(MHI) Installation accuracy fault

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

002C Motor side dtc: Error 2

Details An error was detected by the detector connected to the motor side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- OSA105, OSA105-ET2, OSA166, OSA166-ET2(MITSUBISHI) LED alarm
- AT343, AT543, AT545(Mitsutoyo) EEPROM error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) EEPROM error
- SR75, SR85, SR77, SR87, RU77(Magnescale) System memory error

[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Waveform error
- EIB Series(HEIDENHAIN) EEPROM error

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

002D Motor side dtc: Error 3

Details An error was detected by the detector connected to the motor side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- OSA105, OSA105-ET2, OSA166, OSA166-ET2(MITSUBISHI) Data alarm
- OSA18() Data alarm
- MDS-B-HR() Data error
- AT343, AT543, AT545(Mitsutoyo) Photoelectric type, static capacity type data mismatch
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Relative/ absolute position data mismatch
- MPRZ Series(MHI) Detection position deviance
- SR75, SR85, SR77, SR87, RU77(Magnescale) Encoder mismatch error
- SAM/SVAM/GAM/LAN Series (FAGOR) Absolute position detection error

[Detector alarm (Spindle drive unit)]
- MDS-B-HR() Data error
- OSA18() Data error
- MPCI scale(MHI) Detection position deviance

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

002E Motor side dtc: Error 4

Details An error was detected by the detector connected to the motor side.
The error details are different according to the detector type.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) ROM/RAM error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) ROM/RAM error
- MPRZ Series(MHI) Scale breaking
- SAM/SVAM/GAM/LAM Series (FAGOR) H/W error

[Detector alarm (Spindle drive unit)]
- MPCI scale(MHI) Scale breaking

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

002F Motor side dtc: Commu error

Details An error was detected in the communication with the motor side detector.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0030 Over regeneration

Details Over-regeneration level exceeded 100%. The regenerative resistor is overloaded.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0031 Overspeed

Details The motor speed exceeded the allowable speed.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0032 Power module overcurrent

Details The power module detected the overcurrent.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0033 Overvoltage

Details The bus voltage in main circuit exceeded the allowable value.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0034 NC-DRV commu: CRC error

Details The data received from the NC was outside the setting range.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0035 NC command error

Details The travel command data received from the NC was excessive.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0036 NC-DRV commu: Commu error

Details The communication with the NC was interrupted.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0037 Initial parameter error

Details An incorrect set value was detected among the parameters send from the NC at the power ON.
In the safety observation function, an error was detected in the relation between the safety speed and safety rotation number in the speed observation mode.
- Servo stop method: Initial error
- Spindle stop method: Initial error

0038 NC-DRV commu: Protocol error 1

Details An error was detected in the communication frames received from the NC.
Or, removing an axis or changing an axis was performed in the synchronous control.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0039 NC-DRV commu: Protocol error 2

Details An error was detected in the axis data received from the NC.
Or, in changing an axis, the parameter setting of the synchronous control was applied when the axis was installed.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

003A Overcurrent

Details Excessive motor drive current was detected.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

003B Power module overheat

Details The power module detected an overheat.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

003C Regeneration circuit error

Details An error was detected in the regenerative transistor or in the regenerative resistor.
- Servo stop method: Dynamic stop

003D Pw sply volt err acc/dec

Details A motor control error during acceleration/deceleration, due to a power voltage failure, was detected.
- Servo stop method: Dynamic stop

003E Magnet pole pos detect err

Details The magnetic pole position, detected in the magnetic pole position detection control, is not correctly detected.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0041 Feedback error 3

Details Either a missed feedback pulse in the motor side detector or an error in the Z-phase was detected in the full closed loop system.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0042 Feedback error 1

Details Either a missed feedback pulse in the position detection or an error in the Z-phase was detected. Or the distance-coded reference check error exceeded the allowable value when the distance-coded reference scale was used.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0043 Feedback error 2

Details An excessive difference in feedback was detected between the machine side detector and the motor side detector.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0045 Fan stop

Details An overheat of the power module was detected during the cooling fan stopping.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0046 Motor overheat

Details Either the motor or the motor side detector detected an overheat.
Or, the thermistor signal receiving circuit of the linear motor or DD motor was disconnected.
Or, the thermistor signal receiving circuit was short-circuited.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0048 Motor side dtc: Error 5

Details An error was detected by the detector connected to the main side.
The error details are different according to the connected detector.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

[Detector alarm (Servo drive unit)]
- MDS-B-HR() Scale not connected
- AT343, AT543, AT545(Mitsutoyo) CPU error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) CPU error
- MPRZ Series(MHI) Absolute value detection fault
- SAM/SVAM/GAM/LAM Series (FAGOR) CPU error

[Detector alarm (Spindle drive unit)]
- MDS-B-HR() Connection error
- EIB Series(HEIDENHAIN) CPU error

(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

0049 Motor side dtc: Error 6

Details An error was detected by the detector connected to the main side.
The error details are different according to the connected detector.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop
[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) Photoelectric type overspeed
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Overspeed
- SR75, SR85, SR77, SR87, RU77(Magnescale) Over speed
[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Overspeed
- EIB Series(HEIDENHAIN) Overspeed
(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

004A Motor side dtc: Error 7

Details An error was detected by the detector connected to the main side.
The error details are different according to the connected detector.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop
[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) Static capacity type error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Absolute position data error
- MPRZ Series(MHI) Gain fault
- SR75, SR85, SR77, SR87, RU77(Magnescale) Absolute position data error
[Detector alarm (Spindle drive unit)]
- MPCI scale(MHI) Gain fault
(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

004B Motor side dtc: Error 8

Details An error was detected by the detector connected to the main side.
The error details are different according to the connected detector.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop
[Detector alarm (Servo drive unit)]
- AT343, AT543, AT545(Mitsutoyo) Photoelectric type error
- LC193M, LC493M, RCN223M, RCN227M, RCN727M, RCN827M, EIB Series(HEIDENHAIN) Relative position data error
- MPRZ Series(MHI) Phase fault
- SR75, SR85, SR77, SR87, RU77(Magnescale) Relative position data error
[Detector alarm (Spindle drive unit)]
- TS5690, TS5691(MITSUBISHI) Relative position data error
- EIB Series(HEIDENHAIN) Relative position data error
- MPCI scale(MHI) Phase fault
(Note) A driver processes all reset types of alarms as "PR". However, "AR" will be applied according to the detector.

004C Current err mag pole estim

Details Current detection failed at the initial magnetic pole estimation.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

004E NC command mode error

Details An error was detected in the control mode send from the NC.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

004F Instantaneous power interrupt

Details The control power supply has been shut down for 50ms or more.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0050 Overload 1

Details Overload detection level became 100% or more. The motor or the drive unit is overloaded.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0051 Overload 2

Details In a servo system, current command of 95% or more of the unit's max. current was given continuously for 1 second or longer. In a spindle system, current command of 95% or more of the motor's max. current was given continuously for 1 second or longer.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0052 Excessive error 1

Details A position tracking error during servo ON was excessive.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0053 Excessive error 2

Details A position tracking error during servo OFF was excessive.
- Servo stop method: Dynamic stop

0054 Excessive error 3

Details There was no motor current feedback when the alarm "Excessive error 1" was detected.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0056 Commanded speed error

Details In the C-axis control mode, excessive speed error was detected.
- Spindle stop method: Deceleration stop enabled

0058 Collision detection 1: G0

Details A disturbance torque exceeded the allowable value in rapid traverse modal (G0).
- Servo stop method: Maximum capacity deceleration stop

0059 Collision detection 1: G1

Details A disturbance torque exceeded the allowable value in the cutting feed modal (G1).
- Servo stop method: Maximum capacity deceleration stop

005A Collision detection 2

Details A current command with the maximum drive unit current value was detected.
- Servo stop method: Maximum capacity deceleration stop

005B Sfty obsrvation: Cmd spd err

Details A commanded speed exceeding the safe speed was detected in the safety observation mode.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

005D Sfty obsrvation: Door stat err

Details The door state signal input in the NC does not coincide with the door state signal input in the drive unit in the safety observation mode. Otherwise, door open state was detected in normal mode.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

005E Sfty obsrvation: FB speed err

Details A motor speed exceeding the safe speed was detected in the safety observation mode.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

005F External contactor error

Details A contact of the external contactor is welding.
- Servo stop method: Deceleration stop enabled
- Spindle stop method: Deceleration stop enabled

0080 Motor side dtc: cable err

Details The cable type of the motor side detector cable is for rectangular wave signal.
- Servo stop method: Initial error

0081 Machine side dtc: cable err

Details The cable type of the machine side detector cable does not coincide with the detector type which is set by the parameter.
- Servo stop method: Initial error

0087 Drive unit communication error

Details The communication frame between drive units was aborted.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

0088 Watchdog

Details The drive unit does not operate correctly.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

008A Drivers commu data error 1

Details The communication data 1 between drivers exceeded the tolerable value in the communication between drive units.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

008B Drivers commu data error 2

Details The communication data 2 between drivers exceeded the tolerable value in the communication between drive units.
- Servo stop method: Dynamic stop
- Spindle stop method: Coast to a stop

Power supply alarms

0061 Pw sply: Pwr module overcurnt

Details Overcurrent protection function in the power module has started its operation.
- LED display: 1

0062 Pw sply: Frequency error

Details The input power supply frequency increased above the specification range.
- LED display: 2

0066 Process error

Details An error occurred in the process cycle.
- LED display: 6

0067 Pw sply: Phase interruption

Details An open-phase condition was detected in input power supply circuit.
- LED display: 7

0068 Pw sply: Watchdog

Details The system does not operate correctly.
- LED display: 8

0069 Pw sply: Grounding

Details The motor power cable is in contact with FG (Frame Ground).
- LED display: 9

006A Pw sply: Ext contactor weld

Details A contact of the external contactor is welding.
- LED display: A

006B Pw sply: Rush relay welding

Details An error was detected in the rush circuit.
- LED display: b

006C Pw sply: Main circuit error

Details An error was detected in charging operation of the main circuit capacitor.
- LED display: C

006D Pw sply: Parameter error

Details An error was detected in the parameter sent from the drive unit.
- LED display: d

006E Pw sply: Memory error

Details An error was detected in the internal memory.
An error was detected in the A/D converter.
An error was detected in the unit identification.
- LED display: E

006F Power supply error

Details No power supply is connected to the drive unit, or a communication error was detected.
- LED display: F

0070 Pw sply: External EMG stop err

Details A mismatch of the external emergency stop input and NC emergency stop input continued for 30 seconds.
- LED display: G

0071 Pw sply: Instant pwr interrupt

Details The power was momentarily interrupted.
- LED display: H

0072 Pw sply: Fan stop

Details A cooling fan built in the power supply unit stopped, and overheat occurred in the power module.
- LED display: I

0073 Pw sply: Over regeneration

Details Over-regeneration detection level became over 100%. The regenerative resistor is overloaded. This alarm cannot be reset for 15 min from the occurrence to protect the regeneration resistor. Leave the drive system energized for more than 15 min, then turn the power ON to reset the alarm.
- LED display: J

0075 Pw sply: Overvoltage

Details L+ and L- bus voltage in main circuit exceeded the allowable value. As the voltage between L+ and L- is high immediately after this alarm, another alarm may occur if this alarm is reset in a short time. Wait more than 5 min before resetting so that the voltage drops.
- LED display: L

0076 Pw sply: Ext EMG stop set err

Details The rotary switch setting of external emergency stop is not correct, or a wrong external emergency stop signal is input.
- LED display: M

0077 Pw sply: Power module overheat

Details Thermal protection function in the power module has started its operation.
- LED display: n

3.2 Initial Parameter Errors (S02)

S02 Initial parameter error : PR 2201-2264 (Axis name)

Details The servo parameter setting data is illegal.
The alarm No. is the No. of the servo parameter where the error occurred.

Remedy Check the descriptions for the appropriate servo parameters and correct them.

S02 Initial parameter error : PR 2301 (Axis name)

Details The number of constants to be used in the following functions is too large:
- Electronic gears
- Position loop gain
- Speed feedback conversion

Remedy Check that all the related parameters are specified correctly.
sv001:PC1, sv002:PC2, sv003:PGN1
sv018:PIT, sv019:RNG1, sv020:RNG2

S02 Initial parameter error : PR 2302 (Axis name)

Details When high-speed serial incremental detector (OSE104, OSE105) is connected, parameters for absolute position are set to ON.
Set the parameters for absolute position detection to OFF.
To detect an absolute position, replace the incremental specification detector with an absolute position detector.

Remedy Check that all the related parameters are specified correctly.
sv017:SPEC, sv025:MTYP

S02 Initial parameter error : PR 2303 (Axis name)

Details No servo option is found.
The closed loop (including the ball screw-
end detector) or dual feedback control is an optional function.

Remedy Check that all the related parameters are specified correctly.
sv025:MTYP/pen
sv017:SPEC/dfbx

S02 Initial parameter error : PR 2304 (Axis name)

Details No servo option is found.
The SHG control is an optional function.

Remedy Check that all the related parameters are specified correctly.
sv057:SHGC
sv058:SHGCsp

S02 Initial parameter error : PR 2305 (Axis name)

Details No servo option is found.
The adaptive filtering is an optional function.

Remedy Check that all the related parameters are specified correctly.
sv027:SSF1/aflt

S02 Initial parameter error : PR 13001-13256 (Axis name)

Details Parameter error
The spindle parameter setting data is illegal.
The alarm No. is the No. of the spindle parameter where the error occurred.

Remedy Check the descriptions for the appropriate spindle parameters and correct them.
Refer to Alarm No.37 in Spindle Drive Maintenance Manual.

3.3 Parameter Errors (S51)

S51 Parameter error 2201-2264 (Axis name)

Details Servo parameter setting data is illegal.
The alarm No. is the No. of the servo parameter where the warning occurred.

Remedy Check the descriptions for the appropriate servo parameters and correct them.

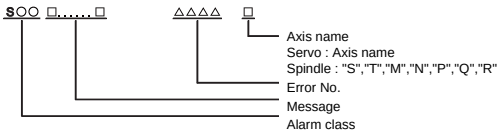
S51 Parameter error 13001-13256 (Axis name)

Details Spindle parameter setting data is illegal.
The alarm No. is the No. of the spindle parameter where the warning occurred.

Remedy Check the descriptions for the appropriate spindle parameters and correct them.
Refer to Spindle Drive Maintenance Manual.

3.4 Servo Warnings (S52)

Servo warning is displayed in the following format.



Alarm class	Message
S52	Servo warning

Error No. consists of four digits (0096 to). Servo warnings are explained in ascending order of the error No. The four digits on the left part of each warning indicate the error No.

(Note) For the details of servo warnings, refer to your drive unit's instruction manual.

Drive unit warnings

0096 Scale feedback error

Details An excessive difference in feedback amount was detected between the main side detector and the MPI scale in MPI scale absolute position detection system.
- Reset method: Automatically reset once the cause of the warning is removed.

0097 Scale offset error

Details An error was detected in the offset data that is read at the NC power-ON in MPI scale absolute position detection system.

009B Detec cnv: Mag pole shift warn

Details The difference between the magnetic pole position after the phase Z has been passed (magnetic pole shift amount:SV028) and the initially detected position is excessive in the built-in motor's incremental control system. The magnetic pole is controlled by the initial detection value.
- Reset method: Automatically reset once the cause of the warning is removed.

009E Abs pos dtc: Rev count error

Details An error was detected in the revolution counter data of the absolute position detector. The accuracy of absolute position is not guaranteed.
- Reset method: Automatically reset once the cause of the warning is removed.

009F Battery voltage drop

Details The battery voltage to be supplied to the absolute position detector is dropping.
- Reset method: Automatically reset once the cause of the warning is removed.

00A3 DisCode ref chk: init s-up war

Details This warning is detected until the axis reaches the reference position during the initial setup of the distance-coded reference check function. This warning turns OFF after the axis has reached the position, thus set the value displayed on the drive monitor to the parameter.
- Reset method: Automatically reset once the cause of the warning is removed.

00A6 Fan stop warning

Details A cooling fan in the drive unit stopped.
- Reset method: Automatically reset once the cause of the warning is removed.

00E0 Over regeneration warning

Details Over-regeneration detection level exceeded 80%.
- Reset method: Automatically reset once the cause of the warning is removed.

00E1 Overload warning

Details A level of 80% of the Overload 1 alarm state was detected.
- Reset method: Automatically reset once the cause of the warning is removed.

00E4 Set parameter warning

Details An incorrect set value was detected among the parameters send from the NC in the normal operation.
- Reset method: Automatically reset once the cause of the warning is removed.

00E6 Control axis detach warning

Details A control axis is being detached. (State display)
- Reset method: Automatically reset once the cause of the warning is removed.

00E7 In NC emergency stop state

Details In NC emergency stop. (State display)
- Stop method: Deceleration stop enabled
- Reset method: Automatically reset once the cause of the warning is removed.

00E8-00EF Power supply warning

Details The power supply unit detected a warning. The error details are different according to the connected power supply unit.
Refer to "Power supply warning".
- Stop method: - (EA: Deceleration stop enabled)
- Reset method: Automatically reset once the cause of the warning is removed.

Power supply warnings

00E9 Instant pwr interrupt warning

Details The power was momentarily interrupted.
- LED display: P

00EA In external EMG stop state

Details External emergency stop signal was input.
- Reset method: Automatically reset once the cause of the warning is removed.
- LED display: q

00EB Pw sply: Over regenerat warn

Details Over-regeneration detection level exceeded 80%.
- Reset method: Automatically reset once the cause of the warning is removed.
- LED display: r

00EE Power supply: Fan stop warning

Details A cooling fan built in the power supply unit stopped.
- Reset method: Automatically reset once the cause of the warning is removed.
- LED display: u

4. MCP Alarms (Y)

Y02 System alm: Process time over 0050

Details System alarm: Process time is over.

Remedy The software or hardware may be damaged.
Contact the service center.
(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: CRC error 1 0051 0000

Details A communication error has occurred between controller and drive unit.

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: CRC error 2 0051 0001

Details A communication error has occurred between controller and drive unit.

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: Recv timing err 0051 0002

Details A communication error has occurred between controller and drive unit.

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: Data ID error 0051 xy03

Details A communication error has occurred between controller and drive unit.
x: Channel No. (0 to)
y: Drive unit rotary switch No. (0 to)

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: Recv frame No. 0051 xy04

Details A communication error has occurred between controller and drive unit.
x: Channel No. (from 0)
y: Drive unit rotary switch No. (from 0)

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: Commu error 0051 x005

Details A communication error has occurred between controller and drive unit.
x: Channel No. (from 0)

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: Connect error 0051 x006

Details A communication error has occurred between controller and drive unit.
x: Channel No. (from 0)

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er : Init commu error 0051 xy20

Details A communication error has occurred between controller and drive unit.
A drive unit stopped due to transition failure from initial communication to runtime.
x: Channel No. (from 0)
y: Drive unit rotary switch No. (from 0)

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: Node detect error 0051 xy30

Details A communication error has occurred between controller and drive unit.
No response from drive unit to the request from NC when setting network configuration.
x: Channel No. (from 0)
y: Station No. (from 0)

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 SV commu er: Commu not support 0051 xy31

Details A communication error has occurred between controller and drive unit.
Drive unit's software version doesn't support the communication mode that the controller requires.
x: Channel No. (from 0)
y: Station No. (from 0)

Remedy
- Take measures against noise.
- Check for any failure of the communication cable connectors between controller and drive unit or between two drive units.
- Check for any failure of the communication cables between controller and drive unit or between two drive units.
- A drive unit may be faulty. Take a note of the 7-segment LED contents of each drive unit and contact the Service Center.
- Update the drive unit software version.

(Note) When two or more "Y02 System alarms" occur at the same time, only the alarm which has occurred first is displayed.

Y02 System alarm 0052 0001

Details Transfer to buffer is not properly done in servo communication.

Remedy
Software/ hardware may have a fault.
Contact service center.

(Note) When two or more "Y02 System alarms 0051" alarms occur at the same time, only the alarm which occurs first is displayed.

Y03 Drive unit unequipped axis name

Details The drive unit is not correctly connected.
Alphabet (axis name): Servo axis drive unit not mounted
1 to 4: PLC axis drive unit not mounted
S: No.1 spindle drive unit not mounted
T: No.2 spindle drive unit not mounted
M: No.3 spindle drive unit not mounted
N: No.4 spindle drive unit not mounted

Remedy Check the drive unit mounting state.
- Check the end of the cable wiring.
- Check for any broken wires.
- Check the connector insertion.
- The drive unit input power has not been ON.
- The drive unit axis No. switch is illegal.

Y05 Initial parameter error

Details There is a problem in the value set for the number of axes or the number of part systems.

Remedy Correct the value set for the following corresponding parameters:
"#1001 SYS_ON (System validation setup)",
"#1002 axisno (Number of axes)",
"#1039 spinno (Number of spindles)", etc.

Y06 mcp_no setting error 0001

Details There is a skipped number in the channels.

Remedy Check the values set for the following parameters.
"#1021 mcp_no (Drive unit I/F channel No. (servo))"
"#3031 smcp_no (Drive unit I/F channel No. (spindle))"

Y06 mcp_no setting error 0002

Details There is a duplicate setting for random layout.

Remedy Check the values set for the following parameters.
"#1021 mcp_no (Drive unit I/F channel No. (servo))"
"#3031 smcp_no (Drive unit I/F channel No. (spindle))"

Y06 mcp_no setting error 0003

Details The drive unit fixed setting "0000" and random layout setting "****" are both set.

Remedy Check the values set for the following parameters.
"#1021 mcp_no (Drive unit I/F channel No. (servo))"
"#3031 smcp_no (Drive unit I/F channel No. (spindle))"

Y06 mcp_no setting error 0004

Details The spindle/C axis "#1021 mcp_no (Drive unit I/F channel No. (servo))" and "#3031 smcp_no (Drive unit I/F channel No. (spindle))" are not set to the same values.

Remedy Check the values set for the following parameters.
"#1021 mcp_no (Drive unit I/F channel No. (servo))"
"#3031 smcp_no (Drive unit I/F channel No. (spindle))"

Y06 mcp_no setting error 0005

Details A random layout has been set while "#1154 pdoor" has been set to "1" in two-part system.

Remedy Check the values set for the following parameters.
"#1021 mcp_no (Drive unit I/F channel No. (servo))"
"#3031 smcp_no (Drive unit I/F channel No. (spindle))"

Y06 mcp_no setting error 0006

Details The channel No. parameter is not within the setting range.

Remedy Check the values set for the following parameters.
"#1021 mcp_no (Drive unit I/F channel No. (servo))"
"#3031 smcp_no (Drive unit I/F channel No. (spindle))"

Y07 Too many axes connected 00xy

Details The number of axes connected to each channel exceeds the maximum number of connectable axes.
The exceeded number of axes per channel is displayed as alarm No.
x: Exceeded number of axes at drive unit interface channel 2 (0 to F)
y: Exceeded number of axes at drive unit interface channel 1 (0 to F)

This alarm also occurs when the drive unit is connected only with the 2nd channel without connecting with the 1st channel.

Remedy Remove connected axes from the channel whose alarm No. is other than '0' for the number displayed as the alarm No. Keep the number of connected axes to or less than the maximum that can be connected.
(Note 1) The number of axes is limited per each drive unit interface channel.
(Note 2)Maximum number of axes that can be connected differs depending on whether or not an expansion unit is available or the setting of '#11012 16 axes for 1ch (Connecting 16 axes for 1ch)'.
With the expansion unit, up to eight axes can be connected to a channel. Without the expansion unit, up to eight axes are allowed when '#11012 16 axes for 1ch (Connecting 16 axes for 1ch)' is set to '0', sixteen axes when set to '1'.
(Note 3) If this alarm occurs, the alarm 'Y03 Message: Drive unit unequipped' will not occur.
(Note 4) This alarm is displayed taking precedence over the alarm 'Y08 Too many drive units connected' and 'Y09 Too many axisno connected'.

Y08 Too many drive units connected 00xy

Details The number of drive units connected to each channel exceeds 8.
The exceeded number of drive units per channel is displayed as alarm No.
x: Exceeded number of drive units at drive unit interface channel 2 (0 to F)
y: Exceeded number of drive units at drive unit interface channel 1 (0 to F)

Remedy Remove drive units from the channel whose alarm No. is other than "0" for the number displayed as the alarm No. Keep the number of connected drive units to 8 or less.
(Note 1) The drive unit is not counted when all the axes connected to it are invalid.
(Note 2) If this alarm occurs, the alarm "Y03 Message: Drive unit unequipped" will not occur.
(Note 3) The alarm "Y07 Too many axes connected" and "Y09 Too many axisno connected" are displayed taking precedence over this alarm.

Y09 Too many axisno connected 00xy

Details The No. of the axis (drive unit's rotary switch No.) connected to each channel is bigger than the No. allowed.
If the axis No. of each channel is bigger than the No. allowed, "1" is displayed for the alarm No.
x: "1" when the axis No. at drive unit interface channel 2 is too big
y: "1" when the axis No. at drive unit interface channel 1 is too big

Remedy For the channel whose alarm No. is "1", keep the axis No. (drive unit's rotary switch No.) not bigger than the No. allowed.
(Note 1) The axis No. is limited per each drive unit interface channel.
(Note 2) The biggest allowed connected axis No. differs depending on whether or not an expansion unit is available or the setting of "#11012 16 axes for 1ch (Connecting 16 axes for 1ch)". The biggest connectable axis No. is as shown below.
With the expansion unit, axes No. '0' to '7' can be connected.
Without the expansion unit, axes No. '0' to '7' are allowed when '#11012 16 axes for 1ch (Connecting 16 axes for 1ch)' is set to '0', axes No. '0' to 'F' when set to '1'.
(Note 3) If this alarm occurs, the alarm "Y03 Message: Drive unit unequipped" will not occur.
(Note 4) This alarm is displayed taking precedence over the alarm "Y08 Too many drive units connected".
(Note 5) The alarm "Y07 Too many axes connected" is displayed taking precedence over this alarm.

Y11 Node Detect Err 8002-8300 xy00

Details Drive unit does not respond to the request from NC when the NC is turned ON.
Error No. shows the No. of communication phase at which the response stopped.
x: Channel No. (0 or later)
y: Station No. with the error (0 or later)

Remedy The communication error may be caused by the drive unit software version that does not correspond to the NC software version. Check the drive unit software version.
This alarm is canceled after the NC restarts.
When the alarm is not canceled, write down the alarm No. and contact service center.

Y12 No commu. with axis drv unit

Details Although the high-speed synchronous tapping option is valid, the connected drive unit doesn't support the option.

Remedy Replace the drive unit with that supports the option.

Y13 No commu. with sp drv unit

Details Although the high-speed synchronous tapping option is valid, the connected drive unit doesn't support the option.

Remedy Replace the drive unit with that supports the option.

Y14 Comm btwn drives not ready

Details Communication between drive units failed to be ready within a specified time.

Remedy - There may be a faulty connection of drive units.
- Check if any of drive units is broken.

Y20 Parameter compare error 0001 (Axis name)

Details The speed monitoring parameter in the NC does not correspond to the parameter transmitted to the drive unit.
The name of the axis with an error is displayed.

Remedy The NC or the servo drive unit may be damaged.
Contact the service center.

Y20 Sfty obsrvation: Cmd spd err 0002 (Axis name)

Details The speed exceeding the speed set with the parameter was commanded during the speed monitoring mode.
The name of the axis with an error is displayed.

Remedy Check the speed monitoring parameter and the sequence program.
Restart the NC.

Y20 Sfty obsrvation: FB pos err 0003 (Axis name)

Details The commanded position, transmitted to the servo drive unit from NC, is totally different from the feedback position received from the servo drive unit during the speed monitoring mode.
The name of the axis with an error is displayed.

Remedy The NC or the servo drive unit may be damaged.
Contact the service center.

Y20 Sfty obsrvation: FB speed err 0004 (Axis name)

Details Actual rotation speed of the motor is exceeding the speed that has been set with speed monitoring parameter during the speed monitoring mode.
The name of the axis with an error is displayed.

Remedy Correct the speed observation parameter and the sequence program.
Restart the NC.

Y20 Door signal: Input mismatch 0005 Door No.

Details Door state signals on the NC side and the drive side do not match. It may be caused by the followings:
- Cable disconnection
- Damaged door switch
- Damaged NC or servo drive unit

Remedy Check the cable.
Check the door switch.
Restart the NC.

Y20 No speed observation mode in door open 0006 Door No.

Details The door open state was detected when the speed monitoring mode was invalid.
The causes may be same as the ones for 0005 (Door signal: Input mismatch). Also the sequence program may not be correct.

Remedy Correct the sequence program.
Restart the NC.

Y20 Speed obsv: Para incompatible 0007 (Axis name)

Details Two speed monitoring parameters are not matched at the rising edge of the "speed monitor mode" signal.
The name of the axis with an error is displayed.

Remedy Correct the relevant parameters so that the two speed monitoring parameters match.
Restart the NC.

Y20 Contactor welding detected 0008 Contactor No.

Details Contactor welding was detected.
Displays the bit corresponding to the No. of the abnormal contactor.
Some contactors take a while to be shutdown after the servo ready is turned OFF, and the servo ready was turned ON in the meantime.

Remedy
- Make sure that contactor's auxiliary B contact signal is output correctly to the device set on "#1330 MC_dp1(Contactor weld detection device 1)" and "#1331 MC_dp2(Contactor weld detection device 2)".
- If welding, replace the contactor.
- Restart the NC.

Y20 No spec: Safety observation 0009

Details “#2313 SV113 SSF8/bitF (Servo function selection 8)” and “#13229 SP229 SFNC9/bitF (Spindle function 9)” are set for a system with no safety observation option.

Remedy Disable “#2313 SV113 SSF8/bitF (Servo function selection 8)” and “#13229 SP229 SFNC9/bitF (Spindle function 9)”.
Then, restart the NC.

Y20 SDIO connector input volt err 0010

Details 24VDC power is not supplied to SDIO connector correctly. (SDIO 4A pin supply voltage was dropped to 16V or less, or 1ms or more instant power interrupt was detected.)
In this case, "Pw sply:Inst pw interpt(DC24V)" alarm occurs because the contactor control output signal cannot be controlled.
This state remains until restarting the NC even if the cause of the alarm has been removed.

Remedy Check the wiring. Supply 24VDC power to the SDIO connector.
Restart the NC.

Y20 Device setting illegal 0011

Details
- The device set in "#1353 MC_ct1 (Contactor shutoff output 1 device)" does not exist.
- The device set in "#1353 MC_ct1 (Contactor shutoff output 1 device)" is used as an output device in PLC program.

Remedy
- In "#1353 MC_ct1 (Contactor shutoff output 1 device)", set the device to which a remote I/O is connected. Use the device to control the contactor.
- Confirm that the devices set by "#1353 MC_ct1 (Contactor shutoff output 1 device)" are not used as an output device in PLC program.

Y20 Contactor operation abnormal 0012 Contactor No.

Details Contactor's operation is not following the NC's commands.
Displays the No. of the abnormal contactor.

Remedy
- Check and correct "#1353 MC_ct1 (Contactor shutoff output 1 device)" setting.
- Check the wiring for contactor shutoff.
- Check for contactor's welding.

Y20 Dual signal: parameter setting error 0027

Details A setting of #2118 SscDrSel, #3071 SscDrSelSp, #2180 S_DIN, or #3140 S_DINSp is not correct.

Remedy - Correct the parameter setting.

Y20 Safety observation: parameter memory error 0031 (Parameter No.))

Details The following parameters are not consistent with the check data.
#2180 S_DIN, #3140 S_DINSp

Remedy
- Correct the parameter setting.
- Restore the backup data, as the parameter or check data may be corrupted.

Y21 Speed obsv signal: Speed over 0001 (Axis name)

Details The speed exceeds the safety speed limit when the "speed monitor mode" signal is ON.
The name of the axis with an error is displayed.

Remedy Decelerate the speed to reset the warning and start the speed monitor.

Y51 Parameter G0tL illegal 0001

Details The time constant has not been set or exceeded the setting range.

Remedy Correct "#2004 G0tL (G0 time constant (linear))".

Y51 Parameter G1tL illegal 0002

Details The time constant has not been set or exceeded the setting range.

Remedy Correct "#2007 G1tL (G1 time constant (linear))".

Y51 Parameter G0t1 illegal 0003

Details The time constant has not been set or exceeded the setting range.

Remedy Correct "#2005 G0t1 (G0 time constant (primary delay) / Second-step time constant for soft acceleration/deceleration)".

Y51 Parameter G1t1 illegal 0004

Details The time constant has not been set or exceeded the setting range.

Remedy Correct "#2008 G1t1 (G1 time constant (primary delay)/Second-step time constant for soft acceleration/deceleration)".

Y51 Parameter grid space illegal 0009

Details The grid space is illegal.

Remedy Correct "#2029 grspc(Grid interval)".

Y51 Parameter stapt1-4 illegal 0012

Details The time constant has not been set or exceeded the setting range.

Remedy Correct the parameters from "#3017 stapt1(Tap time constant (Gear: 00))" to "#3020 stapt4(Tap time constant (Gear: 11))".

Y51 Slave axis No. illegal 0014

Details In the axis synchronization, parameter settings for slave axis have been attempted in different part system from that of master axis.

Remedy - Correct the "#1068 slavno (Slave axis number)" setting.

Y51 Parameter skip_tL illegal 0015

Details The time constant has exceeded the setting range.

Remedy Correct "#2102 skip_tL (Skip time constant linear)".

Y51 Parameter skip_t1 illegal 0016

Details The time constant has exceeded the setting range.

Remedy Correct "#2103 skip_t1 (Skip time constant primary delay / Second-step time constant for soft acceleration/deceleration)".

Y51 Parameter G0bdcc illegal 0017

Details "#1205 G0bdcc (Acceleration and deceleration before G0 interpolation)" for the 2nd part system is set to acceleration/deceleration before G0 interpolation.

Remedy Correct "#1205 G0bdcc (Acceleration and deceleration before G0 interpolation)".

Y51 OMR-II parameter error 0018

Details An illegal setting was found in the OMR-II-related parameters. OMR-II has been disabled.

Remedy Correct the related parameter settings.

Y51 PLC indexing stroke length err 0019

Details "#12804 aux_tleng (Linear axis stroke length)" has not been set or exceeded the setting range while the linear axis equal indexing is enabled for the PLC indexing axis.

Remedy Correct "#12804 aux_tleng (Linear axis stroke length)".

Y51 No hi-accu acc/dec t-const ext 0020

Details There is no expansion option for the high-accuracy acceleration/deceleration time constant.

Remedy Set "#1207 G1btL (Time constant)" to a value within the setting range with no expansion specification for the extended high-accuracy time constant.

Y51 Values of PC1/PC2 too large 0101

Details The PC1 and PC2 settings for the rotary axis are too large.

Remedy Correct "#2201 SV001 PC1 (Motor side gear ratio)" and "#2202 SV002 PC2 (Machine side gear ratio)".

Y90 No spindle signal 0001-0007

Details There is an error in the spindle encoder signal.
The data transmission to the drive unit is stopped when this error occurs.

Remedy Check the spindle encoder's feedback cable and the encoder.

5. System Alarms (Z)

Z02 System error

Details The operation result is illegal.

Remedy - Contact the service center.

Z31 Socket open error(socket) 0001

Details Socket open error (socket)

Remedy Set the parameter then turn the power OFF and ON again.

Z31 Socket bind error(bind) 0002

Details Socket bind error (bind)

Remedy Set the parameter then turn the power OFF and ON again.

Z31 Connection wait queue error(listen) 0003

Details Connection wait queue error (listen)

Remedy Set the parameter then turn the power OFF and ON again.

Z31 Connection request error(accept) 0004

Details Connection request error (accept)

Z31 Data recv error(socket error) 0005

Details Data receive error (socket error)

Z31 Data recv error(data error) 0006

Details Data receive error (data error)

Z31 Data send error(socket error) 0007

Details Data send error (socket error)

Z31 Data send error(data error) 0008

Details Data send error (data error)

Z31 Socket close error(close) 000A

Details Socket close error (close)

Remedy Set the parameter then turn the power OFF and ON again.

Z34 DeviceNet error

Details Any of the following errors has occurred in the DeviceNet unit.
- Master function error (X03 is ON)
- Slave function error (X08 is ON)
- Message communication error (X05 is ON)

If the errors have occurred in more than one unit, the error No. of the unit with the smallest slot No. is displayed.
If the master function, slave function and message communication errors have occurred at the same time, the error is displayed in the following priority order.
1. Master function error
2. Slave function error
3. Message communication error

Remedy - Select the [Ext. PLC link control] menu on the maintenance screen to open the unit confirmation screen, and check the unit in error and details to cancel the error.
For the details of the DeviceNet unit errors, refer to "External PLC Link II (Bus connection) MELSEC-Q Series Appendix 2 (DeviceNet)"BNP-C3039-276 (Appendix 2).

Z40 Format mismatch

Details "#1052 MemVal (No. of common variables shared in part system designation)", formatted at "0", was set to "1".

Remedy - Reset "#1052 MemVal (No. of common variables shared in part system designation)" to "0" or format and restart.

Z51 EEPROM ERROR

Details The data read from EEPROM does not coincide with the data that has been written into it.

Remedy - If the same alarm occurs with the same operation, a hardware fault may be the cause. Contact the service center.

Z52 Battery fault 000x

Details The voltage of the battery in the NC control unit has dropped. (The battery used to save the internal data.)
0001: Battery warning
0002: Battery detecting circuit error
0003: Battery alarm
(Note)The display of "Z52 battery fault 0001" can be removed by resetting. However, the warning state will not be cleared until the battery is replaced.

Remedy
- Replace the battery of the NC control unit.
- Check for any disconnection of the battery cable.
- After fixing the battery's fault, check the machining program.

Z53 CNC overheat

Details The controller or operation board temperature has risen above the designated value.
(Note)Temperature warning
When an overheat alarm is detected, the alarm is displayed and the overheat signal is output simultaneously. Automatic operation will be continued, while restarting after resetting or stopping with M02/M30 is not possible. (Restarting after block stop or feed hold is possible.)
The alarm will be cleared and the overheat signal will turn OFF when the temperature drops below the specified temperature.
Z53 CNC overheat 000x
[000x]
(For all models)
0001: The temperature in the control unit is high.
(For M700VS only)
0004: The temperature in the control unit is high.
0005: The temperature in the control unit 2 is high.
The ambient temperature must be lowered immediately when a "Z53 CNC overheat" alarm occurs. However, if the machining needs to be continued, set "#6449/bit7 Control unit temperature alarm ON" to "0". Then the alarm will be invalidated.

Remedy
- Cooling measures are required.
- Turn OFF the controller power, or lower the temperature with a cooler, etc.

Z55 RIO communication stop

Details An error occurs in the communication between the control unit and remote I/O unit.
Disconnection of a cable
Fault in remote I/O unit
Fault of power supply to remote I/O unit
The alarm and the I/O unit No. is displayed when an error occurs in the communication between the control unit and remote I/O unit.
The remote I/O unit No. is displayed in eight digits. Two digits (in hexadecimal) are used for each board and part system.
[Display format of remote I/O unit No.]
Z55 RIO communication stop
(a) (b) (c) (d) (e) (f) (g) (h)
(a)(b): Remote I/O 2nd part system communication interrupted station
(c)(d): Remote I/O 1st part system communication interrupted station
(e)(f): Remote I/O 3rd part system communication interrupted station
(g)(h): Board connection remote I/O communication interrupted station
(a)(b) indicates the following station in hexadecimal.
bit0: RIO (0th station)
bit1: RIO (first station)
bit2: RIO (second station)
bit3: RIO (third station)
bit4: RIO (fourth station)
bit5: RIO (fifth station)
bit6: RIO (sixth station)
bit7: RIO (seventh station)
This also applies for the remote I/O 1st part system communication interrupted station, remote I/O 3rd part system communication interrupted station and board connection remote I/O communication interrupted station.

Remedy
- Check and replace the cables.
- Replace the remote I/O unit.
- Check the power supply (existence of supply and voltage).

Z57 System warning

Details Program memory capacity has been set over the value that can be formatted.
An expansion device/expansion cassette has not mounted after formatting.
The mounted expansion device/expansion cassette is different from the one that was mounted at formatting.

Remedy
Check the followings.
- Program memory capacity
- Mounting of an expansion device/expansion cassette
- APLC release option

Z58 ROM write not completed

Details A machine tool builder macro program has not been written to FROM after being registered/ edited/ copied/ condensed/ merged/ the number changed/ deleted.

Remedy
- Write the machine tool builder macro program to FROM.
The program does not need to be written to FROM unless the editing operations and so on need to be valid after the NC power OFF.

Z59 Acc/dec time cnst too large

Details Acceleration and deceleration time constants are too large.
(This alarm is output at the same time as "T02 0206".)

Remedy
- Set the larger value for "#1206 G1bF(Maximum speed)".
- Set the smaller value for "#1207 G1btL(Time constant)".
- Set the lower feedrate.

Z60 Fieldbus communication error n1 n2 n3 n4

Details A communication error has occurred on the Fieldbus communication with HN571/HN573/HN575.
[n1 :Shows state of the master channel (shown in hexadecimal number)]
00 :Offline In initializing
40 :Stop Cutting I/O communication
80 :Clear Resetting output data of each slave by sending 0 data.
C0 :In operation I/O In I/O communication
[n2 :Shows error state (shown in hexadecimal number)]
bit0 :Control error Parameter error
bit1 :Auto clear error Communication with all the slave channels was cut because a communication with one slave channel had an error.
bit2 :Non exchange error Slave channel with communication error is found.
bit3 :Fatal error The communication cannot be continued because severe network failure exists.
bit4 :Event error Short-circuit was found on the network.
bit5 :Not ready CNC communication is not ready.
bit6 :Time out error Time out was detected in communication with each channel.
bit7 :Not used
[n3 :Shows error No. (shown in hexadecimal number)]
- Error in master channel (when remote address with an error is FF (hexadecimal number))
  0 :No error Operating normally
  32 :No USR_INT Damage in HN571. Replace HN571.
  33 :No global data field
  34 :No FDL-task
  35 :No PLC-task
  37 :Master parameter incorrect
  39 :Slave parameter incorrect
  3C :Data offset exceeding allowable set value received. Check the configuration setting.
  3D :Slave data send range overlap
  3E :Slave data receive range overlap
  3F :Not set data hand shake Damage in HN571. Replace HN571.
  40 :RAM range exceeded
  41 :Slave parameter data set illegal
  CA :No segment
  D4 :Data base read illegal Download the configuration data again.
  D5 :Operating system illegal Damage in HN571. Replace HN571.
  DC :Watch dog error
  DD :Hand shake mode No data communication by 0
  DE :Master auto clear mode When setting auto clear mode, the auto clear mode was performed because one slave was not able to connect in run time.
- Error in slave channel (when remote address with an error is other than FF (hexadecimal number))
  Check the configuration of slave channel in which error has occurred. Check if there is any short-circuit in wire to bus.
  2 :Station overflow reported
  3 :Station stopped responding to master command
  9 :No slave required responding data
  11 :No station respond
  12 :No master to logical token ring
  15 :Illegal parameter requested

[n4 : Shows slave No. where communication error has occurred. (shown in hexadecimal number)]
'FF' means an error in master channel.

Z64 Valid term soon to be expired xx

Details The valid term will be expired in less than a week. Remaining valid term is xx days.

Remedy - Obtain a decryption code by making a payment. Enter the decryption code.

Z65 Valid term has been expired

Details The valid term has been expired with no decryption code input.

Remedy - Obtain a decryption code by making a payment. Enter the decryption code.

Z67 CC-Link communication error

Details A communication error occurred during CC-Link communication using CC-Link unit.

Remedy - Refer to "List of Messages" in CC-Link (Master/Slave) Specification manual (BNP-C3039-214).

Z68 CC-Link unconnected

Details A cable between CC-Link unit and a device is disconnected or broken.

Remedy
- Connect the cable.
- Check for any broken cables.

Z69 External link error 2

Details A FROM/TO instruction was used while the MELSEC-Q interface expansion module is not installed.

Remedy Install the MELSEC-Q interface expansion module.

Z69 External link error 3

Details A negative value was set for an I/O No. in the FROM/TO instruction.

Remedy Correct the I/O No.

Z69 External link error 4

Details A negative value was set for transfer size in the FROM/TO instruction.

Remedy Correct the transfer size.

Z69 External link error 5

Details The number of FROM/TO instructions within one scan has exceeded 50.

Remedy Correct the user PLC (ladder sequence) so that the number of FROM/TO instructions per scan is 50 or less.

Z69 External link error 6

Details The access to the buffer memory by the FROM/TO instruction has exceeded 12K words per scan.

Remedy Correct the user PLC (ladder sequence) so that the buffer memory access by the FROM/TO instruction won't exceed 12K words per scan. (The total size of FROM/TO is up to 12K words.)

Z69 External link error 7

Details A FROM/TO instruction was used in high-speed processing.

Remedy Delete the FROM/TO instruction from high-speed processing.

Z69 External link error 8

Details The bit device number designated in the FROM/TO instruction is not a multiple of 16.

Remedy Correct the bit device number designated in the FROM/TO instruction to be a multiple of 16.

Z69 External link error 9

Details With a FROM/TO instruction, a value out of the address range (negative value, or 0x8000 or over) was set as the head address of the buffer memory.

Remedy Correct the head address of the buffer memory.

Z69 External link error 10

Details An alarm occurred in the MELSEC module mounted on the extension base.

Remedy Check for any disconnection of the MELSEC module and the cables on the extension base. Then turn the CNC's power ON again.

Z69 External link error 11

Details The I/O No. designated in the FROM/TO instruction is different from the mounted location of the intelligent function module on the extension base (the module's I/O No.).

Remedy Correct the I/O No. Then turn the CNC's power ON again.

Z82 3D machine interference/No machine model 0001

Details Machine model is not registered.

Remedy
- Press RESET to cancel the alarm.
  Movement can be resumed after the cancellation. However, the 3D machine interference check will become invalid.
- Inform the machine tool builder if an alarm occurs.

Z82 3D machine interference/Machine model illegal 0002

Details Machine model is illegal.

Remedy
- Press RESET to cancel the alarm.
  Movement can be resumed after the cancellation. However, the 3D machine interference check will become invalid.
- Inform the machine tool builder if an alarm occurs.

Z82 3D machine Interference check load excess 003

Details The calculation of the interference check took time and caused a deceleration.

Remedy
- Inform the machine tool builder.
- Restart the axis in case of a manual operation.
- In case of an automatic operation, the operation will automatically resume when the processing load of the interference check decreases.

Z82 3D machine Interference check error 004

Details The interference check failed.

Remedy
- Take a note of the failed status and contact the service center.
- Press RESET to cancel the alarm. Invalidate the 3D machine interference check to continue the operation.

Z83 NC started during SP rotation 0001

Details The NC was started while the spindle was rotating.

Remedy Turn the power OFF and confirm that the spindle is not rotating, then turn the power ON again.

6. Absolute Position Detection System Alarms (Z7*)

Z70 Abs posn base set incomplete 0001 (Axis name)

Details Zero point initialization is incomplete. Otherwise, the spindle was removed.

Remedy
Complete zero point initialization.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: Required

Z70 Absolute position lost 0002 (Axis name)

Details The absolute position basic point data saved in the NC has been damaged.

Remedy
Set the parameters. If the basic point data is not restored by setting the parameters, perform zero point initialization.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: (Required)

Z70 Abs posn param changed 0003 (Axis name)

Details Any of the parameters for absolute position detection has been changed.
#1003 iunit
#1016 iout
#1017 rot
#1018 ccw
#1040 M_inch
#2049 type

Remedy
Correct the parameter settings. Then turn the power ON again and perform zero point initialization.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: Required

Z70 Abs posn initial set illegal 0004 (Axis name)

Details The zero point initialization point is not at the grid position.

Remedy
Perform the zero point initialization again.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: Required

Z70 Abs posn param restored 0005 (Axis name)

Details The data has been restored by inputting the parameters during the alarm No.0002.

Remedy
Turn the power ON again to start the operation.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: Not required

Z70 Abs data error 0006

Details Deviation of the servo axis with scale when the power is OFF exceeds the set value in "#2051 check (Check)".

Remedy
Search for the factor which led the deviation of the servo axis at the power OFF.
- Zero point initialization: Not required
- Alarm reset when power is turned OFF: -
- Servo alarm No.: -

Z70 Abs posn data lost 0080 (Axis name)

Details The absolute position data has been lost. An error of the multi-rotation counter data in the detector and so on may be the cause.

Remedy
Replace the detector and complete zero point initialization.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: Required
- Servo alarm No.: (9E)etc.

Z70 Abs posn error(servo alm 25) 0101 (Axis name)

Details The servo alarm No. 25 was displayed and the power was turned ON again.

Remedy
Perform zero point initialization again.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: Required
- Servo alarm No.: -25

Z70 Abs posn error(servo alm E3) 0106 (Axis name)

Details The servo alarm No. E3 was displayed and the power was turned ON again.

Remedy Perform zero point initialization again.
(Note) To release alarm "Z70 Abs data error", enter the parameter data output when establishing the absolute position and turn ON the power again. For the rotary axis, however, the alarm cannot be released by entering the parameter data.
- Zero point initialization: Required
- Servo alarm No.: (E3)

Z71 AbsEncoder:Backup voltage drop 0001 (Axis name)

Details Backup voltage in the absolute position detector dropped.

Remedy Replace the battery, check the cable connections, and check the detector. Turn the power ON again and perform zero point initialization.
- Zero point initialization: Required
- Alarm reset when power is turned OFF: -(Z70-0101 is displayed after the power is turned ON again.)
- Servo alarm No.: 25

Z71 AbsEncoder: Commu error 0003 (Axis name)

Details Communication with the absolute position detector has been disabled.

Remedy Check and replace the cables, card or detector. Turn the power ON again and perform zero point initialization.
- Zero point initialization: (Required) only when the detector has been replaced.
- Alarm reset when power is turned OFF: Reset
- Servo alarm No.: 91

Z71 AbsEncoder: Abs data changed 0004 (Axis name)

Details Absolute position data has been changed at the absolute position establishment.

Remedy Check and replace the cables, card or detector. Turn the power ON again and perform zero point initialization.
- Zero point initialization: (Required) only when the detector has been replaced.
- Alarm reset when power is turned OFF: Reset
- Servo alarm No.: 93

Z71 AbsEncoder: Serial data error 0005 (Axis name)

Details An error of the serial data was found in the absolute position detector.

Remedy Check and replace the cables, card or detector. Turn the power ON again and perform zero point initialization.
- Zero point initialization: (Required) only when the detector has been replaced.
- Alarm reset when power is turned OFF: Reset
- Servo alarm No.: 92

Z71 AbsEncoder: Abs/inc posn diffr 0006 (Axis name)

Details Servo alarm E3
Absolute position counter warning

Remedy Operation is possible until the power is turned OFF.
- Zero point initialization: (Required) after the power is turned ON again.
- Alarm reset when power is turned OFF: Reset (Z70-0106 is displayed after the power is turned ON again.)
- Servo alarm No.: E3

Z71 AbsEncoder: Initial commu er 0007 (Axis name)

Details Initial communication with the absolute position detector is not possible.

Remedy Check and replace the cables, card or detector. Turn the power ON again and perform zero point initialization.
- Zero point initialization: (Required) only when the detector has been replaced.
- Alarm reset when power is turned OFF: Reset
- Servo alarm No.: 18

Z72 Message: Position check error (Axis name)

Details An error is detected at the comparison of detector's absolute position and controller coordinate values in the absolute position detection system.

Remedy

Z73 Battery for abs data fault 0001

Details Low backup battery
Servo alarm 9F
Low battery voltage

Remedy This is displayed when the battery voltage is0 low or the cable has been damaged.
The absolute position initialization is not required.
(Note) When this alarm has occurred, do not turn OFF the drive unit power in order to protect the absolute position data. Replace the battery with the drive unit power ON.

7. Distance-coded Reference Scale Errors (Z8*)

Z80 Basic position lost 0001

Details The basic point data saved in the NC has been damaged.

Remedy - Set the parameters. If the basic point data is not restored by setting the parameters, perform zero point initialization.

Z80 Basic position restore 0002

Details The basic point data has been restored by setting the parameters.

Remedy - Turn the power ON again to start the operation.

Z80 No spec: Distance-coded scale 0003

Details The distance-coded reference scale has been set available although this function is out of the specifications.

Remedy - Check the specifications.
- If you do not use this function, correct the detector type with the servo parameter.

Z81 R-pos adjustment data lost 0001

Details Reference position adjustment value data saved in the NC has been damaged.

Remedy - Set the parameter. If the data is not restored by setting the parameter, establish the reference position again.

Z81 R-pos adjustment data restored 0002

Details After the 'Z81 R-pos adjustment data lost 0001', the data has been recovered by setting the parameter.

Remedy - Establish the reference position to start the operation.

8. Emergency Stop Alarms (EMG)

EMG Emergency stop PLC

Details The user PLC has entered the emergency stop state during the sequence process.

Remedy - Investigate and remove the cause of the user PLC emergency stop.

EMG Emergency stop EXIN

Details The "emergency stop" signal is significant (open).

Remedy - Cancel the "emergency stop" signal.
- Check for any broken wires.

EMG Emergency stop SRV

Details An alarm occurred in the servo system causing an emergency stop.

Remedy - Investigate and remove the cause of the servo alarm.

EMG Emergency stop STOP

Details The user PLC (ladder sequence) is not running.

Remedy - Check the setting of the control unit rotary switch CS2. Correct it if set to "1".
- Check the [RUN/SP] (run/stop) switch on the PLC edit file save screen (onboard function). Turn it OFF if ON.

EMG Emergency stop SPIN

Details Spindle drive unit is not mounted.

Remedy - Cancel the causes of the other emergency stop.
- Check the "emergency stop" signal input in the spindle drive unit.

EMG Emergency stop PC_H

Details Failure in the high-speed PC processing abnormal

Remedy - Correct the sequence program. (To stop monitoring the high-speed PC processing temporarily, set "1" in "#1219 aux03/bit1 (Stop high-speed PC monitoring function)". Disable the monitoring function only as a temporary measure.)

EMG Emergency stop PARA

Details Setting of the door open II fixed device is illegal.
Setting of the parameters for dog signal random assignment is illegal.

Remedy - Correct the "#1155 DOOR_m" and "#1156 DOOR_s" settings. (When the door open II fixed device is not used, set "#1155 DOOR_m" and "#1156 DOOR_s" to "100".)
- Correct the "#2073 zrn_dog (Origin dog Random assignment device)", "#2074 H/W_OT+ (H/W OT+ Random assignment device)", "#2075 H/W_OT- (H/W OT- Random assignment device)" and "#1226 aux10/bit5 (Arbitrary allocation of dog signal)" settings.

EMG Emergency stop LINK

Details An emergency stop occurs when the FROM/TO instruction is not executed within 500ms.

Remedy - Execute the FROM/TO instruction one or more times every 500ms.
The time in which no interrupt request is issued from MELSEC is measured and stored in the following R registers:
R10190: Current timeout counter
R10191: Maximum timeout counter after power ON
R10192: Maximum timeout counter after system is started up (this is backed up)

Details MELSEC is in error and reset states.

Remedy - Check the MELSEC states.

Details The contents of MELSEC-specific code area in buffer memory have been damaged.

Remedy - Check the MELSEC states.

Details PLC serial link communication has stopped.
(Note) When "WAIT" is entered in the PLC serial link, only the preparation sequence has been established before the communication stops. It is supposed that the settings of the serial link parameters "#1902 Din size" and "#1903 Dout size" are incorrect or the "#1909 Tout (ini)" set-time is too short in basic specification parameters.

Remedy - Check the CC-Link card wiring and the external sequencer transmission.
- Check the link communication errors shown on the diagnostic screen.
- Correct the settings of the serial link parameters in basic specification parameters.

EMG Emergency stop WAIT

Details The preparation sequence is not sent from the master station. Otherwise, the contents of the received preparation sequence are inconsistent with those of the parameters, so that the usual sequence cannot be started.
(Note) When "LINK" is also entered for the PLC serial link, refer to "Note" in the section, "LINK".

Remedy - Check that the CC-Link card switch setting and wiring as well as the external sequencer transmission are normal.
- Check the diagnostic screen for link communication errors.

EMG Emergency stop XTEN

Details The CC-Link card is operating incorrectly.
Switch/parameter settings for the CC-Link card are incorrect.

Remedy
- Replace the CC-Link card.
- Correct the switch/parameter settings for the CC-Link card.

EMG Emergency stop LAD

Details The sequence program has an illegal code.

Remedy
- Correct any illegal device Nos. or constants in the sequence program.

EMG Emergency stop CVIN

Details The "emergency stop" signal for power supply is significant (open) because the external emergency stop function for power supply is enabled.

Remedy
- Cancel the "emergency stop" signal.
- Check for any broken wires.

EMG Emergency stop MCT

Details The contactor shutoff test is being executed.

Remedy
- The emergency stop is reset automatically after the contactor shutoff is confirmed.
- If the contactor shutoff is not confirmed within 5 seconds after the "contactor shutoff test" signal has been input, the "contactor welding detected" alarm occurs and the emergency stop status remains.
- Make sure that the contactor's auxiliary B contact signal is correctly output to the device that is set in "#1330 MC_dp1" and "#1331 MC_dp2" (Contactor weld detection device 1 and 2), and then turn the power ON again.

EMG Emergency stop IPWD

Details The data backup for power failure might not have been executed successfully at the previous power failure.

Remedy
- If this message appears frequently, the power supply may be deteriorated. Contact the service center.

EMG Emergency stop SUIN

Details The emergency stop input signal (M0) is OFF in the NC/PLC safety circuit.

Remedy
- Check the conditions for turning ON the emergency stop input signal.
- Check for any broken wires.

EMG Emergency stop STP2

Details Sequence programs stopped in CNC.

Remedy
- Correct the rotary switch 1 (on the right) of the control unit if set to “1”.

EMG Emergency stop MULT

Details An error related to Q bus or Qr bus occurred.

Remedy
- Refer to the error No. that follows the message “A01 Multi CPU error” to take a remedy.

EMG Emergency stop LINE

Details An error was detected when communicating with the drive unit.

Remedy
- Check the wiring.

9. Auxiliary Axis Alarms

9.1 Auxiliary Axis Servo Errors/Warnings (S)

S01 Aux ax PCB err (Drive circuit) 0011 (Axis No. 1 to 4)

Details An error occurred in the drive unit's internal PCB.

Remedy - Replace servo drive unit.

S01 Aux ax S/W processing error 0013 (Axis No. 1 to 4)

Details An error occurred in the drive unit's internal reference clock.

Remedy - Replace servo drive unit.

S01 Aux ax motor/detector type err 0016 (Axis No. 1 to 4)

Details Motor type error.

Remedy - Use a correct drive unit and motor combination.

Details Detector initial communication error.

Remedy - Connect correctly.
- Replace the motor.
- Replace or repair cable.

Details Detector CPU error.

Remedy - Replace the motor (detector).

S01 Aux ax PCB error(A/D err) 0017 (Axis No. 1 to 4)

Details An error occurred in the drive unit's internal A/D converter.

Remedy - Replace servo drive unit.

S01 Aux ax absolute posn lost 0025 (Axis No. 1 to 4)

Details An error occurred in the detector's internal absolute position data.

Remedy - Turn the power ON for 2 to 3 minutes while the alarm is occurring, and then turn the power ON again.
- Replace the battery, and initialize the absolute position again.

S01 Aux ax CRC error 0034 (Axis No. 1 to 4)

Details An error occurred in the communication with the NC.

Remedy - Take countermeasures against noise.

S01 Aux ax communication timeout 0036 (Axis No. 1 to 4)

Details Communication with the NC was cut off.

Remedy - Connect correctly.
- Turn the NC power ON.
- Replace the drive unit or NC.

S01 Aux ax parameter error 0037 (Axis No. 1 to 4)

Details The parameter setting value is incorrect.

Remedy - Set the parameter correctly.

S01 Aux ax frame error 0038 (Axis No. 1 to 4)

Details An error occurred in the communication with the NC.

Remedy - Take countermeasures against noise.

S01 Aux ax commu INFO error 0039 (Axis No. 1 to 4)

Details Undefined data was transferred from the NC.

Remedy - Change the NC software version to a compatible version.

S02 Aux ax PCB err (Drive circuit) 0011 (Axis No. 1 to 4)

Details An error occurred in the drive unit's internal PCB.

Remedy - Replace servo drive unit.

S02 Aux ax S/W processing error 0013 (Axis No. 1 to 4)

Details An error occurred in the drive unit's internal reference clock.

Remedy - Replace servo drive unit.

S02 Aux ax EEROM error 0015 (Axis No. 1 to 4)

Details A write error occurred to the EEROM in the drive unit.

Remedy - Replace servo drive unit.

S02 Aux ax PCB error(A/D err) 0017 (Axis No. 1 to 4)

Details An error occurred in the drive unit's internal A/D converter.

Remedy - Replace servo drive unit.

S02 Aux ax PCB error(LSI err) 0018 (Axis No. 1 to 4)

Details An error occurred in the drive unit's internal LSI.

Remedy - Replace servo drive unit.

S02 Aux ax detector error 0020 (Axis No. 1 to 4)

Details An error occurred in the communication between the servo drive unit and detector.

Remedy - Connect correctly.
- Replace or repair cable.

S02 Aux ax ground fault detection 0024 (Axis No. 1 to 4)

Details A ground fault of the output was detected when the power was turned ON.

Remedy - Repair the ground fault section.
- Replace the cable or motor.

S03 Aux ax under voltage 0010 (Axis No. 1 to 4)

Details The power voltage is 160V or less.

Remedy - Review the power supply.
- Replace the servo drive unit.

S03 Aux ax regeneration error 0030 (Axis No. 1 to 4)

Details The tolerable regeneration power of the internal regenerative resistor or external regenerative option was exceeded.

Remedy - Set the parameter #50002 correctly.
- Connect correctly.
- Lower the positioning frequency.
- Change the regenerative option to a larger capacity.
- Lower the load.
- Review the power supply.

Details Regenerative transistor error

Remedy - Replace the servo drive unit.

S03 Aux ax overspeed 0031 (Axis No. 1 to 4)

Details The motor's rotation speed exceeded the tolerable momentary speed.

Remedy - Increase the acceleration/ deceleration time constant.
- Review the gear ratio.
- Replace the detector.

S03 Aux ax overcurrent 0032 (Axis No. 1 to 4)

Details A current exceeding the servo drive unit's tolerable current flowed.

Remedy - Repair the wiring.
- Replace the servo drive unit.
- Take countermeasures against noise.

S03 Aux ax overvoltage 0033 (Axis No. 1 to 4)

Details The voltage of the converter in the servo drive unit was 400V or more.

Remedy - Wire correctly.
- Replace the servo drive unit.
- For the internal regenerative resistor, replace the drive unit.
- For the external regenerative option, replace the regenerative option.

S03 Aux ax motor overheating 0046 (Axis No. 1 to 4)

Details An operation state causing the motor to overheat continued.

Remedy - Reduce the motor load.
- Review the operation pattern.

S03 Aux ax overload 1 0050 (Axis No. 1 to 4)

Details The servo drive unit or servomotor overload protection function activated.

Remedy - Reduce the motor load.
- Review the operation pattern.
- Change to a motor or drive unit with large output.
- Change the setting of the automatic tuning response characteristics.
- Correct the connection.
- Replace the servomotor.

S03 Aux ax overload 2 0051 (Axis No. 1 to 4)

Details The max. output current flowed for several seconds due to a machine collision or overload.

Remedy - Review the operation pattern.
- Change the setting of the automatic tuning response characteristics.
- Correct the connection.
- Replace the servomotor.

S03 Aux ax excessive error 0052 (Axis No. 1 to 4)

Details A position deflection exceeding the excessive error detection setting value occurred.

Remedy
- Increase the acceleration/ deceleration time constant.
- Increase the torque limit value.
- Review the power facility capacity.
- Review the operation pattern.
- Replace the servomotor.
- Connect correctly.
- Repair or replace the cable.

S52 Aux ax servo warning 0092 (Axis No. 1 to 4)

Details The absolute position detection battery voltage dropped.

Remedy
- Mount a battery.
- Replace the battery and initialize the absolute position.

S52 Aux ax servo warning 00E0 (Axis No. 1 to 4)

Details The regeneration power may have exceeded the tolerable range of the built-in regenerative resistor or external regenerative option.

Remedy
- Lower the positioning frequency.
- Change the regenerative option to a larger one.
- Lower the load.

S52 Aux ax servo warning 00E1 (Axis No. 1 to 4)

Details The overload alarm 1 could occur.

Remedy
- Refer to the items for S03 0050.

S52 Aux ax servo warning 00E3 (Axis No. 1 to 4)

Details There is an error in the absolute position detector internal data.

Remedy
- Take countermeasures against noise.
- Replace the servomotor.

S52 Aux ax servo warning 00E9 (Axis No. 1 to 4)

Details The servo ON signal was input while the main circuit power was OFF.
The contactor operation is faulty.

Remedy
- Turn ON the main circuit power.

9.2 Auxiliary Axis Absolute Position Detection System Alarms (Z)

Z70 Aux ax abs posn base set incomplete 0001 (Axis No. 1 to 4)

Details The zero point (reference point) has not been initialized in the absolute position system.

Remedy - Initialize the zero point (reference point).

Z70 Aux ax absolute position lost 0002 (Axis No. 1 to 4)

Details The absolute position coordinate data in the drive unit has been lost.

Remedy - Initialize the zero point (reference point).

Z70 Aux ax abs posn param changed 0003 (Axis No. 1 to 4)

Details The absolute position system related parameters have been changed or lost.

Remedy - Correctly set the parameters and then initialize the zero point (reference point).

Z71 Aux ax abs encoder: back up voltage drop 0001 (Axis No. 1 to 4)

Details The data in the detector has been lost.
Battery voltage drop.
Detector cable wire breakage or looseness.

Remedy - Check the battery and detector cable and then initialize the zero point (reference point).

Z73 Aux ax battery for abs data fault 0001 (Axis No. 1 to 4)

Details Battery voltage drop.
Detector cable wire breakage or looseness.

Remedy - Check the battery and detector cable. The zero point does not need to be initialized.

Z73 Aux ax absolute position counter warning 0003 (Axis No. 1 to 4)

Details An error occurred in the detector's absolute position counter.

Remedy - Replace the detector.

9.3 Auxiliary Axis Operation Errors (M)

M00 Aux ax dog overrun 0001 (Axis No. 1 to 4)

Details When executing dog-type reference position, the zero point return speed is too fast or the dog length is too short.

Remedy - Lower the zero point return speed or increase the dog length.

M00 Aux ax R-pnt direction illegal 0003 (Axis No. 1 to 4)

Details When executing reference position return, the axis was moved in the opposite of the designated direction.

Remedy - Move the axis in the correct direction.

M00 Aux ax external interlock 0004 (Axis No. 1 to 4)

Details The axis interlock function is valid.

Remedy - Cancel the interlock signal

M00 Aux ax internal interlock 0005 (Axis No. 1 to 4)

Details An interlock was established by the servo OFF function.

Remedy - Cancel the servo OFF.

M00 Aux ax soft limit 0007 (Axis No. 1 to 4)

Details The soft limit was reached.

Remedy - Check the soft limit setting and machine position

M00 Aux ax R ret invld at abs alm 0024 (Axis No. 1 to 4)

Details Reference position return was executed during an absolute position alarm.

Remedy - Initialize the absolute position reference point and then fix the absolute position coordinates.

M00 Aux ax R ret invld at ini 0025 (Axis No. 1 to 4)

Details Reference position return was executed while initializing the absolute position.

Remedy - Initialize the absolute position reference point and then fix the absolute position coordinates.

M01 Aux ax no operation mode 0101 (Axis No. 1 to 4)

Details The operation mode is not designated, or the operation mode was changed during axis movement.

Remedy - Correctly designate the operation mode.

M01 Aux ax feedrate 0 0103 (Axis No. 1 to 4)

Details The feedrate set in the operation parameter is zero, or the override value is zero while the override is enabled.

Remedy - Set a value other than zero in the feedrate setting or override value.

M01 Aux ax sta No. illegal 0160 (Axis No. 1 to 4)

Details A station No. exceeding the No. of indexed divisions was designated.

Remedy - Correctly designate the station No.

M01 Aux ax R-pnt ret incomplete 0161 (Axis No. 1 to 4)

Details Automatic/manual operation was started before reference position return was executed with the incremental system.

Remedy - Execute the reference position return.

M01 Aux abs position initializing 0162 (Axis No. 1 to 4)

Details The start signal was input while initializing the absolute position reference point.

Remedy - Complete the absolute position reference point initialization.

M01 Aux ax abs position error 0163 (Axis No. 1 to 4)

Details The start signal was input during an absolute position alarm.

Remedy - Initialize the absolute position reference point and then fix the absolute position coordinates.

M01 Aux ax arbitrary positioning 0164 (Axis No. 1 to 4)

Details The manual operation mode was started during the random positioning mode.

Remedy - Turn the random positioning mode OFF before switching to the manual operation mode.

M01 Aux uneven index sta No. ilgl 0165 (Axis No. 1 to 4)

Details The commanded station No. was higher than 9 or the number of indexing stations during uneven indexing.

Remedy - Check the commanded station No. and the parameter "#50100 station" setting.

9.4 Auxiliary Axis MCP Alarms (Y)

Y02 Aux ax sys alm: Proc time over 0050 (Axis No. 1 to 4)

Details Aux ax sys alm: Proc time over

Remedy The software or hardware may be damaged.
Contact the service center.

Y02 Aux ax commu er:CRC error 1 0051 0000

Details Aux ax commu er:CRC error 1(10 times/910.2ms)

Remedy A communication error has occurred between the controller and drive unit.
- Take measures against noise.
- Check that the communication cable connector between the controller and drive unit and one between the drive units are tight.
- Check whether the communication cable between the controller and drive unit and one between the drive units are disconnected.
- A driving drive unit may be faulty. Take a note of the 7-segment LED contents of each driving drive unit and report to the Service Center.

Y02 Aux ax commu er:CRC error 2 0051 0001

Details Aux ax commu er:CRC error 2(2 continuous times)

Remedy A communication error has occurred between the controller and drive unit.
- Take measures against noise.
- Check that the communication cable connector between the controller and drive unit and one between the drive units are tight.
- Check whether the communication cable between the controller and drive unit and one between the drive units are disconnected.
- A driving drive unit may be faulty. Take a note of the 7-segment LED contents of each driving drive unit and report to the Service Center.

Y02 Aux ax commu er:Recv timing 0051 0002

Details Aux ax commu er:Recv timing(2 continuous times)

Remedy A communication error has occurred between the controller and drive unit.
- Take measures against noise.
- Check that the communication cable connector between the controller and drive unit and one between the drive units are tight.
- Check whether the communication cable between the controller and drive unit and one between the drive units are disconnected.
- A driving drive unit may be faulty. Take a note of the 7-segment LED contents of each driving drive unit and report to the Service Center.

Y02 Aux ax commu er:Data ID 0051 xx03

Details Aux ax commu er:Data ID(2 continuous times)
xx: Axis No.

Remedy A communication error has occurred between the controller and drive unit.
- Take measures against noise.
- Check that the communication cable connector between the controller and drive unit and one between the drive units are tight.
- Check whether the communication cable between the controller and drive unit and one between the drive units are disconnected.
- A driving drive unit may be faulty. Take a note of the 7-segment LED contents of each driving drive unit and report to the Service Center.

Y02 Aux ax commu er:Recv frame no. 0051 xx04

Details Aux ax commu er:Recv frame no.(2 continuous times)
xx: Axis No.

Remedy A communication error has occurred between the controller and drive unit.
- Take measures against noise.
- Check that the communication cable connector between the controller and drive unit and one between the drive units are tight.
- Check whether the communication cable between the controller and drive unit and one between the drive units are disconnected.
- A driving drive unit may be faulty. Take a note of the 7-segment LED contents of each driving drive unit and report to the Service Center.

Y03 Aux ax drive unit unequipped (Axis No. 1 to 4)

Details bit correspondence (bit 0: 1st axis, bit 1: 2nd axis, bit 2: 3rd axis, bit 3: 4th axis)

Remedy Check the auxiliary axis drive unit mounting state.
- Check the end of the cable wiring.
- Check the cable for broken wires.
- Check the connector insertion.

The auxiliary axis drive unit input power is not being input.
The auxiliary axis drive unit axis No. switch is illegal.

10. Computer Link Errors (L)

L01 Serial port being used -2

Details Serial port has already been opened or cannot be used.

Remedy
- Set the port not to shared by Anshin-net and so on.
- Correct the parameter settings for tape operation port.

L01 Timeout error -4

Details Communication ended with timeout.
(CNC has a 248-byte receive buffer. The time during which CNC receives 248 bytes exceeds the 'TIME-OUT' value set in the I/O device parameter.

Remedy
- Set a greater timeout value in the input/output device parameter.
- Check the software in HOST and make sure that the HOST transmits data in response to DC1(data request) from CNC.
- Set '#9614 START CODE' to '0'.

L01 Host ER signal OFF -10

Details ER signal in HOST (or DR signal in CNC) is not turned ON.

Remedy
- Check for any disconnected cable.
- Check for any broke wire.
- Make sure that the HOST power is turned ON.

L01 Parity H error -15

Details Communication ended with parity H.

Remedy
- Check the software in HOST and make sure that the data to be transmitted to CNC is ISO code.

L01 Parity V error -16

Details Communication ended with parity V.

Remedy
- Correct the data to transmit to CNC.

L01 Overrun error -17

Details CNC received 10 bytes or more data from HOST in spite of DC3 (request to stop data transfer) transmission from CNC to the HOST, which terminated the communication.
CNC received 10 bytes or more data from HOST during the data transmission from CNC to the HOST.

Remedy
- Check the software in HOST and make sure that the HOST stops transmitting data within 10 bytes after receiving DC3.
- Correct the software in HOST not to transmit data such as a command or header to CNC during receiving a machining program.

11. User PLC Alarms (U)

U01 No user PLC - -

Details PLC program is not input.
(Note 1) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.
(Note 2) Emergency stop (EMG) will be applied.

Remedy Download the PLC program with the format selected by the PLC environment selection parameters (bit selection "#51/bit4").

U10 Illegal PLC 0x0010 -

Details PLC scan time error
The scan time is 1 second or longer.
(Note) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.

Remedy Edit the PLC program to make the size smaller.

U10 Illegal PLC 0x0040 -

Details PLC program operation mode illegal
The downloaded PLC program is compatible with the designated mode.
(Note 1) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.
(Note 2) Emergency stop (EMG) will be applied.

Remedy Turn the power ON again or download the PLC program with the same format as at the power ON.

U10 Illegal PLC 0x0080 -

Details GPPW ladder code error
(Note 1) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.
(Note 2) Emergency stop (EMG) will be applied.

Remedy Download the PLC program with a correct GPPW format.

U10 Illegal PLC 0x008x -

Details PLC4B ladder code error
An illegal circuit was found in the PLC4B ladder.
bit1: PC medium-speed circuit illegal
bit2: PC high-speed circuit illegal
(Note 1) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.
(Note 2) Emergency stop (EMG) will be applied.

Remedy Download the correct PLC4B format PLC program.

U10 Illegal PLC 0x0400 Number of ladder steps

Details Software illegal interrupt
An abnormal stop occurred in the PLC program process due to an illegal code for software command.
(Note 1) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.
(Note 2) Emergency stop (EMG) will be applied.

Remedy Turn the power ON again.
If the error is not reset, download the correct PLC program.

U10 Illegal PLC 0x800x Number of PLC program steps

Details Software exception
An abnormal stop occurred in PLC program process due to a bus error, etc.
bit0: BIN command operation error
bit1: BCD command operation error
(Note) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.

Remedy Refer to the methods for using the BCD and BIN function commands.

Details Software exception
An abnormal stop occurred in PLC program process due to a bus error, etc.
bit6: CALL/CALLS/RET command error
bit7: IRET command execution error
(Note 1) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.
(Note 2) Emergency stop (EMG) is applied for bit6/7.

Remedy Turn the power ON again.
If the error is not reset, download the correct PLC program.

U50 PLC stopped

Details The PLC program is stopped.
(Note) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.

Remedy Start the PLC program.

U55 PLC stopped / is not saved

Details The PLC program is stopped and not written into ROM.
(Note) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.

Remedy Write the PLC program into ROM.

U60 Ladder is not saved

Details The PLC program is not written into ROM.
(Note) The number of PLC program steps displayed on the screen may not match the actual number of error occurrence steps because of the PLC program timing. Use this as a guideline of the occurrence place.

Remedy Write the PLC program into ROM.

12. Network Service Errors (N)

N001 Modem initial error

Details An error occurred in the modem connection at the power ON.

Remedy - Check the connection between the NC and modem, connection port and power supply to modem.

N002 Redial over

Details - The number of redials exceeded due to the dial transmission failure.

Remedy - Wait a while, and then dial again.

N003 TEL unconnect

Details - The phone line is not connected.

Remedy - Check for any disconnection in the modem's phone line.

N004 Net communication error

Details - An error other than the above occurred during communication.

Remedy - Note down how the error occurred and contact the service center.

N005 Invalid net communication

Details - The modem connection port is being used for another function such as input/output.
- The modem connection port settings are incorrect.

Remedy - Stop using the modem connection port with the other function, and then turn the power ON again.
- Correct the settings of the modem connection port.

N006 Received result of diagnosis

Details - A diagnosis data file has been received.

Remedy - Clear the message.

N007 Send data size over

Details - A file larger than Anshin-net server capacity (64Kbyte) has been transmitted in machining data sharing.

Remedy - Reduce the size of machining program file so that it won't exceed the capacity of Anshin-net server.

N008 No file on server

Details - The file reception failed in machining data sharing because no file exists on Anshin-net server.

Remedy - Confirm that a machining program file exists on Anshin-net server before receiving it.

N009 Password error

Details - The file reception failed in machining data sharing due to a wrong password.

Remedy - Input the password again.

N010 Customer number error

Details - The file reception failed in machining data sharing due to a wrong customer number.

Remedy - Input the customer number again.

N011 Storage capacity over

Details - The file reception failed in machining data sharing because the size of the file to be received is bigger than free space in the NC.

Remedy - Ensure sufficient free space in the NC.

N012 File deletion error

Details - A file on Anshin-net server cannot be deleted in machining data sharing.

Remedy - Confirm that the file exists on Anshin-net server.
- Note down how the error occurred and contact the service center.

13. Program Errors (P)

P10 No. of simultaneous axes over

Details The number of axis addresses commanded in a block is exceeds the specifications.

Remedy
- Divide the alarm block command into two.
- Check the specifications.

P11 Illegal axis address

Details The axis address commanded by the program does not match any of the ones set by the parameter.

Remedy
- Correct the axis names in the program.

P20 Division error

Details The issued axis command cannot be divided by the command unit.

Remedy
- Correct the program.

P29 Not accept command

Details The command has been issued when it is impossible.
- The normal line control command (G40.1, G41.1, G42.1) has been issued during the modal in which the normal line control is not acceptable.
- The command has been issued during the modal in which the 2-part system synchronous thread cutting is not acceptable.

Remedy
- Correct the program.

P30 Parity H error

Details The number of holes per character on the paper tape is even for EIA code and odd for ISO code.

Remedy
- Check the paper tape.
- Check the tape puncher and tape reader.

P31 Parity V error

Details The number of characters per block on the paper tape is odd.

Remedy
- Make the number of characters per block on the paper tape even.
- Set the parameter parity V selection OFF.

P32 Illegal address

Details An address not listed in the specifications has been used.

Remedy
- Correct the program address.
- Correct the parameter settings.
- Check the specifications.

P33 Format error

Details The command format in the program is not correct.

Remedy
- Correct the program.

P34 Illegal G code

Details The commanded G code is not in the specifications.
An illegal G code was commanded during the coordinate rotation command.

Remedy
- Correct the G code address in the program.

Details G51.2 or G50.2 was commanded when "#1501 polyax (Rotational tool axis number)" was set to "0".
G51.2 or G50.2 was commanded when the tool axis was set to the linear axis ("#1017 rot (Rotational axis)" is set to"0").

Remedy
- Correct the parameter settings.

P35 Setting value range over

Details The setting range for the addresses has been exceeded.

Remedy
- Correct the program.

P36 Program end error

Details "EOR" has been read during tape and memory mode.

Remedy
- Enter the M02 and M30 command at the end of the program.
- Enter the M99 command at the end of the subprogram.

P37 O, N number zero

Details "0" has been specified for program or sequence No.

Remedy
- Designate program Nos. within a range from 1 to 99999999.
- Designate sequence Nos. within a range from 1 to 99999.

P38 No spec: Add. Op block skip

Details "/n" has been issued while the optional block skip addition is not in the specifications.

Remedy - Check the specifications.

P39 No specifications

Details
- A non-specified G code was commanded.
- The selected operation mode is out of specifications.

Remedy - Check the specifications.

P45 G-CODE COMB.

Details The combination of G codes in a block is inappropriate.
A part of unmodal G codes and modal G codes cannot be commanded in a same block.

Remedy
Correct the combination of G codes.
Separate the incompatible G codes into different blocks.

P48 Restart pos return incomplete

Details A travel command was issued before the execution of the block that had been restart-searched.

Remedy - Carry out program restart again.
Travel command cannot be executed before the execution of the block that has been restart-searched.

P49 Invalid restart search

Details
- Restart search was attempted for the 3-dimensional circular interpolation.
- Restart search was attempted for the mixed control (cross axis control) command (G110).
- Restart search was attempted during the cylindrical interpolation, polar coordinate interpolation, or tool tip center control.
- Restart search was attempted from a block (G68.2) during the inclined surface machining mode or from the inclined surface machining mode cancel command block (G69).

Remedy
- Correct the program.
- Correct the restart search position.

P50 No spec: Inch/Metric change

Details Inch/Metric changeover (G20/G21) command was issued while the function is out of specifications.

Remedy - Check the specifications.

P60 Compensation length over

Details The commanded movement distance is excessive (over 231).

Remedy - Correct the command range for the axis address.

P61 No spec: Unidirectional posit.

Details Unidirectional positioning (G60) was commanded while the function is out of specifications.

Remedy - Check the specifications.

P62 No F command

Details
- No feed rate command has been issued.
- There is no F command in the cylindrical interpolation or polar coordinate interpolation immediately after the G95 mode is commanded.

Remedy
- The default movement modal command at power ON is G01. This causes the machine to move without a G01 command if a movement command is issued in the program, and an alarm results. Use an F command to specify the feed rate.
- Specify F with a thread lead command.

P63 No spec: High-speed machining

Details High-speed machining cancel (G5P0) was commanded while the high-speed machining is out of specifications.

Remedy - Check the specifications.

P65 No spec: High speed mode 3

Details

Remedy - Check whether the specifications are provided for the high-speed mode III.

P70 Arc end point deviation large

Details
- There is an error in the arc start and end points as well as in the arc center.
- The difference of the involute curve through the start point and the end point is large.
- When arc was commanded, one of the two axes configuring the arc plane was a scaling valid axis.

Remedy
- Correct the numerical values of the addresses that specify the start and end points, arc center as well as the radius in the program.
- Correct the "+" and "-" directions of the address numerical values.
- Check for the scaling valid axis.

P71 Arc center error

Details
- An arc center cannot be obtained in R-specified circular interpolation.
- A curvature center of the involute curve cannot be obtained.

Remedy
- Correct the numerical values of the addresses in the program.
- Correct the start and end points if they are inside of the base circle for involute interpolation. When carrying out tool radius compensation, make sure that the start and end points after compensation will not be inside of the base circle for involute interpolation.
- Correct the start and end points if they are at an even distance from the center of the base circle for involute interpolation.

P72 No spec: Herical cutting

Details A helical command has been issued though it is out of specifications.

Remedy
- Check whether the specifications are provided for the helical cutting.
- An Axis 3 command has been issued by the circular interpolation command. If there is no helical specification, move the linear axis to the next block.

P73 No spec: Spiral cutting

Details A spiral command was issued though it is out of specifications.

Remedy
- Issue the G02.1 and G03.1 commands for circular interpolation.
- Check whether the specifications are provided for the spiral cutting.

P74 Can't calculate 3DIM arc

Details The 3-dimension circular cannot be obtained because the end block was not specified during 3-dimension circular interpolation supplementary modal.
The 3-dimension circular cannot be obtained due to an interruption during 3-dimension circular interpolation supplementary modal.

Remedy - Correct the program.

P75 3DIM arc illegal

Details An illegal G code was issued during 3-dimension circular interpolation modal.
Otherwise, 3-dimension circular interpolation command was issued during a modal for which a 3-dimension circular interpolation command cannot be issued.

Remedy - Correct the program.

P76 No spec: 3DIM arc interpolat

Details G02.4/G03.4 was commanded though there is no 3-dimension circular interpolation specification.

Remedy - Check the specifications.

P80 No spec: Hypoth ax interpolat

Details Hypothetical axis interpolation (G07) was commanded though it is out of specifications.

Remedy - Check the specifications.

P90 No spec: Thread cutting

Details A thread cutting command was issued though it is out of specifications.

Remedy - Check the specifications.

P91 No spec: Var lead threading

Details Variable lead thread cutting (G34) was commanded though it is out of specifications.

Remedy - Check the specifications.

P93 Illegal pitch vaule

Details An illegal thread lead (thread pitch) was specified at the thread cutting command.

Remedy - Correct the thread lead for the thread cutting command.

P100 No spec: Cylindric interpolat

Details A cylindrical interpolation command was issued though it is out of specifications.

Remedy - Check the specifications.

P110 Plane select during figure rot

Details Plane selection (G17/G18/G19) was commanded during figure rotation.

Remedy - Correct the machining program.

P111 Plane selected while coord rot

Details Plane selection commands (G17, G18, G19) were issued during a coordinate rotation was being commanded.

Remedy - Always command coordinate rotation cancel after the coordinate rotation command, and then issue a plane selection command.

P112 Plane selected while R compen

Details
- Plane selection commands (G17, G18, G19) were issued while tool radius compensation (G41, G42) and nose R compensation (G41, G42, G46) commands were being issued.
- Plane selection commands were issued after completing nose R compensation commands when there were no further axis movement commands after G40, and compensation has not been cancelled.

Remedy
- Issue plane selection commands after completing (axis movement commands issued after G40 cancel command) tool radius compensation and nose R compensation commands.

P113 Illegal plane select

Details The circular command axis does not correspond to the selected plane.

Remedy
- Select a correct plane before issuing a circular command.

P120 No spec: Feed per rotation

Details Feed per rotation (G95) was commanded though it is out of specifications.

Remedy
- Check the specifications.

P121 F0 command during arc modal

Details F0 (F 1-digit feed) was commanded during the arc modal (G02/G03).

Remedy
- Correct the machining program.

P122 No spec: Auto corner override

Details An auto corner override command (G62) was issued though it is out of specifications.

Remedy
- Check the specifications.
- Delete the G62 command from the program.

P123 No spec: High-accuracy control

Details High-accuracy control command was issued though it is out of specifications.

Remedy
- Check the specifications.

P124 No spec: Inverse time feed

Details
- The inverse time option is not provided.

Remedy
- Check the specifications.

P125 G93 mode error

Details
- The issued G code command is illegal during G93 mode.
- G93 command was issued during a modal for which inverse time feed cannot be performed.

Remedy
- Correct the program.

P126 Invalid cmnd in high-accuracy

Details An illegal command was issued during the high-accuracy control mode.
- A G code group 13 command was issued during the high-accuracy control mode.
- Milling, cylindrical interpolation or pole coordinate interpolation was commanded during the high-accuracy control mode.

Remedy
- Correct the program.

P127 No spec: SSS Control

Details The SSS control valid parameter has been set although there is no SSS control specification.

Remedy
- Check the specifications. Set "#8090 SSS ON" to "0" when there is no SSS control specification.

P128 Machin condtn select I disable

Details Machining condition selection I was commanded during the mode where the selection command is unavailable.

Remedy
- Check the program and see whether any unavailable mode is included during machining condition selection I. If any, cancel that mode.

P130 2nd M function code illegal

Details The 2nd miscellaneous function address, commanded in the program, differs from the address set in the parameters.

Remedy
- Correct the 2nd miscellaneous function address in the program.

P131 No spec: Cnst surface ctrl G96

Details A constant surface speed control command (G96) was issued though it is out of specifications.

Remedy
- Check the specifications.
- Issue a rotation speed command (G97) instead of the constant surface speed control command (G96).

P132 Spindle rotation speed S=0

Details No spindle rotation speed command has been issued.

Remedy - Correct the program.

P133 Illegal P-No. G96

Details The illegal No. was specified for the constant surface speed control axis.

Remedy - Correct the parameter settings and program that specify the constant surface speed control axis.

P134 G96 Clamp Err.

Details The constant surface speed control command (G96) was issued without commanding the spindle speed clamp (G92/G50).

Remedy Press the reset key and carry out the remedy below.
- Check the program.
- Issue the G92/G50 command before the G96 command.
- Command the constant surface speed cancel (G97) to switch to the rotation speed command.

P140 No spec: Pos compen cmd

Details The position compensation command (G45 to G48) is out of specifications.

Remedy - Check the specifications.

P141 Pos compen during rotation

Details Position compensation was commanded during the figure rotation or coordinate rotation command.

Remedy - Correct the program.

P142 Pos compen invalid arc

Details Position compensation cannot be executed with the issued arc command.

Remedy - Correct the program.

P150 No spec: Nose R compensation

Details
- Tool radius compensation commands (G41 and G42) were issued though they are out of specifications.
- Nose R compensation commands (G41, G42, and G46) were issued though they are out of specifications.

Remedy - Check the specifications.

P151 Radius compen during arc mode

Details A compensation command (G40, G41, G42, G43, G44, or G46) has been issued in the arc modal (G02 or G03).

Remedy - Issue the linear command (G01) or rapid traverse command (G00) in the compensation command block or cancel block.
(Set the modal to linear interpolation.)

P152 No intersection

Details
- In interference block processing during execution of a tool radius compensation (G41 or G42) or nose R compensation (G41, G42, or G46) command, the intersection point after one block is skipped cannot be determined.
- The compensation amount cannot be calculated during the tool radius compensation for 5-axis machining (G41.2,G42.2).

Remedy - Correct the program.

P153 Compensation interference

Details An interference error has occurred while the tool radius compensation command (G41 or G42) or nose R compensation command (G41, G42 or G46) was being executed.

Remedy - Correct the program.

P154 No spec: 3D compensation

Details A three-dimensional compensation command was issued though it is out of specifications.

Remedy - Check the specifications.

P155 Fixed cyc exec during compen

Details A fixed cycle command has been issued in the radius compensation mode.

Remedy - Issue a radius compensation cancel command (G40) to cancel the radius compensation mode that has been applied since the fixed cycle command was issued.

P156 R compen direction not defined

Details A shift vector with undefined compensation direction was found at the start of G46 nose R compensation.

Remedy
- Change the vector to that which has the defined compensation direction.
- Change the tool to that which has a different tip point No.

P157 R compen direction changed

Details During G46 nose R compensation, the compensation direction is reversed.

Remedy
- Change the G command to that which allows the reversed compensation direction (G00, G28, G30, G33, or G53).
- Change the tool to that which has a different tip point No.
- Enable "#8106 G46 NO REV-ERR".

P158 Illegal tip point

Details An illegal tip point No. (other than 1 to 8) was found during G46 nose R compensation.

Remedy
- Correct the tip point No.

P159 C-CMP REMAINS

Details One of the followings was commanded while the compensation has not been canceled (the compensation amount remained).
(1) Automatic tool nose R compensation (G143)
(2) Radius compensation (G145)
(3) Plane selection (G17 to G19)
(4) Skip (G31 or G31.1/G31.2/G31.3)
(5) Fixed cycle for drilling (G81 to G89)
(6) Compound type fixed cycle II (G74 to G76)

Remedy
- Cancel the compensation (with compensation amount "0") before commanding.
- Command the G00 move block before the block with a command among (1) to (6).

P160 G53 CMP. ERR

Details
- G53 was commanded during nose R compensation (by G41/G42/G46).
- G53 was commanded to the block where the nose R compensation mode is changed (with G40/G41/G42/G46).
- G53 was commanded while nose R compensation amount has not been cleared.

Remedy
- Correct the program.
- When issuing G53 after G40 command, move the compensation plane axis by G00/G01/G02/G03 command before issuing G53.

P161 No spec: 5ax tool R compensate

Details Tool radius compensation for 5-axis machining is not included in the specifications.

Remedy
- Check the specifications.

P162 Disable Cmd in 5ax tool R comp

Details A command (G or T command, etc) was issued during tool radius compensation for 5-axis machining, although it is disabled during the compensation.

Remedy
- Cancel the tool radius compensation for 5-axis machining.

P163 5 ax tool R comp is disable

Details Tool radius compensation for 5-axis machining was commanded in a mode where the command is disabled.

Remedy
- Cancel the mode that disables the command.

P170 No offset number

Details No compensation No. (DOO, TOO or HOO) command was given when the radius compensation (G41, G42, G43 or G46) command was issued. Otherwise, the compensation No. is larger than the number of sets in the specifications.

Remedy
- Add the compensation No. command to the compensation command block.
- Check the number of sets for the tool compensation Nos. and correct the compensation No. command to be within the number of sets.

P171 No spec:Comp input by prog G10

Details Compensation data input by program (G10) was commanded though it is out of specifications.

Remedy
- Check the specifications.

P172 G10 L number error

Details An address of G10 command is not correct.

Remedy
- Correct the address L No. of the G10 command.

P173 G10 P number error

Details The compensation No. at the G10 command is not within the permitted number of sets in the specifications.

Remedy
- Check the number of sets for the tool compensation Nos. and correct the address P designation to be within the number of sets.

P174 No spec:Comp input by prog G11

Details Compensation data input by program cancel (G11) was commanded though there is no specification of compensation data input by program.

Remedy
- Check the specifications.

P177 Tool life count active

Details Registration of tool life management data with G10 was attempted when the "usage data count valid" signal was ON.

Remedy - The tool life management data cannot be registered during the usage data count. Turn the "usage data count valid" signal OFF.

P178 Tool life data entry over

Details The number of registration groups, total number of registered tools or the number of registrations per group exceeded the range in the specifications.

Remedy - Correct the number of registrations.

P179 Illegal group No.

Details
- A duplicate group No. was found at the registration of the tool life management data with G10.
- A group No. that was not registered was designated during the T****99 command.
- An M code command, which must be issued as a single command, coexists in the same block as that of another M code command.
- The M code commands set in the same group exist in the same block.

Remedy - Register the tool life data once for one group: commanding with a duplicate group No. is not allowed.
- Correct to the group No.

P180 No spec: Drilling cycle

Details A fixed cycle command (G72 - G89) was issued though it is out of specifications.

Remedy - Check the specifications.
- Correct the program.

P181 No spindle command (Tap cycle)

Details Spindle rotation speed (S) has not been commanded in synchronous tapping.

Remedy - Command the spindle rotation speed (S) in synchronous tapping.
- When "#8125 Check Scode in G84" is set to "1", enter the S command in the same block where the synchronous tapping command is issued.

P182 Synchronous tap error

Details
- Connection to the main spindle unit was not established.
- The synchronous tapping was attempted with the spindle not serially connected under the multiple-spindle control I.

Remedy - Check connection to the main spindle.
- Check that the main spindle encoder exists.
- Set 1 to the parameter #3024 (sout).

P183 No pitch/thread number

Details The pitch or number of threads has not been commanded in the tap cycle of a fixed cycle for drilling command.

Remedy - Specify the pitch data and the number of threads by F or E command.

P184 Pitch/thread number error

Details
- The pitch or the number of threads per inch is illegal in the tap cycle of the fixed cycle for drilling command.
- The pitch is too small for the spindle rotation speed.
- The thread number is too large for the spindle rotation speed.

Remedy - Correct the pitch or the number of threads per inch.

P185 No spec: Sync tapping cycle

Details Synchronous tapping cycle (G84/G74) was commanded though it is out of specifications.

Remedy - Check the specifications.

P186 Illegal S cmnd in synchro tap

Details S command was issued during synchronous tapping modal.

Remedy - Cancel the synchronous tapping before issuing the S command.

P190 No spec: Turning cycle

Details A lathe cutting cycle command was issued though it is out of specifications.

Remedy - Check the specification.
- Delete the lathe cutting cycle command.

P191 Taper length error

Details In the lathe cutting cycle, the specified length of taper section is illegal.

Remedy - Set the smaller radius value than the axis travel amount in the lathe cycle command.

P192 Chamfering error

Details Chamfering in the thread cutting cycle is illegal.

Remedy - Set a chamfering amount not exceeding the cycle.

P200 No spec: MRC cycle

Details The compound type fixed cycle for turning machining I (G70 to G73) was commanded though it is out of specifications.

Remedy - Check the specifications.

P201 Program error (MRC)

Details
- The subprogram, called with a compound type fixed cycle for turning machining I command, has at least one of the following commands: reference position return command (G27, G28, G29, G30); thread cutting (G33, G34); fixed cycle skip-function (G31, G31.n).
- An arc command was found in the first movement block of the finished shape program in compound type fixed cycle for turning machining I.

Remedy
- Delete G27, G28, G29, G30, G31, G33, G34, and fixed cycle G codes from the subprogram called with the compound type fixed cycle for turning machining I commands (G70 to G73).
- Delete G02 and G03 from the first movement block of the finished shape program in compound type fixed cycle for turning machining I.

P202 Block over (MRC)

Details The number of blocks in the shape program of the compound type fixed cycle for turning machining I is over 50 or 200 (the maximum number differs according to the model).

Remedy - Set a 50/200 or less value for the number of blocks in the shape program called by the compound type fixed cycle for turning machining I commands (G70 to G73). (The maximum number differs according to the model).

P203 D cmnd figure error (MRC)

Details A proper shape will not obtained by executing the shape program for the compound type fixed cycle for turning machining I (G70 to G73).

Remedy - Correct the shape program for the compound type fixed cycle for turning machining I (G70 to G73).

P204 E cmnd fixed cycle error

Details A command value of the compound type fixed cycle for turning machining (G70 to G76) is illegal.

Remedy - Correct the command value of the compound type fixed cycle for turning machining (G70 to G76).

P210 No spec: Pattern cycle

Details A compound type fixed cycle for turning machining II (G74 to G76) command was commanded though it is out of specifications.

Remedy - Check the specifications.

P220 No spec: Special fixed cycle

Details There are no special fixed cycle specifications.

Remedy - Check the specifications.

P221 No. of special fixed holes = 0

Details "0" has been specified for the number of holes in special fixed cycle mode.

Remedy - Correct the program.

P222 G36 angle error

Details A G36 command specifies "0" for angle intervals.

Remedy - Correct the program.

P223 G12/G13 radius error

Details The radius value specified with a G12 or G13 command is below the compensation amount.

Remedy - Correct the program.

P224 No spec: Circular (G12/G13)

Details There are no circular cutting specifications.

Remedy - Check the specifications.

P230 Subprogram nesting over

Details Over 8 times of subprogram calls have been done in succession from a subprogram.
- A M198 command was found in the program in the data server.
- The program in the IC card has been called more than once (the program in the IC card can be called only once during nested).

Remedy - Correct the program so that the number of subprogram calls does not exceed 8 times.

P231 No sequence No.

Details The sequence No., commanded at the return from the subprogram or by GOTO in the subprogram call, was not set.

Remedy - Specify the sequence Nos. in the call block of the subprogram.

P232 No program No.

Details
- The machining program has not been found when the machining program is called.
- The file name of the program registered in IC card is not corresponding to O No.

Remedy
- Enter the machining program.
- Check the subprogram storage destination parameters.
- Ensure that the external device (including IC card) that contains the file is mounted.

P235 Program editing

Details Operation was attempted for the file under program editing.

Remedy - Execute the program again after completion of program editing.

P240 No spec: Variable commands

Details A variable command (with #) was issued though it is out of specifications.

Remedy - Check the specifications.

P241 No variable No.

Details The variable No. commanded is out of the range specified in the specifications.

Remedy
- Check the specifications.
- Correct the program variable No.

P242 = not defined at vrble set

Details The "=" sign has not been commanded when a variable is defined.

Remedy - Designate the "=" sign in the variable definition of the program.

P243 Can't use variables

Details An invalid variable has been specified in the left or right side of an operation expression.

Remedy - Correct the program.

P244 Invalid set date or time

Details Date or time was set earlier than current date or time in the system variables (#3011, #3012) when the credit system was valid.

Remedy
- Date or time cannot be changed.
- Correct the program.

P250 No spec: Figure rotation

Details Figure rotation (M98 I_J_P_H_L_) was commanded though it is out of specifications.

Remedy - Check the specifications.

P251 Figure rotation overlapped

Details Figure rotation command was issued during figure rotation.

Remedy - Correct the program.

P252 Coord rotate in fig. rotation

Details A coordinate rotation related command (G68, G69) was issued during figure rotation.

Remedy - Correct the program.

P260 No spec: Coordinates rotation

Details A coordinate rotation command was issued though it is out of specifications.

Remedy - Check the specifications.

P261 G code illegal (Coord rot)

Details Another G code or a T command has been issued in the block of coordinate rotation command.

Remedy - Correct the program.

P262 Illegal modal (Coord rot)

Details A coordinate rotation command has been issued during modal in which coordinate rotation is not allowed.

Remedy - Correct the program.

P270 No spec: User macro

Details A macro specification was commanded though it is out of specifications.

Remedy - Check the specifications.

P271 No spec: Macro interrupt

Details A macro interruption command has been issued though it is out of specifications.

Remedy - Check the specifications.

P272 NC and macro texts in a block

Details An executable statement and a macro statement exist together in the same block.

Remedy - Place the executable statement and macro statement in separate blocks in the program.

P273 Macro call nesting over

Details The number of macro call nests exceeded the limit imposed by the specifications.

Remedy - Correct the program so that the macro calls do not exceed the limit imposed by the specifications.

P275 Macro argument over

Details The number of argument sets in the macro call argument type II has exceeded the limit.

Remedy - Correct the program.

P276 Illegal G67 command

Details A G67 command was issued though it was not during the G66 command modal.

Remedy - Correct the program.
- Issue G66 command before G67 command, which is a call cancel command.

P277 Macro alarm message

Details An alarm command has been issued in #3000.

Remedy - Refer to the operator messages on the diagnosis screen.
- Refer to the instruction manual issued by the machine tool builder.

P280 Brackets [ ] nesting over

Details Over five times have the parentheses "[" or "]" been used in a single block.

Remedy - Correct the program so that the number of "[" or "]" is five or less.

P281 Brackets [ ] not paired

Details A single block does not have the same number of commanded parentheses "[" as that of "]".

Remedy - Correct the program so that "[" and "]" parentheses are paired up properly.

P282 Calculation impossible

Details The arithmetic formula is incorrect.

Remedy - Correct the formula in the program.

P283 Divided by zero

Details The denominator of the division is zero.

Remedy - Correct the program so that the denominator for division in the formula is not zero.

P288 IF EXCESS

Details Over ten times of IF statement nesting have been done.

Remedy Correct the program so that the number of IF statement nesting does not exceed ten.

P289 IF-ENDIF MMC.

Details An IF statement is not ended with ENDIF.
THEN/ELSE has been commanded while there is no IF command.

Remedy - Correct the program so that IF statements are ended with ENDIFs.
- Put IF[condition] before THEN/ELSE command.

P290 IF sentence error

Details There is an error in the "IF[<conditional>]GOTO(" statement.

Remedy - Correct the program.

P291 WHILE sentence error

Details There is an error in the "WHILE[<conditional>]DO(-END(" statement.

Remedy - Correct the program.

P292 SETVN sentence error

Details There is an error in the "SETVN(" statement when the variable name setting was made.

Remedy - Correct the program.
- The number of characters in the variable name of the SETVN statement must be 7 or less.

P293 DO-END nesting over

Details The number of DO-END nesting levels in the "WHILE[<conditional>]DO(-END(" statement has exceeded 27.

Remedy - Correct the program so that the nesting levels of the DO-END statement does not exceed 27.

P294 DO and END not paired

Details The DOs and ENDs are not paired off properly.

Remedy - Correct the program so that the DOs and ENDs are paired off properly.

P295 WHILE/GOTO in tape

Details There is a WHILE or GOTO statement on the tape during tape operation.

Remedy - Apply memory mode operation instead of tape mode that does not allow the execution of the program with a WHILE or GOTO statement.

P296 No address (macro)

Details A required address has not been specified in the user macro.

Remedy - Correct the program.

P297 Address-A error

Details The user macro does not use address A as a variable.

Remedy - Correct the program.

P298 G200-G202 cmnd in tape

Details User macro G200, G201, or G202 was specified during tape or MDI mode.

Remedy - Correct the program.

P300 Variable name illegal

Details The variable names have not been commanded properly.

Remedy - Correct the variable names in the program.

P301 Variable name duplicated

Details A duplicate variable name was found.

Remedy - Correct the program so that no duplicate name exists.

P310 Not use GMSTB macro code

Details G, M, S, T, or B macro code was called during fixed cycle.

Remedy - Correct the program.
- Correct the parameter settings.

P350 No spec: Scaling command

Details The scaling command (G50, G51) was issued though it is out of specifications.

Remedy - Check the specifications.

P360 No spec: Program mirror

Details A mirror image (G50.1 or G51.1) command has been issued though the programmable mirror image specifications are not provided.

Remedy - Check the specifications.

P370 No spec: Facing t-post MR

Details The facing turret mirror image specifications are not provided.

Remedy - Check the specifications.

P371 Facing t-post MR illegal

Details
- Mirror image for facing tool posts was commanded to an axis in external mirror image or parameter mirror image.
- The commanded mirror image for facing tool posts enables the mirror image for a rotary axis.

Remedy - Correct the program.
- Correct the parameter settings.

P380 No spec: Corner R/C

Details The corner R/C was issued though it is out of specifications.

Remedy - Check the specifications.
- Delete the corner chamfering/corner rounding command in the program.

P381 No spec: Arc R/C

Details Corner chamfering II or corner rounding II was commanded in the arc interpolation block though it is out of specifications.

Remedy - Check the specifications.

P382 No corner movement

Details The block next to corner chamfering/ corner rounding is not a travel command.

Remedy - Replace the block succeeding the corner chamfering/ corner rounding command by G01 command.

P383 Corner movement short

Details The travel distance in the corner chamfering/corner rounding command was shorter than the value in the corner chamfering/corner rounding command.

Remedy - Set the smaller value for the corner chamfering/corner rounding than the travel distance.

P384 Corner next movement short

Details The travel distance in the following block in the corner chamfering/corner rounding command was shorter than the value in the corner chamfering/corner rounding command.

Remedy - Set the smaller value for the corner chamfering/corner rounding than the travel distance in the following block.

P385 Corner during G00/G33

Details A block with corner chamfering/corner rounding was given during G00 or G33 modal.

Remedy - Correct the program.

P390 No spec: Geometric

Details A geometric command was issued though it is out of specifications.

Remedy - Check the specifications.

P391 No spec: Geometric arc

Details There are no geometric IB specifications.

Remedy - Check the specifications.

P392 Angle < 1 degree (GEOMT)

Details The angular difference between the geometric line and line is 1° or less.

Remedy - Correct the geometric angle.

P393 Inc value in 2nd block (GEOMT)

Details The second geometric block has a command with an incremental value.

Remedy - Issue a command with an absolute value in the second geometric block.

P394 No linear move command (GEOMT)

Details The second geometric block contains no linear command.

Remedy - Issue the G01 command.

P395 Illegal address (GEOMT)

Details The geometric format is invalid.

Remedy - Correct the program.

P396 Plane selected in GEOMT ctrl

Details A plane switching command was issued during geometric command processing.

Remedy - Complete the plane switching command before geometric command processing.

P397 Arc error (GEOMT)

Details In geometric IB, the circular arc end point does not contact or cross the next block start point.

Remedy - Correct the geometric circular arc command and the preceding and following commands.

P398 No spec: Geometric1B

Details A geometric command was issued though the geometric IB specifications are not provided.

Remedy - Check the specifications.

P411 Illegal modal G111

Details
- G111 was issued during milling mode.
- G111 was issued during nose R compensation mode.
- G111 was issued during constant surface speed.
- G111 was issued during mixed control (cross axis control).
- G111 was issued during fixed cycle.
- G111 was issued during polar coordinate interpolation.
- G111 was issued during cylindrical interpolation mode.

Remedy
- Before commanding G111, cancel the following commands.
- Milling mode
- Nose R compensation
- Constant surface speed
- Mixed control (cross axis control)
- Fixed cycle
- Polar coordinate interpolation
- Cylindrical interpolation

P412 No spec: Axis name switch

Details Axis name switch (G111) was issued though it is out of specifications.

Remedy - Check the specifications.

P420 No spec: Para input by program

Details Parameter input by program (G10) was commanded though it is out of specifications.

Remedy - Check the specifications.

P421 Parameter input error

Details
- The specified parameter No. or set data is illegal.
- An illegal G command address was input in parameter input mode.
- A parameter input command was issued during fixed cycle modal or nose R compensation.
- G10L50, G10L70, G11 were not commanded in independent blocks.

Remedy - Correct the program.

P430 R-pnt return incomplete

Details
- A command was issued to move an axis, which has not returned to the reference position, away from that reference position.
- A command was issued to an axis removal axis.

Remedy
- Execute reference position return manually.
- Disable the axis removal on the axis for which the command was issued.

P431 No spec: 2,3,4th R-point ret

Details A command for second, third or fourth reference position return was issued though there are no such command specifications.

Remedy - Check the specifications.

P432 No spec: Start position return

Details Start position return (G29) was commanded though it is out of specifications.

Remedy - Check the specifications.

P433 No spec: R-position check

Details Reference position check (G27) was commanded though it is out of specifications.

Remedy - Check the specifications.

P434 Compare error

Details One of the axes did not return to the reference position when the reference position check command (G27) was executed.

Remedy - Correct the program.

P435 G27 and M commands in a block

Details An M command was issued simultaneously in the G27 command block.

Remedy - Place the M code command, which cannot be issued in a G27 command block, in separate block from G27 command block.

P436 G29 and M commands in a block

Details An M command was issued simultaneously in the G29 command block.

Remedy - Place the M code command, which cannot be issued in a G29 command block, in separate block from G29 command block.

P438 G52 invalid during G54.1

Details A local coordinate system command was issued during execution of the G54.1 command.

Remedy - Correct the program.

P450 No spec: Chuck barrier

Details The chuck barrier on command (G22) was specified although the chuck barrier is out of specifications.

Remedy - Check the specifications.

P451 No spec: Stroke chk bef travel

Details Stroke check before travel (G22/G23) was commanded though it is out of specifications.

Remedy - Check the specifications.

P452 Limit before travel exists

Details An illegal command, which places the axis travel start/end point in the prohibited area or moves the axis through the prohibited area, was detected when Stroke check before travel (G22) was commanded.

Remedy - Correct the coordinate values of the axis address commanded in the program.

P460 Tape I/O error

Details An error has occurred in the tape reader. Otherwise an error has occurred in the printer during macro printing.

Remedy - Check the power and cable of the connected devices.
- Correct the I/O device parameters.

P461 File I/O error

Details
- A file of the machining program cannot be read.
- IC card has not been inserted.

Remedy - In memory mode, the programs stored in memory may have been destroyed. Output all of the programs and tool data and then format the system.
- Ensure that the external device (including an IC card, etc) that contains the file is mounted.
- Correct the parameter settings for HD operation or IC card operation.

P462 Computer link commu error

Details A communication error occurred during the BTR operation.

Remedy - "L01 Computer link error" is displayed simultaneously. Take the remedy corresponding to the error No.

P480 No spec: Milling

Details
- Milling was commanded though it is out of specifications.
- Polar coordinate interpolation was commanded though it is out of specifications.

Remedy - Check the specifications.

P481 Illegal G code (mill)

Details
- An illegal G code was used during the milling mode.
- An illegal G code was used during cylindrical interpolation or polar coordinate interpolation.
- The G07.1 command was issued during the tool radius compensation.

Remedy - Correct the program.

P482 Illegal axis (mill)

Details
- A rotary axis was commanded during the milling mode.
- Milling was executed though an illegal value was set for the milling axis No.
- Cylindrical interpolation or polar coordinate interpolation was commanded during mirror image.
- Cylindrical interpolation or polar coordinate interpolation was commanded before the tool compensation was completed after the T command.
- G07.1 was commanded when cylindrical interpolation was not possible (there is no rotary axis, or external mirror image is ON).
- An axis other than a cylindrical coordinate system axis was commanded during cylindrical interpolation.

Remedy - Correct the machining program, parameters and PLC interface signals.

P484 R-pnt ret incomplete (mill)

Details
- Movement was commanded to an axis that had not completed reference position return during the milling mode.
- Movement was commanded to an axis that had not completed reference position return during cylindrical interpolation or polar coordinate interpolation.

Remedy - Carry out manual reference position return.

P485 Illegal modal (mill)

Details
- The milling mode was turned ON during nose R compensation or constant surface speed control.
- A T command was issued during the milling mode.
- The mode was switched from milling to cutting during tool compensation.
- Cylindrical interpolation or polar coordinate interpolation was commanded during the constant surface speed control mode (G96).
- The command unacceptable in the cylindrical interpolation was issued.
- A T command was issued during the cylindrical interpolation or polar coordinate interpolation mode.
- A movement command was issued when the plane was not selected just before or after the G07.1 command.
- A plane selection command was issued during the polar coordinate interpolation mode.
- Cylindrical interpolation or polar coordinate interpolation was commanded during tool radius compensation.
- The G16 plane in which the radius value of a cylinder is "0" was specified.
- A cylindrical interpolation or polar coordinate interpolation command was issued during coordinate rotation by program.

Remedy
- Correct the program.
- Issue G40 or G97 before issuing G12.1.
- Issue a T command before issuing G12.1.
- Issue G40 before issuing G13.1.
- Specify the radius value of a cylinder other than "0", or specify the X axis's current value other than "0" before issuing G12.1/G16.

P486 Milling error

Details
- The milling command was issued during the mirror image (when parameter or external input is turned ON).
- Polar coordinate interpolation, cylindrical interpolation or milling interpolation was commanded during mirror image for facing tool posts.
- The start command of the cylindrical interpolation or polar coordinate interpolation was issued during the normal line control.

Remedy
- Correct the program.

P501 Cross (G110) impossible

Details

Mixed control (cross axis control) command (G110) was issued in the following modes.
- During nose R compensation mode
- During pole coordinate interpolation mode
- During cylindrical interpolation mode
- During balance cut mode
- During fixed cycle machining mode
- During facing turret mirror image
- During constant surface speed control mode
- During hobbing mode
- During axis name switch

Remedy
- Correct the program.

P503 Illegal G110 axis

Details
- The commanded axis does not exist.
- The mixed control (cross axis control) (G110) was commanded to the axis for which the mixed control (cross axis control) is disabled.
- The number of axes included in the mixed control (cross axis control) (G110) command is exceeding the maximum number of axes per part system.

Remedy
- Correct the program.

P511 Synchronization M code error

Details
- Two or more synchronization M codes were commanded in the same block.
- The synchronization M code and "!" code were commanded in the same block.
- Synchronization with the M code was commanded in 3rd part system or more. (Synchronization with the M code is valid only in 1st part system or 2nd part system.)

Remedy
- Correct the program.

P520 Control axis superimposition/Designated axis illegal

Details

An axis which was impossible to superimpose was designated as a master axis or superimposing axis.

Remedy

Correct the program.

P521 Illegal synchronization axis

Details

The axis specified as a basic or synchronous axis of synchronization across part systems cannot be synchronized.

Remedy
- Correct the program.

P530 DEC. POINT ERR

Details

A decimal point was added to the address where the decimal point command is not allowed. ("#1274 ext10/bit0 (Type of address enabling/disabling decimal point command)")

Remedy

Do not add any decimal point to the addresses where the decimal point is not allowed.

P544 No spec: Wk instl err cmp

Details The workpiece installation error compensation function is out of the specifications.

Remedy - Check the specifications.

P545 Invld cmd in wk instl err cmp

Details During workpiece installation error compensation, a command impossible to issue (such as G command) was issued.

Remedy - Check the program. If you wish to issue a command impossible to issue (such as G command) during workpiece installation error compensation, cancel workpiece installation error compensation once.

P546 Wk instl err cmp cmd invalid

Details
- Workpiece installation error compensation was commanded in a G modal in which commanding it is not allowed.
- An illegal G command was issued in the block that has a workpiece installation error compensation command.

Remedy
- Check the program. Also check the G modals which were issued at commanding the workpiece installation error compensation, and cancel illegal ones.
- Issue the G command in a separate block.

P547 Illegal wk instl err cmp cmd

Details A command in which the rotary axis's travel distance exceeds 180 degrees was issued.

Remedy - Divide the travel command so that the rotary axis's travel distance per block is less than 180 degrees.

P550 No spec: G06.2(NURBS)

Details There is no NURBS interpolation option.

Remedy - Check the specifications.

P551 G06.2 knot error

Details The knot (k) command value is smaller than the value for the previous block.

Remedy
- Correct the program.
- Specify the knot by monotone increment.

P552 Start point of 1st G06.2 err

Details The block end point immediately before the G06.2 command and the G06.2 first block command value do not match.

Remedy - Match the G06.2 first block coordinate command value with the previous block end point.

P554 Invld manual interrupt in G6.2

Details Manual interruption was executed in a block that applies the G06.2 mode.

Remedy - Execute the manual interruption in the block that does not apply the G06.2 mode.

P555 Invalid restart during G06.2

Details Restart was attempted from the block that applies G06.2 mode.

Remedy - Restart from the block that does not apply the G06.2 mode.

P600 No spec: Auto TLM

Details An automatic tool length measurement command (G37) was issued though it is out of specifications.

Remedy - Check the specifications.

P601 No spec: Skip

Details A skip command (G31) was issued though it is out of specifications.

Remedy - Check the specifications.

P602 No spec: Multi skip

Details A multiple skip command (G31.1, G31.2, G31.3 or G31 Pn) was issued though it is out of specifications.

Remedy - Check the specifications.

P603 Skip speed 0

Details The skip speed is "0".

Remedy - Specify the skip speed.

P604 TLM illegal axis

Details No axis was specified in the automatic tool length measurement block. Otherwise, two or more axes were specified.

Remedy - Specify only one axis.

P605 T & TLM command in a block

Details The T code is in the same block as the automatic tool length measurement block.

Remedy - Specify the T code before the automatic tool length measurement block.

P606 T cmnd not found before TLM

Details The T code was not yet specified in automatic tool length measurement.

Remedy - Specify the T code before the automatic tool length measurement block.

P607 TLM illegal signal

Details The measurement position arrival signal turned ON before the area specified by the D command or "#8006 ZONE d". Otherwise, the signal remained OFF to the end.

Remedy - Correct the program.

P608 Skip during radius compen

Details A skip command was issued during radius compensation processing.

Remedy - Issue a radius compensation cancel (G40) command or remove the skip command.

P610 Illegal parameter

Details
- The parameter setting is not correct.
- G114.1 was commanded while the spindle synchronization was selected with the PLC interface signal.
- G113 was commanded while the spindle-spindle polygon machining option was OFF and the spindle synchronization was selected with the PLC interface signal.
- G110 was commanded while the mixed control (cross axis control) was selected with the PLC interface signal.
- G125 was commanded while the control axis synchronization across part systems was selected with the PLC interface signal.

Remedy
- Check whether the values are set in descending order (from the largest value) for "#1549 Iv0vR1" to "#1553 Iv0vR5".
- Check whether the values are set in descending order for "#1554 Iv0rd2" to "#1557 Iv0rd5".
- Correct the settings of "#1514 expLinax (Exponential function interpolation linear axis)" and "#1515 expRotax (Exponential function interpolation rotary axis)".
- Correct the program.
- Correct the parameter settings.

P611 No spec: Exponential function

Details There is no specification for the exponential interpolation.

Remedy - Check the specifications.

P612 Exponential function error

Details A travel command for exponential interpolation was issued during mirror image for facing tool posts.

Remedy - Correct the program.

P700 Illegal command value

Details Spindle synchronization was commanded to a spindle that is not connected serially.

Remedy
- Correct the program.
- Correct the parameter settings.

P900 No spec: Normal line control

Details A normal line control command (G40.1, G41.1, or G42.1) was issued though it is out of specifications.

Remedy - Check the specifications.

P901 Normal line control axis G92

Details A coordinate system preset command (G92) was issued to a normal line control axis during normal line control.

Remedy - Correct the program.

P902 Normal line control axis error

Details
- The normal line control axis was set to a linear axis.
- The normal line control axis was set to the linear type rotary axis II axis.
- The normal line control axis has not been set.
- The normal line control axis is the same as the plane selection axis.

Remedy - Correct the normal line control axis setting.

P903 Plane chg in Normal line ctrl

Details The plane selection command (G17, G18, or G19) was issued during normal line control.

Remedy - Delete the plane selection command (G17, G18, or G19) from the program of the normal line control.

P920 No spec: 3D coord conv

Details There is no specification for 3-dimensional coordinate conversion.

Remedy - Check the specifications.

P921 Illegal G code at 3D coord

Details The commanded G code cannot be performed during 3-dimensional coordinate conversion modal.

Remedy - Refer to "MITSUBISHI CNC 700/70 Series Programming Manual (Machining Center System)" for usable G commands.
- When the basic specification parameter "#1229 set01/bit3 (Initial constant surface speed)" is enabled, disable the parameter or issue the constant surface speed control cancel (G97) command.

P922 Illegal mode at 3D coord

Details A 3-dimensional coordinate conversion command was issued during a modal for which 3-dimensional coordinate conversion cannot be performed.

Remedy - Refer to "MITSUBISHI CNC 700/70 Series Programming Manual (Machining Center System)" for usable G commands.

P923 Illegal addr in 3D coord blk

Details A G code and G68 was commanded in a block though the G code cannot be commanded with G68.

Remedy - Refer to "MITSUBISHI CNC 700/70 Series Programming Manual (Machining Center System)" for usable G commands.

P930 No spec: Tool axis compen

Details A tool length compensation along the tool axis command was issued though it is out of specifications.

Remedy - Check the specifications.

P931 Executing tool axis compen

Details There is a G code that cannot be commanded during tool length compensation along the tool axis.

Remedy - Correct the program.

P932 Rot axis parameter error

Details There is an illegal linear axis name or rotary axis name set in the rotary axis configuration parameters.
There is an illegal setting in the parameter concerning the configuration of the inclined surface machining axis.

Remedy - Set the correct value and turn the power ON again.

P940 No spec: Tool tip control

Details There is no specification for tool tip center control.

Remedy - Check the specifications.

P941 Invalid T tip control command

Details A tool tip center control command was issued during a modal for which a tool tip center control command cannot be issued.

Remedy - Correct the program.

P942 Invalid cmnd during T tip ctrl

Details A G code that cannot be commanded was issued during tool tip center control.

Remedy - Correct the program.

P943 Tool posture command illegal

Details In tool tip center control type 1, if the signs at the tool-side rotary axis or table base-side rotary axis start and finish points differ, a tool base-side rotary axis or table workpiece-side rotary axis rotation exists for the same block, and does not pass a singular point.
In tool tip center control type 2, the posture vector command is incorrect.

Remedy - Correct the program.

P950 No spec: Tilt face machining

Details Inclined surface machining option is not supported.

Remedy - Check the specifications.

P951 Ill cmd in tilt face machining

Details A forbidden command (G command, etc) was issued during inclined surface machining.

Remedy - Check the program. If you want to execute a command (G command, etc) that is unavailable during inclined surface machining, cancel the inclined surface machining.

P952 Inclined face cut prohibited

Details Inclined surface machining was commanded during the mode where the machining is unavailable.
Inclined surface machining was commanded during interruption.

Remedy - Check the program and see whether any unavailable mode is included during inclined surface machining command. If any, cancel that mode.

P953 Tool axis dir cntrl prohibited

Details Tool axis direction control was commanded during the mode where the control is unavailable.

Remedy - Check the program and see whether any unavailable mode is included during tool axis direction control. If any, cancel that mode.

P954 Inclined face command error

Details The address to issue the inclined surface machining command is incorrect.

Remedy - Check the program.

P955 Inclined face coord illegal

Details Impossible to define an inclined surface with the values you specified.

Remedy - Check the program.

P957 Tool axis dir ctrl cmp amt 0

Details When the tool axis direction control type 2 (G53.6) was commanded, a tool length compensation No. whose compensation amount is 0 was commanded.

Remedy - Correct the program. Set the tool length compensation amount, or command a tool length compensation No. whose compensation amount is not 0.

P990 PREPRO error

Details Combining commands that required pre-reading (nose R offset, corner chamfering/corner rounding, geometric I, geometric IB, and compound type fixed cycle for turning machining) resulted in eight or more pre-read blocks.

Remedy - Delete some or all of the combinations of commands that require pre-reading.

II Parameters

1. User Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

【#8001】 WRK COUNT M

Set the M code for counting the number of the workpiece repeated machining.
The number of the M-codes set by this parameter is counted.
The No. will not be counted when set to "0".

---Setting range---
0 to 999

【#8002】 WRK COUNT

Set the initial value of the number of workpiece machining. The number of current workpiece machining is displayed.

---Setting range---
0 to 999999

【#8003】 WRK COUNT LIMIT

Set the maximum number of workpiece machining.
A signal will be output to PLC when the number of machining times is counted to this limit.

---Setting range---
0 to 999999

【#8004】 SPEED

Set the feedrate during automatic tool length measurement.

---Setting range---
1 to 1000000 (mm/min)

【#8005】 ZONE r

Set the distance between the measurement point and deceleration start point.

---Setting range---
0 to 99999.999 (mm)

【#8006】 ZONE d

Set the tolerable range of the measurement point.
An alarm will occur when the sensor signal turns ON before the range, set by this parameter, has not been reached from the measurement point, or when the signal does not turn ON after the range is passed.

---Setting range---
0 to 99999.999 (mm)

【#8007】 OVERRIDE

Set the override value for automatic corner override.

---Setting range---
0 to 100 (%)

【#8008】 MAX ANGLE

Set the maximum corner opening angle where deceleration should start automatically.
When the angle is larger than this value, deceleration will not start.

---Setting range---
0 to 180 (°)

【#8009】 DSC. ZONE

Set the position where deceleration starts at the corner.
Designate at which length point before the corner deceleration should start.

---Setting range---
0 to 99999.999 (mm)

【#8010】 ABS. MAX. (for L system only)

Set the maximum value when inputting the tool wear compensation amount.
A value exceeding this setting value cannot be set.
Absolute value of the input value is set.
(If a negative value is input, it is treated and set as a positive value.)
If "0" is input, this parameter will be disabled.

---Setting range---
0 to 999.999 (mm)
(Input setting increment applies)

【#8011】 INC. MAX. (for L system only)

Set the maximum value for when inputting the tool wear compensation amount in the incremental mode.
A value exceeding this setting value cannot be set.
Absolute value of the input value is set.
(If a negative value is input, it is treated and set as a positive value.)
If "0" is input, this parameter will be disabled.

---Setting range---
0 to 999.999 (mm)
(Input setting increment applies)

【#8012】 G73 n (for M system only)

Set the return amount for G73 (step cycle).

---Setting range---
0 to 99999.999 (mm)

【#8013】 G83 n

Set the return amount for G83 (deep hole drilling cycle).

---Setting range---
0 to 99999.999 (mm)

【#8014】 CDZ-VALE (for L system only)

Set the screw cut up amount for G76 and G78 (thread cutting cycle).

---Setting range---
0 to 127 (0.1 lead)

【#8015】 CDZ-ANGLE (for L system only)

Set the screw cut up angle for G76 and G78 (thread cutting cycle).

---Setting range---
0 to 89 (°)

【#8016】 G71 MINIMUM (for L system only)

Set the minimum value of the last cutting amount by the rough cutting cycle (G71, G72). The cutting amount of the last cutting will be the remainder. When the remainder is smaller than this parameter setting, the last cycle will not be executed.

---Setting range---
0 to 999.999 (mm)

【#8017】 G71 DELTA-D (for L system only)

Set the change amount of the rough cutting cycle.
The rough cutting cycle (G71, G72) cutting amount repeats d+⊿d, d, d-⊿d using the value (d) commanded with D as a reference. Set the change amount ⊿d.

---Setting range---
0 to 999.999 (mm)

【#8018】 G84/G74 n (for M system only)

Not used. Set to "0".

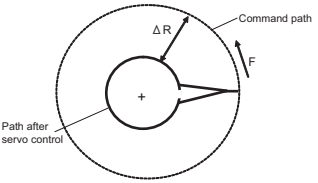
【#8019】 R COMP

Set a compensation coefficient for reducing a control error in the reduction of a corner roundness and arc radius.
The larger the set value is, the smaller the theoretical error will be. However, since the speed at the corner goes down, the cycle time will be extended.
Coefficient = 100 - set value
(Note) This function will be enabled when "#8021 COMP_CHANGE" is set to "0".

---Setting range---
0 to 99 (%)

Theoretical radius decrease error amount

Displays the theoretical radius decrease error amount, ΔR(mm), from the automatic calculation by NC.



Theoretical radius decrease amount in arc

R5mm arc deceleration speed

Displays a deceleration speed(mm/min) along an arc of 5(mm) radius.

R1mm arc deceleration speed

Displays a deceleration speed(mm/min) along an arc of 1(mm) radius.

【#8020】 DCC ANGLE

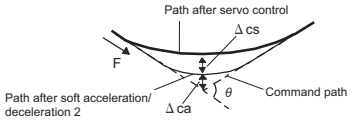
Set the minimum value of an angle (external angle) that should be assumed to be a corner. When an inter-block angle (external angle) in high-accuracy mode is larger than the set value, it will be determined as a corner and the speed will go down to sharpen the edge.

(Note) If "0" is set, it will be handled as "5" degrees.

---Setting range---
0 to 89 (°)
0: 5 degree (Equals to setting "5")

Theoretical corner dull amount

Displays the corner dull amount Δc(mm) in respect to the corner's angle (external angle) θ (°).



Theoretical roundness amount at corner

ca(mm): Error (Δ) caused by the soft acceleration/deceleration 2
cs(mm): Error (Δ) caused by the servo system

Corner deceleration speed

Display corner deceleration speed c (mm/min) for the corner of the angle (external angle) with θ (°).

Theoretical dull amount at 90 degree

Display corner dull amount when the angle is 90 degree.

Corner deceleration speed at 90 degree

Display corner deceleration speed when the angle is 90 degree.

【#8021】 COMP_CHANGE

Select whether to share or separate the compensation coefficient at the corner/curve during the high-accuracy control mode.
0: Share ("#8019 R COMP" is applied.)
1: Separate
- Corner : #8022 CORNER COMP
- Curve : #8023 CURVE COMP

(Note) Set "1" when using SSS control.

【#8022】 CORNER COMP

Set the compensation coefficient to further reduce or increase the roundness at the corner during the high-accuracy control mode.
Coefficient = 100 - setting value
(Note) This is valid when "#8021 COMP CHANGE" is set to "1".

Reference to "#8020 Corner decreasing speed "for theoretical corner roundness amount, corner decreasing speed, theoretical 90 degree dull amount, 90 degree corner decreasing speed.

---Setting range---
-1000 to 99 (%)

【#8023】 CURVE COMP

Set the compensation coefficient to further reduce or increase the radius reduction amount at the curve (arc, involute, spline) during the high-accuracy control mode.
Coefficient = 100 - setting value
(Note) This is valid when "#8021 COMP CHANGE" is set to "1".

For theoretical radius reduction error amount, R5mm arc deceleration speed and R1mm arc deceleration speed, refer to "#8019 R COMP".

---Setting range---
-1000 to 99 (%)

【#8025】 SPLINE ON (for M system only)

Select whether to enable the spline function.
0: Disable
1: Enable

Spline interpolation is valid during G61.2 modal, regardless of this setting.

【#8026】 CANCEL ANG. (for M system only)

Set the angle where the spline interpolation is temporarily canceled.
When the angle made by blocks exceeds this parameter setting value, spline interpolation will be canceled temporarily. In consideration of the pick feed, set a value a little smaller than the pick feed angle.

---Setting range---
0 to 180 (°)
0: 180 (°)

【#8027】 Toler-1 (for M system only)

Set the maximum chord error (tolerance) in a block that includes an inflection point. Set the tolerance applicable when the applicable block is developed to fine segments by CAM. (normally about 10 μm)
When "0.000" is set, the applicable block will be linear.

---Setting range---
0.000 to 100.000 (mm)

【#8028】 Toler-2 (for M system only)

Set the maximum chord error (tolerance) in a block that includes no inflection point. Set the tolerance applicable when the applicable block is developed to fine segments by CAM. (normally about 10 μm)
When "0.000" is set, the applicable block will be linear.

---Setting range---
0.000 to 100.000 (mm)

【#8029】 FairingL (for M system only)

Set the length of the block subject to fairing.
(Enabled when "#8033 Fairing ON" is set to "1".)

---Setting range---
0 to 100.000 (mm)

【#8030】 MINUTE LENGS (for M system only)

Set the fine-segment length where the spline interpolation is temporarily canceled.
When the length of one block exceeds this parameter setting value, spline interpolation is canceled temporarily and linear interpolation is performed. Set a value a little smaller than one block length of the program.
If "-1" is set, spline interpolation will be performed regardless of block length.

---Setting range---
-1 to 127 (mm)
0: 1 (mm)

【#8033】 Fairing ON (for M system only)

Select whether to use the fairing function.
0: Not use
1: Use
Fairing function is enabled during G61.2 modal, regardless of this setting.

【#8034】 AccClamp ON (for M system only)

Select the method for clamping the cutting speed.
0: Clamp with parameter "#2002 clamp" or the corner deceleration function.
1: Clamp the cutting speed with acceleration judgment.
(Enabled when "#8033 Fairing ON" is set to "1".)

【#8036】 CordecJudge (for M system only)

Select the condition to decide a corner.
0: A corner is decided from the angle of the neighboring block.
1: A corner is decided from the angle of the neighboring block, excluding minute blocks.
(Enabled when "#8033 Fairing ON" is set to "1".)

【#8037】 CorJudgeL (for M system only)

Set the length of the block to be excluded when deciding a corner.
(Enabled when "#8036 CordecJudge" is set to "1".)

---Setting range---
0 to 99999.999 (mm)

【#8041】 C-rot.R

Set the length from the center of the normal line control axis to the tool tip. This is used to calculate the turning speed at the block joint.
This is enabled during the normal line control type II.

---Setting range---
0.000 to 99999.999 (mm)

【#8042】 C-ins.R

Set the radius of the arc to be automatically inserted into the corner during normal line control.
This is enabled during the normal line control type I.

---Setting range---
0.000 to 99999.999 (mm)

【#8043】 Tool HDL FD OFS

Set the length from the tool holder to the tool tip.

---Setting range---
0.000 to 99999.999 (mm)

【#8044】 UNIT*10

Set the command increment scale.
The scale will be "1" when "0" is set.

---Setting range---
0 to 10000 (fold)
0: One fold

【#8051】 G71 THICK

Set the amount of cut-in by the rough cutting cycle (G71, G72)

---Setting range---
0 to 99999.999 (mm)

【#8052】 G71 PULL UP

Set the amount of pull-up when returning to the cutting start point for the rough cutting cycle (G71. G72).

---Setting range---
0 to 99999.999 (mm)

【#8053】 G73 U

Set the X-axis cutting margin of the forming rough cutting cycle (G73).

---Setting range---
-99999.999 to 99999.999 (mm)

【#8054】 G73 W

Set the Z-axis cutting margin of the forming rough cutting cycle (G73).

---Setting range---
-99999.999 to 99999.999 (mm)

【#8055】 G73 R

Set how many times cutting will be performed in the forming rough cutting cycle (G73).

---Setting range---
0 to 99999 (times)

【#8056】 G74 RETRACT

Set the amount of retract (amount of cut-up) of the cutting-off cycle (G74, G75).

---Setting range---
0 to 999.999 (mm)

【#8057】 G76 LAST-D

Set the amount of final cut-in by the compound type thread cutting (G76).

---Setting range---
0 to 999.999 (mm)

【#8058】 G76 TIMES

Set how many times the amount of final cut-in cycle (G76 finish margin) will be divided in the compound type thread cutting (G76).

---Setting range---
0 to 99 (times)

【#8059】 G76 ANGLE

Set the angle (thread angle) of the tool nose in the compound type thread cutting (G76).

---Setting range---
0 to 99 (°)

【#8060】 G71 ERR

Set the tolerable error range to avoid a program error (a shape change at pocket machining) against minute inversion when the finished shape's Z axis (or X axis at G72 command) does not move monotonously.

---Setting range---
0.000 to 0.010 (mm)

【#8071】 3-D CMP (for M system only)

Set the value of the denominator constants for 3-dimensional tool radius compensation.
Set the value of "p" in the following formula.
Vx = i x r/p, Vy = j x r/p, Vz = k x r/p
Vx, Vy, Vz : X, Y, and Z axes or vectors of horizontal axes
i, j, k : Program command value
r : Offset
$p = \sqrt{\ }(i2 + j2 + k2)$ when the set value is "0".

---Setting range---
0 to 99999.999

【#8072】 SCALING P (for M system only)

Set the scale factor for reduction or magnification in the machining program specified by G50 or G51 command.
This parameter will be valid when the program specifies no scale factor.

---Setting range---
-99.999999 to 99.999999

【#8075】 SpiralEndErr (for M system only)

Set the tolerable error range (absolute value) when the end point position, commanded by the spiral or conical interpolation command with the command format type 2, differs from the end point position obtained from the speed and increment/decrement amount.

---Setting range---
0 to 99999.999 (mm)

【#8078】 Screen Saver Timer

Set the period of time before turn-OFF of the display unit backlight.
When "0" is set, the backlight is not turned OFF.

---Setting range---
0 to 60 (min)
0: The backlight is not turned OFF

【#8081】 Gcode Rotat (for L system only)

Set the rotation angle for the program coordinate rotation command.
This parameter is enabled when "1" is set in "#1270 ext06/bit5 (Coordinate rotation angle without command)".
This parameter is set as absolute value command regardless of the "#8082 G68.1 R INC" setting. If the rotation angle is designated by an address R in G68.1 command, the designation by program will be applied.

---Setting range---
-360.000 to +360.000 (°)

【#8082】 G68.1 R INC (for L system only)

Select absolute or increment command to use for the rotation angle command R at L-system coordinate rotation.
0: Use absolute value command in G90 modal, incremental value command in G91 modal
1: Always use incremental value command

(Note) If G91 does not exist in the G code system, the command type is decided by this parameter only.

【#8083】 G83S modeM (for M system only)

Set the M command code for changing to the small diameter deep hole drilling cycle mode.

---Setting range---
1 to 99999999

【#8084】 G83S Clearance (for M system only)

Set the clearance amount for the small diameter deep hole drilling cycle (G83).

---Setting range---
0 to 999.999 (mm)

【#8085】 G83S Forward F (for M system only)

Set the feedrate from the R point to the cutting start position in the small diameter deep hole drilling cycle (G83).

---Setting range---
0 to 99999 (mm/min)

【#8086】 G83S Back F (for M system only)

Set the speed for returning from the hole bottom during the small diameter deep hole drilling cycle (G83).

---Setting range---
0 to 99999 (mm/min)

【#8090】 SSS ON (for M system only)

Set whether to enable the SSS control with G05 P10000.
0: Disable
1: Enable

【#8091】 StdLength (for M system only)

Set the maximum value of the range for recognizing the shape.
To eliminate the effect of steps or errors, etc., set a large value. To enable sufficient deceleration, set a small value.
If "0.000" is set, the standard value (1.000mm) will be applied.

---Setting range---
0 to 100.000 (mm)

【#8092】 ClampCoeff (for M system only)

Set the clamp speed at the curved section configured of fine segments.
Coefficient = $\sqrt{\ }$ setting value

---Setting range---
1 to 100

【#8093】 StepLeng (for M system only)

Set the width of the step at which the speed is not to be decelerated. (Approximately the same as the CAM path difference [Tolerance].)
If "0" is set, the standard value (5 μm) will be applied.
If a minus value is set, the speed will decelerate at all minute steps.

---Setting range---
-1.000 to 0.100 (mm)

【#8094】 DccWaitAdd (for M system only)

Set the time to wait for deceleration when the speed FB does not drop to the clamp speed.

---Setting range---
0 to 100 (ms)

【#8101】 MACRO SINGLE

Select how to control the blocks where the user macro command continues.
0: Do not stop while macro blocks continue.
1: Stop every block during signal block operation.

【#8102】 COLL. ALM OFF

Select the interference (bite) control to the workpiece from the tool diameter during tool radius compensation and nose R compensation.
0: An alarm will be output and operation stops when an interference is judged.
1: Changes the path to avoid interference.

【#8103】 COLL. CHK OFF

Select the interference (bite) control to the workpiece from the tool diameter during tool radius compensation and nose R compensation.
0: Performs interference check.
1: Does not perform interference check.

【#8105】 EDIT LOCK B

Select the edit lock for program Nos. 8000 to 9999 in the memory.
0: Enable the editing.
1: Prohibit the editing of above programs.

When "1" is set, the file cannot be opened.

【#8106】 G46 NO REV-ERR (for L system only)

Select the control for the compensation direction reversal in G46 (nose R compensation).
0: An alarm will be output and operation will stop when the compensation direction is reversed (G41 -> G42' G42 -> G41).
1: An alarm won't occur when the compensation direction is reversed, and the current compensation direction will be maintained.

【#8107】 R COMPENSATION

Select whether to move to the inside because of a delay in servo response to a command during arc cutting mode.
0: Move to the inside, making the arc smaller than the command value.
1: Compensate the movement to the inside.

【#8108】 R COMP Select

Select the arc radius error compensation target.
0: Perform compensation over all axes.
1: Perform compensation axis by axis.

(Note) This parameter is effective only when "#8107 R COMPENSATION" is "1".

【#8109】 HOST LINK

Select whether to enable computer link B instead of the RS-232C port.
0: Disable (Enable normal RS-232C communication.)
1: Enable (Disable normal RS-232C communication.)

【#8110】 G71/G72 POCKET

Select whether to enable the pocket machining when there is a dimple (pocket) in the rough cutting cycle (G71, G72) finishing program.
0: OFF
1: ON

【#8111】 Milling Radius

Select the diameter and radius of the linear axis for milling (cylindrical/pole coordinate) interpolation.
0: All axes radius command
1: Each axis setting (follows "#1019 dia")

(Note) This parameter is valid only in the milling (cylindrical/polar coordinate) interpolation mode.

【#8112】 DECIMAL PNT-P

Select whether to enable the decimal point command for G04 address P.
0: Disable
1: Enable

【#8113】 Milling Init G16

Set which plane to execute for milling machining after the power is turned ON or reset.

#8113:0, #8114:0 ---> G17 plane
#8113:0, #8114:1 ---> G19 plane
#8113:1, #8114:0 ---> G16 plane
#8113:1, #8114:1 ---> G16 plane

0: Not G16 plane
1: G16 plane

(Note) This parameter is valid for the G code system 2 or 3 ("#1037 cmdtyp"="3" or "4").

【#8114】 Milling Init G19

Set which plane to execute for milling machining after the power is turned ON or reset.

#8113:0, #8114:0 ---> G17 plane
#8113:0, #8114:1 ---> G19 plane
#8113:1, #8114:0 ---> G16 plane
#8113:1, #8114:1 ---> G16 plane

0: Not G19 plane
1: G19 plane

(Note) This parameter is valid for the G code system 2 or 3 ("#1037 cmdtyp"="3" or "4").

【#8116】 Coord rot para invd

Select whether to enable the coordinate rotation by the parameters.
0: Enable
1: Disable

【#8117】 OFS Diam DESIGN

Select tool radius or tool diameter compensation amount to be specified.
0: Tool radius compensation amount
1: Tool diameter compensation amount

【#8119】 Comp. unit switch

Select the setting unit of compensation amount that has no decimal point.
0: 1mm (or 1inch) unit
1: The minimum command unit (follows "#1003 iunit")

【#8120】 FONT SELECTION

Select the font when Simplified Chinese is selected for "#1043 lang".
0: MITSUBISHI CNC GOTHIC font
1: Standard Windows font

(Note) This parameter is available for M700VW only.

【#8121】 Screen Capture

Select whether to enable the screen capture function.
0: Disable
1: Enable

(Note1) By setting this parameter to "1", and by keeping pushing the [SHIFT] key, screen capture will be executed.
(Note2) This parameter is valid with 700VS/70 Series.

【#8122】 Keep G43 MDL M-REF

Select whether to keep the tool length offset by high speed manual reference position return during tool length offset.
0: Will not be kept (Cancel)
1: Kept

【#8123】 H-spd retract ON

Select whether to enable the drilling cycle at high-speed retract in fixed cycle for drilling.
0: Disable
1: Enable

【#8124】 Mirr img at reset

Select the operation type of the mirror image by parameter setting and the mirror image by external input.
0: The current mirror image is canceled, and new mirror image will start with the machine position at reset as the mirror center.
1: The mirror center is kept to continue the mirror image.

【#8125】 Check Scode in G84

Select how to operate when there is no S command in synchronous tapping block.
0: Use the spindle function modal value as S-command value.
1: Output a program error.

【#8126】 Disable op tone

Select whether to disable keyboard/touch panel operation tones.
0: Enable the operation tones
1: Disable the operation tones
(Note)This setting is valid only for M700VS/M70V/M70 Series.

【#8145】 Validate F1 digit

Select whether to execute the F command with a 1-digit code command or with a direct numerical command.
0: Direct numerical command (command feedrate during feed per minute or rotation)
1: 1-digit code command (with the feedrate specified by the parameters "#1185 spd_F1" to "#1189 spd_F5")

【#8154(PR)】

Not used. Set to "0".

【#8155】 Sub-pro interrupt

Select the method for the user macro interrupt.
0: The user macro interrupt of macro type
1: The user macro interrupt of sub-program type

【#8156】 Fine thread cut E

Select the address E type when cutting an inch screw.
0: Specify the number of threads per inch for inch screw cutting.
1: Specify the precision lead for inch screw cutting.

【#8157】 Radius comp type B (M system) / Nose R comp type B (L system)

For M system
Select the method of the arithmetic processing for the intersection point when the start-up or cancel commands are operated during radius compensation.
0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.
1: The processing is executed for the intersection point between the command block and the next block.

For L system
Select the method of the arithmetic processing for the intersection point when the start-up or cancel commands are operated during nose R or radius compensation.
0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.
1: The processing is executed for the intersection point between the command block and the next block.

【#8158】 Init const sur spd

Select the initial state after power-ON.
0: Constant surface speed control cancel mode.
1: Constant surface speed control mode.

【#8159】 Synchronous tap

Select whether to use the floating tap chuck in G74 and G84 tap cycles.
0: With a floating tapping chuck
1: Without a floating tapping chuck

【#8160】 Start point alarm

Select an operation when the operation start point cannot be found while moving to the next block of G117.
0: The auxiliary function is enabled after the block for the movement has finished.
1: The program error (P33) occurs.

【#8173】 Hold intr amount

Select whether to clear or hold the interruption amount after the "NC reset 1 (or 2)" signal is ON when the manual ABS switch is OFF.
0: Clear (Reset the coordinate deviation due to the interruption)
1: Hold

【#8201】 AX. RELEASE

Select the function to remove the control axis from the control target.
0: Control as normal.
1: Remove from control target.

【#8202】 OT-CHECK OFF

Select whether to enable the stored stroke limit II function set in #8204 and #8205.
0: Enable
1: Disable

【#8203】 OT-CHECK-CANCEL

When the simple absolute position method ("#2049 type" is "9") is selected, the stored stroke limits I, II (or IIB) and IB can be disabled until the first reference position return is executed after the power is turned ON.
0: Enable (according to #8202)
1: Temporarily cancel

(Note) "#8203 OT-CHECK-CANCEL" affects all the stored stroke limits.

【#8204】 OT-CHECK-N

Set the coordinates of the (-) direction in the movable range of the stored stroke limit II or the lower limit coordinates of the prohibited range of stored stroke limit IIB.
If the sign and value are the same as #8205, the stored stroke limit II (or IIB) will be invalid.
If the stored stroke limit IIB function is selected, the prohibited range will be between two points even when #8204 and #8205 are set in reverse. When II is selected, the entire range will be prohibited if #8204 and #8205 are set in reverse.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8205】 OT-CHECK-P

Set the coordinates of the (+) direction in the movable range of the stored stroke limit II or the upper limit coordinates of the prohibited range of stored stroke limit IIB.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8206】 TOOL CHG. P

Set the coordinates of the tool change position for G30. n (tool change position return).
Set with coordinates in the basic machine coordinate system.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8207】 G76/87 IGNR (for M system only)

Select whether to enable the shift operation at G76 (fine boring) and G87 (back boring).
0: Enable
1: Disable

【#8208】 G76/87 (-) (for M system only)

Select the shift direction at G76 and G87.
0: Shift to (+) direction
1: Shift to (-) direction

【#8209】 G60 SHIFT (for M system only)

Set the last positioning direction and distance for a G60 (unidirectional positioning) command.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8210】 OT INSIDE

Select whether the stored stoke limit function set by #8204 and #8205 prevents the machine from moving to the inside or outside of the specified range.
0: Inhibits outside area (Select stored stroke limit II.)
1: Inhibits inside area (Select stored stroke limit II B.)

【#8211】 MIRR. IMAGE

Select whether to enable the parameter mirror image function.
0: Disable
1: Enable

【#8213(PR)】 Rotation axis type

Select the rotation type (short-cut valid/invalid) or linear type (workpiece coordinate linear type/all coordinate linear type).
This parameter is enabled only when "#1017 rot" is set to "1". (Note)
0: Short-cut invalid
1: Short-cut valid
2: Workpiece coordinate linear type
3: All coordinate linear type

(Note) The movement method is as follows by the specified rotation axis type.

<Workpiece coordinate value>
0,1 : Display range 0° to 359.999°
2,3 : Display range 0° to ± 99999.999°
<Machine coordinate value/relative position>
0,1,2 : Display range 0° to 359.999°
3 : Display range 0° to ± 99999.999°
<ABS command>
0 : The incremental amount from the end point to the current position is divided by 360, and the axis moves by the remainder amount according to the sign.
1 : Moves with a short-cut to the end point.
2,3 : In the same manner as the normal linear axis, moves according to the sign by the amount obtained by subtracting the current position from the end point.
<INC command>
0,1,2,3 : Moves in the direction of the commanded sign by the commanded incremental amount starting at the current position.
<Reference position return>
0,1,2 : The movement to the middle point applies to the ABS command or the INC command.
Returns with movement within 360 degrees from the middle point to reference position.
3 : The movement to the middle point applies to the ABS command or the INC command.
Moves and returns in the reference position direction for the difference from the current position to the reference position.

【#8215】 TLM std length

Set the TLM standard length.
TLM standard length is the distance from a tool replacement point (reference position) to the measurement basic point (surface) which is used to measure the tool length.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8216】 Type in G28 return

Select the performance after establishing the reference position in reference position return command.
0: Moves to the reference position.
1: Won't move to the reference position.

【#8217】 Check start point

Set a drawing start position in graphic check of each axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8300】 P0 (for L system only)

Set the reference X-coordinates of the chuck and the tail stock barrier.
Set the center coordinate (radius value) of workpiece by the basic machine coordinate system.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8301】 P1 (for L system only)

Set the area of the chuck and tail stock barrier.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8302】 P2 (for L system only)

Set the area of the chuck and tail stock barrier.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8303】 P3 (for L system only)

Set the area of the chuck and tail stock barrier.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8304】 P4 (for L system only)

Set the area of the chuck and tail stock barrier.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8305】 P5 (for L system only)

Set the area of the chuck and tail stock barrier.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8306】 P6 (for L system only)

Set the area of the chuck and tail stock barrier.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8310】 Barrier ON (for L system only)

Select whether to enable the chuck and tailstock barrier.
0: Disable (Setting from special display unit will be enabled)
1: Enable

【#8311】 P7 (for L system only)

Set the area of the left spindle section.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8312】 P8 (for L system only)

Set the area of the left spindle section.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8313】 P9 (for L system only)

Set the area of the right spindle section.
X axis: Set the coordinate from the workpiece center (P0). (radius value)
Z axis: Set the coordinates in the basic machine coordinate system.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8314】 P10 (for L system only)

Set the area of the right spindle section.
Set the coordinate from the center of workpiece (P0) for X-axis. (radius value)
Set the coordinate value by basic machine coordinate system for Z-axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8315】 Barrier Type (L) (for L system only)

Select the shape of the left chuck and tailstock barrier.
0: No area
1: Chuck
2: Tailstock

【#8316】 Barrier Type (R) (for L system only)

Select the shape of the right chuck and tailstock barrier.
0: No area
1: Chuck
2: Tailstock

【#8317】 ELIV. AX. Name (for L system only)

Set the name of the delivery axis when the right chuck and tailstock barrier is movable.
When using the multi-part system method and the delivery axis is an axis in the other part system, designate the axis including the part system as 1A, 1B or 2A, 2B. If the part system is not designated as A and B, the set part system will be used.

---Setting range---
A/B/.. (axis name)

1A/1B/..
2A/2B/.. (with part system designated)

0: Cancel

【#8318】 Stock Angle (L) (for L system only)

Set the angle for the left tailstock end section.
The angle will be interpreted as 90° if there is no setting (when "0" is set).

---Setting range---
0 to 180 (°)
0: 90° (default)

【#8319】 Stock Angle (R) (for L system only)

Set the angle for the right tailstock end section.
The angle will be interpreted as 90° if there is no setting (when "0" is set).

---Setting range---
0 to 180 (°)
0: 90° (default)

【#8621】 Coord rot plane (H)

Set the plane (horizontal axis) for coordinate rotation control.
Usually, set the name of the 1st axis.
When this parameter is not set, the coordinate rotation function will not work.

---Setting range---
Axis name

【#8622】 Coord rot plane (V)

Set the plane (vertical axis) for coordinate rotation control.
Usually, set the name of the 2nd axis.
When this parameter is not set, the coordinate rotation function will not work.

---Setting range---
Axis name

【#8623】 Coord rot centr (H)

Set the center coordinates (horizontal axis) for coordinate rotation control.

---Setting range---
-999999.999 to 999999.999 (mm)

【#8624】 Coord rot centr (V)

Set the center coordinates (vertical axis) for coordinate rotation control.

---Setting range---
-999999.999 to 999999.999 (mm)

【#8625】 Coord rot vctr (H)

Set the vector components (horizontal axis) for coordinate rotation control.
When this parameter is set, the coordinate rotation control angle (#8627) will be automatically calculated.

---Setting range---
-999999.999 to 999999.999 (mm)

【#8626】 Coord rot vctr (V)

Set the vector components (vertical axis) for coordinate rotation control.
When this parameter is set, the coordinate rotation control angle (#8627) will be automatically calculated.

---Setting range---
-999999.999 to 999999.999 (mm)

【#8627】 Coord rot angle

Set the rotation angle for coordinate rotation control.
When this parameter is set, the coordinate rotation vector (#8625, #8626) will be "0".

---Setting range---
-360.000 to 360.000 (°)

【#8701】 Tool length

Set the length to the touch tool tip.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8702】 Tool Dia

Set the diameter of the sphere at the touch tool tip.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8703】 OFFSET X

This sets the deviation amount (X direction) from the touch tool center to the spindle center.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8704】 OFFSET Y

Set the deviation amount (Y direction) from the touch tool center to the spindle center.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8705】 RETURN

Set the one-time return distance for contacting again.

---Setting range---
0 to 99999.999 (mm)

【#8706】 FEED

Set the feedrate when contacting again.

---Setting range---
1 to 60000 (mm/min)

【#8707】 Skip past amout (H)

Set the difference (horizontal axis direction) between the skip read value and actual skip position.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8708】 Skip past amout (V)

Set the difference (vertical axis direction) between the skip read value and actual skip position.

---Setting range---
-99999.999 to 99999.999 (mm)

【#8709】 EXT work sign rvs

Select when using the external workpiece coordinate system with Z shift.
Select whether to reverse the sign.
0: External workpiece offset (Z shift) without sign reversal
1: External workpiece offset (Z shift) with sign reversal

【#8710】 EXT work ofs invld

Set whether to enable external workpiece offset subtraction when setting the workpiece coordinate offset.
0: Not subtract the external workpiece offset. (Conventional specification)
1: Subtract the external workpiece offset.

【#8711】 TLM L meas axis

Set the tool length measurement axis.
Set the "#1022 axname2" axis name.

---Setting range---
Axis name
(Note) If the axis name is illegal or not set, the 3rd axis name will be set as default.

【#8712】 TLM D meas axis

Set the tool diameter measurement axis.
Set the "#1022 axname2" axis name.

---Setting range---
Axis name
(Note) If the axis name is illegal or not set, the 1st axis name will be set as default.

【#8713】 Skip coord. Switch (For M system only)

Select the coordinate system for reading skip coordinate value.
Select whether to read the skip coordinate in the workpiece coordinate system or in the feature coordinate system during inclined surface machining command.
Select whether to read the skip coordinate in the workpiece coordinate system or in the workpiece installation coordinate system during workpiece installation error compensation.
0: Workpiece coordinate system
1: Feature coordinate system/Workpiece installation coordinate system

【#8880】 Subpro stor D0: dev

Select the storage destination (device) for the subprogram.
M:Memory, G:HD(Note), F:FD(Note), R:Memory card, D:Data server(Note)
(Note) This is available only with M700/M700VW Series.

When D0 is designated at a subprogram call, the subprogram to be called will be searched from the device selected with this parameter.

(Example) M98 P (program No.), D0
-> Device: "#8880 Subpro stor D0: dev" device
Directory: "#8881 Subpro stor D0: dir" directory
The device and directory above will be searched.

(Note 1) When the called subprogram is not found in the selected storage destination, a program error will occur.
(Note 2) When D0 to D4 is not designated at a subprogram call, the subprogram will be searched from the memory.

【#8881】 Subpro stor D0: dir

Select the storage destination (directory) for the subprogram.
When D0 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.
Refer to "#8880 Subpro stor D0: dev".

---Setting range---
Directory 48 characters

【#8882】 Subpro stor D1: dev

Select the storage destination (device) for the subprogram.
M:Memory, G:HD(Note), F:FD(Note), R:Memory card, D:Data server(Note)
(Note) This is available only with M700/M700VW Series.

When D1 is designated at a subprogram call, the subprogram to be called will be searched from the device selected with this parameter.

(Example) M98 P (program No.), D1
-> Device: "#8882 Subpro stor D1: dev" device
Directory: "#8883 Subpro stor D1: dir" directory
The device and directory above will be searched.

(Note 1) When the called subprogram is not found in the selected storage destination, a program error will occur.
(Note 2) When D0 to D4 is not designated at a subprogram call, the subprogram will be searched from the memory.

【#8883】 Subpro stor D1: dir

Select the storage destination (directory) for the subprogram.
When D1 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.
Refer to "#8882 Subpro stor D1: dev".

---Setting range---
Directory 48 characters

【#8884】 Subbro stor D2: dev

Select the storage destination (device) for the subprogram.
M:Memory, G:HD(Note), F:FD(Note), R:Memory card, D:Data server(Note)
(Note) This is available only with M700/M700VW Series.

When D2 is designated at a subprogram call, the subprogram to be called will be searched from the device selected with this parameter.

(Example) M98 P (program No.), D2
-> Device: "#8884 Subpro stor D2: dev" device
Directory: "#8885 Subpro stor D2: dir" directory
The device and directory above will be searched.

(Note 1) When the called subprogram is not found in the selected storage destination, a program error will occur.
(Note 2) When D0 to D4 is not designated at a subprogram call, the subprogram will be searched from the memory.

【#8885】 Subpro stor D2: dir

Select the storage destination (directory) for the subprogram.
When D2 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.
Refer to "#8884 Subpro stor D2: dev".

---Setting range---
Directory 48 characters

【#8886】 Subbro stor D3: dev

Select the storage destination (device) for the subprogram.
M:Memory, G:HD(Note), F:FD(Note), R:Memory card, D:Data server(Note)
(Note) This is available only with M700/M700VW Series.

When D3 is designated at a subprogram call, the subprogram to be called will be searched from the device selected with this parameter.

(Example) M98 P (program No.), D3
-> Device: "#8886 Subpro stor D3: dev" device
Directory: "#8887 Subpro stor D3: dir" directory
The device and directory above will be searched.

(Note 1) When the called subprogram is not found in the selected storage destination, a program error will occur.
(Note 2) When D0 to D4 is not designated at a subprogram call, the subprogram will be searched from the memory.

【#8887】 Subpro stor D3: dir

Select the storage destination (directory) for the subprogram.
When D3 is designated at a subprogram call, the subprogram to be called will be searched from the directory selected with this parameter.
Refer to "#8886 Subpro stor D3: dev".

---Setting range---
Directory 48 characters

【#8888】 Subbro stor D4: dev

Select the storage destination (device) for the subprogram.
M:Memory, G:HD(Note), F:FD(Note), R:Memory card, D:Data server(Note)
(Note) This is available only with M700/M700VW Series.

When D4 is designated at a subprogram call, the subprogram to be called will be searched from the device selected with this parameter.

(Example) M98 P (program No.), D4
-> Device: "#8888 Subpro stor D4: dev" device
Directory: "#8889 Subpro stor D4: dir" directory
The device and directory above will be searched.

(Note 1) When the called subprogram is not found in the selected storage destination, a program error will occur.
(Note 2) When D0 to D4 is not designated at a subprogram call, the subprogram will be searched from the memory.

【#8889】 Subpro stor D4: dir

Select the storage destination (directory) for the subprogram.
When D4 is designated at a subprogram calling, the subprogram to be called will be searched from the directory selected with this parameter.
Refer to "#8888 Subpro stor D4: dev".

---Setting range---
Directory 48 characters

【#8890-8894】 Subpro srch odr D0 to D4

Specify the search order of D0 to D4 (devices and directories storing subprograms) when D0 to D4 are omitted from subprogram call.
Search is performed in the order from 1 to 5. When 0 is set, the device is excluded from search.
If the same value is set for more than one device, search is carried out in the order from the one with a smaller parameter number.
If 0 is set for all the devices, the memory is searched.

---Setting range---
0 to 5

【#8901】 Counter type 1

Set the type of counter displayed at the upper left of the AUTO/MDI display on the Monitor screen.

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate

---Setting range---
1 to 23

【#8902】 Counter type 2

Set the type of counter displayed at the lower left of the AUTO/MDI display on the Monitor screen.

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate

---Setting range---
1 to 23

【#8903】 Counter type 3

Set the type of counter displayed at the upper right of the AUTO/MDI display on the Monitor screen.

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate

---Setting range---
1 to 23

【#8904】 Counter type 4

Set the type of counter displayed at the lower right of the AUTO/MDI display on the Monitor screen.

1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate

---Setting range---
1 to 23

【#8905】 Counter type 5

Set the type of counter displayed at the left of the Manual display on the Monitor screen.
1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate

---Setting range---
1 to 23

【#8906】 Counter type 6

Set the type of counter displayed at the right of the Manual display on the Monitor screen.
1: Current position
2: Workpiece coordinate position
3: Machine position
4: Program position
8: Remain command
9: Manual interrupt amount
10: Next command
11: Restart position
12: Remain distance
16: Tip workpiece coordinate position
18: Tool axis movement
19: Tip machine position
20: Relative position
21: Table coordinate position
22: Workpiece installation position
23: Inclined surface coordinate

---Setting range---
1 to 23

【#8909(PR)】 Aut/Manual switch

Select the counter display method on Monitor screen.
0: "AUTO/MDI" and "Manual" display is switched by the mode selection switch.
1: Display AUTO/MDI counter only.
2: Display Manual counter only.
3: Display the enlarged counter of "#8901 Counter type 1".

(Note) This parameter is disabled when "#11019 2-system display (2-part system simultaneous display)" is set to "1" or "2".

【#8910】 Edit undo

Set whether to enable the Undo function during program edit on the Monitor screen or Edit screen.
0: Disable
1: Enable

(Note) This parameter is valid only with M700VW/M700VS/M700/M70V Series.

【#8913】 Touch panel sense

Set the sensibility of the touch panel.
The smaller the setting value is, the more sensitive the panel will be.
(1: sensitive, 4: insensitive)
When set to 0, the sensibility will be the same as when the standard setting of 2 is applied.

(Note) This parameter is available for M700VS/M70V/M70 Series.

---Setting range---
0 to 4

【#8914】 Auto Top search

Select the operation method for restart search type 2.
0: It is necessary to set the top search position arbitrarily.
1: The restart search is executed from O No. that is designated as head.

【#8915】 Auto backup day 1

When the NC power is ON after the designated date was passed over, the automatic backup is executed.
When "-1" is set to "Auto backup day 1", the automatic backup is executed every turning NC power ON.
When "0" is set to all on "Auto backup day 1" to "4", the automatic backup is not executed.
It is possible to specify the designated date up to 4 days for a month.

---Setting range---
-1 to 31("-1" can be set for "Auto backup day 1" only.)

【#8916】 Auto backup day 2

When the NC power is ON after the designated date was passed over, the automatic backup is executed.
When "-1" is set to "Auto backup day 1", the automatic backup is executed every turning NC power ON.
When "0" is set to all on "Auto backup day 1" to "4", the automatic backup is not executed.
It is possible to specify the designated date up to 4 days for a month.

---Setting range---
-1 to 31("-1" can be set for "Auto backup day 1" only.)

【#8917】 Auto backup day 3

When the NC power is ON after the designated date was passed over, the automatic backup is executed.
When "-1" is set to "Auto backup day 1", the automatic backup is executed every turning NC power ON.
When "0" is set to all on "Auto backup day 1" to "4", the automatic backup is not executed.
It is possible to specify the designated date up to 4 days for a month.

---Setting range---
-1 to 31("-1" can be set for "Auto backup day 1" only.)

【#8918】 Auto backup day 4

When the NC power is ON after the designated date was passed over, the automatic backup is executed.
When "-1" is set to "Auto backup day 1", the automatic backup is executed every turning NC power ON.
When "0" is set to all on "Auto backup day 1" to "4", the automatic backup is not executed.
It is possible to specify the designated date up to 4 days for a month.

---Setting range---
-1 to 31("-1" can be set for "Auto backup day 1" only.)

【#8919】 Auto backup device

Select the automatic backup target device.
[M700/M700VW Series]
0: DS
1: HD
2: Memory card

[M700VS/M70V Series]
0: Memory card
3: USB memory

[M70 Series]
0: Memory card

(Note) The setting range differs according to the model.

【#8920】 3D tool ofs select

Select the method to calculate the drawing position when drawing a solid.
With 3D drawing, the drawing position (tool tip position) is calculated with the method designated with this parameter, and the image is drawn.
0: For tool radius compensation, use the tool compensation amount set in tool compensation screen. For tool length, use the value in tool set window. (for tool length measurement type I)
1: Use the tool compensation amount set in tool compensation screen for both tool radius and tool length compensation. (for tool length measurement type II)
2: Use the value set in tool set window for both tool radius and tool length compensation. (for tool length measurement type I)
3: Use the value set in tool set window for both tool radius and tool length compensation. (for tool length measurement type II)

【#8921】 Mass Edit select

Select the editing mode for the machining programs saved in HD, FD, and memory card.
When the program size is 1.0MB (When "#8910 Edit Undo" is invalid, 2.0MB) or more, mass-editing will be applied.
0: Regular editing mode
1: Mass-editing mode

【#8922】 T-reg-dup check

Set whether to enable the duplication check in registering tools to magazine pots, and in setting tool Nos. for spindle/standby.
0: Duplication check valid for all valid magazines
1: Duplication check invalid
2: Duplication check valid only for the selected magazine

【#8923(PR)】 Hide Edit-IO menu

Set whether to enable the edit-in/out menu. When disabled, the edit-input/output menu won't appear. However, the maintenance-in/out menu is always enabled regardless of this parameter setting.
0: Enable
1: Disable

【#8924】 MEAS. CONFIRM MSG

Select whether to display a confirming message when attempting to write compensation data for tool measurement, or coordinate system data for workpiece measurement.
0: Not display a confirming message
1: Display a confirming message

【#8925】 SP on 1st part sys

Set a spindle No. to be displayed on the 1st part system window when 2-part system simultaneous display is valid. On the 15-type display, 1-part system display can be also specified.
High-order: Select an upper side spindle No.
Low-order: Select a lower side spindle No.

(Note 1) When "00" is set in 2-part system simultaneous display, spindles will be displayed in a default order (the 1st spindle on the upper side, the 2nd spindle on the lower side). When "00" is set in 1-part system display of the 15-type display, all spindles will be displayed.
(Note 2) If you designate a bigger number than the setting of "#1039 spinno", or either the high-order or low-order setting is "0", the 1st spindle will be displayed.
(Note 3) If the low-order is set to "F", the spindle speed command value and the actual rotation number which are specified in the high-order will be displayed.

---Setting range---
High-order: 0 to 6
Low-order: 0 to 6, F

【#8926】 SP on 2nd part sys

Set a spindle No. to be displayed on the 2nd part system window when 2-part system simultaneous display is valid. On the 15-type display, 1-part system display can be also specified.
High-order: Select an upper side spindle No.
Low-order: Select a lower side spindle No.

(Note 1) When "00" is set in 2-part system simultaneous display, spindles will be displayed in a default order (the 1st spindle on the upper side, the 2nd spindle on the lower side). When "00" is set in 1-part system display of the 15-type display, all spindles will be displayed.
(Note 2) If you designate a bigger number than the setting of "#1039 spinno", or either the high-order or low-order setting is "0", the 1st spindle will be displayed.
(Note 3) If the low-order is set to "F", the spindle speed command value and the actual rotation number which are specified in the high-order will be displayed.

---Setting range---
High-order: 0 to 6
Low-order: 0 to 6, F

【#8927】 SP on 3rd part sys

Set a spindle No. to be displayed on the 3rd part system window when 2-part system simultaneous display is valid. On the 15-type display, 1-part system display can be also specified.
High-order: Select an upper side spindle No.
Low-order: Select a lower side spindle No.

(Note 1) When "00" is set in 2-part system simultaneous display, spindles will be displayed in a default order (the 1st spindle on the upper side, the 2nd spindle on the lower side). When "00" is set in 1-part system display of the 15-type display, all spindles will be displayed.
(Note 2) If you designate a bigger number than the setting of "#1039 spinno", or either the high-order or low-order setting is "0", the 1st spindle will be displayed.
(Note 3) If the low-order is set to "F", the spindle speed command value and the actual rotation number which are specified in the high-order will be displayed.

---Setting range---
High-order: 0 to 6
Low-order: 0 to 6, F

【#8928】 SP on 4th part sys

Set a spindle No. to be displayed on the 4th part system window when 2-part system simultaneous display is valid. On the 15-type display, 1-part system display can be also specified.
High-order: Select an upper side spindle No.
Low-order: Select a lower side spindle No.

(Note 1) When "00" is set in 2-part system simultaneous display, spindles will be displayed in a default order (the 1st spindle on the upper side, the 2nd spindle on the lower side). When "00" is set in 1-part system display of the 15-type display, all spindles will be displayed.
(Note 2) If you designate a bigger number than the setting of "#1039 spinno", or either the high-order or low-order setting is "0", the 1st spindle will be displayed.
(Note 3) If the low-order is set to "F", the spindle speed command value and the actual rotation number which are specified in the high-order will be displayed.

---Setting range---
High-order: 0 to 6
Low-order: 0 to 6, F

【#8929】 Disable=INPUT:comp

Select whether to enable [=INPUT] menu in [T-ofs] (tool compensation amount setting) or [Coord] (workpiece coordinate system offset setting) menu on [Setup] screen.
0: Enable
1: Disable

【#8930】 Disable=INPUT:var

Select whether to enable [=INPUT] menu in [Com var] (common variables) menu on [Monitr] screen.
0: Enable
1: Disable

【#8931】 Display/Set limit

Select the restriction of the connected NC's screen display/settings on/from the remote control tool.
0: Permit the screen display/settings
1: Permit the screen display only
2: Restrict the connection

【#8932(PR)】 Hide measure scrn

Select whether to display the tool measurement screen and workpiece measurement screen.
0: Display
1: Not display

【#8933】 Disable lngth comp

Set whether to disable the setting of tool shape compensation amount.
0: Not disable
1: Disable

The shape compensation amount covers the following data according to the tool compensation type.
- Compensation type A ("1" in "#1037 cmdtyp(command type)")
  ... Compensation amount (the sum of shape compensation and wear compensation amount)
- Compensation type B ("2" in "#1037 cmdtyp(command type)")
  ... Length dimension and radius dimension
- Compensation type C ("3" in "#1037 cmdtyp(command type)")
  ... Tool length and tool nose R

【#8934】 Disable wear comp

Select whether to disable the setting of tool wear compensation amount.
0: Not disable
1: Disable

The wear compensation amount covers the following data according to the tool compensation type.
- Compensation type A ("1" in "#1037 cmdtyp(command type 1)")
  ... This parameter is disabled.
- Compensation type B ("2" in "#1037 cmdtyp(command type)")
  ... Length wear and radius wear
- Compensation type C ("3" in "#1037 cmdtyp(command type)")
  ... Tool wear and tool nose wear

【#8935】 W COORD CONFIRM

Select whether to display confirmation message when setting workpiece coordinate system offset in [Simple setting] menu.
0: Not display
1: Display

【#8936】 Delete leading 0

In creating a file, or in transferring a file, if the file name of the new file, or the file name of the transfer destination consists only of numerical figures, 0 of the file name head will be deleted from the name.
0: Designated file name (0 remains in the file name)
1: 0 will be deleted from the file name

【#8937】 File sort volume

Set the maximum number of files to sort in the memory card and DS lists.
If the setting is large, update of the list may take longer.
With M70V/M70 Series, the maximum number will be 64 regardless of the setting of this parameter.

---Setting range---
64 to 1000(M700/M700VW Series)
64 to 250(M700VS Series)
Standard: 64

【#8938】 Edit-Not show Prg

Select whether to enable the automatic display on the Edit screen, when selected, of the programs searched by operation/check search or the MDI programs in MDI mode.
0: Enable the automatic display
1: Disable the automatic display

【#8939】 Undo confirm msg

Display a confirming message when operating the [Undo] menu.
0: Not display a confirming message
1: Display a confirming message

【#8940】 Set select display

Select what to display in the selectable display area.
0: Common variable
1: Local variable
2: Workpiece coordinate system offset
3: All spindles' rotation speed
4: Expanded counters
5: Tool center coordinate display
6: Custom release window

(Note 1)This parameter is available for 15-type display unit only.
(Note 2)Tool center coordinate display is available only when any of the 5-axis related options is enabled.

【#8941(PR)】 ABS/INC for T-ofs

Enable switching the method to set tool compensation data (absolute/incremental value) with INPUT key.
0: Fix it to the absolute value input.
1: Enable to switch between absolute and incremental value input.

【#8942(PR)】 $1 color

Set the color to be shown on the top-left of screen for the 1st part system. This enables switching the color patterns for each part system.
When set to the values 1 to 4, the part system name is shown in the form of button image.
When set to 0, the settings between #8943 and #8945 is disabled and the screen is shown by the default color pattern for all the part systems.
0: Purple (no button image) (default)
1: Purple
2: Pink
3: Light blue
4: Orange

【#8943(PR)】 $2 color

Set the color to be shown on the top-left of screen for the 2nd part system. This enables switching the color patterns for each part system. When set to the values 1 to 4, the part system name is shown in the form of button image.
Note) Enabled when #8942 ($1 color) is set to the values 1 to 4.
1: Purple (default)
2: Pink
3: Light blue
4: Orange

【#8944(PR)】 $3 color

Set the color to be shown on the top-left of screen for the 3rd part system. This enables switching the color patterns for each part system. When set to the values 1 to 4, the part system name is shown in the form of button image.
Note) Enabled when #8942 ($1 color) is set to the values 1 to 4.
1: Purple (default)
2: Pink
3: Light blue
4: Orange

【#8945(PR)】 $4 color

Set the color to be shown on the top-left of screen for the 4th part system. This enables switching the color patterns for each part system. When set to the values 1 to 4, the part system name is shown in the form of button image.
Note) Enabled when #8942 ($1 color) is set to the values 1 to 4.
1: Purple (default)
2: Pink
3: Light blue
4: Orange

【#8951】 No Tab counter sw.

Disable Tab key to change the counter type.
0: Enable Tab key to change counter typ
(The value of #8905 also changes)
1: Disable Tab key to change counter type

【#8952】 Edit-win $ switch

Select whether to enable switching of program displayed in the edit window on Monitor screen according to the displayed part system when part system switch is performed.
0: Not switch
1: Switch

【#8953】 2$ disp switch typ

Select how to switch the part system to display when the 2-part system simultaneous display is enabled.
0: Switch by incrementing the No. of part system to display by one.
1: Switch by skipping the system displayed in the non-active area. When a window is being popped up, however, this skip is not performed and the system is switched by incrementing the No. by one.

【#8956(PR)】 User key type

Select the definition type of the user-defined keys.

There are two user-defined keys.
Type 1 :
It is the same as the conventional specification. A line feed between "[]" is not dealt as ":".
It is dealt as an upper case/lower case letter depending on the CapsLock status.
A symbolic character may be converted into a specific character.
Type 2:
A line break inside square brackets "[]" is dealt as ":".
Regardless of the CapsLock status, the defined character is input.
A symbolic character is also input as defined.

0 : Type 1 (Conventional specification)
1 : Type 2

(Note) This parameter is valid for M700VW series.

【#9001】 DATA IN PORT

Select the port for inputting the data such as machine program and parameters.
1: ch1
2: ch2

【#9002】 DATA IN DEV.

Select the device No. for inputting the data. (The device Nos. correspond to the input/output device parameters.)

---Setting range---
0 to 4

【#9003】 DATA OUT PORT

Select the port for outputting the data such as machine program and parameters.
1: ch1
2: ch2

【#9004】 DATA OUT DEV.

Select the device No. for outputting the data. (The device Nos. correspond to the input/output device parameters.)

---Setting range---
0 to 4

【#9005】 TAPE MODE PORT

Select the input port for running with the tape mode.
1: ch1
2: ch2

【#9006】 TAPE MODE DEV.

Select the device No. to be run with the tape mode. (The device Nos. correspond to the input/output device parameters.)

---Setting range---
0 to 4

【#9007】 MACRO PRINT PORT

Select the output port used for the user macro DPRINT command.
1: ch1
2: ch2
9: Memory card

【#9008】 MACRO PRINT DEV.

Select the device No. used for the DPRINT command. (The device Nos. correspond to the input/output device parameters.)

---Setting range---
0 to 4

【#9009】 PLC IN/OUT PORT

Select the port for inputting/outputting various data with PLC.
1: ch1
2: ch2

【#9010】 PLC IN/OUT DEV.

Select the device No. used for the PLC input/output. (The device Nos. correspond to the input/output device parameters.)

---Setting range---
0 to 4

【#9011】 REMOTE PRG IN PORT

Select the port for inputting remote programs.
1: ch1
2: ch2

【#9012】 REMOTE PRG IN DEV.

Select the device No. used to input remote programs. The device Nos. correspond to the input/output device parameters.

---Setting range---
0 to 4

【#9013】 EXT UNIT PORT

Select the port for communication with an external unit.
1: ch1
2: ch2

【#9014】 EXT UNIT DEV.

Select the unit No. used for communication with an external unit(The unit Nos. correspond to the input/output device parameters.)

---Setting range---
0 to 4

【#9017】 HANDY TERMINAL PORT

Select the port for communication with a handy terminal.
1: ch1
2: ch2

【#9018】 HANDY TERMINAL DEV.

Select the device No. used for communication with a handy terminal. (The device Nos. correspond to the input/output device parameters.)

---Setting range---
0 to 4

【#9051】 Data I/O port

Select whether to use display side serial port or NC side serial port for data input/output function.
0: Display side serial port
1: Display side serial port
2: NC side serial port

(Note) The setting range differs according to the model.

【#9052】 Tape mode port

Select whether to use display side serial port or NC side serial port for tape mode.
0: NC side serial port
1: Display side serial port
2: NC side serial port

(Note) The setting range differs according to the model.

【#9053】 M2 macro converter

Select whether to enable the macro converter when inputting M2/M0 formatted program via RS-232C (serial connection).
When enabling the converter, select whether to convert the comment part enclosed with brackets ().
0: Disable
1: Enable; convert the comment part enclosed with brackets ().
2: Enable; not convert the comment part enclosed with brackets ().

【#9054】 MACRO PRINT FILE

Set the file name to save the output data to a memory card with the DRPNT command for the user macro.
If this parameter is not set, the data will be output under the following name.
dprt$-MMDDhhmmssff
$ is the part system No. in which DPRNT is commanded, MMDDhhmmssff is the current date.
(MM: month, DD: day, hh: hour, mm: minute, ss: second, ff: millisecond)
(Note) This parameter is enabled when "#9007 Macro print directory" is set to "9".

---Setting range---
Program name or file name (32 characters)

【#9101】 DEV0 DEVICE NAME

Set the device name corresponding to the device No.
Set a simple name for quick identification.

---Setting range---
Use alphabet characters, numerals and symbols to set a name within 3 characters.

【#9102】 DEV0 BAUD RATE

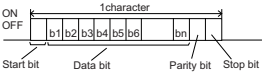
Select the serial communication speed.
0: 19200 (bps)
1: 9600
2: 4800
3: 2400
4: 1200
5: 600
6: 300
7: 110

【#9103】 DEV0 STOP BIT

Select the stop bit length used in the start-stop system.
Refer to "#9104 DEV0 PARITY CHECK". At the output of data, the number of characters is always adjusted for the parity check.
1: 1 (bit)
2: 1.5
3: 2

【#9104】 DEV0 PARITY CHECK

Select whether to add the parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.
0: Not add a parity bit in I/O mode
1: Add a parity bit in I/O mode

【#9105】 DEV0 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.
0: Odd parity
1: Even parity

【#9106】 DEV0 CHR. LENGTH

Set the length of the data bit.
Refer to "#9104 DEV0 PARITY CHECK".
0: 5 (bit)
1: 6
2: 7 (NC connection not supported)
3: 8

【#9107】 DEV0 TERMINATR TYP

Select the code to terminate data reading.
0, 3: EOR
1, 2: EOB or EOR
[When M700/700VW display side serial port is selected]
0: No terminator
1: EOR
2: EOB
3: EOB or EOR

【#9108】 DEV0 HAND SHAKE

Select the transmission control method.
No handshaking will be used when a value except 1 to 3 is set.
1: RTS/CTS method
2: No handshaking
3: DC code method

【#9109】 DEV0 DC CODE PRTY

Select the DC code type when the DC code method is selected.
0: Not add parity to DC code (DC3 = 13H)
1: Add parity to DC code (DC3 = 93H)

【#9111】 DEV0 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.
DC2 / DC4
0: None / None
1: Yes / None
2: None / Yes
3: Yes / Yes

【#9112】 DEV0 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.
0: Not add
1: Add

【#9113】 DEV0 EIA OUTPUT

Select ISO or EIA code for data output.
In data input mode, the ISO and EIA codes are identified automatically.
0: ISO code output
1: EIA code output

【#9114】 DEV0 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---
0 to 999 (characters)

【#9115】 DEV0 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.
At the output of data, the number of characters is always adjusted to for the parity check.
0: Not perform parity V check
1: Perform parity V check

【#9116】 DEV0 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.
Time out check will not be executed when set to "0".

---Setting range---
0 to 30 (s)

【#9117】 DEV0 DR OFF

Select whether to enable the DR data check in data I/O mode.
0: Enable
1: Disable

【#9118】 DEV0 DATA ASCII

Select the code of the output data.
0: ISO/EIA code (Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)
1: ASCII code

【#9119】 DEV0 INPUT TYPE

Select the mode for input (verification).
0: Standard input (Data from the very first EOB is handled as significant information.)
1: EOBs following the first EOB of the input data are skipped until data other than EOB is input

【#9120】 DEV0 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.
If the output device has a data receiving error (overrun error), decrease the buffer size with this parameter.
If the buffer size is decreased, output time will prolong according to the size.
0: 250 bytes (default)
1: 1 byte
2: 4 bytes
3: 8 bytes
4: 16 bytes
5: 64 bytes

【#9121】 DEV0 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9122】 DEV0 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9123】 DEV0 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9124】 DEV0 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9125】 DEV0 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9126】 DEV0 EIA CODE :

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " : ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9127】 DEV0 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9128】 DEV0 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9201】 DEV1 DEVICE NAME

Set the device name corresponding to the device No.
Set a simple name for quick identification.

---Setting range---
Use alphabet characters, numerals and symbols to set a name within 3 characters.

【#9202】 DEV1 BAUD RATE

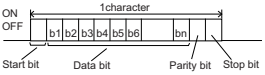
Select the serial communication speed.
0: 19200 (bps)
1: 9600
2: 4800
3: 2400
4: 1200
5: 600
6: 300
7: 110

【#9203】 DEV1 STOP BIT

Select the stop bit length used in the start-stop system.
Refer to "#9204 DEV1 PARITY CHECK". At the output of data, the number of characters is always adjusted to for the parity check.
1: 1 (bit)
2: 1.5
3: 2

【#9204】 DEV1 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.
0: Not add a parity bit in I/O mode
1: Add a parity bit in I/O mode

【#9205】 DEV1 EVEN PARITY

Select whether even or odd parity will be used when parity is used. This parameter is ignored when no parity is added.
0: Odd parity
1: Even parity

【#9206】 DEV1 CHR. LENGTH

Select the length of the data bit.
Refer to "#9204 DEV1 PARITY CHECK".
0: 5 (bit)
1: 6
2: 7 (NC connection not supported)
3: 8

【#9207】 DEV1 TERMINATR TYP

Select the code to terminate data reading.
0, 3: EOR
1, 2: EOB or EOR
[When M700/700VW display side serial port is selected]
0: No terminator
1: EOR
2: EOB
3: EOB or EOR

【#9208】 DEV1 HAND SHAKE

Select the transmission control method.
No handshaking will be used when a value except 1 to 3 is set.
1: RTS/CTS method
2: No handshaking
3: DC code method

【#9209】 DEV1 DC CODE PRTY

Select the DC code type when the DC code method is selected.
0: Not add parity to DC code (DC3 = 13H)
1: Add parity to DC code (DC3 = 93H)

【#9211】 DEV1 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.
DC2 / DC4
0: None / None
1: Yes / None
2: None / Yes
3: Yes / Yes

【#9212】 DEV1 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.
0: Not add
1: Add

【#9213】 DEV1 EIA OUTPUT

Select ISO or EIA code for data output.
In data input mode, the ISO and EIA codes are identified automatically.
0: ISO code output
1: EIA code output

【#9214】 DEV1 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---
0 to 999 (characters)

【#9215】 DEV1 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.
At the output of data, the number of characters is always adjusted to for the parity check.
0: Not perform parity V check
1: Perform parity V check

【#9216】 DEV1 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.
Time out check will not be executed when set to "0".

---Setting range---
0 to 30 (s)

【#9217】 DEV1 DR OFF

Select whether to enable the DR data check in data I/O mode.
0: Enable
1: Disable

【#9218】 DEV1 DATA ASCII

Select the code of the output data.
0: ISO/EIA code (Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)
1: ASCII code

【#9219】 DEV1 INPUT TYPE

Select the mode for input (verification).
0: Standard input (Data from the very first EOB is handled as significant information.)
1: EOBs following the first EOB of the input data are skipped until data other than EOB is input

【#9220】 DEV1 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.
If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.
If the buffer size is decreased, output time will prolong according to the size.
0: 250 bytes (default)
1: 1 byte
2: 4 byte
3: 8 byte
4: 16 byte
5: 64 byte

【#9221】 DEV1 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9222】 DEV1 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9223】 DEV1 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified. .

---Setting range---
0 to FF (hexadecimal)

【#9224】 DEV1 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9225】 DEV1 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9226】 DEV1 EIA CODE :

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " : ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9227】 DEV1 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9228】 DEV1 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9301】 DEV2 DEVICE NAME

Set the device name corresponding to the device No.
Set a simple name for quick identification.

---Setting range---
Use alphabet characters, numerals and symbols to set a name within 3 characters.

【#9302】 DEV2 BAUD RATE

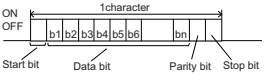
Select the serial communication speed.
0: 19200 (bps)
1: 9600
2: 4800
3: 2400
4: 1200
5: 600
6: 300
7: 110

【#9303】 DEV2 STOP BIT

Select the stop bit length used in the start-stop system.
Refer to "#9304 DEV2 PARITY CHECK". At the output of data, the number of characters is always adjusted to for the parity check.
1: 1 (bit)
2: 1.5
3: 2

【#9304】 DEV2 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.
0: Not add a parity bit in I/O mode
1: Add a parity bit in I/O mode

【#9305】 DEV2 EVEN PARITY

Select whether even or odd parity will be used when parity is used. This parameter is ignored when no parity is added.
0: Odd parity
1: Even parity

【#9306】 DEV2 CHR. LENGTH

Select the length of the data bit.
Refer to "#9304 DEV2 PARITY CHECK".
0: 5 (bit)
1: 6
2: 7 (NC connection not supported)
3: 8

【#9307】 DEV2 TERMINATR TYP

Select the code to terminate data reading.
0, 3: EOR
1, 2: EOB or EOR
[When M700/700VW display side serial port is selected]
0: No terminator
1: EOR
2: EOB
3: EOB or EOR

【#9308】 DEV2 HAND SHAKE

Select the transmission control method.
No handshaking will be used when a value except 1 to 3 is set.
1: RTS/CTS method
2: No handshaking
3: DC code method

【#9309】 DEV2 DC CODE PRTY

Select the DC code type when the DC code method is selected.
0: Not add parity to DC code (DC3 = 13H)
1: Add parity to DC code (DC3 = 93H)

【#9311】 DEV2 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.
DC2 / DC4
0: None / None
1: Yes / None
2: None / Yes
3: Yes / Yes

【#9312】 DEV2 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.
0: Not add
1: Add

【#9313】 DEV2 EIA OUTPUT

Select ISO or EIA code for data output.
In data input mode, the ISO and EIA codes are identified automatically.
0: ISO code output
1: EIA code output

【#9314】 DEV2 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---
0 to 999 (characters)

【#9315】 DEV2 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.
At the output of data, the number of characters is always adjusted to for the parity check.
0: Not perform parity V check
1: Perform parity V check

【#9316】 DEV2 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.
Time out check will not be executed when set to "0".

---Setting range---
0 to 30 (s)

【#9317】 DEV2 DR OFF

Select whether to enable the DR data check in data I/O mode.
0: Enable
1: Disable

【#9318】 DEV2 DATA ASCII

Select the code of the output data.
0: ISO/EIA code (Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)
1: ASCII code

【#9319】 DEV2 INPUT TYPE

Select the mode for input (verification).
0: Standard input (Data from the very first EOB is handled as significant information.)
1: EOBs following the first EOB of the input data are skipped until data other than EOB is input

【#9320】 DEV2 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.
If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.
If the buffer size is decreased, output time will prolong according to the size.

0: 250 bytes (default)
1: 1 byte
2: 4 byte
3: 8 byte
4: 16 byte
5: 64 byte

【#9321】 DEV2 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9322】 DEV2 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9323】 DEV2 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9324】 DEV2 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9325】 DEV2 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9326】 DEV2 EIA CODE :

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " : ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9327】 DEV2 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9328】 DEV2 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9401】 DEV3 DEVICE NAME

Set the device name corresponding to the device No.
Set a simple name for quick identification.

---Setting range---
Use alphabet characters, numerals and symbols to set a name within 3 characters.

【#9402】 DEV3 BAUD RATE

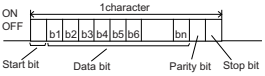
Select the serial communication speed.
0: 19200 (bps)
1: 9600
2: 4800
3: 2400
4: 1200
5: 600
6: 300
7: 110

【#9403】 DEV3 STOP BIT

Select the stop bit length used in the start-stop system.
Refer to "#9404 DEV3 PARITY CHECK". At the output of data, the number of characters is always adjusted to for the parity check.
1: 1 (bit)
2: 1.5
3: 2

【#9404】 DEV3 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.
0: Not add a parity bit in I/O mode
1: Add a parity bit in I/O mode

【#9405】 DEV3 EVEN PARITY

Select whether even or odd parity will be used when parity is used. This parameter is ignored when no parity is added.
0: Odd parity
1: Even parity

【#9406】 DEV3 CHR. LENGTH

Select the length of the data bit.
Refer to "#9404 DEV3 PARITY CHECK".
0: 5 (bit)
1: 6
2: 7 (NC connection not supported)
3: 8

【#9407】 DEV3 TERMINATR TYP

Select the code to terminate data reading.
0, 3: EOR
1, 2: EOB or EOR
[When M700/700VW display side serial port is selected]
0: No terminator
1: EOR
2: EOB
3: EOB or EOR

【#9408】 DEV3 HAND SHAKE

Select the transmission control method.
No handshaking will be used when a value except 1 to 3 is set.
1: RTS/CTS method
2: No handshaking
3: DC code method

【#9409】 DEV3 DC CODE PRTY

Select the DC code type when the DC code method is selected.
0: Not add parity to DC code (DC3 = 13H)
1: Add parity to DC code (DC3 = 93H)

【#9411】 DEV3 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.
DC2 / DC4
0: None / None
1: Yes / None
2: None / Yes
3: Yes / Yes

【#9412】 DEV3 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.
0: Not add
1: Add

【#9413】 DEV3 EIA OUTPUT

Select ISO or EIA code for data output.
In data input mode, the ISO and EIA codes are identified automatically.
0: ISO code output
1: EIA code output

【#9414】 DEV3 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---
0 to 999 (characters)

【#9415】 DEV3 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.
At the output of data, the number of characters is always adjusted to for the parity check.
0: Not perform parity V check
1: Perform parity V check

【#9416】 DEV3 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.
Time out check will not be executed when set to "0".

---Setting range---
0 to 30 (s)

【#9417】 DEV3 DR OFF

Select whether to enable the DR data check in data I/O mode.
0: Enable
1: Disable

【#9418】 DEV3 DATA ASCII

Select the code of the output data.
0: ISO/EIA code (Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)
1: ASCII code

【#9419】 DEV3 INPUT TYPE

Select the mode for input (verification).
0: Standard input (Data from the very first EOB is handled as significant information.)
1: EOBs following the first EOB of the input data are skipped until data other than EOB is input.

【#9420】 DEV3 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.
If the output device has a data receiving error (overrun error), decrease the buffer size with this parameter.
If the buffer size is decreased, output time will prolong according to the size.
0: 250 bytes (default)
1: 1 byte
2: 4 bytes
3: 8 bytes
4: 16 bytes
5: 64 bytes

【#9421】 DEV3 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9422】 DEV3 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9423】 DEV3 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9424】 DEV3 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9425】 DEV3 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9426】 DEV3 EIA CODE :

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " : ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9427】 DEV3 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9428】 DEV3 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9501】 DEV4 DEVICE NAME

Set the device name corresponding to the device No.
Set a simple name for quick identification.

---Setting range---
Use alphabet characters, numerals and symbols to set a name within 3 characters.

【#9502】 DEV4 BAUD RATE

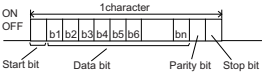
Select the serial communication speed.
0: 19200 (bps)
1: 9600
2: 4800
3: 2400
4: 1200
5: 600
6: 300
7: 110

【#9503】 DEV4 STOP BIT

Select the stop bit length used in the start-stop system.
Refer to "#9504 DEV4 PARITY CHECK". At the output of data, the number of characters is always adjusted to for the parity check.
1: 1 (bit)
2: 1.5
3: 2

【#9504】 DEV4 PARITY CHECK

Select whether to add a parity check bit to the data.



Set this parameter in accordance with the I/O device specifications.
0: Not add a parity bit in I/O mode
1: Add a parity bit in I/O mode

【#9505】 DEV4 EVEN PARITY

Select whether even or odd parity will be used when parity is used. This parameter is ignored when no parity is added.
0: Odd parity
1: Even parity

【#9506】 DEV4 CHR. LENGTH

Select the length of the data bit.
Refer to "#9504 DEV4 PARITY CHECK".
0: 5 (bit)
1: 6
2: 7 (NC connection not supported)
3: 8

【#9507】 DEV4 TERMINATR TYP

Select the code to terminate data reading.
0, 3: EOR
1, 2: EOB or EOR
[When M700/700VW display side serial port is selected]
0: No terminator
1: EOR
2: EOB
3: EOB or EOR

【#9508】 DEV4 HAND SHAKE

Select the transmission control method.
No handshaking will be used when a value except 1 to 3 is set.
1: RTS/CTS method
2: No handshaking
3: DC code method

【#9509】 DEV4 DC CODE PRTY

Select the DC code type when the DC code method is selected.
0: Not add parity to DC code (DC3 = 13H)
1: Add parity to DC code (DC3 = 93H)

【#9511】 DEV4 DC2/4 OUTPUT

Select the DC code handling when outputting data to the output device.
DC2 / DC4
0: None / None
1: Yes / None
2: None / Yes
3: Yes / Yes

【#9512】 DEV4 CR OUTPUT

Select whether to add the (CR) code just before the EOB (L/F) code during output.
0: Not add
1: Add

【#9513】 DEV4 EIA OUTPUT

Select ISO or EIA code for data output.
In data input mode, the ISO and EIA codes are identified automatically.
0: ISO code output
1: EIA code output

【#9514】 DEV4 FEED CHR.

Set the length of the tape feed to be output at the start and end of the data during tape output.

---Setting range---
0 to 999 (characters)

【#9515】 DEV4 PARITY V

Select whether to perform the parity check for the number of characters in a block at the input of data.
At the output of data, the number of characters is always adjusted to for the parity check.
0: Not perform parity V check
1: Perform parity V check

【#9516】 DEV4 TIME-OUT (sec)

Set the time out time to detect an interruption in communication.
Time out check will not be executed when set to "0".

---Setting range---
0 to 30 (s)

【#9517】 DEV4 DR OFF

Select whether to enable the DR data check in data I/O mode.
0: Enable
1: Disable

【#9518】 DEV4 DATA ASCII

Select the code of the output data.
0: ISO/EIA code (Depends on whether #9113, #9213, #9313, #9413 or #9513 EIA output parameter is set up.)
1: ASCII code

【#9519】 DEV4 INPUT TYPE

Select the mode for input (verification).
0: Standard input (Data from the very first EOB is handled as significant information.)
1: EOBs following the first EOB of the input data are skipped until data other than EOB is input.

【#9520】 DEV4 OUT BUFFER

Select the buffer size of the output data which is output to output device using NC side serial port.
If the output device has a transmission error (overrun error), decrease the buffer size with this parameter.
If the buffer size is decreased, output time will prolong according to the size.

0: 250 bytes (default)
1: 1 byte
2: 4 byte
3: 8 byte
4: 16 byte
5: 64 byte

【#9521】 DEV4 EIA CODE [

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " [".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9522】 DEV4 EIA CODE]

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "] ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9523】 DEV4 EIA CODE #

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "#".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9524】 DEV4 EIA CODE *

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "*".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9525】 DEV4 EIA CODE =

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "=".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9526】 DEV4 EIA CODE :

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code " : ".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9527】 DEV4 EIA CODE $

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "$".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9528】 DEV4 EIA CODE !

Set the code in hexadecimal, which does not duplicate the existing EIA codes, for the special code "!".
When output with EIA code, data can be output using the alternate code in which the special ISO code, not included in EIA, is specified.

---Setting range---
0 to FF (hexadecimal)

【#9601】 BAUD RATE

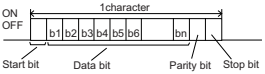
Select the rate at which data is transferred.
- 0: 19200 (bps)
- 1: 9600
- 2: 4800
- 3: 2400
- 4: 1200
- 5: 600
- 6: 300
- 7: 110
- 8: 38400

【#9602】 STOP BIT

Select the stop bit length used in the start-stop system.
Refer to "#9603 PARITY EFFECTIVE". At the output of data, the number of characters is always adjusted to for the parity check.
- 1: 1 (bit)
- 2: 1.5
- 3: 2

【#9603】 PARITY EFFECTIVE

Select whether to add the parity bit to the data.
The parameter is set when using a parity bit separately from the data bit.



Set this parameter according to the specifications of input/output device.
- 0: Not add a parity bit at the input/output
- 1: Add a parity bit at the input/output

【#9604】 EVEN PARITY

Select odd or even when parity is added to the data. This parameter is ignored when no parity is added.
- 0: Odd parity
- 1: Even parity

【#9605】 CHR. LENGTH

Select the length of the data bit.
Refer to "#9603 PARITY EFFECTIVE".
- 0: 5 (bit)
- 1: 6
- 2: 7 (NC connection not supported)
- 3: 8

【#9606】 HAND SHAKE

Select the transmission control method.
"3" (DC code method) should be set for computer link B.
- 0: No control
- 1: RTS/CTS method
- 2: No handshaking
- 3: DC code method

【#9607】 TIME-OUT SET

Set the time-out time at which an interruption of data transfer during data input/output should be detected.
"0" means infinite time-out.

---Setting range---
- 0 to 999 (1/10s)

【#9608】 DATA CODE

Set the code to be used for the data description.
Refer to "#9603 PARITY EFFECTIVE".
- 0: ASCII code
- 1: ISO code

【#9609】 LINK PARAM. 1

bit1: DC1 output after NAK or SYN

Select whether to output the DC1 code after the NAK or SYN code is output.
- 0: Not output the DC1 code.
- 1: Output the DC1 code.

bit7: Enable/disable resetting

Select whether to enable the resetting in the computer link.
- 0: Enable
- 1: Disable

【#9610】 LINK PARAM. 2

Bit 2: Specify the control code parity (even parity for the control code).

Select whether to add an even parity to the control code, in accordance with the I/O device specifications.
0: Not add a parity bit to the control code
1: Add a parity bit to the control code

Bit 3: Parity V

Select whether to enable checking of parity V in one block at the input of the data.
0: Disable
1: Enable

【#9611】 Link PARAM. 3

Not used. Set to "0".

【#9612】 Link PARAM. 4

Not used. Set to “0”.

【#9613】 Link PARAM. 5

Not used. Set to “0”.

【#9614】 START CODE

Select the code used to command the first transfer of file data.
This parameter is used for a specific user. Normally set "0".
0: DC1 (11H)
1: BEL (07H)

【#9615】 CTRL. CODE OUT

bit 0: NAK output

Select whether to send the NAK code to the host if a communication error occurs in computer link B.
0: Not output the NAK code
1: Output the NAK code.

bit 1: SYN output

Select whether to send the SYN code to the host if NC resetting or an emergency stop occurs in computer link B.
0: Not output the SYN code.
1: Output the SYN code.

bit 3: DC3 output

Select whether to send the DC3 code to the host when the communication ends in computer link B.
0: Not output the DC3 code.
1: Output the DC3 code.

【#9616】 CTRL. INTERVAL

Not used. Set to “0”.

【#9617】 WAIT TIME

Not used. Set to “0”.

【#9618】 PACKET LENGTH

Not used. Set to “0”.

【#9619】 BUFFER SIZE

Not used. Set to “0”.

【#9620】 START SIZE

Not used. Set to “0”.

【#9621】 DC1 OUT SIZE

Not used. Set to “0”.

【#9622】 POLLING TIMER

Not used. Set to “0”.

【#9623】 TRANS. WAIT TMR

Not used. Set to “0”.

【#9624】 RETRY COUNTER

Not used. Set to “0”.

【#9701(PR)】 IP addr auto set

The IP address is automatically assigned from the server.
0: Manual setting
1: Automatic setting

(Note) When the automatic setting is selected, "#11005 PC IP address, PC Subnet, PC Gateway" will be invalid.

【#9706】 Host No.

Select the No. of the host to be used from host 1 to host 4.

---Setting range---
1 to 4 : Host No.

【#9711】 Host1 host name

Set the host computer name.
This parameter allows the NC to easily recognize the host computer on the network. Set the host computer's name (name registered in C:\windows\hosts) or the IP address.
<Setting example>
For host name: mspc160
For IP address: 150.40.0.111
(Note) Set the host computer's TCP/IP address if communication is not carried out correctly.

---Setting range---
15 characters (alphanumeric) or less

【#9712】 Host1 user name

Set the user name when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9713】 Host1 password

Set the password when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9714】 Host1 directory

Set the directory name of the host computer.
The directory released to the client (NC unit) with the host computer's server is handled as root directory by the NC unit.

---Setting range---
31 characters (alphanumeric) or less

【#9715】 Host1 host type

Select the type of the host computer.
0: UNIX/PC automatic judgment
1: UNIX
2: PC (DOS)

(Note) When "0" is set, the settings for the following parameters will be invalid.
- #9716 Wrd pos: name
- #9717 Wrd pos: size
- #9718 Wrd pos: Dir
- #9719 Wrd pos: cmnt
- #9720 Wrd num: cmnt

【#9716】 Host 1 Wrd pos: name

Set the file name display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9717】 Host 1 Wrd pos: size

Set the size display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9718】 Host 1 Wrd pos: Dir

Set the <DIR> display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9719】 Host 1 Wrd pos: cmnt

Set the comment (date, time, etc.) display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9720】 Host 1 Wrd num: cmnt

Set the number of words to be displayed as a comment.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9721】 Host 1 no total siz

Set whether to display the total number of characters registered in the machining programs of host1 when displaying the file list.
If there are many files in the directory to be referred to, the list can be updated quickly by setting "1".
0: Display
1: Not display

【#9731】 Host2 host name

Set the host computer name.
This parameter allows the NC to easily recognize the host computer on the network. Set the host computer's name (name registered in C:\windows\hosts) or the IP address.
<Setting example>
For host name: mspc160
For IP address: 150.40.0.111

(Note) Set the host computer's TCP/IP address if communication is not carried out correctly.

---Setting range---
15 characters (alphanumeric) or less

【#9732】 Host2 user name

Set the user name when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9733】 Host2 password

Set the password when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9734】 Host2 directory

Set the directory name of the host computer.
The directory released to the client (NC unit) with the host computer's server is handled as the root directory by the NC unit.

---Setting range---
31 characters (alphanumeric) or less

【#9735】 Host2 host type

Select the type of the host computer.
0: UNIX/PC automatic judgment
1: UNIX
2: PC (DOS)

(Note) When "0" is set, the settings for the following parameters will be invalid.
- #9736 Wrd pos: name
- #9737 Wrd pos: size
- #9738 Wrd pos: Dir
- #9739 Wrd pos: cmnt
- #9740 Wrd num: cmnt

【#9736】 Host 2 Wrd pos: name

Set the file name display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9737】 Host 2 Wrd pos: size

Set the size display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9738】 Host 2 Wrd pos: Dir

Set the <DIR> display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9739】 Host 2 Wrd pos: cmnt

Set the comment (date, time, etc.) display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9740】 Host 2 Wrd num: cmnt

Set the number of words to be displayed as a comment.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9741】 Host 2 no total siz

Set whether to display the total number of characters registered in the machining programs of host1 when displaying the file list.
If there are many files in the directory to be referred to, the list can be updated quickly by setting "1".
0: Display
1: Not display

【#9751】 Host3 host name

Set the host computer name.
This parameter allows the NC to easily recognize the host computer on the network. Set the host computer's name (name registered in C:\windows\hosts) or the IP address.
<Setting example>
For host name: mspc160
For IP address: 150.40.0.111
(Note) Set the host computer's TCP/IP address if communication is not carried out correctly.

---Setting range---
15 characters (alphanumeric) or less

【#9752】 Host3 user name

Set the user name when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9753】 Host3 password

Set the password when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9754】 Host3 directory

Set the directory name of the host computer.
The directory released to the client (NC unit) with the host computer's server is handled as the root directory by the NC unit.

---Setting range---
31 characters (alphanumeric) or less

【#9755】 Host3 host type

Select the type of the host computer.
0: UNIX/PC automatic judgment
1: UNIX
2: PC (DOS)

(Note) When "0" is set, the settings for the following parameters will be invalid.
- #9756 Wrd pos: name
- #9757 Wrd pos: size
- #9758 Wrd pos: Dir
- #9759 Wrd pos: cmnt
- #9760 Wrd num: cmnt

【#9756】 Host 3 Wrd pos: name

Set the file name display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9757】 Host 3 Wrd pos: size

Set the size display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9758】 Host 3 Wrd pos: Dir

Set the <DIR> display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9759】 Host 3 Wrd pos: cmnt

Set the comment (date, time, etc.) display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9760】 Host 3 Wrd num: cmnt

Set the number of words to be displayed as a comment.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9761】 Host 3 no total siz

Set whether to display the total number of characters registered in the machining programs of host1 when displaying the file list.
If there are many files in the directory to be referred to, the list can be updated quickly by setting "1".
0: Display
1: Not display

【#9771】 Host4 host name

Set the host computer name.
This parameter allows the NC to easily recognize the host computer on the network. Set the host computer's name (name registered in C:\windows\hosts) or the IP address.
<Setting example>
For host name: mspc160
For IP address: 150.40.0.111
(Note) Set the host computer's TCP/IP address if communication is not carried out correctly.

---Setting range---
15 characters (alphanumeric) or less

【#9772】 Host4 user name

Set the user name when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9773】 Host4 password

Set the password when logging into the host computer.

---Setting range---
15 characters (alphanumeric) or less

【#9774】 Host4 directory

Set the directory name of the host computer.
The directory released to the client (NC unit) with the host computer's server is handled as the root directory by the NC unit.

---Setting range---
31 characters (alphanumeric) or less

【#9775】 Host4 host type

Select the type of the host computer.
0: UNIX/PC automatic judgment
1: UNIX
2: PC (DOS)

(Note) When "0" is set, the settings for the following parameters will be invalid.
- #9776 Wrd pos: name
- #9777 Wrd pos: size
- #9778 Wrd pos: Dir
- #9779 Wrd pos: cmnt
- #9780 Wrd num: cmnt

【#9776】 Host 4 Wrd pos: name

Set the file name display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9777】 Host 4 Wrd pos: size

Set the size display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9778】 Host 4 Wrd pos: Dir

Set the <DIR> display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9779】 Host 4 Wrd pos: cmnt

Set the comment (date, time, etc.) display position (nth word from left) of the list displayed when the ftp command "dir" is executed.

(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9780】 Host 4 Wrd num: cmnt

Set the number of words to be displayed as a comment.
(Note) One word designates a character string divided by one or more spaces.

---Setting range---
0 to 100
0: Default value

【#9781】 Host 4 no total siz

Set whether to display the total number of characters registered in the machining programs of host1 when displaying the file list.
If there are many files in the directory to be referred to, the list can be updated quickly by setting "1".
0: Display
1: Not display

【#10501 - 10530(PR)】 Monitr main menu 1 to 30

Set the menu Nos. to display the menu on Monitor screen's main menu using menu customization function.

The menu position of each parameter and the menu when "0" is set are as follows.
#10501: First from left in the page 1 (when "0" is set: Search)
#10502: Second from left in the page 1 (when "0" is set: Research)
#10503: Third from left in the page 1 (when "0" is set: Edit)
#10504: Fourth from left in the page 1 (when "0" is set: Trace)
#10505: Fifth from left in the page 1 (when "0" is set: Check)
#10506: Sixth from left in the page 1 (when "0" is set: Cnt exp)
#10507: Seventh from left in the page 1 (when "0" is set: Offset)
#10508: Eighth from left in the page 1 (when "0" is set: Coord)
#10509: Ninth from left in the page 1 (when "0" is set: Cnt set)
#10510: Tenth from left in the page 1 (when "0" is set: MST)
#10511: First from left in the page 2 (when "0" is set: Modal)
#10512: Second from left in the page 2 (when "0" is set: Tree)
#10513: Third from left in the page 2 (when "0" is set: Time)
#10514: Fourth from left in the page 2 (when "0" is set: Com var)
#10515: Fifth from left in the page 2 (when "0" is set: Loc var)
#10516: Sixth from left in the page 2 (when "0" is set: P corr)
#10517: Seventh from left in the page 2 (when "0" is set: PLC SW)
#10518: Eighth from left in the page 2 (when "0" is set: G92 set)
#10519: Ninth from left in the page 2 (when "0" is set: Col stp)
#10520: Tenth from left in the page 2 (when "0" is set: LD MTR)
#10521: First from left in the page 3 (when "0" is set: Sp-stby)
#10522: Second from left in the page 3 (when "0" is set: TipDisp)
#10523: Third from left in the page 3 (when "0" is set: All sp)
#10524: Fourth from left in the page 3 (when "0" is set: MST)
#10525: Fifth from left in the page 3 (when "0" is set: Not display)
#10526: Sixth from left in the page 3 (when "0" is set: Not display)
#10527: Seventh from left in the page 3 (when "0" is set: Not display)
#10528: Eighth from left in the page 3 (when "0" is set: Not display)
#10529: Ninth from left in the page 3 (when "0" is set: Not display)
#10530: Tenth from left in the page 3 (when "0" is set: Not display)

-- Menu No. --
-1: Not display
0: Default
1: Search
2: Research
3: Edit
4: Trace
5: Check
6: Cnt exp
7: Offset
8: Coord
9: Cnt set
10: MST
11: Modal
12: Tree
13: Time
14: Com var
15: Loc var
16: P corr
17: PLC SW
18: G92 set
19: Col stp
20: LD MTR
21: Sp-stby
22: TipDisp
23: All sp
24: MST

(Note) If the menu No. for "Not display" is set for the main menu, that menu will not be displayed.

【#10551 - 10580(PR)】 Setup main menu 1 to 30

Set the menu Nos. to display the menu on Setup screen's main menu using menu customization function.

The menu position of each parameter and the menu when "0" is set are as follows.
#10551: First from left in the page 1 (when "0" is set: T-ofs)
#10552: Second from left in the page 1 (when "0" is set: T-meas)
#10553: Third from left in the page 1 (when "0" is set: T-reg)
#10554: Fourth from left in the page 1 (when "0" is set: T-life)
#10555: Fifth from left in the page 1 (when "0" is set: Coord)
#10556: Sixth from left in the page 1 (when "0" is set: W-meas)
#10557: Seventh from left in the page 1 (when "0" is set: User)
#10558: Eighth from left in the page 1 (when "0" is set: MDI)
#10559: Ninth from left in the page 1 (when "0" is set: Cnt set)
#10560: Tenth from left in the page 1 (when "0" is set: MST)
#10561: First from left in the page 2 (when "0" is set: T-list)
#10562: Second from left in the page 2 (when "0" is set: Pallet)
#10563: Third from left in the page 2 (when "0" is set: Not display)
#10564: Fourth from left in the page 2 (when "0" is set: Not display)
#10565: Fifth from left in the page 2 (when "0" is set: Not display)
#10566: Sixth from left in the page 2 (when "0" is set: Not display)
#10567: Seventh from left in the page 2 (when "0" is set: Not display)
#10568: Eighth from left in the page 2 (when "0" is set: Not display)
#10569: Ninth from left in the page 2 (when "0" is set: Not display)
#10570: Tenth from left in the page 2 (when "0" is set: Not display)
#10571: First from left in the page 3 (when "0" is set: Not display)
#10572: Second from left in the page 3 (when "0" is set: Not display)
#10573: Third from left in the page 3 (when "0" is set: Not display)
#10574: Fourth from left in the page 3 (when "0" is set: Not display)
#10575: Fifth from left in the page 3 (when "0" is set: Not display)
#10576: Sixth from left in the page 3 (when "0" is set: Not display)
#10577: Seventh from left in the page 3 (when "0" is set: Not display)
#10578: Eighth from left in the page 3 (when "0" is set: Not display)
#10579: Ninth from left in the page 3 (when "0" is set: Not display)
#10580: Tenth from left in the page 3 (when "0" is set: Not display)

-- Menu No. --
-1: Not display
0: Default
1: T-ofs
2: T-meas
3: T-reg
4: T-life
5: Coord
6: W-meas
7: User
8: MDI
9: Cnt set
10: MST
11: T-list
12: Pallet

(Note) If the menu No. for "Not display" is set for the main menu, that menu will not be displayed.

【#10601 - 10630(PR)】 Edit main menu 1 to 30

Set the menu Nos. to display the menu on Edit screen's main menu using menu customization function.

The menu position of each parameter and the menu when "0" is set are as follows.
#10601: First from left in the page 1 (when "0" is set: Edit)
#10602: Second from left in the page 1 (when "0" is set: Check)
#10603: Third from left in the page 1 (when "0" is set: NAVI)
#10604: Fourth from left in the page 1 (when "0" is set: Not display)
#10605: Fifth from left in the page 1 (when "0" is set: I/O)
#10606: Sixth from left in the page 1 (when "0" is set: Not display)
#10607: Seventh from left in the page 1 (when "0" is set: Not display)
#10608: Eighth from left in the page 1 (when "0" is set: Not display)
#10609: Ninth from left in the page 1 (when "0" is set: Not display)
#10610: Tenth from left in the page 1 (when "0" is set: Not display)
#10611: First from left in the page 2 (when "0" is set: Not display)
#10612: Second from left in the page 2 (when "0" is set: Not display)
#10613: Third from left in the page 2 (when "0" is set: Not display)
#10614: Fourth from left in the page 2 (when "0" is set: Not display)
#10615: Fifth from left in the page 2 (when "0" is set: Not display)
#10616: Sixth from left in the page 2 (when "0" is set: Not display)
#10617: Seventh from left in the page 2 (when "0" is set: Not display)
#10618: Eighth from left in the page 2 (when "0" is set: Not display)
#10619: Ninth from left in the page 2 (when "0" is set: Not display)
#10620: Tenth from left in the page 2 (when "0" is set: Not display)
#10621: First from left in the page 3 (when "0" is set: Not display)
#10622: Second from left in the page 3 (when "0" is set: Not display)
#10623: Third from left in the page 3 (when "0" is set: Not display)
#10624: Fourth from left in the page 3 (when "0" is set: Not display)
#10625: Fifth from left in the page 3 (when "0" is set: Not display)
#10626: Sixth from left in the page 3 (when "0" is set: Not display)
#10627: Seventh from left in the page 3 (when "0" is set: Not display)
#10628: Eighth from left in the page 3 (when "0" is set: Not display)
#10629: Ninth from left in the page 3 (when "0" is set: Not display)
#10630: Tenth from left in the page 3 (when "0" is set: Not display)

-- Menu No. --
-1: Not display
0: Default
1: Edit
2: Check
3: NAVI
5: I/O

(Note) If the menu No. for "Not display" is set for the main menu, that menu will not be displayed.

【#10801】 Notice tel num 1

Set the call-back telephone No. used for one-touch call and operator notification.
Begin with the No. from an area code for domestic call.
Begin with a communication company No. for international call.
Hyphens "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10802】 Comment 1

Set a comment, such as a party's name, for the notification party telephone No.1.

---Setting range---
Within 20 alphanumerical characters
(excluding spaces)

【#10803】 Notice tel num 2

Set the call-back telephone No. used for one-touch call and operator notification.
Begin with the No. from an area code for domestic call.
Begin with a communication company No. for international call.
Hyphens "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10804】 Comment 2

Set a comment, such as a party's name, for the notification party telephone No.2.

---Setting range---
Within 20 alphanumerical characters
(excluding spaces)

【#10805】 Notice tel num 3

Set the call-back telephone No. used for one-touch call and operator notification.
Begin with the No. from an area code for domestic call.
Begin with a communication company No. for international call.
Hyphens "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10806】 Comment 3

Set a comment, such as a party's name, for the notification party telephone No.3.

---Setting range---
Within 20 alphanumerical characters
(excluding spaces)

【#10807】 Password

Set the password for sharing of machining data.

---Setting range---
4 characters (one-byte alphanumeric characters, without space)

【#10808】 Customer number

Set the user No. for sharing of machining data.

---Setting range---
Within 8 characters (one-byte alphanumeric characters, without space)

【#10812】 Anshin-net valid

Select whether to enable the Anshin-net function.
0: Disable
1: Enable

【#10813】 MTBnet enable

Select whether to enable the machine tool builder network system.
0: Disable
1: Enable
Standard setting: 0

(Note) Values other than "0" and "1" are invalid.

【#10814】 OP-notice condition

Select the condition of an NC for delivering an operator notification.
0: When the "automatic operation is starting" signal turns off. (Notifies the alarm if an alarm occurs, and if not, notifies the completion of machining.)
1: If the designated "#10971 Complete condition" changes into "#10972 Complete CND num", or the "automatic operation is starting" signal turns off due to an alarm.(Notifies the alarm if an alarm occurs at the change of device condition, and if not, notifies the completion of machining.)
2: When the "automatic operation is starting" signal turns off due to an alarm.

【#10815】 OP-notice mode

Select whether to cancel the mode after delivering an operator notification.
0: Cancel
1: Not cancel. Cancel the mode by screen operation.

【#19001】 Syn.tap(,S)cancel

0: Retain the spindle speed (,S) in synchronous tap return
1: Cancel the spindle speed (,S) in synchronous tap return with G80

【#19002】 Zero-point mark

Select the position for displaying the zero point mark in the graphic trace and 2D check.
0: Machine coordinates zero point (same as conventional method)
1: Workpiece coordinate zero point

【#19003】 PRG coord rot type

Select the start point of the initial travel command after program coordinate rotation command.
0: Calculate the end position using the current position on the local coordinate system before rotating, without rotating the start point in accordance with the coordinates rotation.
1: Calculate the end position, assuming that the start point rotates in accordance with the coordinates rotation.

【#19004】 Tap feedrate limit

Set the upper limit of the cutting feed rate in synchronous tapping.

---Setting range---
0 to 1000(mm/rev)

(Note)Setting "0" disables this parameter.
When the commanded cutting feed rate in synchronous tapping exceeds this setting, a program error (P184) will occur.

【#19005】 manual Fcmd2 clamp

Set a clamp speed coefficient (%) for manual speed command 2.
The feed rate is clamped at the command feed rate or rapid traverse rate for automatic operation, which was multiplied by this parameter's value.
(Note)This setting is valid only for manual speed command 2.

---Setting range---
0 to 1000 (%)
0: 100% (Default value)

【#19006(PR)】 EOR Disable

Set whether to handle an EOR(%) in machining program as the end of program in automatic operation, graphic check, program transfer to NC memory, program editing, and buffer correction. Tape operation, Computer Link B, and serial input/output are not included.
0: An EOR(%) is handled as the end of machining program.
1: An EOR(%) is not handled as the end of machining program. The program will be read to the end of file.

【#19401】 G33.n chamfer spd

Set the chamfering speed in C axis interpolation type thread cutting.

---Setting range---
1 to 1000000 (mm/min)

【#19405】 Rotary ax drawing

Specify this parameter to draw a path of C axis (rotary axis) according to its rotation in the graphic trace and 2D graphic trace.
When "#1013 axname" is set to "C", the axis is handled as a rotary axis.
By setting this parameter to "C", a rotation path around the Z axis on actual workpiece can be expressed.
When the Graphic check rotary axis drawing option or Graphic trace rotary axis drawing option is disabled, this parameter is ignored.
C：Enable this function
0：Disable this function
（Setting is cleared when "0" is set）

【#19425】 ManualB Std R1

Set a radius used as standard for the rotary axis speed.
When the setting value of #19425 is larger than that of "#19427 ManualB Std R2", #19425 setting will be used as surface speed control standard radius 2: #19427 setting will be used as surface speed control standard radius 1.

---Setting range---
0 to 99999.999 (mm)

【#19426】 ManualB Std F1

This sets the rotary axis speed for surface speed control standard radius 1 (ManualB Std R1).
When the setting value of #19426 is larger than that of "#19428 ManualB Std F2", #19426 setting will be used as surface speed control standard speed 2: #19427 setting will be used as surface speed control standard speed 1.

---Setting range---
1 to 1000000 (°/min)

【#19427】 ManualB Std R2

Set a radius used as standard for the rotary axis speed.
When the same value is set as "#19425 ManualB Std R1", the surface speed control standard speed 1 (ManualB Std F1) will be selected as the rotary axis speed if the radius is less than that value. The surface speed control standard speed 2 (ManualB Std F2) is selected if larger than the set value.

---Setting range---
0 to 99999.999 (mm)

【#19428】 ManualB Std F2

Set the rotary axis speed for surface speed control standard radius 2 (ManualB Std R2).

---Setting range---
1 to 1000000 (°/min)

2. Base Specifications Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

【#1001(PR)】 SYS_ON System validation setup

Select the existence of PLC axes and part systems.
0: Not exist
1: Exist

【#1002(PR)】 axisno Number of axes

Set the number of control axes and PLC axes.
A total of 16 axes can be set.
Control axis: 0 to 8
PLC axis: 0 to 6
When set to "0", the number of control axes in the part system will be "0". Do not set the number of control axes of the first part system to "0".

(Note) The setting range differs according to the model.

【#1003(PR)】 iunit Input setup unit

Select the input setting value for each part system and the PLC axis.
Increments in parameters will follow this selection.
B : 1 μm
C : 0.1 μm
D : 0.01 μm (10nm)
E : 0.001 μm (1nm)

【#1004(PR)】 ctrl_unit Control unit

Select the control increment for each part system and PLC axis.
Select the increment for the NC internal position data, communication data between the NC and drive unit, and the servo travel data. Although the standard value is "D", set the optimum value according to the series and specification.
B : 1 μm
C : 0.1 μm
D : 0.01 μm (10nm)
E : 0.001 μm (1nm)

【#1005(PR)】 plcunit PLC unit

Select the PLC interface setting and display increment.
The PLC interface setting and display increment will follow this specification. Note that the PLC axis will follow “#1003 iunit”.
B : 1 μm
C : 0.1 μm
D : 0.01 μm (10nm)
E : 0.001 μm (1nm)

【#1006(PR)】 mcmpunit Machine error compensation unit

Select the machine error compensation setting and display increment.
The parameters related to machine error compensation (backlash, pitch error compensation, etc.) and PLC interface (external machine coordinate system compensation) will follow this selection.
B : 1 μm
C : 0.1 μm
D : 0.01 μm (10nm)
E : 0.001 μm (1nm)

【#1007(PR)】 System type select System type select

Select the NC system type.
0: Machining center system (M system)
1: Lathe system (L system)

(Note 1) If the setting value is out of range, M system will be selected.
(Note 2) This parameter is valid only for M700VS/M70V/M70 Series. (M700/M700VW series doesn't support this parameter.)

【#1010(PR)】 srvunit Output unit (servo)

Select the output increment to servo. Although the standard value is "D", set the optimum value according to the series and specification.
B : 1 μm
C : 0.1 μm
D : 0.01 μm (10nm)
E : 0.001 μm (1nm)

【#1013(PR)】 axname Axis name

Set each axis' name with an alphabetic character.
Use the characters X, Y, Z, U, V, W, A, B or C.
(Note 1) Do not set the same name twice in one part system.
The same name which is used in another part system can be set.
(Note 2) The PLC name does not need to be set. (Numbers 1 to 6 are shown as the axis names.)

---Setting range---
X,Y,Z,U,V,W,A,B,C

【#1014(PR)】 incax Increment command axis name

Set the axis name when commanding an incremental value for the axis travel amount. Available alphabets are the same as in "#1013 axname".

(Note 1) Set an alphabet that is different from that of "#1013 axname".

(Note 2) Setting is not required if absolute/incremental specification with axis names is not performed ("#1076 Abslnc" = "0").

---Setting range---

X, Y, Z, U, V, W, A, B, C

【#1015(PR)】 cunit Program command unit

Set the minimum increment of program travel command.

cunit Travel amount for travel command 1

0: Follow "#1003 iunit"

1: 0.0001 mm (0.1 μm)

10: 0.001 mm (1 μm)

100: 0.01 mm (10 μm)

1000: 0.1 mm (100 μm)

10000: 1.0 mm

If there is a decimal point in travel command, the decimal point position will be handled as 1mm regardless of this setting.

【#1017(PR)】 rot Rotational axis

Select whether the axis is a rotary axis or linear axis.
When rotary axis is set, the axis will be controlled with the rotary axis's coordinate system.
Set the rotary axis type with "#8213 Rotation axis type".

0: Linear axis

1: Rotary axis

【#1018(PR)】 ccw Motor CCW

Select the direction of the motor rotation to the command direction.

0: Clockwise (looking from motor shaft) with the forward rotation command

1: Counterclockwise (looking from motor shaft) with the forward rotation command

【#1019(PR)】 dia Diameter specification axis

Select the command method of program travel amount.
When the travel amount is commanded with the diameter dimensions, the travel distance will be 5mm when the command is 10mm of travel distance.
The travel amount per pulse will also be halved during manual pulse feed.
If diameter is selected, tool length, the wear compensation amount, and the workpiece coordinate offset will be displayed in diameter value. Other parameters concerning length will always be displayed in radius value.

0: Command with travel amount

1: Command with diameter dimension

【#1020(PR)】 sp_ax Spindle Interpolation

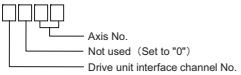
Select "1" when using the spindle for the contour control of NC axis (C-axis).

0: Servo axis is used for contour control.

1: Spindle is used for contour control.

【#1021(PR)】 mcp_no Drive unit I/F channel No. (servo)

Using a 4-digit number, set the drive unit interface channel No. and which axis in that channel is to be used when connecting a servo drive unit.



【#1022(PR)】 axname2 2nd axis name

Set the name of the axis displayed on the screen with two characters. (X1, Z2, etc.)
Always use an alphabetic character (A to Z) for the first character.

---Setting range---

A to Z and 1 to 9 (Two digits)
(Setting will be cleared when "0" is set)

【#1023(PR)】 crsadr Command address during mixed control (cross axis control)

Set the axis name for issuing a command to this axis during mixed control (cross axis control).

---Setting range---

A to Z
(Setting will be cleared when "0" is set)

【#1024(PR)】 crsinc Incremental command address during mixed control (cross axis control)

Set the axis name for issuing an incremental command to this axis during mixed control (cross axis control).

---Setting range---

A to Z
(Setting will be cleared when "0" is set)

【#1025】 l_plane Initial plane selection

Select the plane to be selected when the power is turned ON or reset.
0: X-Y plane (G17 command state)
1: X-Y plane (G17 command state)
2: Z-X plane (G18 command state)
3: Y-Z plane (G19 command state)

【#1026】 base_I Base axis I

Set the names of the basic axes that compose the plane.
Set the axis name set in "#1013 axname".
If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.
Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:
G17: X-Y
G18: Z-X
G19: Y-Z
Specify the desired axis name to set an axis address other than above.

---Setting range---
Axis names such as X, Y or Z

【#1027】 base_J Base axis J

Set the names of the basic axes that compose the plane.
Set the axis name set in "#1013 axname".
If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.
Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:
G17: X-Y
G18: Z-X
G19: Y-Z
Specify the desired axis name to set an axis address other than above.

---Setting range---
Axis names such as X, Y or Z

【#1028】 base_K Base axis K

Set the names of the basic axes that compose the plane.
Set the axis name set in "#1013 axname".
If all three items ("base_I", "base_J" and "base_K") do not need to be set, such as for 2-axis specifications, input "0", and the parameter will be blank.
Normally, when X, Y and Z are specified respectively for base_I, _J, _K, the following relation will be established:
G17: X-Y
G18: Z-X
G19: Y-Z
Specify the desired axis name to set an axis address other than above.

---Setting range---
Axis names such as X, Y or Z

【#1029】 aux_I Flat axis I

Set the axis name when there is an axis parallel to "#1026 base_I".

---Setting range---
Axis names such as X, Y or Z

【#1030】 aux_J Flat axis J

Set the axis name when there is an axis parallel to "#1027 base_J".

---Setting range---
Axis names such as X, Y or Z

【#1031】 aux_K Flat axis K

Set the axis name when there is an axis parallel to "#1028 base_K".

---Setting range---
Axis names such as X, Y or Z

【#1037(PR)】 cmdtyp Command type

Set the G code list and compensation type for programs.
1 : List1(for M) Type A (one compensation amount for one compensation No.)
2 : List1(for M) Type B (shape and wear compensation amounts for one comp. No.)
3 : List2(for L) Type C (shape and wear compensation amounts for one comp. No.)
4 : List3(for L) Ditto
5 : List4(for special L) Ditto
6 : List5(for special L) Ditto
7 : List6(for special L) Ditto
8 : List7(for special L) Ditto
9 : List8(for M) M2 form at type A Type A
(one compensation amount for one compensation No.)
10 : List8(for M) M2 form at type B Type B
(shape and wear compensation amounts for one compensation No.)

There are some items in the specifications that can be used or cannot be used according to the value set in this parameter.
The file structure may also change depending on the compensation data type.

【#1038】 plcsel Ladder selection

Not used. Set to "0".

【#1039(PR)】 spinno Number of spindles

Select the number of spindles.
0: No spindle
1 to 6: One to six spindles

(Note) The setting range differs according to the model.

【#1040(PR)】 M_inch Constant input (inch)

Select the unit system for setting and display regarding machine parameter and PLC interface's position, length and speed.
0: Metric system
1: Inch system

【#1041(PR)】 I_inch Initial state (inch)

Select the unit system for the program travel amount when the power is turned ON or reset and for position display.
0: Metric system
1: Inch system

(Note) The units of the following data are converted by "#1041 I_inch".
- Command unit at power ON and reset (Inch/metric command mode)
  But under the following conditions, the unit will follow G20/G21 command modal even at reset.
  When reset modal is retained ("#1151 rstint"="0")
  When G code group 06 reset modal is retained ("#1210 RstGmd/bit5" ON)
- Unit system for position display (counter, user parameter, tool, work offset)
- User parameter I/O unit
- Parameter unit of user parameters concerning length and speed
- Arc error parameter (#1084 RadErr)
- PLC interface unit related to function manual arc feed

【#1042(PR)】 pcinch PLC axis command (inch)

Select the unit system for the commands to the PLC axis.
0: Metric system
1: Inch system

【#1043】 lang Select language displayed

Select the display language.
0: English (Standard)
1: Japanese (Standard)
11: German (Option)
12: French (Option)
13: Italian (Option)
14: Spanish (Option)
15: Traditional Chinese (Option)
16: Korean (Option)
17: Portuguese (Option)
18: Dutch (Option)
19: Swedish (Option)
20: Hungarian (Option)
21: Polish (Option)
22: Simplified Chinese (Option)
23: Russian (Option)
24: Turkish (Option)
25: Czech (Option)

(Note) A language which can be displayed is different according to each series.

【#1044(PR)】 auxno MR-J2-CT Connections

Set the number of MR-J2-CTs connected.

(Note) The number of MR-J2-CTs possible to connect and setting range are different according to the model.
Check the specifications of each series.

【#1050(PR)】 MemPrg

Not used. Set to "0".

【#1051(PR)】 MemTol Tool compensation memory common for part systems

0: Tool compensation memory separate for part systems
1: Tool compensation memory common for part systems

【#1052(PR)】 MemVal No. of common variables shared in part system designation

0: Common variables common for part systems (number fixed)
#100 - : Per part system
#500 - : Common for part systems
1: Common variables common for part systems (number designation)
#100 - : Designate with V1comN
#500 - : Designate with V0comN

(Note) When this parameter is changed, the file system will be changed after the power is turned ON.
So always execute format.
The new format will be enabled after turning the power ON again.

Setting order
(1) MemVal changeover -> (2) Turn power ON again -> (3) Format -> (4) Turn power ON again

【#1061(PR)】 intabs Manual ABS updating

Select whether to update the absolute position data during automatic handle interrupt.
This parameter is enabled only when "#1145 I_abs" is set to "1".
0: Do not update (coordinate system shifted the amount of the interruption)
1: Update (same coordinates as when interrupt did not occur will be applied)

【#1062】 T_cmp Tool compensation function

Select whether the tool length compensation and wear compensation are enabled during T command execution.

0 :	Tool length compensation enable	Wear compensation enable
1 :	Tool length compensation enable	Wear compensation disable
2 :	Tool length compensation disable	Wear compensation enable
3 :	Tool length compensation disable	Wear compensation disable

【#1063】 mandog Manual dog-type

Select the manual reference position return method for the second return (after the coordinate system is established) and later.
The initial reference position return after the power ON is performed with dog-type return, and the coordinate system will be established.
(This setting is not required when the absolute position detection is used.)
0: High speed return
1: Dog-type

【#1064(PR)】 svof Error correction

Select whether to correct the error when the servo is OFF.
0: Not correct the error
1: Correct the error

【#1068(PR)】 slavno Secondary axis number

Set the axis number of the secondary axis in synchronous control.
The axis number is an NC number excluding the spindle and PLC axis.
Two or more secondary axes cannot be set for one primary axis.
This parameter cannot be set for a secondary axis.
When using the multi-part system, the relation of the primary axis and secondary axis cannot extend over part systems.
0: No secondary axis
1 to 16: First to sixteenth axis

【#1069】 no_dsp Axis with no counter display

Select whether to display the axis counter or not.
This setting is enabled on the counter display screen (relative position counter, etc.).
0: Display
1: Not display

【#1070】 axoff Axis removal

Select whether to enable or disable axis removal control.
0: Disable
1: Enable

【#1072】 chop_ax Chopping axis

Select the chopping axis.
0: Non-chopping axis
1: Chopping axis

【#1073】 I_Absm Initial absolute setting

Select the mode (absolute or incremental) at turning ON the power or reset.
0: Incremental setting
1: Absolute setting

【#1074】 I_Sync Initial synchronous feed

Select the feedrate mode at turning ON the power or reset.
0: Asynchronous feed (feed per minute)
1: Synchronous feed (feed per revolution)

【#1075】 I_G00 Initial G00

Select the linear command mode at turning ON the power or reset.
0: Linear interpolation (G01 command state)
1: Positioning (G00 command state)

【#1076】 Abslnc ABS/INC address (for L system only)

Select the command method for the absolute and incremental commands.
0: Use G command for the absolute and incremental commands.
1: Use axis name for the absolute and incremental commands.
(The axis name in "#1013 axname" will be the absolute command, "#1014 incax" will be the incremental command.)

When "1" is selected, using two axis names, one each for the absolute and incremental commands, allows to issue the absolute and incremental commands appropriately to an axis.

【#1077】 radius Incremental command for diameter specification axis

Select whether the incremental command of the diameter specification axis ("#1019 dia" is set to "1") uses the diameter value or radius value.
0: Diameter value
1: Radius value

【#1078】 Decpt2 Decimal point type 2

Select the increment of position commands that do not have a decimal point.
0: Minimum input command unit (follows "#1015 cunit")
1: 1mm (or 1inch) unit (For the dwell time, 1s unit is used.)

【#1079】 F1digt Validate F1 digit

Select the F command method.
0: Direct numerical command (command feedrate during feed per minute or rotation)
1: 1-digit code command (feedrate set with "#1185 spd_F1" to "#1189 spd_F5")

【#1080】 Dril_Z Specify boring axis (for M system only)

Select a fixed cycle hole drilling axis.
0: Use an axis vertical to the selected plane as hole drilling axis.
1: Use the Z axis as the hole drilling axis regardless of the selected plane.

【#1081】 Gmac_P Give priority to G code parameter

Select the G code priority relationship during the macro call with G command.
0: Priority is on G code used in the system
1: Priority is on registered G code for call

【#1082】 Geomet Geometric

Select the type of geometric to use.
0: Not use
1: Use only geometric I
2: Use geometric I and IB

With geometric, specific address codes are used for exclusive meanings. Thus, if A or C is used for the axis name or 2nd miscellaneous command code, the A used for the axis name may function as the geometric's angle designation. Pay special attention to axis names, etc., when using this function.

【#1084】 RadErr Arc error

Set the tolerable error range when the end point deviates from the center coordinate in the circular command.

---Setting range---
0 to 1.000 (mm)

【#1085】 G00Drn G00 dry run

Select whether to apply dry run (feed at manual setting speed instead of command feedrate) to the G00 command.
0: Not apply to G00. (move at rapid traverse rate)
1: Apply to G00. (move at manual setting speed)

【#1086】 G0Intp G00 non-interpolation

Select the G00 travel path type.
0: Move linearly toward the end point. (interpolation type)
1: Move to the end point of each axis at the rapid traverse feedrate for each axis. (non-interpolation)

(Note) If this parameter is set to "1", neither of the following functions will be available: rapid traverse constant inclination acceleration/deceleration and rapid traverse constant inclination multi-step acceleration/deceleration.

【#1087】 G96_G0 Constant surface speed control by rapid traverse feed command

Select how to handle the surface speed for the G00 command when using the constant surface speed control function.
0: Calculate the surface speed constantly even during G00 movement
1: Calculate the surface speed at the block end point in the G00 command

【#1088】 G30SL Disable G30 soft limit

Select how to handle the soft limit during G30 (2nd reference position return).
0: Enable
1: Disable

【#1091】 Mpoint Ignore middle point

Select how to handle the middle point during G28 and G30 reference position return.
0: Pass the middle point designated in the program and move to the reference position.
1: Ignore the middle point designated in the program and move straight to the reference position.

【#1092】 Tchg _A Replace tools for additional axis

Select the movement of the additional axis at the tool change position return command.
0: The additional axis will not move
1: After the standard axis returns, the additional axis will also return to the tool change position

【#1093】 Wmvfin Synchronization between part systems method

Select the timing of synchronization between part systems when using the multi-part system.
When the travel command is found in the synchronization command (!, M) block:
0: Synchronize before executing travel command
1: Synchronize after executing travel command

【#1094】 TI_SBK Select life count for single block (for L system only)

Select whether to count the data units to be used for single block operation when using the tool life management II function (L system).
0: Not count
1: Count

【#1095】 T0tfof TF output

Select how to handle TF for T00 command.
0: TF will be output
1: TF wont be output

【#1096(PR)】 T_Ltyp Tool life management type

Select the tool life management type.
1: Life management I
In this type, how long and how many times the program commanded tool is used are accumulated to monitor the usage state.
2: Life management II
This method is the same as tool life management I, but with the spare tool selection function.
A spare tool is selected from a group of tool commands commanded in the program.
Tool compensation (tool length compensation and tool radius compensation) is carried out for the selected tool.
3: Life management III (for M system only)
The usage time, frequency of use or the wear amount of the tool which is designated by the program is accumulated, and the tool usage state is monitored.
It is not managed by the group number.
(Note) When "3" is set for the L system, the Life management I is selected.

【#1097】 TIdigt Tool wear compensation number 1-digit command

Select the number of digits of the tool wear compensation No. in the T command.
0: The 2 high-order digits are the tool No., and the 2 low-order digits are the wear compensation No.
1: The 3 high-order digits are the tool No., and the 1 low-order digit is the wear compensation No.

This parameter will be fixed to "0" when tool life management II is selected.

【#1098】 TIno. Tool length offset number

Select the number of digits of the tool length compensation No. in the T command.
0: The 2 or 3 high-order digits are the tool No.
The 2 or 1 low-order digits are the tool length compensation and wear compensation Nos.
1: The 2 or 3 high-order digits are the tool No. and tool length compensation Nos.
The 2 or 1 low-order digits are the wear compensation No.

【#1099】 Treset Cancel tool compensation amount

Select how to handle the tool compensation vector when resetting the system.
0: Clear the tool length and wear compensation vectors when resetting
1: Hold the tool length and wear compensation vectors when resetting

When the values are cleared, the compensation will not be applied. So the axis will be shifted by the compensation amount in the next compensation operation.
When the values are kept, the compensation will be applied, so the axis will shift the differential amount of the compensation amount in the next compensation operation.

【#1100】 Tmove Tool compensation

Select when to perform tool length compensation and wear compensation.
0: Compensate when T command is executed.
1: Superimpose and compensate with the travel command in the block where the T command is located. If there is no travel command in the same block, compensation will be executed after the travel command is superimposed in the next travel command block.
2: Compensate the wear amount when the T command is executed. Superimpose and compensate the tool length compensation amount with the travel command in the same block. If there is no travel command in the same block, compensation will be executed after the travel command is superimposed in the next travel command block.

【#1101】 Tabsmv Tool compensation method

Select the type of travel command when "#1100 Tmove" is set to "1" or "2".
0: Compensate regardless of the travel command type
1: Compensate only at the travel command in the absolute command

【#1102】 tlm Manual tool length measuring system (for L system only)

Select the measurement method for manual tool measurement I.
0: Align tool with basic point
1: Input measurement results

(Note) Interpreted as "0" when other than "0" or "1" is set.

【#1103】 T_Life Validate life management

Select whether to use the tool life management.
0: Not use
1: Use

【#1104】 T_Com2 Tool command method 2

Select how to handle the tool command in the program when "#1103 T_Life" is set to "1".
0: Handle the command as group No.
1: Handle the command as tool No.
(Note) In the case of the tool life management III, the program tool command will be handled as the tool No. regardless of the setting.

【#1105】 T_Sel2 Tool selection method 2

Select the tool selection method when "#1103 T_Life" is set to "1".
0: Select in order of registered No. from the tools used in the same group.
1: Select the tool with the longest remaining life from the tools used or unused in the same group.

【#1106】 Tcount Life management (for L system only)

Select the input method when address N is omitted in inputting the data (G10 L3 command) for tool life management function II.
0: Time specified input
1: Number of times specified input

【#1107】 Tllfsc Split life management display screen (for L system only)

Set the number of groups to be displayed on the tool life management II (L system) screen.
0: Displayed group count 1, maximum number of registered tools: 16
1: Displayed group count 2, maximum number of registered tools: 8
2: Displayed group count 4, maximum number of registered tools: 4

【#1108】 TlrectM Life management re-count M code (for L system only)

Set the M code for tool life management II (L system) re-count.

---Setting range---
0 to 99

【#1109】 subs_M Validate alternate M code

Select the user macro interrupt with the substitute M code.
0: Disable alternate M code
1: Enable alternate M code

【#1110】 M96_M M96 alternate M code

Set an M code to replace M96 when "#1109 subs_M" is set to "1".

---Setting range---
3 to 97 (excluding 30)

【#1111】 M97_M M97 alternate M code

Specify an M code to replace M97 when #1109 subs_M is set to 1.

---Setting range---
3 to 97 (excluding 30)

【#1112(PR)】 S_TRG Validate status trigger method

Select the enable conditions for the user macro interrupt signal (UIT).
0: Enable when interrupt signal (UIT) turns ON
1: Enable when interrupt signal (UIT) is ON

【#1113(PR)】 INT_2 Validate interrupt method type 2

Select the performance after user macro interrupt signal (UIT) input.
0: Execute interrupt program without waiting for block being executed to end
1: Execute interrupt program after completing block being executed

【#1114】 mcrint Macro argument initialization

Select whether to clear statements other than specified arguments by macro call.
Also select whether to clear local variables by power-ON and resetting.
0: Clear the non-specified arguments by macro call.
1: Hold non-specified arguments by macro call
2: Hold non-specified arguments by macro call, and clear local variables by power-ON and resetting

【#1115】 thwait Waiting for thread cutting

Set the queue number during screw thread cutting when chamfering is disabled.

---Setting range---
0 to 99 (Approx. 4 ms)
Standard setting value: 4

【#1116】 G30SLM Invalidate soft limit (manual operation)

Enable this function when disabling the soft limit check function at the second to fourth reference position return.
0: Enable soft limit function
1: Disable soft limit function

【#1117(PR)】 H_sens

Select the handle response mode during handle feed.
0: Standard
1: High-speed

【#1118】 mirr_A Select how to set up the length of tools on cutter tables (opposed tables) (for L system only)

Select one of the following two methods:
- Set the current length of tools on each facing turret.
- Set a value, assuming that the tools on each facing turret are in the same direction as that of those on the base turret.

0: Current length of the tools on each facing turret
1: Value, assuming that the tools on each facing turret are in the same direction as that of those on the base turret

【#1119】 Tmiron Select the mirror image of each facing turret with T command (for L system only)

Select whether to enable the mirror image of each facing turret with the T command.
0: Disable
1: Enable

【#1120(PR)】 TofVal Change macro variable

Select whether to change the macro variable (tool offset) numbers for shape compensation and wear compensation.
0: Not change (Conventional specification)
1: Change the shape and wear compensation variable numbers each for X, Z, and R

【#1121】 edlk_c Edit lock C

Select the edit lock for program Nos. 9000 to 9999 in memory.
0: Editing possible
1: Editing prohibited. The file cannot be opened.

(Note) If "#1122" is set to "1" or "2", "1" will be set in "#1121" when the power is turned ON.

【#1122(PR)】 pglk_c Program display lock C

Select whether to prohibit the program display and search for program Nos. 9000 to 9999 in memory.
0: Program display and search is possible
1: Program display is impossible. Search is possible.
2: Program display and search is impossible

(Note) If "#1122" is set to "1" or "2", "1" will be set in "#1121" when the power is turned ON.

【#1123】 origin Origin set prohibit

Select whether to use the origin set function.
0: Use
1: Not use

【#1124】 ofsfix Fix tool compensation No.

Select how to handle the compensation No. when the input key is pressed on the tool compensation screen.
0: Increment the compensation No. by 1 (Same as general parameters)
1: # compensation No. does not change

When setting in sequence, "0" is handier. When changing and setting repeatedly while adjusting one compensation value, "1" is handier

【#1125】 real_f Actual feedrate display

Select the feedrate display on the monitor screen.
0: Command speed
1: Actual travel feedrate

【#1126】 PB_G90 Playback G90

Select the method to command the playback travel amount in the playback editing.
0: Incremental value
1: Absolute value

【#1127】 DPRINT DPRINT alignment

Select the alignment for printing out with the DPRINT function.
0: No alignment, output s printed with left justification
1: Align the minimum digit and output

【#1128】 RstVCl Clear variables by resetting

Select how to handle the common variables when resetting.
0: Common variables won't change after resetting.
1: The following common variables will be cleared by resetting:
#100 to #149 when 100 sets of variables are provided.
#100 to #199 when 200 sets or more of variables are provided.

【#1129】 PwrVCl Clear variables by power-ON

Select how to handle the common variables when the power is turned ON.
0: The common variables are in the same state as before turning the power OFF.
1: The following common variables will be cleared when the power is turned ON:
#100 to #149 when 100 sets of variables are provided.
#100 to #199 when 200 sets or more of variables are provided.

【#1130】 set_t Display selected tool number

Select the tool command value display on the POSITION screen.
0: Display T-modal value of program command
1: Display Tool No. sent from PLC

【#1132】 brightness

Select the brightness of display unit.
1: High brightness (in bright state)
0: Medium brightness
-1: Low brightness (in dim state)
(Note) This setting is valid only for M700VW/M700VS/M70V/M70 Series.
Set this to "0" for M700 series display as it has no brightness control function.

【#1133】 ofsmem

Not used. Set to "0".

【#1134】 LCDneg

Not used. Set to "0".

【#1135】 unt_nm Unit name

Set the unit name.
Set with 4 or less characters consisting of both alphabets and numbers.
If "0" is set, the unit name won't be displayed.

---Setting range---
4 or less characters consisting of both alphabets and numbers

【#1136】 optype

Not used. Set to "0".

【#1137】 Cntsel

Not used. Set to "0".

【#1138】 Pnosel

Not used. Set to "0".

【#1139】 edtype

Not used. Set to "0".

【#1140】 Mn100 M code number

Set the first number of M code that corresponds to the setup Nos. from 100 to 199.

---Setting range-
0 to 99999999

【#1141】 Mn200 M code number

Set the first number of M code that corresponds to the setup Nos. from 200 to 299.

---Setting range---
0 to 99999999

【#1142】 Mn300 M code number

Set the first number of M code that corresponds to the setup Nos. from 300 to 399.

---Setting range---
0 to 99999999

【#1143】 Mn400 M code number

Set the first number of M code that corresponds to the setup Nos. from 400 to 499.

---Setting range---
0 to 99999999

【#1144】 mdlkof MDI setup lock

Select whether to enable MDI setting in non-MDI mode.
0: Disable MDI setting
1: Enable MDI setting

【#1145】 I_abs Manual ABS parameter

Select how to handle the absolute position data during automatic handle interrupt.
0: Absolute position data will be renewed if manual ABS switch is ON. If it is OFF, data won't be renewed.
1: Follow the "intabs" state when "#1061 intabs" is enabled

【#1146】 Sclamp Spindle rotation speed clamp function

Select how to handle the spindle rotation speed clamp function with the G92S command.
0: G92S command is handled as a clamp command only in the G96 state (during constant surface speed control).
G92S will be handled as normal S command in G97 state (constant surface speed OFF).
1: The S command in the same block as G92 is constantly handled as a clamp command

【#1147】 smin_V Minimum spindle rotation speed clamp type

Specify the type of spindle min. rotation speed clamp value.
0: Rotation speed setting
1: Output voltage coefficient setting

Set "#3023 smini" according to this type setting.

【#1148】 I_G611 Initial high precision

Set the high accuracy control mode for the modal state when the power is turned ON.
0: G64 (cutting mode) at power ON
1: G61.1 (high-accuracy control mode) at power ON

【#1149】 cireft Arc deceleration speed change

Select whether to decelerate at the arc entrance or exit.
0: Not decelerate
1: Decelerate

【#1151】 rstint Reset initial

Select whether to initialize (power ON state) the modals by resetting.
0: Not initialize modal state
1: Initialize modal state

【#1153】 FixbDc Hole bottom deceleration check

Select whether to perform a deceleration check or in-position check at the hole bottom in a hole drilling cycle. This parameter is enabled only for a hole drilling cycle in which no dwell command can be issued at the hole bottom.
0: Perform no deceleration check and in-position check
1: Perform deceleration check
2: Perform in-position check

【#1154(PR)】 pdoor

Not used. Set to "0".

【#1155】 DOOR_m

Not used. Set to "100".

---Setting range---
100

【#1156】 DOOR_s

Not used. Set to "100".

---Setting range---
100

【#1157】 F0atrn

Not used. Set to "0".

【#1158】 F0atno

Not used. Set to "0".

【#1163(PR)】 No rio RIO connection detection invalid

Select whether to enable or disable RIO connection detection.
0: Enable
1: Disable
If your I/O consists of only cards such as CC-LINK, setting this parameter to "1" will avoid the RIO communication cutoff alarm.

【#1164(PR)】 ATS Automatic tuning function

Select whether to enable or disable the automatic tuning function.
0: Disable
1: Enable
(Note) Enable this parameter when using MS Configurator.

【#1166】 fixpro Fixed cycle editing

Select a type of program dealt on the edit/program list/data in/out screen, general program, fixed cycle, or machine tool builder macro program.
0: General programs can be edited, etc.
1: Fixed cycles can be edited, etc.
Password No.: The machine tool builder macro programs can be edited, etc.

---Setting range---
0 to 99999999

【#1167】 e2rom

Not used. Set to "0".

【#1168】 test Simulation test

Select the test mode for the control unit.
In the test mode, test is performed with a hypothetical reference position return complete even though the real reference position return hasn't been completed. This is limited to test operation of the control unit itself, and must not be used when the machine is connected.
0: Normal operation mode
1: Test mode

【#1169】 part system name Part system name

Set the name of each part system.
This must be set only when using multi-part system.
This name will be displayed on the screen only when the part systems must be identified.
Use a max. of four alphabetic characters or numerals.

---Setting range---
A max. of four alphabetic characters or numerals.

【#1170】 M2name Second miscellaneous code

Set this address code when using the 2nd miscellaneous command. Set an address with A, B or C that is not used for "#1013 axname" or "#1014 incax".

---Setting range---
A, B, C

【#1171】 taprov Tap return override

Set the tap return override value for the synchronous tapping.
When "0" is set, it will be regarded as 100%.

---Setting range---
0 to 100 (%)

【#1172】 tapovr Tap return override

Set the override value when leaving the tap end point in the synchronous tapping cycle.
When "0" is set, 100 % is applied for the operation.

---Setting range---
0 to 999 (%)

【#1173】 dwlskp G04 skip condition

Set the skip signal for ending the G04 (dwell) command.

PLC interface input signal

	Skip3	Skip2	Skip1
0 :	-	-	-
1 :	-	-	*
2 :	-	*	-
3 :	-	*	*
4 :	*	-	-
5 :	*	-	*
6 :	*	*	-
7 :	*	*	*

(* : Enable - : Disable)

【#1174】 skip_F G31 skip speed

Set the feedrate when there is no F command in the program at G31 (skip) command.

---Setting range---
1 to 999999 (mm/min)

【#1175】 skip1 G31.1 skip condition

Designate the skip signal in multi-step skip G31.1.
The setting method is same as "#1173".

【#1176】 skip1f G31.2 skip speed

Set the skip feedrate in multi-step skip G31.1.

---Setting range---
1 to 999999 (mm/min)

【#1177】 skip2 G31.2 skip condition

Set the skip signal in multi-step skip G31.2.
The setting method is same as "#1173".

【#1178】 skip2f G31.2 skip speed

Set the skip signal in multi-step skip G31.2.

---Setting range---
1 to 999999 (mm/min)

【#1179】 skip3 G31.3 skip condition

Set the skip signal in multi-step skip G31.3
The setting method is same as "#1173".

【#1180】 skip3f G31.3 skip speed

Set the skip signal in multi-step skip G31.3.

---Setting range---
1 to 999999 (mm/min)

【#1181】 G96_ax Constant surface speed axis

Select the axis to be targeted for constant surface speed control.
0: Program setting will be disabled, and the axis will always be fixed to the 1st axis
1: 1st axis
2: 2nd axis
3: 3rd axis
:
8: 8th axis

However, when set to other than "0", the priority will be on the program setting.

【#1182】 thr_F Thread cutting speed

Set the screw cut up speed when not using chamfering in the thread cutting cycle.
0: Cutting feed clamp feedrate
1 to 60000 mm/min: Setting feedrate

---Setting range---
0 to 60000 (mm/min)

【#1183】 clmp_M M code for clamp

Set the M code for C axis clamp in hole drilling cycle.

---Setting range---
0 to 99999999

【#1184】 clmp_D Dwelling time after outputting M code for unclamp

Set the dwell time after outputting the M code for C axis unclamp in hole drilling cycle.

---Setting range---
0.000 to 99999.999 (s)

【#1185】 spd_F1 F1 digit feedrate F1

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").
Feedrate when F1 is issued (mm/min)
When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---
0 to 1000000 (mm/min)

【#1186】 spd_F2 F1 digit feedrate F2

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").
Feedrate when F2 is issued (mm/min)
When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---
0 to 1000000 (mm/min)

【#1187】 spd_F3 F1 digit feedrate F3

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").
Feedrate when F3 is issued (mm/min)
When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---
0 to 1000000 (mm/min)

【#1188】 spd_F4 F1 digit feedrate F4

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").
Feedrate when F4 is issued (mm/min)
When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---
0 to 1000000 (mm/min)

【#1189】 spd_F5 F1 digit feedrate F5

Set the feedrate for the F command in the F 1-digit command ("#1079 F1digit" is set to "1").
Feedrate when F5 is issued (mm/min)
When "#1246 set08/bit6" is set to "1" and F 1-digit feed is commanded, the feedrate can be increased/decreased by operating the manual handle.

---Setting range---
0 to 1000000 (mm/min)

【#1190(PR)】 s_xcnt Validate inclined axis control (for L system only)

Select whether to enable or disable inclined axis control.
0: Disable inclined axis control
1: Enable inclined axis control

【#1191(PR)】 s_angl Inclination angle (for L system only)

Set the inclination angle (θ).
(Note) When set to "0", the angle determined by three-side setting will be applied.

---Setting range---
-80.000 to 80.000 (°)

【#1192(PR)】 s_zrmv Compensation at reference position return (for L system only)

Select whether to perform compensation for the base axis corresponding to the inclined axis at reference position return.
0: Perform compensation
1: Not perform compensation

【#1193】 inpos Deceleration check method 1/ Validate in-position check

The definitions are changed with the setting of "#1306 InpsTyp Deceleration check specification type".
<When Deceleration check method 1 is selected>
Select the deceleration check method for G0.
0: Command deceleration check
1: In-position check
<When Deceleration check method 2 is selected>
Select the deceleration confirmation method for the positioning or cutting command.
0: G0, G1+G9 Command deceleration check
1: G0, G1+G9 In-position check

【#1194】 H_acdc Time constant 0 for handle feed

Select the time constant for manual handle feed.
0: Use time constant for G01
1: Time constant 0 (step)

【#1195】 Mmac Macro call for M command

Select whether to enable or disable M command macro call of user macro.
0: Disable
1: Enable

【#1196】 Smac Macro call for S command

Select whether to enable or disable S command macro call of user macro.
0: Disable
1: Enable

【#1197】 Tmac Macro call for T command

Select whether to enable or disable T command macro call of user macro.
0: Disable
1: Enable

【#1198】 M2mac Macro call with 2nd miscellaneous code

Select whether to enable or disable 2nd miscellaneous command macro call of user macro.
0: Disable
1: Enable

【#1199】 Sselect Select initial spindle control

Select the initial condition of spindle control after power is turned ON.
0: 1st spindle control mode (G43.1)
1: Selected spindle control mode (G44.1)
2: All spindle simultaneously control mode (G47.1)

(Note) Spindle No. when G44.1 is commanded is selected with "#1534 SnG44.1".

【#1200(PR)】 G0_acc Validate acceleration and deceleration with inclination angle constant G0

Select the acceleration and deceleration type when a rapid traverse command is issued.
0: Acceleration and deceleration with constant time (conventional type)
1: Acceleration and deceleration with a constant angle of inclination

(Note) When rapid traverse constant inclination multi-step acceleration/deceleration is valid, this parameter will be invalid.

【#1201(PR)】 G1_acc Validate acceleration and deceleration with inclination constant G1

Select the acceleration and deceleration type when a linear interpolation command is issued.
0: Acceleration and deceleration with constant time (conventional type)
1: Acceleration and deceleration with a constant angle of inclination

【#1202】 mirofs Distance between facing turrets (for L system only)

Set the distance between tools (edges) (between facing turrets).

---Setting range---
0 to 99999.999 (mm)

【#1203】 TmirS1 Select turrets as facing turrets with T command (for L system only)

Select the turrets, which correspond to the tool Nos. 1 to 32, as facing turrets for T code mirror image.

---Setting range---
0 to FFFFFFFF

【#1204】 TmirS2 Select turrets as facing turrets with T command (for L system only)

Select the turrets, which correspond to the tool Nos. 33 to 64, as facing turrets for T code mirror image.

---Setting range---
0 to FFFFFFFF

【#1205】 G0bdcc Acceleration and deceleration before G0 interpolation

0: Post-interpolation acceleration/deceleration is applied to G00.
1: Pre-interpolation acceleration/deceleration is applied to G00 even in the high accuracy control mode.
2: Rapid traverse constant inclination multi-step acceleration/deceleration is enabled.

(Note) "1" cannot be set for the 2nd part system and the following.

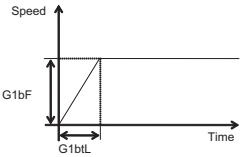
【#1206】 G1bF Maximum speed

Set a cutting feedrate when applying pre-interpolation acceleration/deceleration.
When high-accuracy control time constant expansion is valid, set the maximum of cutting feed clamp speed of each axis.

---Setting range---
1 to 999999 (mm/min)

【#1207】 G1btL Time constant

Set a cutting feed time constant when applying pre-interpolation acceleration/deceleration.
When set to "0", the time constant will be clamped at 1ms.



---Setting range---
Without high-accuracy control time constant expansion: 0 to 5000 (ms)
With high-accuracy control time constant expansion: 0 to 30000 (ms)

Cutting feed Acc Cutting feed acceleration

Displays cutting feed acceleration.

【#1208】 RCK Arc radius error compensation factor

Set a coefficient for arc radius error compensation.
An arc radius error compensation amount can be increased or decreased between -60.0 and +20.0%.

---Setting range---
-60.0 to +20.0 (%)

【#1209】 cirdcc Arc deceleration speed

Set the deceleration speed at the arc entrance or exit.

---Setting range---
1 to 999999 (mm/min)

【#1210】 RstGmd Modal G code reset

Select whether to initialize G code group modals and H and D codes, which corresponds to bits as follows, when the system is reset.
0: Initialize.
1: Not initialize.
<Description of bits for M system>

bit 1F: (Not used)

bit 1E: (Not used)

bit 1D: (Not used)

bit 1C: (Not used)

bit 1B: (Not used)

bit 1A: (Not used)

bit 19: Spindle clamp rotation speed initialization

bit 18: H, D codes initialization

bit 17: (Not used)

bit 16: (Not used)

bit 15: (Not used)

bit 14: (Not used)

bit 13: Group 20 2nd spindle control modal initialization

bit 12: Group 19 G command mirror modal initialization

bit 11: Group 18 Polar coordinate command modal initialization

bit 10: Group 17 Constant surface speed control command modal initialization

bit F: (Not used)

bit E: Group 15 Normal line control modal initialization

bit D: (Not used)

bit C: Group 13 Cutting modal initialization

bit B: Group 12 Workpiece coordinate system modal initialization

bit A: (Not used)

bit 9: Group 10 Fixed cycle return command modal initialization

bit 8: (Not used)

bit 7: Group 8 Length compensation modal initialization

bit 6: Group 7 Radius compensation modal initialization

bit 5: Group 6 Inch/metric modal initialization

bit 4: Group 5 Feed G modal initialization

bit 3: (Not used)

bit 2: Group 3 Absolute/incremental command modal initialization

bit 1: Group 2 Plane selection modal initialization

bit 0: Group 1 Move G modal initialization

The H code indicates the tool length offset number, and the D code indicates the tool radius compensation number.
When bit 18 is set to ON, the H and D codes and group 8 G modal are retained.
When bit 7 is set to ON, the H code and group 8 G modal are retained.

<Description of bits for L system>

bit 1F: (Not used)

bit 1E: (Not used)

bit 1D: (Not used)

bit 1C: (Not used)

bit 1B: (Not used)

bit 1A: (Not used)

bit 19: Spindle clamp rotation speed initialization

bit 18: (Not used)

bit 17: (Not used)

bit 16: (Not used)

bit 15: (Not used)

bit 14: Group 15 Facing turret mirror image initialization

bit 13: Group 20 2nd spindle control modal initialization

bit 12: (Not used)

bit 11: Group 18 Balance cut initialization

bit 10: Group 17 Constant surface speed control command modal initialization

bit F: (Not used)

bit E: (Not used)

bit D: (Not used)

bit C: Group 13 Cutting modal initialization

bit B: Group 12 Workpiece coordinate system modal initialization

bit A: (Not used)

bit 9: Group 10 Fixed cycle return command modal initialization

bit 8: (Not used)

bit 7: (Not used)

bit 6: Group 7 Nose R compensation modal initialization

bit 5: Group 6 Inch/metric modal initialization

bit 4: Group 5 Feed G modal initialization

bit 3: Group 4 Barrier check modal initialization

bit 2: Group 3 Absolute/incremental command modal initialization

bit 1: Group 2 Plane selection modal initialization

bit 0: Group 1 Move G modal initialization

【#1213(PR)】 proaxy Side 1 of inclination angle (for L system only)

Set the length within the orthogonal coordinate of the inclined axis, a side of the triangle formed with the inclination angle.

---Setting range---
-9999.999 to 9999.999

【#1214(PR)】 macaxy Side 2 of inclination angle (for L system only)

Set the actual length of the base axis corresponding to the inclined axis, a side of the triangle formed with the inclination angle.

---Setting range---
-9999.999 to 9999.999

【#1215(PR)】 macaxx Side 3 of inclination angle (for L system only)

Set the actual length of the inclined axis, a side of the triangle formed with the inclination angle.

---Setting range---
-9999.999 to 9999.999

【#1216】 extdcc External deceleration level

Set the upper limit value of the feedrate when the external deceleration signals are enabled.

---Setting range---
1 to 999999 (mm/min)

【#1217】 aux01

Not used. Set to "0".

【#1218】 aux02

bit3: Parameter input/output format

Select the parameter input/output format.
0: Type I
1: Type II (related to "#1218 aux02/bit5")

bit4: External workpiece coordinate offset tool number selection

Select the R register that contains the tool number used for automatic calculation when measuring the coordinate offset of an external workpiece.
0: Follow the setting of "#1130 set_t".
1: Use the tool number indicated by user PLC.

bit5: Parameter I/O II spindle specification address

Select the spindle specification address of parameter I/O type II.
0: C
1: T
This parameter is also applied to the spindle specification address for input and verification.
(Note) This parameter is valid only for parameter I/O type II (when "#1218 aux02/bit3" is set to "1").

bit6: Set No. valid when program input

Select which program No. is applied when inputting programs in "#1 MAIN PROGRAM" on Data I/O screen.
0: The No. in the input data
1: The No. set in the data setting area

bit7: Input by program overwrite

(1) Select the operation when the program to be input in "#1 MAIN PROGRAM" on Data I/O screen, has already been registered.
0: An operation error (E65) occurs.
1: Input by overwrite.
(2) Select the operation in the high-speed program server mode, when the name of the file to be transmitted with (IC -> host) transmission already exists in the host.
0: Prohibit overwrite
1: Enable overwrite

【#1219】 aux03

bit1: Stop high-speed PC monitoring function

Set "1" to disable the function that triggers the emergency stop when the PC high-speed processing time is extended.
Disable the monitoring function only as a temporary measure.

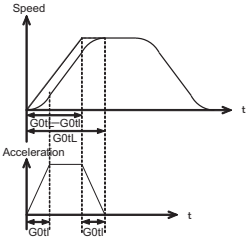
bit5: Dog-type intermediate point

Select whether to move to the intermediate point during automatic dog-type reference position return.

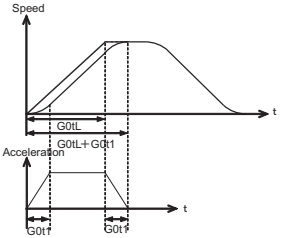
0: Not move.
1: Move.

bit7: Time constant setting changeover for soft acceleration/deceleration

0: Accelerating time is G0tL(G1tL).
When the G00 pre-interpolation acceleration/deceleration and the soft acceleration/deceleration are used together, the inclination of soft acceleration/deceleration will be steeper by setting a time to the soft acceleration/deceleration 2nd step time constant (#2005 G0t1).
Consequently, the acceleration for G28/G30 will be larger than that for G00.
(1) Total accelerating time is "G0tL".
(2) The time for curve part is "G0t1".
(3) The time for linear part is obtained by "G0tL-(2 x G0t1)".



1: Accelerating time is obtained by G0tL+G0t1 (G1tL+G1t1).
When the G00 pre-interpolation acceleration/deceleration and the soft acceleration/deceleration are used together, you can attain the G28/G30 acceleration that is equal to G00, by setting the same value to G00 soft acceleration/deceleration filter (#1569 SfiltG0) as well as to the soft acceleration/deceleration 2nd step time constant (#2005 G0t1).
(1) Total accelerating time is obtained by "G0tL+G0t1".
(2) The time for curve part is "G0t1".
(3) The time for linear part is obtained by "G0tL-G0t1".



【#1220】 aux04 (for L system only)

bit 0: Tool life check timing selection

Select the criterion to judge the tool life end when the use count is incremented in tool life management II.

0: Determine the tool life end when the incremented use count has exceeded the life count. (Default)
(Use count > life count)
1: Determine the tool life end when the incremented use count has reached the life count.
(Use count ≧ life count)

【#1221】 aux05

bit0: Workpiece coordinate/ Absolute coordinate display switching

Select the coordinate to display when workpiece coordinate position counter is selected for the Monitor screen counter display.

0: Workpiece coordinate
1: Absolute coordinate

【#1222】 aux06

bit4: Minimum cut-in amount selection

Select the minimum cut-in amount command value for the compound thread cutting cycle (G76 command).
0: The minimum cut-in amount (Q) will be "0".
1: The minimum cut-in amount (Q) will be set in the CNC internal data.

bit5: Fixed cycle for compound lathe command format check selection

Select the operation when the 1st block of the fixed cycle for compound lathe is omitted while the conventional format is selected ("#1265 ext01/bit0" is set to "0").
0: Program error (P33) will occur.
1: Parameter setting value will be used.

bit7: Reference position return deceleration check method

Select the deceleration check method to be used during automatic reference position return.
0: In-position check
1: Commanded deceleration check

【#1223】 aux07

bit1: Deceleration check method 2

Select the deceleration check method in G1+G9.
0: Command deceleration check in G1+G9
1: In-position check in G1+G9

The deceleration check is not performed for the commands except G1+G9.
When "#1306 InpsTyp deceleration check specification type" is set to "1" (Deceleration check specification type 2), this parameter will be invalid.

bit2: Synchronous tap R-point in-position check

Select whether to enable the synchronous tap I-point -> R-point in-position check.
0: Disable
1: Enable

(Note) This parameter is valid only when "1" (Enable in-position check) is set for "#1223 aux07/bit3 Synchronous tap in-position check improvement".

bit3: Synchronous tap in-position check improvement

Select whether to enable the synchronous tap in-position check improvement.
0: Disable
1: Enable

Related parameters:
#1223/bit2 Synchronous tap R-point in-position check
#1223/bit4 Synchronous tap hole bottom in-position check
#1223/bit5 Synchronous tap R-point in-position check 2

bit4: Synchronous tap hole bottom in-position check

Select whether to enable the synchronous tap hole bottom in-position check.
0: Disable
1: Enable

(Note) This parameter is valid only when "1" (Enable in-position check) is set for "#1223 aux07/bit3 Synchronous tap in-position check improvement".

bit5: Synchronous tap R-point in-position check 2

Select whether to enable the synchronous tap R-point in-position check.
0: Disable
1: Enable

(Note) This parameter is valid only when "1" (Enable in-position check) is set for "#1223 aux07/bit3 Synchronous tap in-position check improvement".

bit6: Cancel synchronous tap (, S) return

0: Retain the spindle speed (, S) in synchronous tap return
1: Cancel the spindle speed (, S) in synchronous tap return with G80

bit7: Synchronous tap method

Select the synchronous tapping method.
0: Synchronous tapping with multi-step acceleration and rapid return
1: Conventional type synchronous tapping

【#1224】 aux08

bit0: Sampling data output

Select whether to enable the sampling data output.
0: Disable
1: Enable

【#1225】 aux09

bit7: Enable/disable spindle rotation speed clamp

Select whether to enable the spindle rotation speed clamp by the G92 S or Q command for the spindle command rotation speed (R7000) set with the user ladder.
0: Enable
1: Disable

【#1226】 aux10

bit0: Tool compensation data for external workpiece coordinate offset measurement

Select the tool compensation data to be used for external workpiece coordinate offset measurement.
0: Tool length data and tool nose wear data
1: Tool length data

bit1: Optional block skip type

Select whether to enable the optional block skip in the middle of a block.
0: Enable only at the beginning of a block.
1: Enable in the middle of a block, as well as at the beginning of the block.

bit2: Single block stop timing

Select the timing at which the single block signal is activated.
0: When the signal goes ON while automatic operation is starting, the block will stop after finished.
1: When the signal is ON at the end of the block, the block will stop.

bit3: C-axis reference position return type

Select the C-axis reference position return type.
0: Basic position return is performed by the G28 reference position return command or by activating the manual reference position return. The basic point dog is used.
1: When the first C-axis command is issued after the C-axis mode is entered in automatic mode, reference position return is performed before the execution of the block. The reference position return is also performed by the G28 reference position return command or by activating the manual reference position return. The Z phase of the encoder is used.

bit4: S command during constant surface speed

Select whether to output a strobe signal when the S command is issued in constant surface speed mode.
0: Not output any strobe signal in constant surface speed mode.
1: Output strobe signals in constant surface speed mode.

bit5: Arbitrary allocation of dog signal

Select whether to enable the arbitrary allocation parameter for the origin dog and H/W OT.
0: Disable (Fixed device is used.)
1: Enable (Device is specified by the parameter.)

bit7: Shorten JOG stop time

Select whether to shorten the JOG stop time.
0: Not shorten (Conventional specification)
1: Shorten

【#1227】 aux11

bit0: Select PLC signal or spindle feedrate attained

Set up this option when disabling the cutting start interlock by spindle feedrate attained.
0: Cutting start interlock by PLC signal
1: Cutting start interlock by spindle feedrate attained

bit1: Select H or D code

Set up this option to validate the data that is set up on the tool life management screen when issuing the H99 or D99 command.
0: The H and D codes validate the data that is set up on the management setup screen.
1: Validates the data that is set up on the management setup screen when issuing the H99 or D99 command.

bit2: Measures against tool setter chattering

Select a condition where a relieving operation completes after measurement with tools.
0: Sensor signals have stopped for 500 ms or longer.
1: 100 μm or longer has passed after sensor signals stopped.

bit3: Absolute coordinate switching (nose R)

Select whether to display a nose position or coordinate value with the absolute coordinate counter.
0: Displays the nose position.
1: Displays the position specified by program command. Select a condition where a relieving operation completes after measurement with tools.

bit5: Spindle rotation speed clamp

Specify whether to clamp the rotation speed in constant surface speed mode when the spindle rotation clamp command is issued.
0: Clamps the rotation regardless of the constant surface speed mode.
1: Clamps the rotation only in constant surface speed mode.

bit7: Switch the range of tool life data to be input

Set up the range of tool life data to be input or compared.
0: Inputs or compares all of the data output.
1: Inputs or compares part of the data output

1) Tool life management I data to be input or compared tool number (D), lifetime (E), life count (F), and auxiliary data (B).
2) Tool life management II data to be input or compared Group number (G), method (M), life (E/F), tool number (D), and compensation number (H)

【#1228】 aux12

bit1: Switch "offset and parameter" screen

Select to switch the "offset and parameter" screen to the parameter screen.
0: Display the "offset and parameter" screen.
1: Display the "parameter" screen.

bit2: Switch data protection in data transmission mode

Select the range of data protection in data transmission mode.
0: Enable the protection for both send and receive data.
1: Enable the protection for receive data only.

bit3: Nose R specification

Select the method to specify the nose R compensation.
0: Specify the nose R compensation by shape number.
1: Specify the nose R compensation by wear number.

bit4: Select operation error or stop code

Select operation error or stop code to provide for both block start and cutting start interlocks.
0: Operation error
1: Stop code

bit5: Select constant surface speed coordinates

Select the constant surface speed coordinate.
0: Workpiece coordinate
1: Absolute value coordinate

bit6: Switch relative values displayed

Select whether to preset the relative coordinates with workpiece coordinate preset (G92.1) or counter preset (G92).
0: Preset the relative coordinates.
1: Not preset the relative coordinates.

bit7: Protection with manual value command

Select whether to protect a manual value command.
0: Not protect. (Conventional specification)
1: Protect.

【#1229】 set01

bit0: Subprogram interrupt

Select the type of the user macro interrupt.
0: Macro type user macro interrupt
1: Sub-program type user macro interrupt

bit1: Accurate thread cutting E

Select what the address E specifies in inch screw cutting.
0: Number of threads per inch
1: Precision lead

bit2: Radius compensation type B (for M system only)

Select the method of the arithmetic processing for the intersection point when the start-up or cancel command is operated during radius compensation.
0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.
1: The processing is executed for the intersection point between the command block and the next block.

bit2: Nose R compensation type B (for L system only)

Select the method of the arithmetic processing for the intersection point when the start-up or cancel commands are operated during nose R or radius compensation.
0: The processing does not handle the start-up or cancel command block: handle the offset vector in the direction vertical to that of the command instead.
1: The processing is executed for the intersection point between the command block and the next block.

bit3: Initial constant surface speed

Select the initial state after the power-ON.
0: Constant surface speed control cancel mode
1: Constant surface speed control mode

bit4: Synchronous tap

Select the operation when ",R" is omitted in G74/G84 tapping cycle.
0: Asynchronous tap
1: Synchronous tap

bit5: Start point alarm

Select the operation when the operation start point cannot be found while executing the next block of G117.
0: Enables the auxiliary function after the block has been executed.
1: Outputs the program error (P33).

bit6: Grid display selection

Select the grid display type on the servo monitor screen during the dog type reference position return.
0: Distance between dog OFF and basic point (including a grid mask amount)
1: A value given by reducing a grid mask amount from the distance between dog OFF and basic point

【#1230】 set02

bit7: Macro interface input/output for each part system

Select the specification of the macro interface input/output.
0: Shared by all part systems.
1: Used independently by the part systems.

【#1231】 set03

bit0: Graphic check compatibility parameter

Select whether to return the data to the pre-starting data after having checked a machining program that rewrites the common variables, workpiece offsets and tool offsets.
0: Return the data.
1: Not return the data.

bit1: Switch graphic trace coordinates

Select whether to use machine coordinate value or tool position coordinate value (position being machined, obtained by subtracting the tool compensation amount from machine coordinate values) for drawing with trace display.
0: Machine coordinate value (conventional method)
1: Tool position coordinate value

bit2: Switch graphic check trace

Select the coordinates to draw at program check: both machine coordinate value (tool center path) and tool position coordinate value (program path) simultaneously, or only the coordinates selected with "#1231 set03/bit1 (Switch graphic trace coordinates)".
0: Both machine coordinates and tool position coordinates (conventional method)
1: Only coordinates designated with switch graphic coordinates

bit4: Switch zero point mark display position

Select the position for displaying the basic point mark in the graphic trace and 2D check.
0: Machine coordinate basic point (same as conventional method)
1: Workpiece coordinate basic point

bit5: Switch graphic check counter display

Select the type of counter displayed on the Graphic Check screen with the combination of "#1231 set03/bit1".
If the drawing coordinate system is other than "all workpiece coordinates", the counter displayed is workpiece coordinate position counter or tool position (workpiece coordinate) regardless of this setting.
0: (When "#1231 set03/bit1" is set to "0") Machine position counter
(When "#1231 set03/bit1" is set to "1") Tool position (workpiece coordinate) counter
1: (When "#1231 set03/bit1" is set to "0") Workpiece coordinate counter
(When "#1231 set03/bit1" is set to "1") Tool position (workpiece coordinate) counter

【#1232】 set04

Not used. Set to "0".

【#1233】 set05

bit1 : Spindle clamp selection

Select whether to enable/disable the spindle override for the spindle speed clamp command (G92 S?).
0 : Disable
1 : Enable

【#1234】 set06

bit3: Interlock when tap retract enabled

Select whether to enable automatic/manual interlock for the part system with "Tap retract enable" signal ON.
0: Interlock all the axes
1: Disable the interlock

【#1235】 set07

bit0: Helical interpolation speed 2

0: Select normal speed designation also for 3rd axis
1: Select arc plane element speed designation

bit2: Fixed type chopping compensation valid only at start

When the fixed type compensation value is selected, the method can be changed to the compensation value sequential update type after the first four cycles.
0: Disable the method changeover
1: Enable the method changeover

bit4: Selection condition of synchronous tapping gear step

Select the parameters that determine the gear step for synchronous tapping.
0: #3005 through #3008 (smax1 to 4) when "#1223 aux07/bit7" is "0".
Or #3013 through #3016 (stap1 to 4) when "#1223 aux07/bit7" is "1".
1: Always #3013 through #3016 (stap1 to 4)

【#1236】 set08

bit0: Manual rotary axis feedrate unit

Select the unit of manual rotary axis feedrate.
0: Fixed to [°/min]
1: Same speed as before (When inch command, the speed is the command speed divided by 25.4.)

bit1: Spindle speed detection

Select the pulse input source of actual spindle rotation speed (R6506/R6507) when the spindle encoder serial connection is selected ("#3025 enc-on" is set to "2").
0: Serial input
1: Encoder input connector

bit2: Current limit droop cancel invalid

Select whether to cancel the position droop when the current limit changeover signal is canceled.
0: Cancel the droop.
1: Not cancel the droop.

bit3: Rotary axis command speed scale

Select to multiply the rotary axis command speed by 10 times.
0: Invalid
1: During initial inching, the rotary axis command speed is multiplied by 10. In other words, if "F100" is commanded, the speed will be the same as when 1000°/min is commanded.
The rotary axis speed display unit will be 10°/min.

【#1237(PR)】 set09

Not used. Set to "0".

【#1238(PR)】 set10

bit0: Switch G36 function

Select the function, the automatic tool length measurement or arc thread cutting (CCW), to be applied to G36 when the G code system 6 or 7 is selected.
0: Automatic tool length measurement
1: Arc thread cutting (CCW)

bit6: Switch absolute position detection alarm

Select the output destination of the absolute position detection alarm.
0: NC alarm 4 (AL4)
1: NC alarm 5 (AL5)

(Note) The absolute position detection alarm is listed in the alarm history regardless of this parameter setting.

bit7: Switch operation alarm

Select whether to enable the NC alarm 5 (AL5) signal output.
0: Disable NC alarm 5 (AL5) (default)
All operation alarms will be output to NC alarm 4 (AL4).
All operation alarms will be recorded in the alarm history.
1: Enable NC alarm 5 (AL5)
The following operation alarms will be output to NC alarm 5 (AL5), not to NC alarm 4 (AL4).
The operation alarms output to NC alarm 5 (AL5) will not be recorded in the alarm history.
- External interlock axis found (M01 0004)
- Cutting override zero (M01 0102)
- External feedrate zero (M01 0103)
- Block start interlock (M01 0109)
- Cutting block start interlock (M01 0100)
- Cutting interlock for spindle-spindle polygon (G51.2) (M01 1033)

【#1239(PR)】 set11

bit0: Coil switching method

Select the coil switching method.
0: Via PLC (Y189F).
1: NC internal processing. (Y189F is invalid.)

bit1: Handle I/F selection

Select the handle connection destination.
0: Use the handle connected to the encoder communication connector.
1: Use the remote I/O unit as a priority.

When HN341/HN342/HN351/HN391/HN392 is mounted, the handle connected to the operation panel I/O unit will be used regardless of this parameter setting.

bit3: Polygon machining mode at reset

Select whether to cancel the polygon machining mode when reset is applied.
0: Not cancel.
1: Cancel.

bit4: Invalidate G51.1 phase command

Select whether to enable the phase control with the spindle-spindle polygon function.
0: Always enable. (When R is not commanded, it will be handled as R0.)
1: Enable only at the R command.

bit5: Door interlock spindle speed clamp valid

Select whether to enable the spindle clamp speed changeover by the PLC signal.
0: Disable
1: Enable

【#1240(PR)】 set12

bit0: Handle input pulse

Select the handle input pulse.
0: MITSUBISHI CNC standard handle pulse (25 pulse/rev)
1: Handle 400 pulse (100 pulse/rev)

bit2: Zero point shift amount magnification

When "1" is set, the following magnification will be applied on the "#2027 G28sft Reference position shift distance", "#2057 Near zero point +" and "#2058 Near zero point -" settings.
For 0.1 μ m: 10-fold
For 0.01 μ m: 100-fold

bit4: Optical communication automatic channel detection invalid

Select whether to enable the optical communication automatic channel detection.
0: Enable
1: Disable

【#1241(PR)】 set13

bit0 : No G-CODE COMB. Error

Select the operation for when an illegal combination of modal and unmodal G codes are commanded in a same block.
0 : The program error (P45) will occur.
1 : A program error can be avoided but the modal G code will be ignored.

【#1242】 set14

Not used. Set to "0".

【#1243】 set15

Not used. Set to "0".

【#1244】 set16

Not used. Set to "0".

【#1245】 set17

bit7: Synchronous tap spindle rotation direction type

Select whether the spindle's rotation direction is determined by the synchronous tapping axis' travel direction.
0: The spindle's rotation direction is determined by the synchronous tapping axis' travel direction.
When the travel direction is negative, the spindle rotates forward.
When the travel direction is positive, the spindle rotates in reverse.
1: The spindle always rotates forward regardless of the synchronous tapping axis' travel direction.

(Note)When a reverse tap is commanded, the spindle rotates in an opposite direction to that mentioned above.

【#1246(PR)】 set18

bit2: Switch coordinate systems for radius compensation

Select the coordinate system for radius compensation.
0: Type 1 (Conventional specification)
Perform radius compensation with reference to a position on the workpiece coordinate system.
1: Type 2
Perform radius compensation with reference to a position on the program coordinate system.

bit3: Change repetition final return position at M2L

Select the final return position after repetition, when in G99 modal and in M2 format with the label L.
0: Initial point
1: R point

bit4: T-lifeover signal output

Select the timing at which tool life over signal is output when using the M system tool life management I/III.
0: Turn the signal ON when a selected tool has reached the lifetime.
1: Turn the signal ON when any of tools in a selected group has reached the lifetime.

bit5: Tool status update type

Select whether to update tool status automatically when lifetime/usage data is changed on the screen in the M system tool life management I/II/III.
0: Not update.
1: Update.
(Note) When "1" is selected, tool status will be updated as follows.
- When usage data is "0", tool status will be "0".
- When usage data is smaller than lifetime data, tool status will be "1".
- When usage data is the same as or larger than lifetime data, tool status will be "2".

bit6 : Switch F 1-digit feedrate change method

Set whether to enable feedrate change with handle until power OFF, or change the parameters #1185 to #1189 with change of speed.
0: Enabled until power OFF
1: Change #1185 spd_F1 to #1189 spd_F5

bit7: PLC axis random device assignment

Select whether to enable the origin dog and H/W OT random assignment for a PLC axis.
0: Disable (assigned to a fixed device)
1: Enable (assigned to the parameter set device)

【#1247】 set19

bit0 : Movement by tool length compensation command (for M system only)

Select whether or not to move the axis by the compensation amount when tool length compensation/cancel is independently commanded.
(Note) This parameter is available for only M700V Series.
M700/M70V/M70 Series will perform the same operation as when this parameter is set to "0".
0: Move
1: Not move

bit1: Thread cutting operation when manual speed command enabled

Select the thread cutting operation in manual speed command.
0: The axis travels at the handle feed rate, jog feed rate, or manual rapid traverse rate
1: The axis travels following the program command

【#1248】 set20

Not used. Set to "0".

【#1249】 set21

Not used. Set to "0".

【#1250】 set22

Not used. Set to "0".

【#1251】 set23

Not used. Set to "0".

【#1252】 set24

Not used. Set to "0".

【#1253】 set25

Not used. Set to "0".

【#1254】 set26

Not used. Set to "0".

【#1255】 set27

Not used. Set to "0".

【#1256】 set28

Not used. Set to "0".

【#1257】 set29

Not used. Set to "0".

【#1258(PR)】 set30

bit0: Skip I/F switch

Select A or B contact for the skip interface.
0: A contact (Skip operation starts at rising edge of a signal)
1: B contact (Skip operation starts at falling edge of a signal)

(Note) This parameter is not applied to PLC skip.

【#1259】 set31

bit0 : Enable normal life tool's data count (for M system only)

Select whether to enable or disable too use data counting when the tool status is 2 (normal life tool).
0: Not count the use data of normal life tool.
1: Count the use data of normal life tool.

【#1260】 set32

Not used. Set to "0".

【#1261】 set33

Not used. Set to "0".

【#1262】 set34

Not used. Set to "0".

【#1263】 set35

Not used. Set to "0".

【#1264】 set36

Not used. Set to "0".

【#1265(PR)】 ext01

bit0: Command format 1

Select the command format for the fixed cycle for compound lathe.
0: Conventional format
1: MITSUBISHI CNC special format (1 block command method)

bit1: Command format 2

Select the command format for the lathe fixed cycle.
0: Conventional format
1: MITSUBISHI CNC special format

bit2: Command format 3

Select the command format for the hole drilling fixed cycle.
0: Conventional format
1: MITSUBISHI CNC special format

【#1266(PR)】 ext02

Not used. Set to "0".

【#1267(PR)】 ext03

bit0: G code type

Select the high-speed high-accuracy G code type.
0: Conventional format (G61.1)
1: MITSUBISHI special format (G08P1)

【#1268(PR)】 ext04

bit2 : Enable synchronous tapping per minute

Select whether to enable feed per minute with the F command of synchronous tapping cycle.
0: Disable (Command in pitch regardless of "G group 5" modal)
1: Enable (Follow "G group 5" modal)

【#1269(PR)】 ext05

Not used. Set to "0".

【#1270(PR)】 ext06

bit3 : Finished shape judgement disable

Select to enable/disable the judgement of shape when the finished shape's Z axis (or X axis at G72 command) does not move monotonously. Program error (a shape change at pocket machining) can be avoided when selected to disable.

0 : Enable
1 : Disable

bit5: Coordinate rotation angle without command (for L system only)

Select the operation when there is no rotation angle command R for the coordinate rotation.

0: Use the previously commanded value (modal value). If the command is the first issued command, the rotation angle will be 0°.
1: Use the set value in "#8081 Gcode Rotat".

bit6: Switch continuous thread cutting Z phase wait operation

Select when to start the 2nd block thread cutting when there is a command with no movement (MST command, etc.) between the thread cutting blocks.

0: Wait for the spindle's single rotation synchronization signal before starting the movement.
1: Start movement without waiting for the spindle's single rotation synchronization signal.

bit7: Handle C axis coordinate during cylindrical interpolation

Specify whether to keep the rotary axis coordinate as before the cylindrical interpolation start command is issued during the cylindrical interpolation.

0: Not keep
1: Keep

【#1271(PR)】 ext07

bit0: Mirror image operation

Select the type of mirror image operation.
0: Type 1
- The program mirror image, external mirror image, and parameter mirror image are exclusive to each other.
- An increment command moves the image to the position indicated by the travel amount with the sign inverted.

1: Type 2
- Mirror image operation is enabled when the program mirror image (G51.1) command is issued or when the external signal or parameter is ON.
- An increment command moves the image to the position determined by applying the mirror image to the absolute program coordinates.

bit1: Address specifying fixed cycle repetition count (for M system only)

Select the address that specifies the fixed cycle repetition count.
0: Address L only (Default)
1: Addresses K and L
If addresses K and L are specified simultaneously, the data at address K will be used for operation.

bit2: F-command unit

Select the unit to be used when a thread cutting lead command does not contain decimal point.
0: Type 1 (conventional specifications)
F1 -> 1 mm/rev, 1 inch/rev
1: Type 2
F1 -> 0.01 mm/rev, 0.0001 inch/rev

bit3: G-code group for unidirectional positioning (for M system only)

Select the G-code group for unidirectional positioning.
0: Unmodal G code (group 00)
1: Modal G code (group 01)
Related parameter: "#8209 G60 Shift" (Set the last positioning direction and distance for each axis applicable when the unidirectional positioning command is issued.)

bit4: Operation by independent G40 command

Select whether the radius compensation vector is canceled by the independent G40 command.
0: Type 1 (conventional specification) (Default)
The radius compensation vector will be canceled by the independent G40 command.
1: Type 2
The radius compensation vector won't be canceled by the independent G40 command: it will be canceled by the next travel command for the radius compensation plane.

bit5: Cut start position (for L system only)

Select the position from where cutting begins in a fixed cycle for compound lathe.
0: Conventional specification (Default)
The cut start position will be determined by the final shaping program.
1: Extended specification
The cut start position will be determined from the cycle start point.

bit6: Nose R compensation (for L system only)

Select whether to apply nose R compensation for shapes in a rough cutting cycle.
0: Conventional specification (Default)
The shape after nose R compensation in the final shaping program will be used as rough cutting shape (when the nose R compensation for the final shaping program).
1: Extended specifications
The shape without nose R compensation in the final shaping program will be used as rough cutting shape.

bit7: Cut amount (for L system only)

Select the operation to be performed when the program-specified cut amount exceeds the cut amount of the final shaping program.
0: Conventional specification (Default)
A program error will occur when the program-specified cut amount exceeds the cut amount of the final shaping program.
1: Extended specification
Rough cutting will be performed by one cut when the program-specified cut amount exceeds the cut amount of the final shaping program.

【#1272(PR)】 ext08

bit0: Switch pocket machining operation

Select the pocket machining specification.
- 0: Conventional specification
  Pocket machining will be selected with the H designation.
  The pull direction when pocket machining is ON will be the Z direction.
- 1: Extended specification
  Pocket machining will start only when both X and Z axes are specified in the first travel block after the finished shape start block.
  The pull direction when pocket machining is ON will be the X direction.

bit1: M function synchronous tap cycle

Specify whether to enable the M function synchronous tapping cycle.
- 0: Disable
- 1: Enable

bit2: Spiral/conical interpolation command format 2

Select the command format for spiral and conical interpolation.
- 0: Type 1 (conventional specification)
- 1: Type 2 (with the number of spiral rotation L designation and the increment designation)

bit3: Switch macro call function

Select whether to shift the argument to the subprogram if nests are overlapped when per block call (G66.1) is commanded.
- 0: Shift
- 1: Not shift (Conventional specification)

bit4: Tap cycle selection

Select the tapping cycle.
- 0: Pecking tapping cycle
- 1: Deep hole tapping cycle

bit5: Deep hole tap cycle override selection

Select whether to enable override on the pulling operation during synchronized tapping with the deep hole tapping cycle.
- 0: Disable
- 1: Enable

bit6: Switch corner chamfering/ corner R command format

Select the command format of the corner chamfering/corner R.
- 0: Command format I (conventional format)
  Issue a command with comma (,C and ,R).
- 1: Command format II
  In addition to command format I, addresses without comma can be used to command.
  I/K or C can be used for corner chamfering, while R can be used for corner R.

bit7: Return position after macro interrupt in fixed cycle selection

Select the destination to return to after a macro interrupt in the fixed cycle.
- 0: Return to the block in the fixed cycle.
- 1: Return to the block next to the fixed cycle.

【#1273(PR)】 ext09

bit0: Switch ASIN calculation results range

Select the notation system for operation result of ASIN.
- 0: Do not switch minus figures to positive figures. (-90° to 90°)
- 1: Switch minus figures to positive figures. (270° to 90°)

bit1: Switch system variable unit

Select the unit for the system variable #3002 (time during automatic start).
- 0: 1 ms unit
- 1: 1 hour unit

bit2: Switch G71, G72, G73 cutting direction judgment

Select the cutting direction when the longitudinal rough cutting cycle (G71), face rough cutting cycle (G72) or closed loop cutting cycle (G73) is commanded.
- 0: Conventional specification
  Determined according to the finished shape program.
- 1: Extended specification
  Determined according to the finishing allowance and cutting allowance commanded in the program.

bit3: Facing turret mirror image coordinate value type

Select how to show the workpiece coordinate values of the axis for which the facing turret mirror image is valid.
- 0: Movements in the workpiece coordinate system are in the same direction as those in the workpiece machine coordinate system.
- 1: Movements in the workpiece coordinate system are in the opposite direction to those in the workpiece machine coordinate system.

bit4: Facing turret mirror image valid axis selection

Select the axis for which the facing turret mirror image is valid.
- 0: Fixed to 1st axis.
- 1: Determined according to the plane selected when the facing turret mirror image is commanded.

【#1274(PR)】 ext10

bit7: Word range check

Select whether to check that the operation expression of the word data in the program is enclosed in brackets ([ ]) when the machine program is executed.
This check is also applied to the 08000 to 09999 and the machine tool builder macro program.
0: Not check
1: Check

【#1275(PR)】 ext11

Not used. Set to "0".

【#1276(PR)】 ext12

Not used. Set to "0".

【#1277(PR)】 ext13

bit0: Tool life management II count type 2

Select how and when the mount or use count will be incremented in tool life management II.
The condition to output "tool group life over (TGLO)" signal will be changed accordingly.
0: Type 1 (Default)
Counts up when the spindle tool is used for cutting.
TGLO signal will be output when the last tool in selected group is judged as expired.
1: Type 2
Counts up by one for a tool used or mounted in a program at the time of resetting.
TGLO signal will be output when any of tool groups has reached its lifetime limit.

bit1: Tool life management II life prediction

Select whether to enable tool life prediction function in tool life management II.
0: Disable
1: Enable

bit2: Tool life management II life end signal timing

Select the timing at which tool life prediction signal is output in tool life management II.
0: Output only when the ["life value" - "used value"] matches the remaining life.
("life value" - "used value" = "remaining life")
1: Output when the ["life value" - "used value"] is less than the remaining life.
("life value" - "used value" ≦ "remaining life")

bit3: Tool life management II life end signal tool

Select the tool for which the tool life prediction signal is output in tool life management II.
0: Output the signal tool by tool.
1: Output the signal at the last tool in the group.

bit4: Tool life management II count changeover (For M system only)

Select the tool life count method and its timing.
0: Conforms to "ext13/bit0" setting.
1: When "ext13/bit0" is set to "0":
Counts up by one for a tool used or mounted in a program at the time of resetting.
When "ext13/bit0" is set to "1":
Follow the setting of "Method (Mthd)" on Tool life screen.
The output condition of "tool group life over" signal conforms to "ext13/bit0".

【#1278(PR)】 ext14

bit0: Program restart method selection

Select the program restart type.
0: Restart type A
1: Restart type B

【#1279(PR)】 ext15

bit0: Part system synchronization method

Select the part system synchronization method.
0: If one part system is not in the automatic operation, the synchronization command will be ignored and the next block will be executed.
1: Operate according to the "waiting ignore" signal.
If the "waiting ignore" signal is set to "1", the synchronization command will be ignored. When set to "0", synchronization will be applied.

bit1: Interrupt amount during machine lock

Select when to cancel the interruption amount during machine lock.
0: When resetting
1: During manual reference position return (not when resetting)

bit2: Selection of cutting start interlock target block

Select whether to enable the cutting start interlock for successive cutting blocks.
0: Enable
1: Disable

bit5: Cancel G92 shift distance

Select whether to clear the G92 (coordinate system setting) shift distance when the manual reference position is reached.
0: Not clear
1: Clear

【#1280(PR)】 ext16

bit0: I/F per axis during mixed control (cross axis control)

Select how to handle the following PLC interface for axes interchanged with the mixed control (cross axis control).
- Mirror image
- Manual/automatic interlock
- Manual/automatic machine lock

0: Follows axis configuration before the mixed control (cross axis control).
1: Follows axis configuration after the mixed control (cross axis control).

(Example)
The device No. of automatic interlock (+) for X1 will be as follows when the mixed control (cross axis control) is executed with the 1st axis (X1) in the 1st part system and 1st axis (X2) in the 2nd part system.
When "0" is set: Y820 (interface for 1st axis in 1st part system)
When "1" is set: Y828 (interface for 1st axis in 2nd part system)

(Note) If the number of axes in the part system changes with the mixed control (cross axis control), the interface of the target axis may change when this parameter is set to "1".

(Example)
When 1st part system's C axis is moved to 2nd part system with a 1st part system (X, Z, C, Y) and 2nd part system (X, Z) configuration:
When "1" is set: Y82A, Y7CA, Y8AA and later will be the interface for the C axis moved to the 2nd part system. Y7C2, Y822, Y8A2 and later will be the interface of the Y axis in the 1st part system, because the axes following the removed C axis (third place) are shifted up.

bit1: Mixed control (cross axis control) cancel with reset

Select whether to cancel the mixed control (cross axis control) when reset is applied.
0: Cancel.
1: Not cancel.

bit2: Interchange coordinate position display

Select whether to display interchanged (or moved) coordinate positions in the mixed control (cross axis control).
This setting will be applied when the axes are moved, as well as when the axes are interchanged.
0: Display interchanged (or moved) coordinate positions.
1: Display coordinate positions without being interchanged (nor moved).

(Example)
When 1st part system's C axis is moved to 2nd part system with a 1st part system (X, Z, C, Y) and 2nd part system (X, Z) configuration:
1st part system: X, Z and Y coordinate positions are displayed.
2nd part system: X, Z and C coordinate positions are displayed.

bit3: Reset operation for synchronization/super-imposition control

Select whether to cancel synchronization/superimposition control when reset is applied.
0: Cancel.
1: Not cancel.

bit4: Mixed control (cross axis control) command method

Select how to command mixed control (cross axis control).
0: Use PLC interface signal for mixed control
1: Use G command for mixed control

bit5: Command method of control axis synchronization across part systems

Select how to command the control axis synchronization across part systems.
0: Use PLC I/F.
1: Use G command.

【#1281(PR)】 ext17

bit0: Switch manual high-speed reference position return in synchronous control

Select the movement of synchronized axes in manual high-speed reference position return.
0: Primary and secondary axes start the return synchronizing. Even when one axis stops at its reference position, the other axis continues moving until it reaches its reference position.
1: Primary and secondary axes start the return synchronizing, and when the primary axis stops at the reference position, the secondary also stops. Thus, the relative position of the primary and secondary is kept.

bit3: Synchronous control operation setting

Select whether or not the positioning of secondary axis automatically aligns with that of primary axis when the axis subject to synchronous control is changed from servo OFF to servo ON.
0: The positioning automatically aligns.
1: The positioning does not align.

bit5: High-speed synchronous tapping valid

Select whether to enable the high-speed synchronous tapping.
0: Disable
1: Enable

bit6 : Compensation method for external machine coordinate system/ball screw thermal expansion during synchronization

Select the method of how to compensate the secondary axis when compensating external machine coordinate system or ball screw thermal expansion during synchronization control. The setting of this parameter will be validated when you select synchronous operation method by the synchronization control operation method signal.
0: Primary axis and secondary axis are independently compensated.
1: Primary axis' compensation amount is applied to secondary axis.

bit7: Switch automatic high-speed reference position return in synchronous control

Select the movement of synchronized axes in automatic high-speed reference position return.
0: Primary and secondary axes start the return synchronizing, and when the primary axis stops at the reference position, the secondary also stops. Thus, the relative position of the primary and secondary is kept.
1: Primary and secondary axes start the return synchronizing. Even when one axis stops at its reference position, the other axis continues moving until it reaches its reference position.

【#1282(PR)】 ext18

bit1: Condition of the reference position reached signal in synchronous control

This parameter switches only conditions of a master axis's reference position return reached signal in synchronous operation. A slave axis's signal is output when the slave axis reaches the reference position coordinate.
0: A master axis's reference position reached signal is output only when both of the master and slave axes reach the reference position coordinate by a reference position return.
1: A master axis's reference position reached signal is output when the master axis reaches the reference position coordinate.

bit2: Measurement basic point for tool length measurement I (for L system only)

Select how to specify the measurement base point coordinate for manual tool length measurement I.
0: Specify the coordinate of "#2015 tlml-" as the measurement basic point (default).
1: Specify the workpiece coordinate system offset (modal) as the measurement basic point.

【#1283(PR)】 ext19

Not used. Set to "0".

【#1284(PR)】 ext20

bit0: Spindle speed clamp check

Select whether to check the spindle speed clamp under the constant surface speed control.
0: Check the spindle speed clamp.
1: Not check the spindle speed clamp.
(Note) This parameter is enabled when the parameter "#1146 Sclamp" is set to "1".

【#1285(PR)】 ext21

bit0: Multi-part system program management

Select whether to use multi-part system program management.
0: Not use
1: Use

(Note) When this parameter's value is changed, the power must be turned OFF and ON, and the system formatted. Two or more part systems from [1] to [4] need to be set to "1" in "#1001 SYS_ON". Otherwise this parameter will be disabled even though set to "1".

bit1: Program search type switch

Select how to search a program to operate.
0: Operation search is performed in the selected part system.
1: Operation search is performed for all part systems. (The program No. will be common to all part systems.)

bit2: Multi-part system program generation and operation

Select whether to perform the following processes for all the part systems or for each part system separately in multi-part system program management: newly create, delete or rename the machining programs in NC memory (including MDI program and machine tool builder macro program) or transfer, compare, merge the programs between NC memory and other device.
0: Perform these processes for the programs in all part systems. If no subprogram contents are found by the subprogram call during automatic operation, the program will be searched for from $1.
1: Perform these processes for the programs in the selected part system.

【#1286(PR)】 ext22

bit2: O No. for program input No.

Select the operation when the same program No. is input during data input.
0: The O No. is handled as a character string data.
1: The O No. is handled as a program No. Whether to overwrite the program or cause an error is decided by "#1218 bit7 Input by program overwrite".

bit3: No O No. at machining program input

Select whether to enable the machining program input even if there is no program No. (O No.).
The program No. is fixed to 01 in this case.
0: Disable
1: Enable

bit5: Selection of multi-part system program input/output method

Select whether to perform the transfer from NC memory to other device for all the part systems or for each part system separately in multi-part system program management.
0: Output the designated programs for all the part systems.
1: Output the programs of only the selected part system.

【#1287(PR)】 ext23

bit1: Inclined surface coordinate display (for M system only)

0: Display the position which includes tool length offset.
1: Display the position on the program which excludes tool length offset.

bit2: Inclined surface coordinate display (for M system only)

0: Display the position which includes tool radius compensation.
1: Display the position on the program which excludes tool radius compensation.

bit4: Relative coordinate display

(M system)
0: Display the position which includes tool length offset.
1: Display the position on the program which excludes tool length offset.
(L system)
0: Display the position which includes tool shape compensation.
1: Display the position on the program which excludes tool shape compensation.

bit5: Relative coordinate display

(M system)
0: Display the position which includes tool radius compensation.
1: Display the position on the program which excludes tool radius compensation.
(L system)
0: Display the position which includes nose R compensation.
1: Display the position on the program which excludes nose R compensation.

bit6: Absolute coordinate display

Select how coordinate values are displayed when absolute coordinate display is selected ("#1221 aux05/bit0"="1").
(M system)
0: Display the position which includes tool length offset.
1: Display the position on the program which excludes tool length offset.
(L system)
0: Display the position which includes tool shape compensation.
1: Display the position on the program which excludes tool shape compensation.

bit7: Absolute coordinate display

Select how coordinate values are displayed when absolute coordinate display is selected ("#1221 aux05/bit0"="1").
(M system)
0: Display the position which includes tool radius compensation.
1: Display the position on the program which excludes tool radius compensation.
(L system)
0: Display the position which includes nose R compensation.
1: Display the position on the program which excludes nose R compensation.

【#1288(PR)】 ext24

bit0: MDI program clear

Select whether to clear the MDI programs when MDI operation ends, the power is turned ON again, reset is input, or emergency stop is canceled.
0: Not clear.
1: Clear (save only % programs).

【#1289(PR)】 ext25

bit0: Tool radius compensation switch corner judgment method (Nose R comp.)

Select the criterion to execute the outer rounding at the small corner in tool radius compensation.
(L system)
0: The corner angle is 0°; linear-linear; G02-G03/G03-G02; the radius is the same. (Conventional method)
1: The corner angle is 1° or smaller; linear-linear; G02-G03/G03-G02; the radius is almost the same. (Method for rounding minute corner angle)
(M system)
0: The corner angle is 1° or smaller; linear-linear; G02-G03/G03-G02. (Conventional method)
1: The corner angle is 1° or smaller; linear-linear; G02-G03/G03-G02; the radius is almost the same. (Method for rounding minute corner angle)

【#1290(PR)】 ext26

Not used. Set to "0".

【#1291(PR)】 ext27

Not used. Set to "0".

【#1292(PR)】 ext28

Not used. Set to "0".

【#1293(PR)】 ext29

Not used. Set to "0".

【#1294(PR)】 ext30

Not used. Set to "0".

【#1295(PR)】 ext31

Not used. Set to "0".

【#1296(PR)】 ext32

Not used. Set to "0".

【#1297(PR)】 ext33

Not used. Set to "0".

【#1298(PR)】 ext34

Not used. Set to "0".

【#1299(PR)】 ext35

Not used. Set to "0".

【#1300(PR)】 ext36

bit0: Multiple spindle control II

Select multiple spindle control I or II.
0: Multiple spindle control I (L system only)
1: Multiple spindle control II (select from ladder)

bit7: Spindle synchronization command method

Select the spindle synchronization command method.
0: Spindle synchronization with PLC I/F
1: Spindle synchronization with machining program

【#1301】 nrfchk Near reference position check method

Select the method to judge the "near reference position".
0: Conventional method
1: Command machine position is used.
2: Feedback position is used.

【#1302】 AutoRP Automatic return by program restart

Select the method to move to the restart position when restarting the program.
0: Move the system manually to the restart position and then restart the program.
1: The system automatically moves to the restart position at the first activation after the program restarts.

【#1303(PR)】 V1comN No. of #100 address part system common variables

Set the number of common variables, common for part systems, starting from address #100.
This is valid only when "#1052 MemVal" is set to "1".

---Setting range---
0 to 100

【#1304(PR)】 V0comN No. of #500 address part system common variables

Set the number of common variables, common for part systems, starting from address #500.
This is valid only when "#1052 MemVal" is set to "1".

---Setting range---
0 to 500

【#1306】 InpsTyp Deceleration check specification type

Select the parameter specification type for the G0 or G1 deceleration check.
0: Deceleration check specification type 1
G0 is specified with "#1193 inpos", and G1+G9 with "#1223 aux07/bit1".
1: Deceleration check specification type 2
G0 or G1+G9 is specified with "#1193 inpos".

【#1309(PR)】 GType Switch command format

Select which is used to command the reverse tap.
0: G84.1/G88.1
1: D command with the value changed to negative

【#1310】 WtMmin Minimum value for synchronization M code

Set the minimum value for the M code. When "0" is set, the synchronization M code will be invalid.

---Setting range---
0, 100 to 99999999

【#1311】 WtMmax Maximum value for synchronization M code

Set the maximum value for the M code. When "0" is set, the synchronization M code will be invalid.

---Setting range---
0, 100 to 99999999

【#1312】 T_base Tool life management standard number

Set the standard No. for the tool life management.
When the value specified by the T code command exceeds the set value in this parameter, the set value will be subtracted from the command value, which will be used as tool group No. for tool life management.
When the value specified by the T code command is equal to or less than the set value, the T code will be handled as a normal T code and not subjected to tool life management.
When "0" is set in this parameter, the T code command will always specify a group No. (Valid for M-system tool life management II.)

---Setting range---
0 to 9999

【#1313】 TapDw1 Synchronous tap hole bottom wait time

Set the hole bottom wait time for synchronous tapping.
When P address is specified, the greater value will be used as the hole bottom wait time.
When an in-position check is performed at the hole bottom, the wait time will be provided after the completion of the in-position check.
(Note) This parameter is valid only when "1" is set in "#1223 aux07/bit3" (synchronous tap in-position check improvement) and "#1223 aux07/bit4" (synchronous tap hole bottom in-position check).

---Setting range---
0 to 999 (ms)

【#1314】 TapInp Synchronous tap in-position check width (tap axis)

Set the hole bottom in-position check width for synchronous tapping.
(Note) This parameter is valid only when "1" is set in "#1223 aux07/bit3" (synchronous tap in-position check improvement) and "#1223 aux07/bit4" (synchronous tap hole bottom in-position check).

---Setting range---
0.000 to 99.999

【#1316(PR)】 CrossCom Reference of common variables common for part systems

Select whether to use the common variables from #100100 to #800199.
0: Not use
1: Use
This parameter is valid only when the number of variable sets is set to 600 or more.
When this parameter is set to "1", variables from #100100 to #100110 will not be available as the system variables for PLC data read function, and the setting of "#1052 MemVal" will be invalid.

【#1324(PR)】 Chop_R Chopping compensation value fixing method

Set the head No. of the R register used as the compensation amount save area during fixed compensation amount method.
When the first number is an odd number, the operation message "Setting error" appears.
When the value overlaps with the chopping control data area, the operation message "Setting error" appears.

---Setting range---
8300 to 9782
(Only the even number)
(Within backup area)

【#1326】 PLC Const Ext. Num PLC constant extension number

Set the number of PLC constant extension points.

---Setting range---
0 to 750

【#1327】 3D ATC type Tool change method specification

Select the tool change method for determining the tool to draw solids.
With 3D drawing, the tool will be changed by the method designated with this parameter, and then the image will be drawn.
0: With one standby tool
1: With two standby tools
2: With no standby tool

【#1328】 TLM type Tool measurement standard positions election

Select the tool measurement method.
0: Use the machine position at TLM switch ON as 0.
1: Use the machine basic point as standard.

【#1329】 Emgcnt Emergency stop contactor shut-off time

Set the time taken for the drive section's main power to be shut-off when the confirmation of all the axes' stop failed after the emergency stop state.
The contactor shut-off signal is output as soon as all the axes are confirmed stopped if the confirmation is done prior to the set time.
When there is no safety observation option or "0" is set, the shut-off time will be 30(s).

---Setting range---
0 to 60 (s)

【#1330(PR)】 MC_dp1 Contactor weld detection device 1

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.
If "0" is set, weld detection will not be executed.

---Setting range---
0000 to 02FF (HEX)

【#1331(PR)】 MC_dp2 Contactor weld detection device 2

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.
If "0" is set, weld detection will not be executed.

---Setting range---
0000 to 02FF (HEX)

【#1332(PR)】 F-bus init delay Fieldbus communication error invalid time

Tuning the power ON, start the communication, and then set the time where Fieldbus communication error is not detected.
Set this in 0.1 second increment.

---Setting range---
0 to 255 (0.1s)
Standard: 0

【#1333】 LMC restrain Lost motion compensation restraint in handle mode

Select whether to restrain the lost motion compensation in handle mode.
0: Restrain
1: Not restrain

【#1334】 DI/DO refresh cycl DI/DO refresh cycle

Select the DI/DO refresh cycle.
0: Standard mode
1: High-speed mode 1
2: High-speed mode 2

(Note 1) This setting is valid only for M700VW/M700VS/M700/M70V Series and M70(typeA). "Standard mode" is applied to M70 (typeB) regardless of this parameter.
(Note 2) The speed may not be high if number of ladder steps is excessive.
(Note 3) If high-speed mode is selected, the fine segment processing performance may degrade.

【#1335】 man_smg Manual feed acceleration/deceleration selection

Select the acceleration/deceleration mode in jog feed, incremental feed and manual reference position return (when rapid traverse signal OFF).
0: Acceleration/Deceleration for rapid traverse
1: Acceleration/Deceleration for cutting feed

【#1336(PR)】 #400_Valtype #400 address variable type

Select whether the #400-level variables are used as machine tool builder macro variables or as common variables.
0: #400 to #449 are not available; #450 to #499 are used as machine tool builder macro variables.
1: #400 to #499 are used as common variables

(Note) 700 sets or more of common variables are required for using #400 to #499 as common variables. If this parameter is set to "1" while the number of common variables is set to less than 700, this parameter setting will be regarded as "0".

【#1338(PR)】 rev data save trg Trigger switching to save arbitrary reverse run data

Select the condition to start/stop saving reverse run data.
0: Start when the reverse run control mode signal is turned ON. Stop when turned OFF.
1: Start when the reverse run control mode signal is ON and macro interrupt is valid (M96/ION).
Stop when the reverse run control mode signal is OFF or macro interruption is finished (M97/IOF) (compatible with M500M).

【#1339(PR)】 MC_dp3 Contactor weld detection device 3

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.
If "0" is set, weld detection will not be executed.

---Setting range---
000 to 02FF (HEX)

【#1340(PR)】 MC_dp4 Contactor weld detection device 4

When safety observation is executed, set the remote I/O device to input the contactor's auxiliary b contact signal used for the contactor weld detection.
If "0" is set, weld detection will not be executed.

---Setting range---
000 to 02FF (HEX)

【#1341(PR)】 ssc_rio Safety observation remote I/O connection

Assign the safety observation function's door switch input device and contactor shutoff output device to the remote I/O.
Select whether to enable or disable the assignment.
0: Disable
1: Enable

【#1342】 AlmDly Alarm display delay time

Set a time between when an operation alarm occurs and when the alarm display and signal turn ON.
When set to "0", the alarm display and signal will turn ON immediately after the alarm occurrence.
When set to "-1", the alarm display and signal will not turn ON after the alarm occurrence.
Target alarms:
M01 External interlock axis found 0004
M01 Internal interlock axis found 0005
M01 Sensor signal illegal ON 0019
M01 No operation mode 0101

---Setting range---
-1 to 30000 (ms)

【#1349(PR)】 DOOR_1 Door 1 switch input device

Set a remote I/O device to input the door sensor signal to detect Door 1's status in safety observation.
When "0" is set, the door is always detected to be open.
Thus, "X0" cannot be used as Door 1 switch input device.

---Setting range---
0000 to 02FF (HEX)

【#1350(PR)】 DOOR_2 Door 2 switch input device

Set a remote I/O device to input the door sensor signal to detect Door 2's status in safety observation.
When "0" is set, the door is always detected to be open.
Thus, "X0" cannot be used as Door 2 switch input device.

---Setting range---
0000 to 02FF (HEX)

【#1353(PR)】 MC_ct1 Contactor shutoff output 1 device

Set a device of an output remote I/O device to control contactor in safety observation.
When set to "0", contactor shutoff output is disabled.
Thus, "Y0" cannot be used as contactor shutoff output device.

---Setting range---
0000 to 02FF (HEX)

【#1357(PR)】 mchkt1 Contactor operation check allowed time 1

Set a period of time until emergency stop is issued when a contactor does not operate even though contactor shutoff output 1 is output.
If the vertical axis drop prevention function is used, set a value bigger than the vertical axis drop prevention time (SV048 EMGrt).
When "0" is set, the contactor operation check will be disabled.

---Setting range---
0 to 30000 (ms)

【#1361(PR)】 aux_acc Auxiliary axis acceleration/deceleration type

Select the acceleration/deceleration type of auxiliary axis in PLC axis indexing.
0: Acceleration/deceleration with constant time
1: Acceleration/deceleration with a constant angle of inclination

【#1365】 manualFtype Manual speed command type

Select the manual speed command type.
0: Manual speed command
The axis travels at the handle/jog feed rate.
Reverse run is performed for each part system independently of the other ones.
1: Manual speed command 2
In a multi-part system configuration, the axis travels at the handle/jog feed rate multiplied by the ratio of each part system's program command speeds.
When the block start point is reached in reverse run in any of the part systems, the axes in the other part systems stop simultaneously.

【#1366】 skipExTyp Multi-system simultaneous skip command

Select the operation when G31 is commanded in more than one part system.
(Note) When set to "1", the skip coordinate position will always be "0" whether G31 is commanded in a single part system or in one part system of a multi-part system. Set to "0" when using G31 command for measurement etc.
0: Carry out G31 command in one part system, while the G31 is kept in an interlocked state in the other systems.
1: Carry out G31 command simultaneously in more than one part system.
Note that the skip coordinate is not read and so the skip coordinate value will be 0.

【#1367】 G1AccOVRMax Max. override value for cutting feed constant inclination acc./dec.

Set the maximum override value to be applied to the cutting feed that is in constant inclination acceleration/deceleration.
When the setting of this parameter is between 0 and 99, the override value is handled as 100% even though the specified cutting feed override is over 100%.

---Setting range---
0 to 300(%)

【#1493(PR)】 ref_syn Synchronization at zero point initialization

0: Primary axis and second axis determine their zero points individually.
1: The zero points of both primary and secondary axes are determined by initializing the primary axis' zero point.

The secondary axis moves in perfect synchronization with the primary axis.
Set this to "1" for speed/current command synchronization control.

【#1494(PR)】 dsp_ax_change Axis order of counter display

Set this in order to change the axis order of counter display.
The axes will be displayed in ascending order of the setting values "1" to "8".
However, axis whose setting is "0" will be displayed after axes whose settings are between "1" and "8" are displayed.

(Note 1) When the same value is set for more than one axis, axis that is displayed on the left side on the parameter screen will be first displayed.
(Note 2) When both of the mixed control (cross axis control) and interchange coordinate position display ("1280 ext16/bit2" OFF) are valid, and when there are two or more valid part systems, this parameter will be ignored.

---Setting range---
1 to 8: Axes are displayed in ascending order.
Other than 1 to 8: Axes are displayed after the display of the axes with setting value "1" to "8".

【#1495(PR)】 grf_ax_direction Axis travel direction in 2D graphic

Select the axis travel direction in the 2D graphic drawing (trace, check).
If set to 1, the positive/negative directions are reversed.

---Setting range---
0/1

【#1501】 polyax Rotational tool axis number (for L system only)

Set the number of the rotational tool axis used for polygon machining (G51.2). Set "0" when not using polygon machining (spindle-servo axis), or when using spindle-spindle polygon machining. A value exceeding the base specification parameter "#1002 axisno" cannot be specified.
This parameter is valid when the G code system is 6 or 7 (7 or 8 is set in base specification parameter "#1037 cmdtyp").

【#1502】 G0lpfg G1 -> G0 deceleration check

Select whether to perform a deceleration check when the travel direction is changed from G1 to G0.
0: Not perform
1: Perform

【#1503】 G1lpfg G1 -> G1 deceleration check

Select whether to perform a deceleration check when the travel direction is changed from G1 to G1.
0: Not perform
1: Perform

【#1505】 ckref2 Second reference position return check

Select whether the check is carried out at the specified position in manual second reference position return mode upon completion of spindle orientation or at second reference position return interlock signal.
0: Upon completion of spindle orientation
1: At second reference position return interlock signal

【#1506】 F1_FM Upper limit of F1-digit feedrate

Set the maximum value up to which the F 1-digit feedrate can be changed.

---Setting range---
0 to 1000000 (mm/min)

【#1507】 F1_K F 1-digit feedrate change constant

Set the constant that determines the speed change rate per manual handle graduation in F 1-digit feedrate change mode.

---Setting range---
0 to 32767

【#1510】 DOOR_H Shorten door interlock II axis stop time

Select whether to shorten the time during which the axis is stopped when the door is opened.
0 : Use the conventional axis stop time.
1 : Shorten the axis stop time.

(Note) When the door interlock II signal is input via a ladder, the conventional axis stop time will be used.

【#1511】 DOORPm Signal input device 1 for door interlock II: for each part system

Set the fixed device number (X??) for door interlock II signal input for each part system.
A device number from X01 to XFF can be specified.(Except X100.)
Device number "000" is invalid.
Set device number "100" when using no fixed device number for door interlock II signal input.
Related parameter: "#1154 pdoor (Door interlock II for each part system) "

---Setting range---
000 to 2FF (hexadecimal)

【#1512】 DOORPs Signal input device 2 for door interlock II: for each part system

Set the fixed device number (X??) for door interlock II signal input for each part system.
(Set the same value as that of #1155.)
Related parameter: "#1154 pdoor (Door interlock II for each part system)"

---Setting range---
000 to 2FF (hexadecimal)

【#1513】 stapM M code for synchronous tap selection

Set the M code for the synchronous tapping selection.
Select the synchronous tapping mode using the miscellaneous function code of the value set in this parameter. The M function command can be issued immediately before the tap command or in the same block. This function is valid only when "1" is set in "#1272 ext08/ bit1 (Enable/disable M-function synchronous tap cycle)".
(Note) Do not use M00, 01 02, 30, 98, and 99.

---Setting range---
0 to 99999999

【#1514】 expLinax Exponential function interpolation linear axis

Set the axis name for the linear axis used in exponential function interpolation.

---Setting range---
A to Z

【#1515】 expRotax Exponential function interpolation rotary axis

Set the axis name for the rotary axis used in exponential function interpolation.

---Setting range---
A to Z

【#1516】 mill_ax Milling axis name

Set the name of the rotary axis used in milling interpolation. Only one rotary axis can be set. When there is no E command in issuing the G12.1 command, this parameter will be followed.

---Setting range---
A to Z

【#1517】 mill_C Milling interpolation hypothetical axis name

Select the hypothetical axis command name for milling interpolation.
When there is no D command in issuing the milling interpolation command, this parameter will be followed.
0: Y axis command
1: Command rotary axis name.

【#1518】 polm Spindle-spindle polygon Workpiece spindle No.

Set the workpiece axis No. used in spindle-spindle polygon machining.
(Note) The 1st spindle will be selected when "0" is set.

【#1519】 pols Spindle-spindle polygonTool spndle No.

Set the number of the rotary tool spindle used in spindle-spindle polygon machining.
(Note) The 2nd spindle will be selected when "0" is set.

【#1520(PR)】 Tchg34 Additional axis tool compensation operation (for L system only)

Select axis to carry out the additional axis' tool compensation function.
0: 3rd axis.
1: 4th axis.

【#1521】 C_min Minimum turning angle

Set the minimum turning angle of the normal line control axis at the block joint during normal line control.

---Setting range---
0.000 to 360.000 (°) (Input setting increment applies)

【#1522(PR)】 C_axis Normal line control axis

Set the number of the axis for normal line control.
Set a rotary axis No.
0: Normal line control disabled
1 to 8: Axis No. (number of control axes)

【#1523】 C_feed Normal line control axis turning speed

Set the turning speed of the normal line control axis at the block joint during normal line control.
Set a value that does not exceed the normal line control axis' clamp speed ("#2002 clamp"). This is valid with normal line control type I.

---Setting range---
0 to 1000000 (°/min)

【#1524】 C_type Normal line control type

Select the normal line control type.
0: Normal line control type I
1: Normal line control type II

【#1533】 millPax Pole coordinate linear axis name

Set the linear axis name used for pole coordinate interpolation.

---Setting range---
Axis name such as X, Y or Z

【#1534】 SnG44.1 Spindle No. for G44.1 command

Set the selected spindle No. for the G44.1 command.
The setting range differs according to the model.
If a spindle that does not exist is set, the 2nd spindle will be used. Note that if there is only one spindle, the 1st spindle will be used.
0: 2nd spindle
1: 1st spindle
2: 2nd spindle
3: 3rd spindle
4: 4th spindle
5: 5th spindle
6: 6th spindle

【#1535】 C_leng Minimum turning movement amount

Set the minimum turning movement amount of the normal line control axis at the block joint during normal line control.

---Setting range---
0.000 to 99999.999 (mm) (Input setting increment applies)

【#1537】 crsax[1] Mixed control (cross axis control) axis

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1538】 crsax[2]

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1539】 crsax[3]

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1540】 crsax[4]

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1541】 crsax[5]

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1542】 crsax[6]

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1543】 crsax[7]

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1544】 crsax[8]

Set the axis to be interchanged during the mixed control (cross axis control).
Using two digits, set the name of the axis to be interchanged with the axis in the part system where the mixed control (cross axis control) request signal is input, or the name of the axis to be shifted to that part system.

---Setting range---
Two digits between A to Z and 1 to 9
(Setting will be cleared when "0" is set)

【#1561】 3Dcdc Switch workpiece coordinate display during 3D coordinate conversion

Select the workpiece coordinate display during 3D coordinate conversion.
0: Workpiece coordinate system
1: G68 program coordinate system
(Note) The special display unit's absolute coordinates also follow this parameter setting.

【#1562】 3Dremc Switch remaining command display during 3D coordinate conversion

Select the remaining command display during 3D coordinate conversion.
0: Workpiece coordinate system
1: G68 program coordinate system

【#1563】 3Dcdrc Switch coordinate reading during 3D coordinate conversion

Select the coordinate system of the workpiece/skip coordinate read value in the 3D coordinate conversion modal.
0: G68 program coordinate system
1: Workpiece (local) coordinate system

【#1564】 3Dspd Hole drilling speed during 3D coordinate conversion

Select the rapid traverse rate for the hole drilling cycle during 3D coordinate conversion.
0: The cutting feed clamp speed is used.
Other than 0: The set speed is used.
Note that if the rapid traverse rate is exceeded, the speed will be clamped at the rapid traverse rate.

---Setting range---
0 to 1000000mm/min

【#1565】 helgear Helical machining base axis

Set the base axis for helix angle calculation in helical machining. When no setting, Z axis will be used.

---Setting range---
Axis name such as X, Y, Z, U, V, W, A, B, and C

【#1566】 3DSelctDrillaxMode Switch drill axis's mode from rapid traverse during 3D coordinate conversion

Select the rapid traverse mode in non-drilling blocks among a drilling cycle to the cutting feed mode during 3-dimensional coordinate conversion.
0: Rapid traverse mode. The speed follows the setting of "#2001 rapid".
1: Cutting feed mode. The speed follows the setting of "#1564 3Dspd".

【#1568】 SfiltG1 G01 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the cutting feed acceleration/deceleration in pre-interpolation acceleration/deceleration.

---Setting range---
0 to 200 (ms)

Notch frequency Hz

Displays the notch frequency(Hz) for the S-pattern filter set in "#1568 SfiltG1 (G01 soft acceleration/deceleration filter)"

【#1569】 SfiltG0 G00 soft acceleration/deceleration filter

Set the filter time constant for smoothly changing the acceleration rate for the rapid traverse acceleration/deceleration in pre-interpolation acceleration/deceleration.

---Setting range---
0 to 200 (ms)

【#1570】 Sfilt2 Soft acceleration/deceleration filter 2

Set the filter time constant for smoothly changing the acceleration rate in pre-interpolation acceleration/deceleration.
This will be disabled when "0" or "1" is set.

---Setting range---
0 to 50 (ms)

Notch frequency Hz

Displays the notch frequency(Hz) for the S-pattern filter set in "#1570 Sfilt2 (Soft acceleration/deceleration filter 2)".

【#1571】 SSSdis SSS control adjustment coefficient fixed value selection

Fix the shape recognition range for SSS control.

【#1572】 Cirorp Arc command overlap

This eliminates speed fluctuations at the joint of the arc and straight line and arc and arc.
Set as a bit unit.
0: Do not overlap the arc command blocks
1: Overlap the arc command blocks

bit0 : Arc command during high-speed high-accuracy control II

bit1 : Arc command during high-speed machining mode II

bit2 : Arc command during high-accuracy control (G61.1)

bit3 : Arc command during cutting mode (G64)

The line command block and arc command block won't be overlapped during G61.2 modal regardless of this setting.
(Note) This parameter is invalid during SSS control.

【#1573】 Ret1 Return type 1

Select the axis to be moved later after tool return.
This is referred to with the movement path (transit point #1 -> interrupt point).
Up to eight axes can be specified by expressing one axis with one bit.

bit0 : Transit point #1 1st axis

bit1 : Transit point #1 2nd axis

bit2 : Transit point #1 3rd axis

bit3 : Transit point #1 4th axis

bit4 : Transit point #1 5th axis

bit5 : Transit point #1 6th axis

bit6 : Transit point #1 7th axis

bit7 : Transit point #1 8th axis

---Setting range---
00000000 to 11111111 (Binary)

【#1574】 Ret2 Return type 2

Select the axis to be moved later after tool return.
This is referred to with the movement path (return start point -> transit point #2).
Up to eight axes can be specified by expressing one axis with one bit.

bit0 : Transit point #2 1st axis

bit1 : Transit point #2 2nd axis

bit2 : Transit point #2 3rd axis

bit3 : Transit point #2 4th axis

bit4 : Transit point #2 5th axis

bit5 : Transit point #2 6th axis

bit6 : Transit point #2 7th axis

bit7 : Transit point #2 8th axis

---Setting range---
00000000 to 11111111 (Binary)

【#1590】 Animate ax direct Machine status animated display axis direction(+/-)

<bit0>

0: 1st axis + direction is set to the right direction.
1: 1st axis + direction is set to the left direction.

<bit1>

0: 2nd axis + direction is set to the rear direction.
1: 2nd axis + direction is set to the front direction.

<bit2>

0: 3rd axis + direction is set to the top direction.
1: 3rd axis + direction is set to the bottom direction.

【#1591】 Animate ax-1 Machine status animated display axis name (1st axis)

Set the name of the 1st axis displayed with the machine status animation. When the axis name is not specified, the current 1st axis name ("#1013 axname") will be used.

---Setting range---
Axis name such as X, Y, Z

【#1592】 Animate ax-2 Machine status animated display axis name (2nd axis)

Set the name of the 2nd axis displayed with the machine status animation. When the axis name is not specified, the current 2nd axis name ("#1013 axname") will be used.

---Setting range---
Axis name such as X, Y, Z

【#1593】 Animate ax-3 Machine status animated display axis name (3rd axis)

Set the name of the 3rd axis displayed with the machine status animation. When the axis name is not specified, the current 3rd axis name ("#1013 axname") will be used.

---Setting range---
Axis name such as X, Y, Z

【#1901(PR)】 station addr

Not used. Set to "0".

【#1902(PR)】 Din size

Not used. Set to "0".

【#1903(PR)】 Dout size

Not used. Set to "0".

【#1904(PR)】 data length

Not used. Set to "0".

【#1905(PR)】 baud rate

Not used. Set to "0".

【#1906(PR)】 stop bit

Not used. Set to "0".

【#1907(PR)】 parity check

Not used. Set to "0".

【#1908(PR)】 even parity

Not used. Set to "0".

【#1909(PR)】 Tout (ini)

Not used. Set to "0".

【#1910(PR)】 Tout (run)

Not used. Set to "0".

【#1911(PR)】 clock select

Not used. Set to "0".

【#1925】 EtherNet Start of service

Start or stop the Ethernet communication function.
0: Stop
1: Start

【#1926(PR)】 Global IP address IP address

Set the main CPU's IP address.
Set the NC IP address seen from an external source.

【#1927(PR)】 Global Subnet mask Subnet mask

Set the subnet mask for the IP address.

【#1928(PR)】 Global Gateway Gateway

Set the IP address for the gateway.

【#1929】 Port number Port No.

Set the port No. for the service function.

---Setting range---
1 to 9999
(Set 2000 when not connected to the Ethernet.)

【#1930(PR)】 Host address Host address

Set the host's IP address.

【#1931(PR)】 Host number Host No.

Set the host's port No.

---Setting range---
1 to 9999

【#1934(PR)】 Local IP address

Set the HMI side CPU's IP address.
(Note) This parameter is valid only for M700/M700VW Series.

【#1935(PR)】 Local Subnet mask

Set the HMI side CPU's subnet mask.
(Note) This parameter is valid only for M700/M700VW Series.

【#11001(PR)】 APC type APC screen display type selection

Set the type of screen displayed with the pallet program registration screen.
0: Standard pallet registration screen
1: Pallet 4-page registration screen

【#11002(PR)】 Valid pallet num Number of pallets setting

Set the number of pallets validated on the pallet program registration screen.

---Setting range---
2 to 12 (Interpreted as 2 when 0 is set.)

【#11003(PR)】 APLC valid APLC valid

Temporarily disable APLC.
Normally set "1".
0: Disable
1: Enable

【#11004(PR)】 PLCauto-run enable PLC automatic startup valid

Select starting condition of the built-in PLC.
0: Start PLC after NC screen startup
1: Start PLC at NC startup
(Note) When standard NC screen is not used, set "1".

【#11005(PR)】 PC IP address IP address setting

Set the IP address for the display unit or PC in which machining programs are stored.
Set the IP address for the display unit on which the automatic power OFF will be executed.
When the 3D machine interference check function is enabled, set the IP address of the display unit that is used for the 3D machine interference check (for M700VW only).
(Note 1) When "0.0.0.0" is input, "192.168.100.2" is automatically set.
(Note 2) This parameter is valid only for M700VW/M700 Series.

PC Subnet

Set the subnet mask for the display unit or PC in which machining programs are stored.

PC Gateway

Set the gateway for the display unit or PC in which machining programs are stored.

【#11006】 PC Port number Port No. setting

Set the port No. for the display unit or PC in which machining programs are stored.
(Note 1) When "0" is input, "55555" is automatically set.
(Note 2) When changing the parameter, set the same value in "PD_Control_Port" in the PC side environment setting file.

---Setting range---
0 to 65535

【#11007】 PC Timeout Communication timeout time setting

Set the NC side communication timeout time.
(Note 1) When "0" is input, "30" is automatically set.
(Note 2) When the value greater than "300" is set, a setting error occurs.
(Note 3) When changing the parameter, set the same value in "PD_Time_out" in the PC side environment setting file.

---Setting range---
0 to 300 (s)

【#11009(PR)】 M2 label O M2 label O

Select the program number label when using the M2 format.
0: Label L
1: Label O

【#11010(PR)】 Software keyboard Software keyboard

Select with touch panel whether to use software keyboard.
0: Do not use
1: Use
2: Use (Note1)
(Note1) Software keyboard automatically appears on a specific screen. (For M700VS/ M70V/M70 Series only).

【#11011】 Handy TERM. PW. Handy terminal password

Set the password used for the handy terminal customized downloading.
Blank (when "0" is set) and "0000" are regarded as no password.
Not the password of a new customizing file but the password of the customizing file downloaded to the last handy terminal is set.
Set blank or "0000" when initially downloading.

---Setting range---
0000 to 9999

【#11012(PR)】 16 axes for 1ch Connecting 16 axes for 1ch

Select the maximum number of axes (sum of the NC axis, spindle, and PLC axis) connected to the drive unit interface (channel 1) when not using the extension unit (FCU7-EX891+HN552)
0: Up to 8 axes can be connected to channel 1.
1: Up to 16 axes can be connected to channel 1. This parameter is disabled when the extension unit is connected. It is possible to connect only up to eight axes or less per channel.

【#11013】 3D_MChk Invalidate 3D machine interference check

Select whether to enable the 3D machine interference check function.
0: Enable
1: Disable

【#11014】 Chk_len1 1st-step interference check distance

Set the 1st-step check distance when in 3D machine interference check mode.
The standard value is "30.000".

---Setting range---
0.000 to 99999.999(mm)

【#11015】 Chk_len2 2nd-step interference check distance

Set the 2nd-step check distance when in 3D machine interference check mode.
The standard value is "5.000".

---Setting range---
0.000 to 99999.999(mm)

【#11016】 Expand_Rate Shape expansion rate

Set the model shape expansion rate to be used for 3D machine interference check. This parameter is used for expanding a model shape to be used for 3D machine interference check. The interference check is performed using a shape expanded by the amount of [Check length (mm) x Shape expansion rate (%)].

---Setting range---
0 to 300(%)

【#11017】 T-ofs set at run

Select whether to enable the tool compensation amount setting and life value setting during automatic operation and operation pause.
0: Disable
1: Enable

【#11018】 M password hold

Select whether to enable the "Machine user" password holding.When this is set to "1", the "Machine user" password will be held.
0: Disable
1: Enable

【#11019】 2-system display 2-part system simultaneous display

Select whether to validate 2-part system simultaneous display on operation screen.
0: Display one part system on operation screen
1: Display two part systems simultaneously on operation screen
2: Display two part systems simultaneously (Display type 2) on operation screen

(Note 1) Unless you set "1" in two or more of "#1001 SYS_ON [1] to [4]", two-part system simultaneous display will fail regardless of this parameter.

【#11021】 PLC mesg disp type Format of PLC alarm and operator message

Select the format of PLC alarms and operator messages to be displayed on the bottom right of the screen.
0: Display up to the first 40 characters.
1: If text is longer than 40 characters, divide it into two and display separately. (Classification No. is displayed together)

【#11022】 SRAM Output Type SRAM output type

Set the SRAM output type.
(Note) In M700 Series, the conventional SRAM output type is set regardless of the setting of this parameter.
0: The latest SRAM output type is set.
(Not compatible with F3 and versions older than F3.)
1: The conventional SRAM output type is set.
(Compatible with F3 and versions older than F3.)

【#11023】 G33.n Drn G33.n dryrun

Select whether to enable dry run in C axis interpolation type thread cutting. The standard setting is "0".
0: Enable
1: Disable

【#11024】 G33.n fhd G33.n feed hold

Select whether to enable feed hold in C axis interpolation type thread cutting. The standard setting is "0".
0: Disable
1: Enable

【#11028】 Tolerance Arc Cent Tolerable correction value of arc center error

Set the tolerable correction value for the calculated coordinate value error of R-specified circular center.
When a difference between "a line between the start and end points" and "commanded radius x 2" is the tolerance or smaller, the error is corrected so that the middle of a line between the start and end points will be the arc center.

When [Setting value < 0] : 0 (Not correct)
When [Setting value = 0] : 2 x minimum setting increment
When [Setting value > 0] : Setting value

---Setting range---
-1 to 0.100(mm)

【#11029】 Arc to G1 no Cent Change command from arc to linear when no arc center designation

Select the operation when arc center or radius designation is omitted from arc command.
0: Program error
1: Change into linear command

【#11030】 Man tap sync cancl Synchronization cancel in manual synchronous tapping

Select whether the tapping axis in manual synchronous tapping synchronizes with the spindle.
0: Synchronize with the spindle
1: Not synchronize with the spindle

【#11031(PR)】 Cursor pos search Cursor position search

Select the cursor position searching method.
0: Disable
1: Pressing the INPUT key in [Monitr] - [Edit] menu starts the operation search for the block with the cursor.
2: Turning ON/OFF the "Edit/Search" signal in [Monitr] - [Edit] menu starts the operation search for the block with the cursor.
3: Turning ON/OFF the "Edit/Search" signal in [Monitr] - [Edit] menu starts the operation search for the block with the cursor. Pressing the reset key shows the top of the program on the [Edit/Search] window.

【#11032(PR)】 Menu sel para lkof Validate menu selection parameter setting

Select whether to enable the setting of the "menu selection parameters" (#10501 to #10530, #10551 to #10580, and #10601 to #10630), with which the order of main menus on Monitor, Setup and Edit screens can be rearranged. And also select who is allowed to do this setting.
0: Disable
1: Enable (machine tool builder password is required)
2: Enable (users are allowed to set)

【#11033(PR)】 skipB_no_sens Unconnected sensor selection when skip is set to contact B

Select the contact of the sensor which you wish to set as unconnected, when the skip signal is set to contact B.
Set "1" for the contact to be unconnected.
bit0: Skip input 1
bit1: Skip input 2
bit2: Skip input 3
bit3: Skip input 4
bit4: Skip input 5
bit5: Skip input 6
bit6: Skip input 7
bit7: Skip input 8
(Note 1)This parameter is enabled when "#1258 set30/bit0" is set to "1".
(Note 2)This parameter is independent of PLC skip.

---Setting range---
00000000 to 11111111 (Binary)

【#11034】 G12AddrCheckType Command address type to check in circular cutting

Select the type of command address to check in circular cutting.
0: Regard command addresses other than D, F, I as illegal.
1: Regard the command address H as illegal. And commands other than D,F,I and M,S,T,B are disabled.

【#11035】 Sys. change limit Part system switching restriction

This restricts switching the part systems displayed on screen.
0: Not restrict
1: Disable the part system switching by pressing [$<->$] key on touch panel.
2: Disable the part system switching by display switch signals(Y730 to Y733).

【#11036】 meas dir judge Non-sensitive band for manual measurement direction judgment (for M system only)

Set the non-sensitive band to be used for judging the manual measurement direction. If the feedback position fluctuates widely at the axis stop, set the fluctuation width or larger value in this set the parameter.
When set to "0", the band will be 1(um).

---Setting range---
0 to 1000(um)
0: 1(um)

【#12001】 ManualB RectanA xH Manual feed rate B constant surface control intersecting part system axis name (horizontal)

Set the part system axis name ("#1013 axname") for the two axes that intersect with the rotary axis direction. When one of the two axes is blank, a constant speed will be applied without using constant surface speed control.

---Setting range---
Axis addresses such as X, Y, Z, U, V, W, A, B, and C

【#12002】 ManualB RectanA xV Manual feed rate B constant surface control intersecting part system axis name (vertical)

Set the part system axis name ("#1013 axname") for the two axes that intersect with the rotary axis direction. When one of the two axes is blank, a constant speed will be applied without using constant surface speed control.

---Setting range---
Axis addresses such as X, Y, Z, U, V, W, A, B, and C

【#12003】 ManualB RotCent erH Manual feed rate B constant surface control rotation center machine position (horizontal)

Set the machine coordinate position (horizontal axis) at the center of the rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#12004】 ManualB RotCent erV Manual feed rate B constant surface control rotation center machine position (vertical)

Set the machine coordinate position (vertical axis) at the center of the rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#12005(PR)】 Mfig Number of M

Set the number of M that can be specified within the same block.

---Setting range---
1 to 4

【#12006(PR)】 Mbin M binary

Data type 0 BCD
Data type 1 Unsigned binary
Data type -1 Singed binary

<For unsigned binary>
The absolute value "1" is output for "-1".
<For singed binary>
"-1" is output as "0xFFFFFFFF".

---Setting range---
Data type
(-1,0,1)

【#12007(PR)】 Sfig Number of S

Set the number of spindles.
(Note 1) The setting range differs according to the model.
(Note 2) Sfig is set in the range of 1 to 6. However, the number of outputs by Sfig cannot be controlled. Thus, only one S command is output regardless of the Sfig setting value.

---Setting range---
1 to 6

【#12008(PR)】 Sbin S binary

Data type 0 BCD
Data type 1 Unsigned binary
Data type -1 Singed binary

<For unsigned binary>
The absolute value "1" is output for "-1".
<For singed binary>
"-1" is output as "0xFFFFFFFF".
(Note 1) Sbin can be set with "-1", "0" and "1", but the S command cannot be BCD output.
If BCD (0) is selected for Sbin, it will be handled as a singed binary (-1).

---Setting range---
Data type
(-1,0,1)

【#12009(PR)】 Tfig Number of T

Set the number of T that can be specified within the same block.

---Setting range---
1 to 4

【#12010(PR)】 Tbin T binary

Data type 0 BCD
Data type 1 Unsigned binary
Data type -1 Singed binary

<For unsigned binary>
The absolute value "1" is output for "-1".
<For singed binary>
"-1" is output as "0xFFFFFFFF".

---Setting range---
Data type
(-1,0,1)

【#12011(PR)】 Bfig Number of B

Set the number of T that can be specified within the same block.

---Setting range---
1 to 4

【#12012(PR)】 Bbin B binary

Data type 0 BCD
Data type 1 Unsigned binary
Data type-1 Singed binary

<For unsigned binary>
The absolute value "1" is output for "-1".

<For singed binary>
"-1" is output as "0xFFFFFFFF".

---Setting range---
Data type
(-1,0,1)

【#12013】 G33.n rot G33.n rotary axis name

Select the axis to use as C axis with its axis name.

---Setting range---
A to Z

【#12014】 G33.n ovr G33.n override

Select which spindle's override is applied in C axis interpolation type thread cutting.
Setting values 1 to 6 correspond to the 1st to 6th spindles respectively.
Setting "0" disables the spindle override in thread cutting blocks: The override will be fixed to 100%.

---Setting range---
0 to 6
Standard value: 0

3. Axis Specifications Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

【#2001】 rapid Rapid traverse rate

Set the rapid traverse feedrate for each axis.
(Note) The maximum value to be set depends on the machine specifications.

---Setting range---
1 to 1000000 (mm/min)

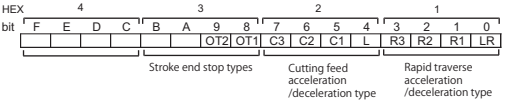
【#2002】 clamp Cutting feedrate for clamp function

Set the maximum cutting feedrate for each axis.
Even if the feedrate in G01 exceeds this value, the clamp will be applied at this feedrate.

---Setting range---
1 to 1000000 (mm/min)

【#2003(PR)】 smgst Acceleration and deceleration modes

Set acceleration and deceleration control modes.
Set value is in hexadecimal.



HEX-1 Rapid traverse acceleration/deceleration type

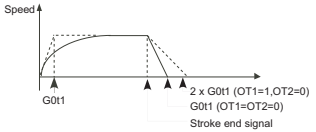
0(bit3,2,1,0 = 0000) : Step
1(bit3,2,1,0 = 0001) : Linear acceleration/deceleration
2(bit3,2,1,0 = 0010) : Prim ary delay
8(bit3,2,1,0 = 1000) : Exponential acceleration and linear deceleration
F(bit3,2,1,0 = 1111) : Soft acceleration/deceleration
(Note) R1 > R3 when both R1 and R3 contain 1.

HEX-2 Cutting feed acceleration/deceleration type

0(bit7,6,5,4 = 0000) : Step
1(bit7,6,5,4 = 0001) : Linear acceleration/deceleration
2(bit7,6,5,4 = 0010) : Prim ary delay
8(bit7,6,5,4 = 1000) : Exponential acceleration and linear deceleration
F(bit7,6,5,4 = 1111) : Soft acceleration/deceleration

HEX-3 Stroke end stop types

0(bit9,8 = 00) : Linear deceleration (Decelerates at G0t1)
1(bit9,8 = 01) : Linear deceleration (Decelerates at 2×G0t1)
2(bit9,8 = 10) : Position loop step stop
3(bit9,8 = 11) : Position loop step stop



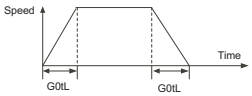
(Note) OT1(bit8) is valid under the following conditions (valid for dog type zero point return):
- Stop type: Linear deceleration
- Acceleration/Deceleration mode: Exponential acceleration and Linear deceleration

HEX-4

Not used. Set to "0".

【#2004】 G0tL G0 time constant (linear)

Set a linear control time constant for rapid traverse acceleration and deceleration.
The time constant will be enabled when LR (rapid traverse feed with linear acceleration/deceleration) or F (soft acceleration/deceleration) is selected in "#2003 smgst Acceleration and deceleration modes".

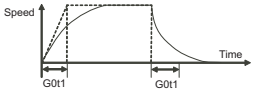


---Setting range---
1 to 4000 (ms)

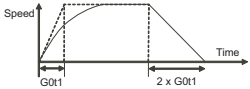
【#2005】 G0t1 G0 time constant(primary delay) / Second-step time constant for soft acceleration/deceleration

Set a primary-delay time constant for rapid traverse acceleration and deceleration.
The time constant will be enabled when R1 (rapid traverse feed with primary delay) or R3 (exponential acceleration and linear deceleration) is selected in "#2003 smgst Acceleration and deceleration modes".
When the soft acceleration/deceleration is selected, the second-step time constant will be used.

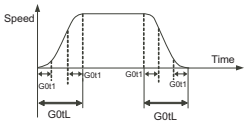
<Rapid traverse feed with primary delay>



<Rapid traverse feed with exponential acceleration and linear deceleration>



<Soft acceleration/deceleration>
- When "#1219 aux03/bit7" is set to "0"



(Note) The time constant setting for the soft acceleration/deceleration can be changed by the setting of "#1219 aux03/bit7"

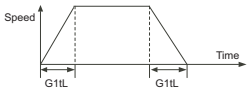
---Setting range---
1 to 5000 (ms)

【#2006】 G0t2

Not used. Set to "0".

【#2007】 G1tL G1 time constant (linear)

Set a linear control time constant for cutting acceleration and deceleration.
The time constant will be enabled when LC (cutting feed with linear acceleration/deceleration) or F (soft acceleration/deceleration) is selected in "#2003 smgst Acceleration or deceleration modes".

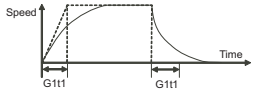


---Setting range---
1 to 4000 (ms)

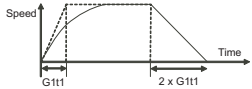
【#2008】 G1t1 G1 time constant (primary delay)/Second-step time constant for soft acceleration/deceleration

Set the primary delay time constant for cutting acceleration and deceleration.
The time constant will be enabled when C1 (cutting feed with the primary delay) or C3 (cutting feed with exponential acceleration and linear deceleration) is selected in "#2003 smgst acceleration/deceleration modes".
When the soft acceleration or deceleration is selected, the second-step time constant will be used.

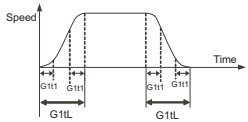
<Cutting feed with primary delay>



<Cutting feed with exponential acceleration and linear deceleration>



<Soft acceleration/deceleration>



---Setting range---
1 to 5000 (ms)

【#2009】 G1t2

Not used. Set to "0".

【#2010】 fwd_g Feed forward gain

Set a feed forward gain for pre-interpolation acceleration/deceleration.
The larger the set value, the smaller the theoretical control error will be. However, if a machine vibration occurs, set the smaller value.

---Setting range---
0 to 200 (%)

【#2011】 G0back G0 backlash

Set up the backlash compensation amount when the direction is reversed with the movement command in rapid traverse feed mode or in manual mode.

---Setting range---
-9999999 to 9999999

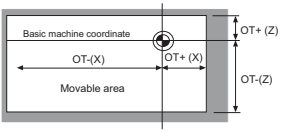
【#2012】 G1back G1 backlash

Set up the backlash compensation amount when the direction is reversed with the movement command in cutting mode.

---Setting range---
-9999999 to 9999999

【#2013】 OT - Soft limit I -

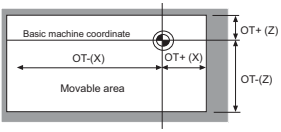
Set a soft limit area with reference to the zero point of the basic machine coordinate. Set the coordinate in the negative direction for the movable area of stored stroke limit 1. The coordinate in the positive direction is set in "#2014 OT+".
To narrow the available range in actual use, use the parameters "#8204 OT-" and "#8205 OT+".
When the same value (other than "0") is set in this parameter and "#2014 OT+", this function will be disabled.



---Setting range---
-99999.999 to 99999.999 (mm)

【#2014】 OT + Soft limit I +

Set a soft limit area with reference to the zero point of the basic machine coordinate. Set the coordinate in the positive direction for the movable area of stored stroke limit 1. The coordinate in the negative direction is set in "#2013 OT-".
To narrow the available range in actual use, use the parameters "#8204 OT-" and"#8205 OT+".
When the same value (other than "0") is set in this parameter and "#2013 OT-", this function will be disabled.



---Setting range---
-99999.999 to 99999.999 (mm)

【#2015】 t1m1- Negative direction sensor of tool setter or TLM standard length

Set a sensor position in the negative direction when using the tool setter.
When the TLM is used, set the distance from a tool change point (reference position) to the measurement basic point (surface) in order to measure the tool length.
(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2016】 t1m1+ Positive direction sensor of tool setter

Set the sensor position in the positive direction when using the tool setter.
(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2017】 tap_g Axis servo gain

Set the position loop gain for special operations (synchronized tapping, interpolation with spindle C axis, etc.).
Set the value in 0.25 increments.
The standard setting value is "10".

---Setting range---
0.25 to 200.00 (rad/s)

【#2018(PR)】 no_srv Operation with no servo control

Select when performing test operation without connecting the drive unit and motor.
0: Normal operation
1: Test operation
When "1" is set, the operation will be possible even if drive units and motor are not connected, because the drive system alarm will be ignored.
This parameter is used for test operation during start up: Do not use during normal operation. If "1" is set during normal operation, errors will not be detected even if they occur.

【#2019】 revnum Return steps

Set the steps required for reference position return for each axis.
0: Not execute reference position return.
1 to max. number of NC axes: Steps required for reference position return

【#2020】 o_chkp Spindle orientation completion check during second reference position return

Set the distance from the second reference position to the position for checking that the spindle orientation has completed during second reference position return.
When the set value is "0", the above check will be omitted.

---Setting range---
0 to 99999.999 (mm)

【#2021】 out_f Maximum speed outside soft limit range

Set the maximum speed outside the soft limit range.

---Setting range---
0 to 1000000 (mm/min)

【#2022】 G30SLX Validate soft limit (automatic and manual)

Select whether to disable a soft limit check during the second to the fourth reference position return in both automatic and manual operation modes.
0: Enable
1: Disable

【#2023】 ozfmin Set up ATC speed lower limit

Set the minimum speed outside the soft limit range during the second to the fourth reference position return.

---Setting range---
0 to 1000000 (mm/min)

【#2024】 synerr Allowable error

Set the maximum synchronization error, allowable at the synchronization error check, for the primary axis.
When "0" is set, the error check will not be carried out.

---Setting range---
0 to 99999.999 (mm)

【#2025】 G28rap G28 rapid traverse rate

Set a rapid traverse rate for the dog type reference position return command.
This is not used for the distance-coded reference position detection.

---Setting range---
1 to 1000000 (mm/min)

【#2026】 G28crp G28 approach speed

Set the approach speed to the reference position.

(Note) The G28 approach speed unit is (10° /min) only when using the Z-phase type encoder (#1226 aux10/bit3=1) for the spindle/C-axis reference position return type. The same unit is used for both the micrometric and sub-micrometric specifications.

---Setting range---
1 to 60000 (mm/min)

【#2027】 G28sft Reference position shift distance

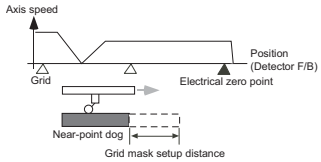
Set the distance from the electrical zero-point detection position to the reference position.
This is not used for the distance-coded reference position detection.

(Note 1) When "#1240 set12/bit2" is ON, a magnification (C: 10-fold, D: 100-fold and E: 1000-fold) corresponding to the input setting unit ("#1003 iunit") will be applied to the setting value.
(Note 2) The sign of setting value is will be following: the direction of "#2030 dir (-) Reference position direction (-)" is plus, and the opposite direction is minus.
(Note 3) When set value is set to minus, the axis moves to electrical zero-point detection position at first and then moves in opposite direction.

---Setting range---
-99.999 to +99.999 (mm)

【#2028】 grmask Grip mask amount

Set the distance where the grid point will be ignored when near-point dog OFF signals are close to that grid point during reference position return.



The grid mask is valid for one grid.
This is not used for the distance-coded reference position detection.

---Setting range---
0.000 to 99.999 (mm)

【#2029】 grspc Grid interval

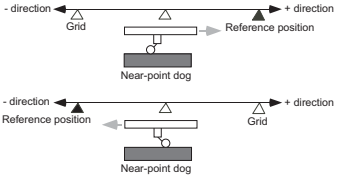
Grid space (#2029 grspc)
Set the distance between grids.
Normally, the ball screw pitch value (#2218 PIT) or the movement amount per motor rotation is set as the grid space. To make the grid space smaller, set a divisor of the grid space.
<Calculation method for movement amount per motor rotation>
(1) When linear feed mechanism is a ball screw:
The movement amount per motor rotation = the motor side gear ration / the machine side gear ratio x the ball screw pitch
(2) When linear feed mechanism is a rack and pinion:
The movement amount per motor rotation = the motor side gear ration / the machine side gear ratio x number of pinion gear teeth x the rack pitch
(3) For the rotary axis:
The movement angle per motor rotation = the motor side gear ration / the machine side gear ratio x 360

---Setting range---
0.000 to 999.999 (mm)

【#2030(PR)】 dir (-) Reference position direction (-)

Select which side of the near-point dog the reference position is established.
0: Positive direction
1: Negative direction

Directions in which reference position is established as viewed from the near-point dog



【#2031】 noref Axis without reference position

Select whether the reference position is provided for the axis.
0: Reference position is provided. (Normal controlled axis)
1: No reference position is provided.
When "1" is set, reference position return is not required before automatic operation starts.

【#2032】 nochk Whether reference position return is completed not checked

Select whether to check the reference position return completion.
0: Check the reference position return completion.
1: Not check the reference position return completion.
When "1" is set, the absolute and incremental commands can be executed even if dog type (or Z phase pulse system) reference position return is not completed.
Note that this setting is available for a rotary axis only.

【#2033】 zp_no Z phase pulse system reference position return spindle encoder No.

Set the spindle encoder No. to be used when the reference position return is performed with the Z phase pulse of the spindle encoder.
0: Dog type
1 to 6: Spindle No.
*The setting range differs according to the model.

---Setting range---
0 to 6

【#2034】 rfpofs Distance-coded reference position detection offset

Set the offset value from the position for the initial reference position setting to the machine's actual basic point in reference position return in the distance-coded reference position detection.
Input the value of the machine value counter that is displayed immediately after the reference position is established.
When the power is turned ON and this parameter is set to "0", the manual reference position return is regarded as initial reference position setting.
If this parameter is set to "0", automatic operation won't be available.

---Setting range---
-99999.999 to 99999.999 (mm)

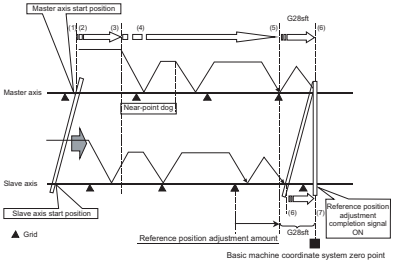
【#2035】 srchmax Distance-coded reference position detection scan distance

Set the maximum distance for scanning the reference marks when the reference position is not established in the distance-coded reference position detection.
For the scan distance, set the distance that fully covers the number of reference marks as you wish to detect.
(Example) When adding about 10% of additional coverage:
Scan distance = Base reference mark interval [mm] * 2 * 1.1

---Setting range---
0.000 to 99999.999 (mm)

【#2036】 slv_adjust Reference position adjustment value

Set the distance from the first grid point after leaving the near point dog on the secondary axis to the position where the reference position is actually established in dog-type reference position return in synchronous control. (Reference position shift amount is not included.)
The adjustment value will be automatically set in the secondary axis's parameter according to the reference position adjustment complete signal from PLC.
Fine adjustment is also available from the parameter screen.
In the distance-coded reference position detection, the reference position adjustment value will be invalid.



(Note 1) This parameter is enabled when the synchronization at zero point initialization ("#1493 ref_syn" = "1" of the primary axis) is applied.
(Note 2) This parameter can be set when one of the following settings is applied.
- Relative position detection ("#2049 type" = "0")
- Dog-type absolute position detection ("#2049 type" = "3")
- Simple absolute position ("#2049 type" = "9")

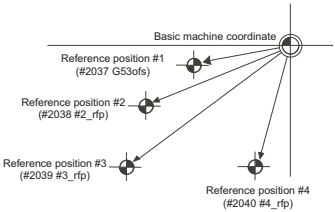
(Note 3) Set "0" when using the speed/current command synchronization control.
(Note 4) A setting unit of this parameter is [mm]. It is not influenced by the content of the following parameters setting.
- "#1003 iunit"
- "#1004 ctrl_unit"
- "#1005 plcunit"
- "#1040 M_inch"
- "#1041 I_inch"
- "#1240 set12/bit2" (Zero point shift amount magnification)

(Note 5) The number of the significant digits after decimal point follows "#1004 ctrl_unit"
(Note 6) A change of this parameter requires reference position return. When the automatic operation starts without reference position return, an alarm will occur.

---Setting range---
0 to 99999.999999 (mm)

【#2037】 G53ofs Reference position #1

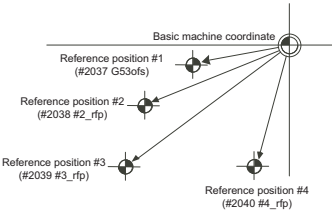
Set the position of the first reference position from the zero point of the basic machine coordinate.



---Setting range---
-99999.999 to 99999.999 (mm)

【#2038】 #2_rfp Reference position #2

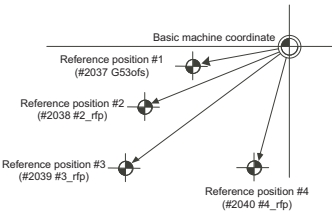
Set the position of the second reference position from the zero point of the basic machine coordinate.



---Setting range---
-99999.999 to 99999.999 (mm)

【#2039】 #3_rfp Reference position #3

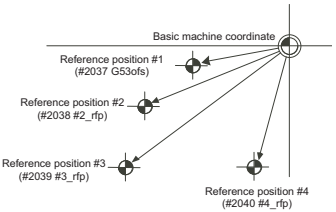
Set the position of the third reference position from the zero point of the basic machine coordinate.



---Setting range---
-99999.999 to 99999.999 (mm)

【#2040】 #4_rfp Reference position #4

Set the position of the fourth reference position from the zero point of the basic machine coordinate.



---Setting range---
-99999.999 to 99999.999 (mm)

【#2049(PR)】 type Absolute position detection method

Select the absolute position zero point alignment method.
0: Not absolute position detection
1: Stopper method (push against mechanical stopper)
2: Marked point alignment method (align to alignment point)
3: Dog-type (align with dog and near point detection switch)
4: Marked point alignment method II (Align to alignment mark. Grid return won't be performed after marked point alignment)
9: Simple absolute position (Not absolute position detection, but the position when the power is turned off is registered.)

【#2050】 absdir Basic point of Z direction

Select the direction of the grid point immediately before the machine basic position (basic point of detector) in the marked point alignment.
0: Positive direction
1: Negative direction

【#2051】 check Check

Set the tolerable range of travel distance (deviation distance) while the power is turned OFF.
If the difference of the positions when the power is turned OFF and when turned ON again is larger than this value, an alarm will be output.
Set "0" to omit the check.

---Setting range---
0 to 99999.999 (mm)

【#2054】 clpush Current limit (%)

Set the current limit value during the stopper operation in the dogless-type absolute position detection.
The setting value is the ratio of the current limit value to the rated current value.

---Setting range---
0 to 100 (%)

【#2055】 pushf Push speed

Set the feedrate for the automatic initial setting during stopper method.

---Setting range---
1 to 999 (mm/min)

【#2056】 aproch Approach

Set the approach distance of the stopper when deciding the absolute position basic point with the stopper method.
After using stopper once, the tool returns with this distance, and then use stopper again.

---Setting range---
0 to 999.999 (mm)

【#2057】 nrefp Near zero point +

Set the positive direction width where the near reference position signal is output.
When set to "0", the width will be equivalent to the grid width setting.
(Note) When "#1240 set12/bit2" is ON, a magnification (C: 10-fold, D: 100-fold, E:1000-fold) corresponding to the input setting increment ("#1003 iunit") will be applied to the setting value.

---Setting range---
0 to 999.999 (mm)
(Input setting increment applied)

【#2058】 nrefn Near zero point -

Set the negative direction width where the near reference position signal is output.
When set to "0", the width will be equivalent to the grid width setting.
(Note) When "#1240 set12/bit2" is ON, a magnification (C: 10-fold, D: 100-fold, E:1000-fold) corresponding to the input setting increment ("#1003 iunit") will be applied to the setting value.

---Setting range---
0 to 999.999 (mm)
(Input setting increment applied)

【#2059】 zerbas Select zero point parameter and basic point

Select which is to be the zero point coordinate position during absolute position initial setting.
0: Position where the axis was stopped.
1: Grid point just before stopper.

【#2061】 OT_1B- Soft limit IB-

Set the coordinate of the lower limit of the area where the stored stroke limit IB is inhibited.
Set a value from zero point in the basic machine coordinate system.
If the same value (non-zero) with the same sign as that of "#2062 OT_IB+" is set, the stored stroke limit IB function will be disabled.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2062】 OT_1B+ Soft limit IB+

Set the coordinate of the upper limit of the area where the stored stroke limit IB is inhibited.
Set a value from zero point in the basic machine coordinate system.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2063】 OT_1B type Soft limit IB type

Select the type that applies the settings of "#2062 OT_IB+" and "#2061 OT_IB-" in stored stroke limit I.
0: Soft limit IB
1: The settings are invalid
2: Soft limit IC
3: Soft limit is checked for the inclined axis control axis with the program coordinate system.
(Note) This is valid only for inclined axis' base axis and inclined axis.

【#2068】 G0fwdg G00 feed forward gain

Set a feed forward gain for G00 pre-interpolation acceleration/deceleration.
The larger the setting value, the shorter the positioning time during in-position checking.
If a machine vibration occurs, set the smaller value.

---Setting range---
0 to 200 (%)

【#2069】 Rcoeff Axis arc radius error correction coefficient

Set the percentage to increase or decrease the arc radius error correction amount for each axis.

---Setting range---
-100.0 to +100.0 (%)

【#2070(PR)】 div_RT Rotational axis division count

Set the number of divisions of one turn of the rotary axis under control.
(Example)
When "36" is set, one turn is supposed to be 36.000.
(Note 1) When "0" is set, the normal rotary axis (360.000 degrees for one turn) is assumed.
(Note 2) If this parameter is changed when the absolute position detection specification is used, absolute position data will be lost. Initialization must be performed again.

---Setting range---
0 to 999

【#2071】 s_axis Inclined axis selection (for L system only)

Select whether the axis is to be under the inclined-axis control or to be the base axis corresponding to the inclined axis.
0: Not to be under the inclined-axis control
1: Inclined axis
2: Base axis corresponding to inclined axis

(Note) Each of "1" and "2" values must be set for only one axis. If either value is set for two or more axes, inclined-axis control does not work.

【#2072】 rslimt Restart limit

Set the most minus (-) side position where restart search is possible.
If the machine is positioned on the more minus (-) side than the set value in T-command restart mode, restart search in type 3 will be disabled.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2073】 zrn_dog Origin dog Random assignment device

Under the standard specifications, the origin dog signal is assigned to a fixed device. Set the input device in this parameter when it is desired to assign the origin dog signal to a position other than the fixed device.

(Note1) This parameter is enabled in the following conditions.
NC axis: When "#1226 aux10/bit5" is set to "1".
PLC axis: When "#1246 set18/bit7" is set to "1".
(Note 2) When this parameter is valid, do not set the existing device number. If the existing device number is set, an emergency stop will occur. However, no device number check will be performed for an axis to which the "near-point dog ignored" signal is input.

---Setting range---
0000 to 02FF (HEX)

【#2074】 H/W_OT+ H/W OT+ Random assignment device

Under the standard specifications, the OT (+) signal is assigned to a fixed device. Set the input device in this parameter when it is desired to assign the OT (+) signal to a position other than the fixed device.

(Note1) This parameter is enabled in the following conditions.
NC axis: When "#1226 aux10/bit5" is set to "1".
PLC axis: When "#1246 set18/bit7" is set to "1".
(Note 2) When this parameter is valid, do not set the existing device number. If the existing device number is set, an emergency stop will occur. However, no device number check will be performed for an axis to which the "OT ignored" signal is input.

---Setting range---
0000 to 02FF (HEX)

【#2075】 H/W_OT- H/W OT- Random assignment device

Under the standard specifications, the OT (-) signal is assigned to a fixed device. Set the input device in this parameter when it is desired to assign the OT (-) signal to a position other than the fixed device.

(Note1) This parameter is enabled in the following conditions.
NC axis: When "#1226 aux10/bit5" is set to "1".
PLC axis: When "#1246 set18/bit7" is set to "1".
(Note 2) When this parameter is valid, do not set the existing device number. If the existing device number is set, an emergency stop will occur. However, no device number check will be performed for an axis to which the "OT ignored" signal is input.

---Setting range---
0000 to 02FF (HEX)

【#2076】 index_x Index table indexing axis

Select whether the axis is a normal axis or an index table indexing axis.
0: Normal axis
1: Index table indexing axis

(Note) This parameter is valid only for the NC axis. The parameter is invalid if set for the PLC axis.

【#2077】 G0inps G0 in-position width

Set the in-position width for G0.
Between SV024 and this parameter, the parameter with a larger value will be applied.
When "0" is set, this parameter will be invalid: only SV024 will be available.

---Setting range---
0.000 to 99.999 (mm)

【#2078】 G1inps G1 in-position width

Set the in-position width for G1.
Between SV024 and this parameter, the parameter with a larger value will be applied.
When "0" is set, this parameter will be invalid: only SV024 will be available.

---Setting range---
0.000 to 99.999 (mm)

【#2079(PR)】 chcomp Chopping compensation coefficient

Set the coefficient to be applied to the compensation amount for the insufficient amount caused by servo delay during chopping.

---Setting range---
0 to 10 (standard value: 8)

【#2080】 chwid Bottom dead center position width

Set the tolerance between the commanded stroke and actual stroke.
Compensation will be applied during chopping so that the result of [command width - maximum stroke of top or bottom dead point/ 2] will be within this tolerance.

---Setting range---
0 to 10.000 (mm)

【#2081】 chclsp Maximum chopping speed

Set the clamp speed in chopping operation.
When "0" is set, the clamp speed will be determined by "#2002 clamp".

---Setting range---
0 to 60000 (mm/min)

【#2082】 a_rstax Restart position return order

Set the No. for each axis in order from the 1st automatically returning axis to the restart position.
When "0" is set, the axis will not return.
Note that when "0" is set for all axes, all of the axes will return simultaneously.

---Setting range---
0 to 8

【#2084】 G60_ax Unidirectional positioning operation selection

Select how to operate the unidirectional positioning when the positioning command (G00) is issued.
0: Carry out unidirectional positioning according to the command and modal.
1: Carry out unidirectional positioning regardless of the command and modal.
Set "1" for the axis to carry out the unidirectional positioning at every positioning command, regardless of whether the unidirectional positioning command and modal are issued.

<Related parameters>
"#8209 G60 SHIFT" and "#2076 index_x"

【#2087】 syncnt Synchronization/super-imposition control setting for each axis

Set the polarity of synchronous axis with respect to basic axis to the bit corresponding to each axis.
0: Polarity with respect to basic axis is positive
1: Polarity with respect to basic axis is negative

---Setting range---
0 to FF (hexadecimal)

【#2088】 bsax_sy Reference axis for synchronous control

Set the basic axis for synchronous control with the 2nd axis name (axname2).A numerical character cannot be set as the 1st character.

---Setting range---
Axis name

【#2089】 bsax_pl

Not used. Set to "0".

【#2090】 plrapid Rapid traverse rate for super-imposition control

Set the rapid traverse rate for superimposition control.
(Equivalent to "#2001 rapid Rapid traverse rate".)

---Setting range---
1 to 1000000 (mm/min)

【#2091】 plclamp Cutting feed clamp speed for super-imposition control

Set the cutting feed clamp speed for superimposition control.
(Equivalent to "#2002 clamp Cutting feed clamp speed".)

---Setting range---
1 to 1000000 (mm/min)

【#2092】 plG0tL G0 time constant for superimposition control (linear)

Set the G0 time constant (linear) for superimposition control.
(Equivalent to "#2004 G0tL G0 time constant (linear)".)

---Setting range---
1 to 4000 (ms)

【#2093】 plG0t1 G0 time constant for superimposition control (primary delay)

Set the G0 time constant (primary delay) for superimposition control.
(Equivalent to "#2005 G0t1 G0 time constant (primary delay".)

---Setting range---
1 to 5000 (ms)

【#2094】 plG1tL G1 time constant for superimposition control (linear)

Set the G1 time constant (linear) for superimposition control.
(Equivalent to "#2007 G1tL G1 time constant (linear)".)

---Setting range---
1 to 4000 (ms)

【#2095】 plG1t1 G1 time constant for superimposition control (primary delay)

Set the G1 time constant (primary delay) for superimposition control.
(Equivalent to "#2008 G1t1 G1 time constant (primary delay)".)

---Setting range---
1 to 5000 (ms)

【#2096】 crncsp Minimum corner deceleration speed

Set the minimum clamp speed for corner deceleration in the high-accuracy control mode.
Normally set "0".

(Note) This parameter is invalid during SSS control.

---Setting range---
0 to 1000000 (mm/min)

【#2097】 tlml2- Sub side tool setter - direction sensor

Set the sensor position (on sub side) in the (-) direction when using the tool setter on the sub spindle side.
(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2098】 tlml2+ Sub side tool setter + direction sensor

Set the sensor position (on sub side) in (+) direction when using the tool setter on the sub spindle side.
(Note) In the case of the basic axis and inclined axis of the inclined axis specifications, set the position on the orthogonal coordinate.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2102】 skip_tL Skip time constant linear

Set a linear control time constant for variable speed skip acceleration and deceleration, or for an occasion where a skip command issues acceleration/deceleration time constant enabled (R1).
The time constant will be enabled when LC (cutting feed with linear acceleration and deceleration) or "F" (soft acceleration/deceleration) is selected in "#2003 smgst Acceleration and deceleration modes".
When set to "0", the time constant set by "#2008 G1t1" is used.

---Setting range---
0 to 4000 (ms)

【#2103】 skip_t1 Skip time constant primary delay / Second-step time constant for soft acceleration/deceleration

Set a primary-delay time constant for variable speed skip acceleration and deceleration, or for an occasion where a skip command issues acceleration/deceleration time constant enabled (R1).
The time constant will be enabled when C1 (cutting feed with primary delay) or C3 (exponential acceleration and linear deceleration) is selected in "#2003 smgst Acceleration and deceleration modes". When the soft acceleration/deceleration is selected, the second-step time constant will be used.
When set to "0", the time constant set by "#2008 G1t1" is used.

---Setting range---
0 to 5000 (ms)

【#2106】 Index unit Indexing unit

Set the indexing unit to which the rotary axis can be positioned.

---Setting range---
0 to 360 (°)

【#2109】 Rapid (H-precision) Rapid traverse rate for high-accuracy control mode

Set the rapid traverse rate for each axis in the high-accuracy control mode. "#2001 rapid" will be used when "0" is set.

---Setting range---
0 to 1000000 (mm/min)

【#2110】 Clamp (H-precision) Cutting feed clamp speed for high-accuracy control mode

Set the cutting feed maximum speed for each axis in the high-accuracy control mode. "#2002 clamp" will be used when "0" is set.

---Setting range---
0 to 1000000 (mm/min)

【#2111】 Blf valid Quadrant protrusion compensation valid

Set whether to enable the quadrant protrusion compensation.
0: Disable
1: Enable
If either of "#2112 Blf motor inertia", "#2115 Blf motor stl trq" or "#2113 Blf visc friction" is set to "0", quadrant protrusion compensation will not work even if this parameter is set to "1".

【#2112】 Blf motor inertia Motor inertia

Set the motor inertia for quadrant protrusion compensation.
Refer to the servo manual and input the value appropriate for the motor.

---Setting range---
1 to 32000 (10-6kgm2)

【#2113】 Blf visc friction Viscous friction

Set the viscous friction for quadrant protrusion compensation.
After setting the other parameters to the appropriate values, monitor the machine end and gradually adjust the value.
If this parameter setting is small, a recess will form on the inner side of the circle, and if large, a protrusion will form on the outer side of the circle. When the value is appropriate, a spike-shaped quadrant protrusion will form based on normal step-shaped backlash.

---Setting range---
1 to 32767 (1/16 Nm/(rad/s))

【#2114】 Blf fwdg Compensation FF gain

Set the feed forward gain for quadrant protrusion compensation.
After setting the other parameters to the appropriate values, monitor the machine end and gradually adjust the value.
If this parameter setting is small, a large quadrant protrusion will form, and if large, a recess will form on the inner side of the circle.

---Setting range---
0 to 1000 (%)

【#2115】 Blf motor stl trq Motor stall torque

Set the motor rated current for quadrant protrusion compensation.
Refer to the servo manual and input the value appropriate for the motor.

---Setting range---
1 to 16000 (1/256 Nm)

【#2118(PR)】 SscDrSel Speed monitor Door selection

Select which door group of the speed monitoring the spindle belongs to.
0000: Door 1 group.
0001: Door 1 group.
0002: Door 2 group.
0003: Door 1 and 2 group.
The speed monitoring will not be executed when "#2313 SV113 SSF8/BitF" is OFF regardless of this parameter.
The selected door group must be set when setting the synchronous control.
The spindle/C axis control enables the door selection in "#3071 SscDrSelSp" for the corresponding spindle.

【#2121】 vbacklash valid Variable backlash valid/continuous or Variable backlash II valid

Select whether the variable backlash is to be disabled/enabled/continuous, or variable backlash II enabled.
0: Disable
1: Enable
2: Continuous
3: Enable variable backlash II
("#2011 G0back" and "#2012 G1back" will not work unless "0: Disable" is selected.)

【#2122】 G0vback+ Variable G0 backlash +

Set the compensation amount for the range of each position during rapid traverse.
(+: B1, =: B2, -: B3 on the compensation amount table)

---Setting range---
-99999999 to 99999999 (Interpolation unit)

【#2123】 G0vback= Variable G0 backlash =

Set the compensation amount for the range of each position during rapid traverse.
(+: B1, =: B2, -: B3 on the compensation amount table)

---Setting range---
-99999999 to 99999999 (Interpolation unit)

【#2124】 G0vback- Variable G0 backlash -

Set the compensation amount for the range of each position during rapid traverse.
(+: B1, =: B2, -: B3 on the compensation amount table)

---Setting range---
-99999999 to 99999999 (Interpolation unit)

【#2125】 G1vback+ Variable G1 backlash +

Set the compensation amount for the range of each position during cutting feed.
(+: A1, =: A2, -: A3 on the compensation amount table)

---Setting range---
-99999999 to 99999999(Interpolation unit)

【#2126】 G1vback= Variable G1 backlash =

Set the compensation amount for the range of each position during cutting feed.
(+: A1, =: A2, -: A3 on the compensation amount table)

---Setting range---
-99999999 to 99999999 (Interpolation unit)

【#2127】 G1vback- Variable G1 backlash -

Set the compensation amount for the range of each position during cutting feed.
(+: A1, =: A2, -: A3 on the compensation amount table)

---Setting range---
-99999999 to 99999999 (Interpolation unit)

【#2128】 G1vback feed1 G1 variable backlash compensation amount changeover speed 1

Set the speed range during cutting feed.
(The speed less than 1 is the low speed, and the speed exceeding 2 is the high speed.)
Note that the speed range is identified in the order of low, high and medium speed.
Consider whether the set value should be larger or smaller than other values.

---Setting range---
0 to 480000 (mm/min)

【#2129】 G1vback feed2 G1 variable backlash compensation amount changeover speed 2

Set the range of the speed during cutting feed.
(The speed less than 1 is the low speed, and the speed exceeding 2 is the high speed.)
Note that the speed range is identified in the order of low, high and medium speed.
Consider whether the set value should be larger or smaller than other values.

---Setting range---
0 to 480000 (mm/min)

【#2130】 G1vback dist1 G1 variable backlash compensation amount changeover distance 1

Set the range of the distance during cutting feed.
(The distance less than 1 is the small distance, and the distance exceeding 2 is the large distance.)
Note that the distance range is identified in the order of small, large and medium. Consider whether the set value should be larger or smaller than other values.

---Setting range---
0 to 999999.999999 (mm)

【#2131】 G1vback dist2 G1 variable backlash compensation amount changeover distance 2

Set the range of the distance during cutting feed.
(The distance less than 1 is the small distance, and the distance exceeding 2 is the large distance.)
Note that the distance range is identified in the order of small, large and medium. Consider whether the set value should be larger or smaller than other values.

---Setting range---
0 to 999999.999999 (mm)

【#2132】 vback pos1 Variable backlash compensation amount changeover end point position 1

Set the range of the center of the end point position.
(The range less than position 1 is the - range, and the range exceeding position 2 is the + range.)
The end point position range is determined in the order of -, + , and center. Consider whether the set value should be larger or smaller than other values.
(Note 1) If continuous variable backlash is set with "#2121 vbacklash valid", position 1 will be set as the position - point and position 2 will be set as the position + point.
(Note 2) When the size relation of the compensation amount changeover speed and distance 1 and 2 is not appropriate while the variable backlash compensation is valid, the followings will be applied:If the backlash speed and distance are smaller than the compensation amount changeover speed and distance 1, both the speed and distance will be small; if larger than the compensation amount changeover speed and distance 2, both the speed and distance will be large.

---Setting range---
-999999.999999 to 999999.999999 (mm)

【#2133】 vback pos2 Variable backlash compensation amount changeover end point position 2

Set the range of the center of the end point position.
(The range less than position 1 is the - range, and the range exceeding position 2 is the + range.)
The end point position range is determined in the order of -, + , and center. Consider whether the set value should be larger or smaller than other values.

(Note 1) If continuous variable backlash is set with "#2121 vbacklash valid", position 1 will be set as the position - point and position 2 will be set as the position + point.

(Note 2) When the size relation of the compensation amount changeover speed and distance 1 and 2 is not appropriate while the variable backlash compensation is valid, the followings will be applied:If the backlash speed and distance are smaller than the compensation amount changeover speed and distance 1, both the speed and distance will be small; if larger than the compensation amount changeover speed and distance 2, both the speed and distance will be large.

---Setting range---
-999999.999999 to 999999.999999 (mm)

【#2134】 vback arc K Variable backlash arc compensation coefficient

Set the arc compensation coefficient.

---Setting range---
0 to 300 (%)

【#2135】 vback feed refpt Variable backlash reference position selection (speed)

Select the speed range to be used as the reference position.
0: Low speed
1: Medium speed
2: High speed

【#2136】 vback pos refpt Variable backlash reference position selection (end point position)

Select the end point range to be used as the reference position.
0: Position + range
1: Position center range
2: Position - range

【#2137】 vback dir refpt Variable backlash reference position selection (entry direction)

Select the entry direction to be used as the reference position.
0: Entry direction +
1: Entry direction -

【#2138】 vback pos center Continuous variable backlash position center point

Set the position center point. (This is used only when continuous variable backlash is set with "#2121 vbacklash valid".) Set a value between "#2132 vback pos1" and "#2133 vbackpos2" for the position center point.

(Note) When the size relation of the compensation amount changeover speed and distance 1 and 2 is not appropriate while the variable backlash compensation is valid, the followings will be applied:
If the backlash speed and distance are smaller than the compensation amount changeover speed and distance 1, both the speed and distance will be small; if larger than the compensation amount changeover speed and distance 2, both the speed and distance will be large.

---Setting range---
-999999.999999 to 999999.999999 (mm)

【#2139】 omrff_off OMR-FF invalid

Select whether to enable or temporarily disable the OMR-FF control when OMR-FF is valid.
0: Enable
1: Temporarily disable
When "1" is selected while OMR-FF is valid, OMR-FF can be temporarily disabled and conventional feed forward control can be applied instead.

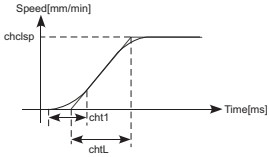
【#2140(PR)】 Ssc Svof Filter Speed monitor Error detection time during servo OFF

Set the error detection time of command speed monitoring and feedback speed monitoring during servo OFF.
An alarm will occur if the time, for which the speed has been exceeding the safe speed or safe rotation speed, exceeds the error detection time set in this parameter.
If "0" is set, it will be handled as 200 (ms).

---Setting range---
0 to 9999 (ms)

【#2141】 chtL Chopping first-step time constant for soft acceleration and deceleration

Set the first-step time constant for the chopping axis when soft acceleration/deceleration is applied.
Note that, however, there may be cases where actual time constant is shorter than the set time constant, because the time constant is automatically calculated according to the feedrate so that the acceleration rate during acceleration/deceleration (clamp speed/ chopping time constant) will be constant.
When "0" is set, "#2007 G1tL" will be valid.



---Setting range---
0 to 4000 (ms)

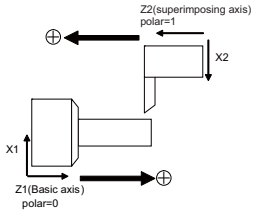
【#2142】 cht1 Chopping second-step time constant for soft acceleration and deceleration

Set the second-step time constant for the chopping axis when soft acceleration/deceleration is applied.
Note that, however, there may be cases where actual time constant is shorter than the set time constant, because the time constant is automatically calculated so that the ratio between first-step and second-step time constant will be constant.
When "0" is set, "#2008 G1t1" will be valid.

---Setting range---
0 to 4000 (ms)

【#2143】 polar Control axis relative polarity

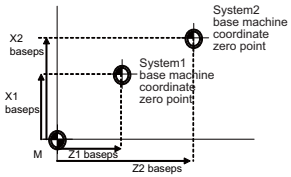
Set "0" for the basic axis, and set the polarity of the superimposing axis relative to the basic axis.
0: Relative to basic axis, polarity is positive
1: Relative to basic axis, polarity is negative



【#2144】 baseps Base machine coordinate zero point relative distance

Set each axis's position of the base machine coordinate zero point when an arbitrary point M on the machine is regarded as a base point.
Unify the directions of all part systems' machine zero point positions with the direction of the machine coordinate system of the 1st part system.
If the 1st part system doesn't have a parallel axis, determine the direction arbitrarily.

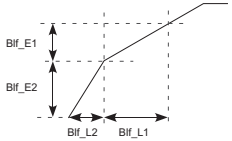
Example: System1(X1, Z1), System2(X2, Z2)



---Setting range---
-99999.999 to 99999.999 (mm)

【#2146】 Blf_L1 Reference distance for position-dependent increasing-type backlash compensation 1

Set the distance for specifying the compensation change rate in position-dependent increasing-type backlash compensation.

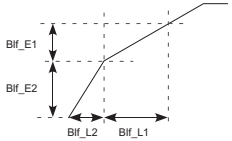


When "#2146 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---
0.000 to 99999.999 (mm)

【#2147】 Blf_L2 Reference distance for position-dependent increasing-type backlash compensation 2

Set the distance for specifying the compensation change rate in position-dependent increasing-type backlash compensation.

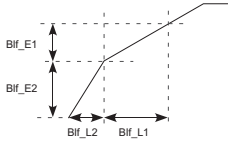


When "#2146 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---
0.000 to 99999.999 (mm)

【#2148】 Blf_E1 Reference amount of position-dependent increasing-type backlash compensation 1

Set the compensation amount for specifying the compensation change rate in position-dependent increasing-type backlash compensation.

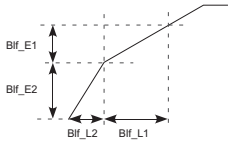


When "#2146 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---
0 to 9999999 (Machine error compensation unit)

【#2149】 Blf_E2 Reference amount of position-dependent increasing-type backlash compensation 2

Set the compensation amount for specifying the compensation change rate in position-dependent increasing-type backlash compensation.



When "#2146 Blf_E1" is set to "0", the position-dependent increasing-type backlash compensation function will be disabled.

---Setting range---
0 to 9999999 (Machine error compensation unit)

【#2150】 Rot_len Farthest distance from rotary axis center

Set the farthest distance of the rotating part from the rotation center for executing the 3D machine interference check.
When "0" is set, this distance will conform to the rotary axis' specification speed.

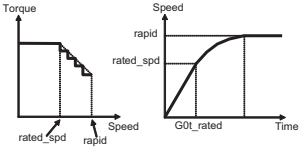
---Setting range---
0.000 to 99999.999(mm)

【#2151】 rated_spd Rated speed

Set the maximum speed which can be driven with the motor's maximum torque.

(Note 1) This parameter's setting value must be smaller than "#2001 rapid Rapid traverse". If bigger, constant inclination acceleration/deceleration will be applied.

(Note 2) If rapid traverse constant inclination multi-step acceleration/deceleration is valid, and also if this parameter is set to "0", constant inclination acceleration/deceleration will be applied.

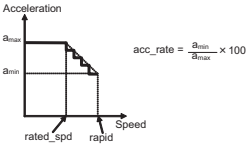


---Setting range---
0 to 1000000(mm/min)

【#2152】 acc_rate Acceleration rate in proportion to the maximum acceleration rate

Set the rate in proportion to the maximum acceleration rate in rapid traverse.

(Note) If this parameter is set to "0" or "100", constant inclination acceleration/deceleration will be applied.



---Setting range---
0 to 100(%)

【#2153】 G0t_rated G0 time constant up to rated speed (multi-step acceleration/

Set the acceleration rate up to the rated speed of rapid traverse constant inclination multi-step acceleration/deceleration.

(Note) If this parameter is set to "0", constant inclination acceleration/deceleration will be applied.

---Setting range---
0 to 4000(ms)

(G0t_rapid) G0 time constant up to rapid traverse speed (multi-step acc./dec.)

Set the acceleration time until the rapid traverse speed of rapid traverse constant inclination multi-step acceleration/deceleration is applied.

(Note) Set the acceleration time when a pertinent axis is operated independently.

【#2155】 hob_fwd_g Feed forward gain for hobbing machining

Set the feed forward gain when controlling as workpiece axis of tool spindle synchronization II (hobbing).

---Setting range---
0 to 200 (%)

【#2169】 Man meas rtrn dir Return direction in manual measurement

Select the direction of return operation in manual measurement.
0: Opposite to the contact direction
1: Fixed to the + direction
2: Fixed to the - direction

【#2170】 Lmc1QR Lost motion compensation gain 1 for high-speed retract

Set the lost motion compensation gain in drilling cycle at high-speed retract (CW: - to + direction, CCW: + to - direction).
Set "-1" when drilling cycle at high-speed retract is not performed.
When set to 0, the performance will follow the setting of "#2171 Lmc2QR (Lost motion compensation gain 2 for high-speed retract)".

---Setting range---
-1, 0 to 200(%)

【#2171】 Lmc2QR Lost motion compensation gain 2 for high-speed retract

Set the lost motion compensation gain in drilling cycle at high-speed retract (CW: - to + direction, CCW: + to - direction).
Set "-1" when drilling cycle at high-speed retract is not performed.
When set to "0", the performance will follow the setting of "#2170 Lmc1QR (Lost motion compensation gain 1 for high-speed retract)".

---Setting range---
-1, 0 to 200(%)

【#2172】 LmcdQR Lost motion compensation timing for high-speed retract

Set the timing of the lost motion compensation in drilling cycle at high-speed retract.
When set to "0", the performance will follow the setting of "#2239 SV039 LMCD (Lost motion compensation timing)".

---Setting range---
0 to 2000 (ms)

【#2173】 LmckQR Lost motion compensation 3 spring constant for high-speed retract

Set the machine system's spring constant when using lost motion compensation type 3 in drilling cycle with high-speed retract.
When set to "0", the performance will follow the setting of "#2285 SV085 LMCk (Lost motion compensation 3 spring constant)".

---Setting range---
0 to 32767(0.01%/μm)

【#2174】 LmccQR Lost motion compensation 3 viscous coefficient for high-speed retract

Set the machine system's viscous coefficient when using lost motion compensation type 3 in drilling cycle at high-speed retract.
When set to "0", the performance will follow the setting of "#2286 SV086 LMCc (Lost motion compensation 3 viscous coefficient)".

---Setting range---
0 to 32767(0.01%/μm)

【#2175】 Special Ax Radius Special diametral axis radius

Set the radius of the special diametral axis.

---Setting range---
0 to 99999.999 (mm)

【#2176】 Special Ax Clamp Special diametral axis clamp speed

Set a clamp speed for the special diametral axis control.

---Setting range---
0 to 1000000 (°/min)

(Note)For "#2001 rapid" and "#2002 clamp", set speeds on a machining line.
When the value in "#2176 Special Ax Clamp" is smaller than that in "#2001 rapid", "Special Ax Clamp" value will be applied to the clamp speed.

【#2177】 ManualFeedBtL Time constant for manual feed rate B

Set the acceleration/deceleration time constant for manual feed rate B.

(Note)When set to "0", this parameter will not be used: conventional acceleration/deceleration will be performed.

---Setting range---
0 to 40000 (ms)

【#2180(PR)】 S_DIN Speed observation input door No.

Set the door signal input in the drive unit.
Use this parameter only when the axis with a door signal belongs to several door groups.
The correspondence between the door signals and bits are as follows.
bit0 : Door1 signal
bit1 : Door2 signal
If the axis does not receive any door signal, set to "0".
An error (Y20 0027) will occur in the following cases.
- Several bits are enabled.
- Any bit other than those set in "#2118 S_DSI" is enabled.

---Setting range---
0000 to 0002 (HEX)

【#2561】 VBL2 VG1 Variable backlash comp II Changeover speed 1

Set the changeover speed at speed normalization.
Set a value smaller than that in "#2562 VBL2 VG0".
Normally, the "#2561 VBL2 VG1" value corresponds to the cutting feedrate, the "#2562 VBL2 VG0" value to the rapid traverse rate.

---Setting range---
1 to 1000000 (mm/min)

【#2562】 VBL2 VG0 Variable backlash comp II Changeover speed 2

Set the changeover speed at speed normalization.
Set a value greater than that in "#2561 VBL2 VG1".
Normally, the "#2561 VBL2 VG1" value corresponds to the cutting feedrate, the "#2562 VBL2 VG0" value to the rapid traverse rate.

---Setting range---
1 to 1000000 (mm/min)

【#2563】 VBL2 P1 Variable backlash comp II Stroke position 1

Set the most plus (+) side stroke position among the three.
Set the parameters VBL2 P1 to P3 to be "VBL2 P1 > VBL2 P2 > VBL2 P3".
Normally, divide the axis's stroke by four, and set a dividing position (except for the both ends) to be a stroke position.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2564】 VBL2 P2 Variable backlash comp II Stroke position 2

Set the middle stroke position among the three.
Set the parameters VBL2 P1 to P3 to be "VBL2 P1 > VBL2 P2 > VBL2 P3".
Normally, divide the axis's stroke by four, and set a dividing position (except for the both ends) to be a stroke position.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2565】 VBL2 P3 Variable backlash comp II Stroke position 3

Set the most minus (-) side stroke position among the three.
Set the parameters VBL2 P1 to P3 to be "VBL2 P1 > VBL2 P2 > VBL2 P3".
Normally, divide the axis's stroke by four, and set a dividing position (except for the both ends) to be a stroke position.

---Setting range---
-99999.999 to 99999.999 (mm)

【#2566】 VBL2 BL11 Variable backlash comp II Comp data at changeover spd 1 and stroke pos 1

Set the compensation data (backlash amount) at changeover speed 1 and stroke position 1.
Calculate the current compensation data according to the current speed and position.

---Setting range---
-99999999 to 99999999 (Machine error compensation unit)

【#2567】 VBL2 BL12 Variable backlash comp II Comp data at changeover spd 1 and stroke pos 2

Set the compensation data (backlash amount) at changeover speed 1 and stroke position 2.
Calculate the current compensation data according to the current speed and position.

---Setting range---
-99999999 to 99999999 (Machine error compensation unit)

【#2568】 VBL2 BL13 Variable backlash comp II Comp data at changeover spd 1 and stroke pos 3

Set the compensation data (backlash amount) at changeover speed 1 and stroke position 3.
Calculate the current compensation data according to the current speed and position.

---Setting range---
-99999999 to 99999999 (Machine error compensation unit)

【#2569】 VBL2 BL01 Variable backlash comp II Comp data at changeover spd 2 and stroke pos 1

Set the compensation data (backlash amount) at changeover speed 2 and stroke position 1.
Calculate the current compensation data according to the current speed and position.

---Setting range---
-99999999 to 99999999 (Machine error compensation unit)

【#2570】 VBL2 BL02 Variable backlash comp II Comp data at changeover spd 2 and stroke pos 2

Set the compensation data (backlash amount) at changeover speed 2 and stroke position 2.
Calculate the current compensation data according to the current speed and position.

---Setting range---
-99999999 to 99999999 (Machine error compensation unit)

【#2571】 VBL2 BL03 Variable backlash comp II Comp data at changeover spd 2 and stroke pos 3

Set the compensation data (backlash amount) at changeover speed 2 and stroke position 3.
Calculate the current compensation data according to the current speed and position.

---Setting range---
-99999999 to 99999999 (Machine error compensation unit)

【#2572】 VBL2 FloatTC Variable backlash comp II Time constant in calculating float amt

Set the time constant in calculating the float amount. Set a value greater than the calculation cycle.

---Setting range---
0 to 10000 (ms)

【#2573】 VBL2 LMMul Variable backlash comp II Multiplier in calculating lost motion amt

Set the multiplier in calculating the lost motion compensation amount, before multiplied by 10-3. When "1000" is set, the multiplier is "1".

---Setting range---
0 to 1000

【#2574】 VBL2 VBound Variable backlash comp II Speed boundary value

Set the speed boundary value in calculating the lost motion compensation amount.

---Setting range---
1 to 1000000 (mm/min)

【#2575】 VBL2 CompMag Variable backlash comp II Compensation magnification

Set the compensation magnification in calculating the lost motion compensation amount. When "0" is set, the magnification is 100%.

---Setting range---
0 to 300 (%)

【#2576】 VBL2 CompMul Variable backlash comp II Multiplier in calculating compensation amount

Set the multiplier in applying the lost motion compensation magnification, before multiplied by 10-3. When "1000" is set, the multiplier is "1".

---Setting range---
0 to 1000

【#2577】 VBL2 BLE Variable backlash comp II Gradually increase amount

Set the value to subtract from the lost motion compensation amount at reversing the axis travel direction.

---Setting range---
-99999999 to 99999999 (Machine error compensation unit)

【#2578】 VBL2 BLL Variable backlash comp II Gradually increase travel distance

Set the travel distance to return to the lost motion compensation amount from the reverse point of the axis travel direction.

---Setting range---
0 to 99999.999 (mm)

4. Servo Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

【#2201(PR)】 SV001 PC1 Motor side gear ratio

Set the gear ratio in the motor side when there is the gear between the servomotor's shaft and machine (ball screw, etc.).
For the rotary axis, set the total deceleration (acceleration) ratio.
Even if the gear ratio is within the setting range, the electronic gears may overflow and an initial parameter error (servo alarm 37) may occur.

For linear servo system
Set to "1".

---Setting range---
1 to 32767

【#2202(PR)】 SV002 PC2 Machine side gear ratio

Set the gear ratio in the machine side when there is the gear between the servomotor's shaft and machine (ball screw, etc.).
For the rotary axis, set the total deceleration (acceleration) ratio.
Even if the gear ratio is within the setting range, the electronic gears may overflow and an initial parameter error (servo alarm 37) may occur.

For linear servo system
Set to "1".

---Setting range---
1 to 32767

【#2203】 SV003 PGN1 Position loop gain 1

Set the position loop gain. The standard setting is "33".
The higher the setting value is, the more accurately the command can be followed, and the shorter the settling time in positioning gets, however, note that a bigger shock will be applied to the machine during acceleration/deceleration.
When using the SHG control, also set SV004 (PGN2) and SV057 (SHGC).

---Setting range---
1 to 200 (rad/s)

【#2204】 SV004 PGN2 Position loop gain 2

When performing the SHG control, set the value of "SV003 x 8/3" to "SV004".
When not using the SHG control, set to "0".

Related parameters: SV003, SV057

---Setting range---
0 to 999 (rad/s)

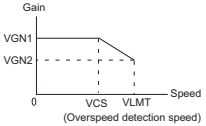
【#2205】 SV005 VGN1 Speed loop gain 1

Set the speed loop gain.
The higher the setting value is, the more accurate the control will be, however, vibration tends to occur.
If vibration occurs, adjust by lowering by 20 to 30%.
The value should be determined to the 70 to 80% of the value at which the vibration stops.
The value differs depending on servo motors.
Aim at the standard value determined by the servo motor type and load inertia ratio to adjust.

---Setting range---
1 to 30000

【#2206】 SV006 VGN2 Speed loop gain 2

Set the speed loop gain at the motor limitation speed VLMT (maximum rotation speed x 1.15) with "VCS(SV029: Speed at the change of speed loop gain)".
Use this to suppress noise at high speed rotation during rapid traverse, etc. Then, the speed loop gain decreases at faster speed than the setting value of VCS.
When not using, set to "0".



---Setting range---
-1000 to 30000

【#2207】 SV007 VIL Speed loop delay compensation

Set this when the limit cycle occurs in the full-closed loop, or overshooting occurs in positioning.
The speed loop delay compensation method can be selected with SV027/bit1,0.
Normally, use "Changeover type 2". Changeover type 2 controls the occurrence of overshooting by lowering the speed loop lead compensation after the position droop gets 0.
When setting this parameter, make sure to set the torque offset (SV032).

---Setting range---
0 to 32767

【#2208】 SV008 VIA Speed loop lead compensation

Set the gain of the speed loop integral control.
Standard setting: 1364
Standard setting in the SHG control: 1900
Adjust the value by increasing/decreasing this by about 100 at a time.
Raise this value to improve contour tracking accuracy in high-speed cutting.
Lower this value when the position droop does not stabilize (when the vibration of 10 to 20Hz occurs).

---Setting range---
1 to 9999

【#2209】 SV009 IQA Current loop q axis lead compensation

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---
1 to 20480

【#2210】 SV010 IDA Current loop d axis lead compensation

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---
1 to 20480

【#2211】 SV011 IQG Current loop q axis gain

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---
1 to 8192

【#2212】 SV012 IDG Current loop d axis gain

Set the fixed value of each motor.
Set the standard value for each motor described in the standard parameter list.

---Setting range---
1 to 8192

【#2213】 SV013 ILMT Current limit value

Set the current (torque) limit value in a normal operation.
This is a limit value in forward run and reverse run (for linear motors:forward and reverse direction).
When the standard setting value is "800", the maximum torque is determined by the specification of the motor.
Set this parameter as a proportion (%) to the stall current.

---Setting range---
0 - 999 (Stall current %)

【#2214】 SV014 ILMTsp Current limit value in special control

Set the current (torque) limit value in a special operation (absolute position initial setting, stopper control and etc.).
This is a limit value in forward and reverse directions.
Set to "800" when not using.
Set this parameter as a proportion (%) to the stall current.

---Setting range---
0 - 999 (Stall current %)
However, when SV084/bitB=1, the setting range is from 0 to 32767 (Stall current 0.01%).

【#2215】 SV015 FFC Acceleration rate feed forward gain

When a relative error in synchronous control is too large, set this parameter to the axis that is delaying.
The standard setting is "0". The standard setting in the SHG control is "100".
To adjust a relative error in acceleration/deceleration, increase the value by 50 - 100 at a time.

---Setting range---
0 to 999 (%)

【#2216】 SV016 LMC1 Lost motion compensation 1

Set this parameter when the protrusion (that occurs due to the non-sensitive band by friction, torsion, backlash, etc.) at quadrant change is too large. This sets the compensation torque at quadrant change (when an axis feed direction is reversed) by the proportion (%) to the stall torque. Whether to enable the lost motion compensation and the method can be set with other parameters.

Type 2: When SV027 (SSF1)/bit9, 8 (lmc) = 10 (Compatible with obsolete type)
Set the type 2 method compensation torque. The standard setting is double the friction torque.
Related parameters: SV027/bit9,8, SV033/bitF, SV039, SV040, SV041, SV082/bit2, SV113/bit7

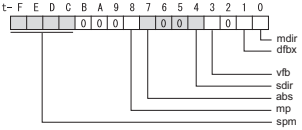
Type 3: When SV082(SSF5)/bit1= 1
Set the compensation torque equivalent of dynamic friction amount of the type 3 method compensation amount. The standard setting is double the dynamic friction torque.
Related parameters: SV041, SV082/bit2,1, SV085, SV086, SV113/bit7

To vary compensation amount according to the direction.
When SV041 (LMC2) is "0", compensate with the value of SV016 (LMC1) in both +/- directions.
If you wish to change the compensation amount depending on the command direction, set this and SV041 (LMC2).
(SV016: + direction, SV041: - direction. However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the direction of the command.

---Setting range---
-1 to 200 (Stall current %)
Note that when SV082/bit2 is "1", the setting range is between -1 and 20000 (Stall current 0.01%).

【#2217(PR)】 SV017 SPEC1 Servo specification 1

Select the servo specifications.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-C : spm Motor series selection

0: 200V HF, HP motor 1
1: 200V HF, HP motor 2 (Standard)
2: 400V HF-H, HP-H motor 1
3: 400V HF-H, HP-H motor 2 (Standard)
6: 200V LM-F linear motor
7: 200V direct-drive motor
8: 400V LM-F linear motor
9: 400V direct-drive motor

bit B :

Not used. Set to "0".

bit A : drvup Combined drive unit:

- For MDS-DM Series
0: Normal setting (Combined drive unit: normal)
1: Combined drive unit: one upgrade
In the following combination of the drive unit and servomotors, set to "bitA=1".
MDS-DM-V3-404040 --------- HF75, HF105, HF123, HF142
MDS-DM-SPV2/SPV3 --------- HF54, HF104, HF223, HF302

bit 9 :

Not used. Set to "0".

bit 8 : mp MPI scale pole number setting

0: 360 poles 1: 720 poles

bit 7 : abs Position control

These parameters are set automatically by the NC system.
0: Incremental 1: Absolute position control

bit 6-5 :

Not used. Set to "0".

bit 4 : sdir Sub side detector feedback

Set the machine side detector's installation polarity.
0: Forward polarity 1: Reverse polarity

bit 3 : vfb Speed feedback filter

0: Stop 1: Start (2250Hz)

bit 2 : seqh Ready on sequence

0: Normal 1: High-speed

bit 1 : dfbx Dual feedback control

Control the position FB signal in full closed control by the combination of a motor side detector and machine side detector.
0: Stop 1: Start

Related parameters: SV051, SV052

bit 0 : mdir Machine side detector feedback (for Linear/direct-drive motor)

Set the detector installation polarity in the linear servo and direct-drive motor control.
0: Forward polarity 1: Reverse polarity

【#2218(PR)】 SV018 PIT Ball screw pitch/Magnetic pole pitch

For servo motor:
Set the ball screw pitch. For the rotary axis, set to "360".

For direct-drive motor
Set to "360".

- For linear motor
Set the ball screw pitch. (For LM-F series, set to "48")

---Setting range---
For general motor: 1 to 32767 (mm/rev)
- For linear motor 1 to 32767 (mm)

【#2219(PR)】 SV019 RNG1 Sub side detector resolution

For semi-closed loop control
Set the same value as SV020.

For full-closed loop control
Set the number of pulses per ball screw pitch.

For direct-drive motor
Set the same value as SV020.

For 1000 pulse unit resolution detector, set the number of pulses in SV019 in increments of 1000 pulse (kp).
In this case, make sure to set "0" to SV117.
For high-accuracy binary resolution detector, set the number of pulses to four bite data of SV117 (high-order) and SV019 (low-order) in pulse (p) unit.
SV117 = number of pulses / 65536 (when =0, set "-1" to SV117)
SV019 = the remainder of number of "pulses / 65536"
When the NC is C70 and "SV019 > 32767", set "the reminder of above - 65536 (negative number)" to "SV019".

---Setting range---
When SV117 = 0, the setting range is from 0 to 32767 (kp)
When SV117 ≠ 0
M700V, M70V, M70: 0 to 65536 (p)
C70: -32768 to 32767 (p)

【#2220(PR)】 SV020 RNG2 Main side detector resolution

Set the number of pulses per revolution of the motor side detector.
OSA18 (-A48) (260,000 p/rev) ---------- SV020 = 260
OSA105 (-A51) (1,000,000 p/rev) ------- SV020 = 1000
OSA166 (-A74) (16,000,000 p/rev) ----- SV020 = 16000

For linear motor
Set the number of pulses of the detector per magnetic pole pitch with SV118.

For direct-drive motor
Set the number of pulses per revolution of the motor side detector.

For 1000 pulse unit resolution detector, set the number of pulses to SV020 in increments of 1000 pulse(kp).
In this case, make sure to set SV118 to "0".
For high-accuracy binary resolution detector, set the number of pulses to four bite data of SV118 (high-order) and SV020 (low-order) in pulse(p) unit.
SV118 = number of pulses / 65536 (when =0, set "-1" to SV118)
SV019 = the remainder of "number of pulses / 65536"
When the NC is C70 and "SV020 > 32767", set "the reminder of above - 65536 (negative number)" to "SV020".

---Setting range---
When SV118 = 0, the setting range is from 0 to 32767 (kp)
When SV118 ≠ 0
For M700V,M70V,M70: 0 to 65536 (p)
For C70: -32768 to 32767 (p)

【#2221】 SV021 OLT Overload detection time constant

Normally, set to "60". (For machine tool builder adjustment.)

Related parameters: SV022

---Setting range---
1 to 999 (s)

【#2222】 SV022 OLL Overload detection level

Set the "Overload 1" (Alarm 50) current detection level as percentage to the stall current.
Normally set this parameter to "150". (For machine tool builder adjustment.)

Related parameters: SV021

---Setting range---
110 to 500 (Stall current %)

【#2223】 SV023 OD1 Excessive error detection width during servo ON

Set the excessive error detection width in servo ON.
<Standard setting value>

OD1=OD2= (Rapid traverse rate [mm/min]) / (60×PGN1) / 2 [mm]

When set to "0", the excessive error alarm detection will be ignored.

Related parameters: SV026

---Setting range---
0 to 32767 (mm)
However, when SV084/bitC=1, the setting range is from 0 to 32767 (μm).
(Only for MDS-D/DH and MDS-DM)

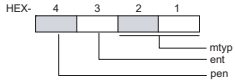
【#2224】 SV024 INP In-position detection width

Set the in-position detection width.
Set the positioning accuracy required for the machine.
The lower the setting is, the higher the positioning accuracy will be. However the cycle time (settling time) becomes longer.
The standard setting value is "50".

---Setting range---
0 to 32767 (μm)

【#2225(PR)】 SV025 MTYP Motor/Detector type

Set the position detector type, speed detector type and motor type.
The setting value is a four-digit hex (HEX).



bit F-C : pen(HEX-4) Position detector

Semi-closed loop control by general motor
pen=2

Full-closed loop control by general motor
- Ball screw end detector (OSA105-ET2, OSA166-ET2)
  pen=6
- For serial signal output rotary scale (including MDS-B-HR)
  pen=6
- For rectangular wave signal output scale
  pen=8
- For serial signal output linear scale (including MDS-B-HR and MPI scale)
  pen=A
- For speed command synchronization control
  Primary axis pen=A
  Secondary axis pen=D

For linear motor
pen=A

For direct-drive motor
pen=2

bit B-8 : ent(HEX-3) Speed detector

For general motor ent=2
For linear motor ent=A
For direct-drive motor ent=2

bit 7-0 : mtyp(HEX-2,1) Motor type

Set the motor type. Set this with SV017/bitF-C.

For SV017/bitF-C = 1 (200V standard motor series)

HF75 : 01h	HP54 : 11h	HF-KP13 : E9h (Note 3)
HF105 : 02h	HP104 : 12h	HF-KP23 : EAh
HF54 : 03h	HP154 : 13h	HF-KP43 : EBh
HF104 : 04h	HP224 : 1Bh	HF-KP73 : ECh
HF154 : 05h, 0Fh (Note 1)	HP204 : 14h	
HF224 : 06h	HP354 : 15h	
HF204 : 07h	HP454 : 16h	
HF354 : 08h	HP704 : 17h	
HF123 : 24h	HP903 : 18h	
HF223 : 26h, 2Dh (Note 2)	HP1103 : 19h	
HF303 : 28h		
HF453 : 09h		
HF703 : 0Ah		
HF903 : 0Bh		
HF142 : 25h		
HF302 : 27h, 2Eh (Note 2)		

(Note 1) When MDS-DM-V3 is connected
(Note 2) When MDS-DM-V3 M/S axis is connected
(Note 3) MDS-D-SVJ3 only

For SV017/bitF-C = 3 (400V standard motor series)

HF-H75 : 01h,	HP-H54 : 11h
HF-H105 : 02h,	HP-H104 : 12h
HF-H54 : 03h,	HP-H154 : 13h
HF-H104 : 04h,	HP-H204 : 14h
HF-H154 : 05h,	HP-H354 : 15h
	HP-H454 : 16h
HF-H204 : 07h,	HP-H704 : 17h
HF-H354 : 08h,	HP-H903 : 18h
HF-H453 : 09h,	HP-H1103: 19h
HF-H703 : 0Ah	
HF-H903 : 0Bh,	HP-H224 : 1Bh
HC-H1502: B9h	

For linear motor and direct-drive motor, follow the settings stated in respective materials.

【#2226】 SV026 OD2 Excessive error detection width during servo OFF

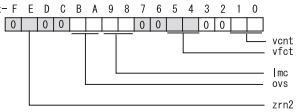
Set the excessive error detection width during servo OFF.
<Standard setting value>
OD1=OD2= (Rapid traverse rate [mm/min]) / (60×PGN1) / 2 [mm]
When set to "0", the excessive error alarm detection will be ignored.

Related parameters: SV023

---Setting range---
0 to 32767 (mm)
However, when SV084/bitC=1, the setting range is from 0 to 32767 (μm).
(Only for MDS-D/DH and MDS-DM)

【#2227】 SV027 SSF1 Servo function 1

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F :

Not used. Set to "0".

bit E : zrn2

Set to "1". (Fixed)

bit D :

Not used. Set to "0".

bit C :

Not used. Set to "0".

bit B-A : ovs Overshooting compensation type selection

Set this if overshooting occurs during positioning.
bitB,A=
00: Compensation stop
01: Setting prohibited
10: Setting prohibited
11: Type 3
(Set the compensation amount in SV031 and SV042.)

Related parameters: SV031, SV042, SV034/bitF-C

bit 9-8 : lmc Lost motion compensation type selection

Type 2 has an obsolete type compatible control.
bit9,8=
00: Compensation stop
01: Setting prohibited
10: Type 2
11: Setting prohibited
(Set the compensation amount in SV016 and SV041.))
(Note) When "SV082/bit1=1", the lost motion compensation type 3 will be selected.

bit 7 :

Not used. Set to "0".

bit 6 :

Not used. Set to "0".

bit 5-4 : vfct Jitter compensation pulse number

Suppress vibration by machine backlash when axis stops.
bit5,4=
00: Disable
01: 1 pulse
10: 2 pulse
11: 3 pulses

bit 3 :

Not used. Set to "0".

bit 2 :

Not used. Set to "0".

bit 1-0 : vcnt Speed loop delay compensation changeover type selection

Normally, use "Changeover type 2".
bit1,0=
00: Disable
01: Changeover type 1
10: Changeover type 2
11: Setting prohibited

Related parameters: SV007

【#2228(PR)】 SV028 MSFT Magnetic pole shift amount (for linear/direct-drive motor)

Set this parameter to adjust the motor magnetic pole position and detector's installation phase when using linear motors or direct-drive motors.
During the DC excitation of the initial setup (SV034/bit4=1), set the same value displayed in "AFLT gain" on the NC monitor screen.

Related parameters: SV034/bit4, SV061, SV062, SV063

For general motor:
Not used. Set to "0".

---Setting range---
-18000 to 18000 (Mechanical angle 0.01°)

【#2229】 SV029 VCS Speed at the change of speed loop gain

Noise at high speed rotation including rapid traverse can be reduced by lowering the speed loop gain at high speeds.
Set the speed at which the speed loop gain changes. Use this with SV006 (VGN2).
When not using, set to "0".

---Setting range---
0 to 9999 (r/min)

【#2230】 SV030 IVC Voltage non-sensitive band compensation

When 100% is set, the voltage reduction amount equivalent to the logical non-energization in the PWM control will be compensated.
When "0" is set, 100% compensation will be performed.
Adjust in increments of 10% from the default value of 100%.
If increased too much, vibration or vibration noise may be generated.

---Setting range---
0 to 255 (%)

【#2231】 SV031 OVS1 Overshooting compensation 1

This compensates the motor torque when overshooting occurs during positioning. This is valid only when the overshooting compensation (SV027/bitB,A) is selected.

Type 3 SV027(SSF1)/bitB,A(ovs) = 11
Set the compensation amount based on the motor stall current. Observing positioning droop waveform, increase in increments of 1% and find the value where overshooting does not occur.

To vary compensation amount depending on the direction.
When SV042 (OVS2) is "0", change the SV031 (OVS1) value in both of the +/- directions to compensate.
To vary the compensation amount depending on the command direction, set this and SV042 (OVS2).
(SV031: + direction, SV042: - direction. However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the direction of the command.

Related parameters: SV027/bitB,A, SV034/bitF-C, SV042, SV082/bit2

---Setting range---
-1 to 100 (Stall current %)
Note that the range will be "-1 - 10000" (Stall current 0.01%) when SV082/bit2 is "1".

【#2232】 SV032 TOF Torque offset

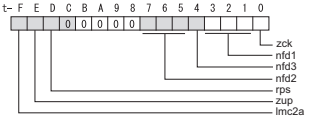
Set the unbalance torque on vertical axis and inclined axis.
When the vertical axis pull up function is enabled, the pull up compensation direction is determined by this parameter's sign. When set to "0", the vertical axis pull up will not be executed.
This can be used for speed loop delay compensation and collision detection function.
To use load inertia estimation function (drive monitor display), set this parameter, friction torque (SV045) and load inertia display enabling flag(SV035/bitF).

Related parameters: SV007, SV033/bitE, SV059

---Setting range---
-100 to 100 (Stall current %)

【#2233】 SV033 SSF2 Servo function 2

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : lmc2a Lost motion compensation 2 timing

0: Normal 1: Change

bit E : zup Vertical axis pull up function

0: Stop 1: Enable

Related parameters: SV032, SV095

bit D : rps Speed setting increment

Change the setting units of the specified speed signal output speed (SV073) and safety observation safety speed (SV238).

0: mm/min 1: 100mm/min

Related parameters: SV073, SV238

bit C-8 :

Not used. Set to "0".

bit 7-5 : nfd2 Depth of Notch filter 2

Set the depth of Notch filter 2 (SV046).
bit7,6,5=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

Set the adaptive frequency of Notch filter 2 in "#2246 SV046 FHz2".

bit 4 : nfd3 Notch filter 3

0: Stop 1: Start (1,125Hz)

bit 3-1 : nfd1 Depth of Notch filter 1

Set the depth of Notch filter 1 (SV038).
bit3,2,1=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

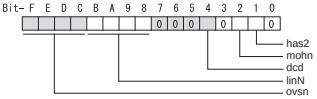
Set the adaptive frequency of Notch filter 1 in "#2238 SV038 FHz1".

bit 0 : zck Feedback error alarm 42 detection

This ignores the false detection of alarms when using multipoint Z phase scale including distance-coded reference scale.
0: Normal setting 1: Disable

【#2234】 SV034 SSF3 Servo function 3

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-C: ovsn Overshooting compensation type 3 Non-sensitive band

Set the non-sensitive band of the model position droop overshooting amount in increments of 2 μ m.
In the feed forward control, set the non-sensitive band of the model position droop and ignore the overshooting of the model.
0 : 0 μ m, 1: 2 μ m, 2: 4 μ m,---, E : 28 μ m, F: 30 μ m

bit B-8 : linN The number of parallel connections when using linear motors (for linear)

Set to"2" to perform 1 amplifier 2 motor control by linear servo.

bit 7-5 :

Not used. Set to "0".

bit 4 : dcd (linear/direct-drive motor)

0: Normal setting 1: DC excitation mode

Related parameters: SV061, SV062, SV063

bit 3 :

Not used. Set to "0".

bit 2 : mohn Thermistor temperature detection (linear/direct-drive motor)

0: Normal setting 1: Disable

bit 1 : has HAS control

This stabilizes the speed overshooting by torque saturation phenomenon.
0: Normal setting 1: Enable

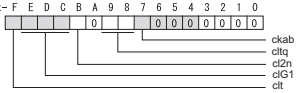
Related parameters: SV084/bitF

bit 0 :

Not used. Set to "0".

【#2235】 SV035 SSF4 Servo function 4

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : clt Inertia ratio display

0: Setting for normal use
1: Display the total inertia ratio estimated at acceleration/deceleration at the inertia ratio on the servo monitor screen
To display it on the screen, set an imbalance torque and friction torque to both SV032 and SV045 and repeat acceleration/deceleration operations for several times.

bit E-C: clG1 G1 Collision detection level

Set the collision detection level in the collision detection method 1 during cutting feed (G1) in multiples of that of rapid traverse (G0). When set to "0", detection of collision detection method 1 during cutting feed will be ignored.
G1 Collision detection level = G0 collision detection level (SV060) × clG1

bit B : cl2n Collision detection method 2

0: Enable 1: Disable

bit A :

Not used. Set to "0".

bit 9-8 : cltq Retract torque in collision detection

Set the retract torque in collision detection using the ratio of motor's maximum torque.
bit9,8=
00: 100%
01: 90%
10: 80%(Standard)
11: 70%

bit 7 : ckab No signal detection 2

Set this to use rectangular wave output linear scale.
This enables the detection of No signal 2 (alarm 21).
0: Disable 1: Enable

bit 6-0 :

Not used. Set to "0".

【#2236(PR)】 SV036 PTYP Power supply type/ Regenerative resistor type

MDS-D/DH Series: Power supply type

When connecting a power supply unit, set a code for each power supply unit.

bit F-C : amp

Not used. Set to "0".

bit B-8 : rtyp

Not used. Set to "0".

bit 7-0 : ptyp External emergency stop setting

When the emergency stop input signal of the power supply unit is "disabled"

Power supply unit is not connected	: 00
MDS-D-CV-37 / MDS-DH-CV-37	: 04
MDS-D-CV-75 / MDS-DH-CV-75	: 08
MDS-D-CV-110 / MDS-DH-CV-110	: 11
MDS-D-CV-185 / MDS-DH-CV-185	: 19
MDS-D-CV-300 / MDS-DH-CV-300	: 30
MDS-D-CV-370 / MDS-DH-CV-370	: 37
MDS-D-CV-450 / MDS-DH-CV-450	: 45
MDS-D-CV-550 / MDS-DH-CV-550	: 55
MDS-DH-CV-750	: 75

When the emergency stop input signal of the power supply unit is "enabled"
(Note) Set the power supply rotary switch to "4".

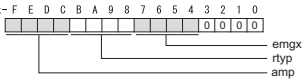
Power supply unit is not connected	: 00
MDS-D-CV-37 / MDS-DH-CV-37	: 44
MDS-D-CV-75 / MDS-DH-CV-75	: 48
MDS-D-CV-110 / MDS-DH-CV-110	: 51
MDS-D-CV-185 / MDS-DH-CV-185	: 59
MDS-D-CV-300 / MDS-DH-CV-300	: 70
MDS-D-CV-370 / MDS-DH-CV-370	: 77
MDS-D-CV-450 / MDS-DH-CV-450	: 85
MDS-D-CV-550 / MDS-DH-CV-550	: 95
MDS-DH-CV-750	: B5

MDS-DM-SPV Series

Not used. Set to "0000".
Power supply type is set by spindle side.

MDS-D-SVJ3 Series: Regenerative resistor type

Set the regenerative resistor type.



bit F-8 : amp(bit F-C) / rtyp(bit B-8)

Resistor built-in drive unit	: 10
Setting prohibited	: 11
MR-RB032	: 12
MR-RB12 or GZG200W39OHMK	: 13
MR-RB32 or GZG200W120OHMK 3 units connected in parallel	: 14
MR-RB30 or GZG200W39OHMK 3 units connected in parallel	: 15
MR-RB50 or GZG300W39OHMK 3 units connected in parallel	: 16
MR-RB31 or GZG200W20OHMK 3 units connected in parallel	: 17
MR-RB51 or GZG300W20OHMK 3 units connected in parallel	: 18
Setting prohibited	: 19-1F
Setting prohibited	: 20-23
FCUA-RB22	: 24
FCUA-RB37	: 25
FCUA-RB55	: 26
Setting prohibited	: 27
R-UNIT1	: 28
R-UNIT2	: 29
R-UNIT3	: 2A
R-UNIT4	: 2B
R-UNIT5	: 2C
FCUA-RB75/2 2 units connected in parallel	: 2D
FCUA-RB55 2 units connected in parallel	: 2E
Setting prohibited	: 2F

bit 7-4 : emgx External emergency stop function

Set the external emergency stop function. (Do not set a value other than specified.)
0: Disable 4: Enable

bit 3-0 :

Not used. Set to "0".

【#2237】 SV037 JL Load inertia scale

Set the motor axis conversion total load inertia including motor itself in proportion to the motor inertia.
SV037(JL)=(Jm+Jl)/Jm×100
Jm: Motor inertia
Jl: Motor axis conversion load inertia

For linear motor, set the gross mass of the moving sections in kg unit.

<<Drive monitor load inertia ratio display>>
Set SV035/bitF=1 and imbalance torque and friction torque to both SV032 and SV045, and then repeat acceleration/deceleration for several times.

---Setting range---
For general motor: 0 to 5000 (%)
For linear motor 0 to 5000 (kg)

【#2238】 SV038 FHz1 Notch filter frequency 1

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV033/bit3-1, SV115

---Setting range---
0 to 2250 (Hz)

【#2239】 SV039 LMCD Lost motion compensation timing

Set this when the timing of lost motion compensation type 2 does not match.
Adjust increments of 10 at a time.

---Setting range---
0 to 2000 (ms)

【#2240】 SV040 LMCT Lost motion compensation non-sensitive band

Set the non-sensitive band of the lost motion compensation in the feed forward control.
When "0" is set, 2 μ m is the actual value to be set. Adjust increments of 1 μ m.

---Setting range---
0 to 255 (μ m)

【#2241】 SV041 LMC2 Lost motion compensation 2

Set this with SV016 (LMC1) only when you wish to vary the lost motion compensation amount depending on the command directions.
Normally, set to "0".

Related parameters: SV016

---Setting range---
-1 to 200 (Stall current %)
Note that when SV082/bit2 is "1", the setting range is between -1 and 20000 (Stall current 0.01%).

【#2242】 SV042 OVS2 Overshooting compensation 2

Set this with SV031 (OVS1) only when you wish to vary the overshooting compensation amount depending on the command directions.
Normally, set to "0".

Related parameters: SV031

---Setting range---
-1 to 100 (Stall current %)
Note that when SV082/bit2 is "1", the setting range is between -1 and 10000 (Stall current 0.01%).

【#2243】 SV043 OBS1 Disturbance observer filter frequency

Set the disturbance observer filter band.
Normally, set to "100". Setting values of 49 or less is equal to "0" setting.
To use the disturbance observer, also set SV037 (JL) and SV044 (OBS2).
When disturbance observer related parameters are changed, lost motion compensation needs to be readjusted.
Set to "0" when not using.

---Setting range---
0 to 1000 (rad/s)

【#2244】 SV044 OBS2 Disturbance observer gain

Set the disturbance observer gain. The standard setting is "100 to 300".
To use the disturbance observer, also set SV037 (JL) and SV043 (OBS1).
When disturbance observer related parameters are changed, lost motion compensation needs to be readjusted.
Set to "0" when not using.

---Setting range---
0 to 500 (%)

【#2245】 SV045 TRUB Friction torque

Set the frictional torque when using the collision detection function.
To use load inertia estimation function (drive monitor display), set this parameter, imbalance torque (SV032) and load inertia display enabling flag (SV035/bitF).

---Setting range---
0 to 255 (Stall current %)

【#2246】 SV046 FHz2 Notch filter frequency 2

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV033/bit7-5, SV115

---Setting range---
0 to 2250 (Hz)

【#2247】 SV047 EC Inductive voltage compensation gain

Set the inductive voltage compensation gain. Standard setting value is "100".
If the current FB peak exceeds the current command peak, lower the gain.

---Setting range---
0 to 200 (%)

【#2248】 SV048 EMGrt Vertical axis drop prevention time

Input the time required to prevent the vertical axis from dropping by delaying READY OFF until the brake works at an emergency stop.
Increase in increments of 100ms at a time, find and set the value where the axis does not drop.
When using a motor with a break of HF(-H) Series or HP(-H) Series, set to "200ms" as a standard.
When the pull up function is enabled (SV033/bitE=1), the pull up is established during the drop prevention time.

Related parameters: SV033/bitE, SV055, SV056

---Setting range---
0 to 20000 (ms)

【#2249】 SV049 PGN1sp Position loop gain 1 in spindle synchronous control

Set the position loop gain during spindle synchronization control (synchronous tapping and synchronization control with spindle C-axis).
Set the same value as that of the position loop gain for spindle synchronous tapping control.
When performing the SHG control, set this parameter with SV050 (PGN2sp) and SV058 (SHGCsp).
When changing the value, change the value of "#2017 tap_g Axis servo gain".

---Setting range---
1 to 200 (rad/s)

【#2250】 SV050 PGN2sp Position loop gain 2 in spindle synchronous control

When using SHG control during spindle synchronous control (synchronous tapping and synchronization control with spindle C-axis), set this parameter with SV049 (PGN1sp) and SV058 (SHGCsp).
Make sure to set the value 8/3 times that of SV049.
When not using the SHG control, set to "0".

---Setting range---
0 to 999 (rad/s)

【#2251】 SV051 DFBT Dual feedback control time constant

Set the control time constant in dual feed back.
When "0" is set, it operates at 1ms.
The higher the time constant is, the closer it gets to the semi-closed control, so the limit of the position loop gain will be raised.

For linear servo/direct-drive motor system
Not used. Set to "0".

Related parameters: SV017/bit1, SV052

---Setting range---
0 to 9999 (ms)

【#2252】 SV052 DFBN Dual feedback control non-sensitive band

Set the non-sensitive band in the dual feedback control.
Normally, set to "0".

For linear servo/direct-drive motor system
Not used. Set to "0".

Related parameters: SV017/bit1, SV052

---Setting range---
0 to 9999 (μm)

【#2253】 SV053 OD3 Excessive error detection width in special control

Set the excessive error detection width when servo ON in a special control (initial absolute position setting, stopper control and etc.).
When "0" is set, excessive error detection will not be performed when servo ON during a special control.

---Setting range---
0 to 32767 (mm)
However, when SV084/bitC=1, the setting range is from 0 to 32767 (μm).
(Only for MDS-D/DH and MDS-DM)

【#2254】 SV054 ORE Overrun detection width in closed loop control

Set the overrun detection width in the full-closed loop control.
When the gap between the motor side detector and the linear scale (machine side detector) exceeds the value set by this parameter, it will be judged as overrun and "Alarm 43" will be detected.
When "-1" is set, the alarm detection will not be performed.
When "0" is set, overrun will be detected with a 2mm width.

For linear servo/direct-drive motor system
Not used. Set to "0".

---Setting range---
-1 to 32767 (mm)
However, when SV084/bitD=1, the setting range is from -1 to 32767 (μm).
(Only for MDS-D/DH and MDS-DM)

【#2255】 SV055 EMGx Max. gate off delay time after emergency stop

Set the time required between an emergency stop and forced READY OFF.
Set the maximum value "+ 100ms" of the SV056 setting value of the servo drive unit electrified by the same power supply unit.
When executing the vertical axis drop prevention, the gate off will be delayed for the length of time set at SV048 even when SV055's is smaller than that of SV048.

Related parameters: SV048, SV056

---Setting range---
0 to 20000 (ms)

【#2256】 SV056 EMGt Deceleration time constant at emergency stop

Set the time constant used for the deceleration control at emergency stop.
Set the time required to stop from rapid traverse rate (rapid).
The standard setting value is EMGt<=G0tL*0.9.
However, note that the standard setting value differs from the above-mentioned value when the setting value of "#2003:smgst Acceleration and deceleration modes bit 3-0:Rapid traverse acceleration/deceleration type" is 8 or F. Refer to Instruction Manual of the drive unit (section "Deceleration control") for details.
When the axis is used in the synchronous control, set the same value with minus sign to both axes.
If one of the axes switches to dynamic brake by an alarm during deceleration control, another axis will also switch.

Related parameters: SV048, SV055

---Setting range---
-20000 to 20000 (ms)

【#2257】 SV057 SHGC SHG control gain

When performing the SHG control, set to SV003(PGN1)*6.
When not using the SHG control, set to "0".

Related parameters: SV003, SV004

---Setting range---
0 to 1200 (rad/s)

【#2258】 SV058 SHGCsp SHG control gain in spindle synchronous control

When using SHG control during spindle synchronization control (synchronous tapping and synchronous control with spindle C-axis), set this parameter with SV049 (PGN1sp) and SV050 (PGN2sp).
Make sure to set the value 6 times that of SV049.
When not using the SHG control, set to "0".

---Setting range---
0 to 1200 (rad/s)

【#2259】 SV059 TCNV Collision detection torque estimated gain

Set the torque estimated gain when using the collision detection function.
The standard setting value is the same as the load inertia ratio (SV037 setting value) including motor inertia.
Set to "0" when not using the collision detection function.

Related parameters: SV032, SV035/bitF-8, SV037, SV045, SV060

<<Drive monitor load inertia ratio display>>
Set SV035/bitF=1 and imbalance torque and friction torque to both SV032 and SV045, and then repeat acceleration/deceleration for several times.

---Setting range---
For general motor: 0 to 5000 (%)
For linear motor: 0 to 5000 (kg)

【#2260】 SV060 TLMT Collision detection level

When using the collision detection function, set the collision detection level at the G0 feeding.
When "0" is set, none of the collision detection function will work.

Related parameters: SV032, SV035/bitF-8, SV037, SV045, SV059

---Setting range---
0 to 999 (Stall current %)

【#2261】 SV061 DA1NO D/A output ch1 data No. / Initial DC excitation level

Input the data number you wish to output to the D/A output channel 1.
When using the 2-axis drive unit, set "-1" to the axis that the data will not be output.

When the DC excitation is running (SV034/bit4=1):
Use this when the DC excitation is running (SV034/bit4=1) to adjust the initial magnetic pole position (when measuring the magnetic pole shift amount) for linear motor and direct-drive motor.
Set the initial excitation level in DC excitation control.
Set 5% as standard.
Related parameters: SV062, SV063

---Setting range---
-1 to 127
When the DC excitation is running (SV034/bit4=1): 0 to 100 (Stall current %)

【#2262】 SV062 DA2NO D/A output ch2 data No. / Final DC excitation level

Input the data number you wish to output to the D/A output channel 2.
When using the 2-axis drive unit, set "-1" to the axis that the data will not be output.

When the DC excitation is running (SV034/bit4=1):
Use this when the DC excitation is running (SV034/bit4=1) to adjust the initial magnetic pole position (when measuring the magnetic pole shift amount) for linear motor and direct-drive motor.
Set the final excitation level in DC excitation control.
Set 5% as standard.
When the magnetic pole shift amount measurement value is unsteady, adjust the value in increments of 5%.
Related parameters: SV061, SV063

---Setting range---
-1 to 127
When the DC excitation is running (SV034/bit4=1): 0 to 100 (Stall current %)

【#2263】 SV063 DA1MPY D/A output ch1 output scale / Initial DC excitation time

Set output scale of the D/A output channel 1 in increment of 1/100.
When "0" is set, the magnification is the same as when "100" is set.

When the DC excitation is running (SV034/bit4=1):
Use this when the DC excitation is running (SV034/bit4=1) to adjust the initial magnetic pole position (when measuring the magnetic pole shift amount) for linear motor and direct-drive motor.
Set the initial excitation time in DC excitation control.
Set 500ms as standard.
When the magnetic pole shift amount measurement value is unsteady, adjust the value in increments of 500ms.
Related parameters: SV061, SV062

---Setting range---
-32768 to 32767 (1/100-fold)
When the DC excitation is running (SV034/bit4=1): 0 to 10000 (ms)

【#2264】 SV064 DA2MPY D/A output ch2 output scale

Set output scale of the D/A output channel 2 in increment of 1/100.
When "0" is set, the magnification is the same as when "100" is set.

---Setting range---
-32768 to 32767 (1/100-fold)

【#2265】 SV065 TLC Machine end compensation gain

The shape of the machine end is compensated by compensating the spring effect from the machine end to the motor end.
Set the machine end compensation gain. Measure the error amount by roundness measurement and estimate the setting value by the following formula.

Compensation amount (μ m) = Command speed F(mm/min)2 * SV065 / (Radius R(mm) * SV003 * 16,200,000)

Set to "0" when not using.

---Setting range---
-30000 to 30000 (Acceleration ratio 0.1%)

【#2266-2272】 SV066 - SV072

This parameter is set automatically by the NC system.

【#2273(PR)】 SV073 FEEDout Specified speed output speed

Set the specified speed.
Also set SV082/bit9,8 to output digital signal.

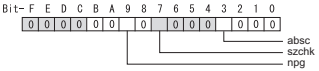
---Setting range---
-32768 to 32767 (r/min)
However, when SV033/bitD=1, the setting range is from -32768 to 32767 (100mm/min).

【#2274-2280】 SV074 - SV080

This parameter is set automatically by the NC system.

【#2281(PR)】 SV081 SPEC2 Servo specification 2

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-A :

Not used. Set to "0".

bit 9 : npg Earth fault detection

0: Disable 1: Enable (standard)
Set "0" and it is constantly "Enable" for MDS-D-SVJ3 Series.

bit 8 :

Not used. Set to "0".

bit 7 : szchk Distance-coded reference scale reference mark

0: Check at 4 points (standard) 1: Check at 3 points

bit 6-4 :

Not used. Set to "0".

bit 3 : absc Distance-coded reference scale

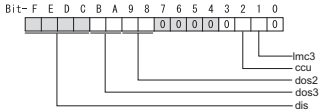
0: Disable 1: Enable

bit 2-0 :

Not used. Set to "0".

【#2282】 SV082 SSF5 Servo function 5

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-C : dis Digital signal input selection

0: No signal
1: Safety observation function door state signal
2: Battery box voltage drop warning (It is not available for MDS-D-SVJ3 Series.)
3 to F: Setting prohibited

bit B-A : dos3 Digital signal output 3 selection

bitB,A=
00: Disable
01: Setting prohibited
10: Contactor control signal output (For MDS-D-SVJ3)
11: Setting prohibited

bit 9-8 : dos2 Digital signal output 2 selection

bit9,8=
00: Disable
01: Specified speed output
10: Setting prohibited
11: Setting prohibited

bit 7-3 :

Not used. Set to "0".

bit 2 : ccu Lost motion overshoot compensation compensation amount setting increment

0: Stall current % 1: Stall current 0.01%

bit 1 : lmc3 Lost motion compensation type 3

Set this when protrusion at a quadrant change is too big.
0: Stop 1: Start

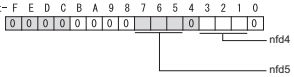
Related parameters: SV016, SV041, SV085, SV086

bit 0 :

Not used. Set to "0".

【#2283】 SV083 SSF6 Servo function 6

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-8 :

Not used. Set to "0".

bit 7-5 : nfd5 Depth of Notch filter 5

Set the depth of Notch filter 5.
bit7,6,5=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

Set the adaptive frequency of Notch filter 5 in "#2288 SV088 FHz5".

bit 4 :

Not used. Set to "0".

bit 3-1 : nfd4 Depth of Notch filter 4

Set the depth of Notch filter 4.
bit3,2,1=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

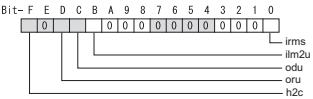
Set the adaptive frequency of Notch filter 4 in "#2287 SV087 FHz4".

bit 0 :

Not used. Set to "0".

【#2284】 SV084 SSF7 Servo function 7

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : h2c HAS control cancel amount

0: 1/4 (standard) 1: 1/2

Related parameters: SV034/bit1

bit E :

Not used. Set to "0".

bit D : oru Overrun detection width unit (for MDS-D/DH and MDS-DM)

0: mm (normal setting) 1: μm
It is not available for MDS-D-SVJ3 Series.

bit C : odu Excessive error detection width unit (for MDS-D/DH and MDS-DM)

0: mm (normal setting) 1: μm
It is not available for MDS-D-SVJ3 Series.

bit B : ilm2u Current limit value (SV014) in special control setting unit

0: Stall current % (normal setting) 1: Stall current 0.01%

bit A-1 :

Not used. Set to "0".

bit 0 : irms Motor current display

0: Motor q axis current display (normal) 1: Motor effective current display

【#2285】 SV085 LMCk Lost motion compensation 3 spring constant

Set the machine system's spring constant when using lost motion compensation type 3. When not using, set to "0".

Related parameters: SV016, SV041, SV082/bit2,1, SV086

---Setting range---
0 to 32767 (0.01%/μm)

【#2286】 SV086 LMCc Lost motion compensation 3 viscous coefficient

Set the machine system's viscous coefficient when using lost motion compensation type 3. When not using, set to "0".

Related parameters: SV016, SV041, SV082/bit2,1, SV086

---Setting range---
0 to 32767 (0.01%/μm)

【#2287】 SV087 FHz4 Notch filter frequency 4

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV083/bit3-1, SV115

---Setting range---
0 to 2250 (Hz)

【#2288】 SV088 FHz5 Notch filter frequency 5

Set the vibration frequency to suppress when machine vibration occurs.
(Normally, do not set 80 or less.)
Set to "0" when not using.

Related parameters: SV083/bit7-5, SV115

---Setting range---
0 to 2250 (Hz)

【#2289】 SV089

Not used. Set to "0".

【#2290】 SV090

Not used. Set to "0".

【#2291】 SV091 LMC4G Lost motion compensation 4 gain

Use this with LMC compensation type 3. As the delay in path tracking is monitored and compensated, the delay in path tracking will be minimized even if machine friction amount changes by aging. Use the lost motion compensation amount (SV016) * 5 (10% of the dynamic friction torque) as the target. The higher the setting value is, the more accurate the quadrant change be; however, the more likely vibrations occur.

---Setting range---
0 to 20000 (Stall current 0.01%)

【#2292】 SV092

Not used. Set to "0".

【#2293】 SV093

Not used. Set to "0".

【#2294】 SV094 MPV Magnetic pole position error detection speed

The magnetic pole position detection function monitors the command speed and motor speed at the position command stop and detects the magnetic pole position error alarm (3E) if any. Set the error detection level for the command speed and motor speed at the position command stop.
Be aware when setting the parameter as the setting units for general motors and linear motors are different.

<<For general motor>>
When the command speed error detection level is set to "0", the magnetic pole position error (3E) is detected at 10r/min.
Set "10" as standard.
This detects the magnetic pole position error (3E) when the motor rotation speed is 100r/min and more.

<<For linear motor>>
When the command motor speed level is set to "0", the magnetic pole position error (3E) is detected at 1mm/s.
Set "10" as standard.
This detects the magnetic pole position error (3E) when the motor speed is 10mm/s and more.

---Setting range---
0 to 31999

<<For general motor>>
Ten-thousands digit, Thousands digit ---------- Command speed error detection level (10r/min)
Hundreds digit, Tens digit, Ones digit ---------- Motor speed error detection level (10r/min)

<<For linear motor>>
Ten-thousands digit, Thousands digit ---------- Command speed error detection speed level (10r/min)
Hundreds digit, Tens digit, Ones digit ---------- Motor speed error detection level (10r/min)

【#2295】 SV095 ZUPD Vertical axis pull up distance

Set this parameter to adjust the pull up distance when the vertical axis pull up function is enabled. When the pull up function is enabled and this parameter is set to "0", for a rotary motor, 8/1000 of a rotation at the motor end is internally set as the pull up distance, and for a linear motor, 80[μm] is set.

Related parameters:
SV032 : The pull up direction is determined. When "0" is set, pull up control is not executed.
SV033/bitE : Start-up of the pull up function
SV048 : Set the drop prevention time. When "0" is set, pull up control is not executed.

---Setting range---
0 to 2000 (μm)

【#2296】 SV096

Not used. Set to "0".

【#2297】 SV097

Not used. Set to "0".

【#2298】 SV098

Not used. Set to "0".

【#2299】 SV099

Not used. Set to "0".

【#2300】 SV100

Not used. Set to "0".

【#2301】 SV101

Not used. Set to "0".

【#2302】 SV102

Not used. Set to "0".

【#2303】 SV103

Not used. Set to "0".

【#2304】 SV104

Not used. Set to "0".

【#2305】 SV105

Not used. Set to "0".

【#2306】 SV106

Not used. Set to "0".

【#2307】 SV107

Not used. Set to "0".

【#2308】 SV108

Not used. Set to "0".

【#2309】 SV109

Not used. Set to "0".

【#2310】 SV110

Not used. Set to "0".

【#2311】 SV111

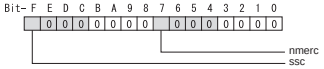
Not used. Set to "0".

【#2312】 SV112

Not used. Set to "0".

【#2313】 SV113 SSF8 Servo function 8

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : ssc Safety observation function

0: Stop 1: Start

bit E-8 :

Not used. Set to "0".

bit 7 : nmerc Machine error compensation amount

When disabled, the machine error compensation amount including backlash and pitch error to be compensated by an NC will be ignored by the servo control.
Use this to adjust the lost motion compensation by the electric end roundness measurement.

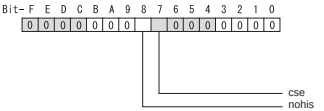
0: Normal setting 1: Disable

bit 6-0 :

Not used. Set to "0".

【#2314】 SV114 SSF9 Servo function 9

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F-9 :

Not used. Set to "0".

bit 8 : nohis History of communication error alarm between NC and DRV (34, 36, 38, 39)

Set "1" for C70.

0: Enable 1: Disable

bit 7 : cse Command speed monitoring function

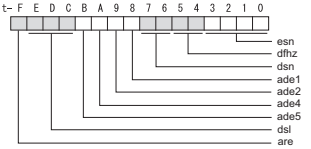
0: Normal setting 1: Enable

bit 6-0 :

Not used. Set to "0".

【#2315】 SV115 SSF10 Servo function 10

Select the servo functions.
A function is assigned to each bit.
Set this in hexadecimal format.



bit F : are Notch filter5 all frequencies adapted

When enabled, Notch filter5 all frequencies adaptive range is not limited regardless of SV115/bit4,5 setting.
0: Disable 1: Enable

bit E-C: dsl Notch filter frequency display

Switch the "AFLT frequency" display on drive monitor screen to check every notch filter frequency.
When the selected notch filter is not used, "0" is displayed.

bitE,D,C=
000 : Estimated resonance frequency (Normal display)
001 : Notch filter 1 frequency
010 : Notch filter 2 frequency
011 : Notch filter 3 frequency (always displays 1125Hz)
100 : Notch filter 4 frequency
101 : Notch filter 5 frequency
Other settings: setting prohibited

bit B : ade5 Notch filter 5 / Adaptive follow-up function

0: Disable 1: Enable

bit A : ade4 Notch filter 4 / Adaptive follow-up function

0: Disable 1: Enable

bit 9 : ade2 Notch filter 2 / Adaptive follow-up function

0: Disable 1: Enable

bit 8 : ade1 Notch filter 1 / Adaptive follow-up function

0: Disable 1: Enable

bit 7-6 : dsn Estimated resonance frequency display holding time

Set the estimated resonance frequency display holding time to the "AFLT frequency" display on drive monitor screen.

bit7,6=
00: 4 [s]
01: 8 [s]
10: 12 [s]
11: 16 [s]

bit 5-4 : dfhz Notch filter frequency range

Set the adaptive range of the notch filter frequency. When the adaptive follow-up function is enabled and if the estimated resonance frequency exists in the set range, the notch filter will be adapted. Normally set this parameter to "00".

bit5,4=
00: -10 to 10 [%]
01: -20 to 20 [%]
10: -30 to 30 [%]
11: -40 to 40 [%]

bit 3-0 : esn Sensitivity of estimated resonance frequency

Set the sensitivity of the estimated resonance frequency. Smaller setting value enables to detect smaller vibration component, however, adaptive movement will be repeated frequently. Normally set this parameter to "0".

0 : Normal setting (same sensitivity as A) 1 : Sensitivity high to F : Sensitivity low

【#2316】 SV116 SSF11 Servo function 11

Not used. Set to "0000".

【#2317(PR)】 SV117 RNG1ex Expansion sub side detector resolution

For high-accuracy binary resolution detector, set the number of pulses to four bite data of SV117 (high-order) and SV019 (low-order) by pulse(p).
When SV117=0, the setting unit of SV019 is (kp).
Refer to SV019 for details.

Related parameters: SV019, SV020, SV118

---Setting range---
-1 to 32767

【#2318(PR)】 SV118 RNG2ex Expansion main side detector resolution

When using high-accuracy binary resolution detector, set the number of pulses to four bite data of SV118 (high-order) and SV020 (low-order) by pulse(p).
When SV118=0, the setting unit of SV020 is (kp).
Refer to SV020 for details.

Related parameters: SV019, SV020, SV117

---Setting range---
-1 to 32767

【#2319】 SV119

Not used. Set to "0".

【#2320】 SV120

Not used. Set to "0".

【#2321】 SV121

Not used. Set to "0".

【#2322】 SV122

Not used. Set to "0".

【#2323】 SV123

Not used. Set to "0".

【#2324】 SV124

Not used. Set to "0".

【#2325】 SV125

Not used. Set to "0".

【#2326】 SV126

Not used. Set to "0".

【#2327】 SV127

Not used. Set to "0".

【#2328】 SV128

Not used. Set to "0".

【#2329】 SV129 Kwf Synchronous control feed forward filter frequency

Set the acceleration rate feed forward filter frequency in high-speed synchronous tapping control. The standard setting is "600".

Related parameters: SV244

---Setting range---
0 to 32767 (rad/s)

【#2330(PR)】 SV130 RPITS Base reference mark interval

Set the base reference mark intervals of distance-coded reference scale. When the distance-coded reference scale is not used, set to "0".
The interval of basic reference mark (SV130) and auxiliary interval (SV131) must be in the specified relationship. Other settings cause the initial parameter error (alarm 37).
Following is the specified relationship.

The quotient of (SV130×1000) / SV131 must be 4 or more and leaves no remainder.

Related parameters: SV081/bit7,3, SV131, SV134 to SV137

---Setting range---
0 to 32767 (mm)

【#2331(PR)】 SV131 DPITS Auxiliary reference mark interval

Set the auxiliary interval of reference mark in the distance-coded reference scale. When the distance-coded reference scale is not used, set to "0".
The interval of basic reference mark (SV130) and auxiliary interval (SV131) must be in the specified relationship. Other settings cause the initial parameter error (alarm 37).
Following is the specified relationship.

The quotient of (SV130×1000) / SV131 must be 4 or more and leaves no remainder.

Related parameters: SV081/bit7,3, SV130, SV134 to SV137

---Setting range---
0 to 32767 (μm)

【#2332】 SV132

Not used. Set to "0".

【#2333】 SV133

Not used. Set to "0".

【#2334】 SV134 RRn0 Distance-coded reference check / revolution counter

Set this parameter to operate distance-coded reference check when using distance-coded reference scale.
During the distance-coded reference check initial setup (SV137 : RAER=-1), set the following items on the NC drive monitor screen after the distance-coded reference check initial setup warning A3 turns OFF.

SV134=Rn, SV135=Pn, SV136=MPOS

When reference point is set, the warning A3 turns OFF.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV137

---Setting range---
-32768 to 32767

【#2335】 SV135 RPn0H Distance-coded reference check /position within one rotation High

Set this parameter to operate distance-coded reference check when using distance-coded reference scale.
During the distance-coded reference check initial setup (SV137 : RAER=-1), set the following items on the NC drive monitor screen after the distance-coded reference check initial setup warning A3 turns OFF.

SV134=Rn, SV135=Pn, SV136=MPOS

When reference point is set, the warning A3 turns OFF.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV137

---Setting range---
-32768 to 32767

【#2336】 SV136 RPn0L Distance-coded reference check / position within one rotation Low

Set this parameter to operate distance-coded reference check when using distance-coded reference scale.
During the distance-coded reference check initial setup (SV137 : RAER=-1), set the following items on the NC drive monitor screen after the distance-coded reference check initial setup warning A3 turns OFF.

SV134=Rn, SV135=Pn, SV136=MPOS

When reference point is set, the warning A3 turns OFF.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV137

---Setting range---
-32768 to 32767

【#2337】 SV137 RAER Distance-coded reference check allowable width

For the distance-coded reference check function when using distance-coded reference scale, set the allowable gap from the reference point position data calculated by the main side detector. When the gap exceeds the allowable range, reference point created by distance-code is judged as wrong and detects alarm 42.
The standard setting value is "basic reference mark interval (SV130) / 4".
SV137=0 setting carries out the same operation as the standard setting value.
SV137=-1 setting enables the distance-coded reference initial set up mode and displays setting values of SV134 to SV136 on NC drive monitor.
To enable the distance-coded reference check function, SV081/bit3=1setting and a battery option are needed.
When SV137=32767, the distance-coded reference check function is disabled.

Related parameters: SV081/bit3,7, SV130, SV131, SV134 to SV136

---Setting range---
-1 to 32767 (mm)

【#2338-2397】 SV138 - SV197

Not used. Set to "0".

【#2398】 SV198 NSE No signal 2 special detection width

Set the special detection width for the no signal 2 (alarm 21).
This detects no signal 2 (alarm 21) when machine side feedback is not invoked even if the motor side detector feedback exceeds this setting in the rectangular wave signal output linear scale.
When "0" is set, the detection will be performed with a 15 μ m width.
For MDS-D-SVJ3, this parameter setting is invalid and the detection width is fixed to 15 μ m.

---Setting range---
0 to 32767 (μ m)

【#2399-2437】 SV199 - SV237

Not used. Set to "0".

【#2438】 SV238 SSCFEED Safety observation Safety speed

Set the machine's safety speed for the safety observation function.
Set this parameter within the following setting ranges.
For linear axis: 2000mm/min or less
For rotary axis: 18000°/min (50r/min) or less
When not using, set to "0".

Related parameters: SV033/bitD, SV113/bitF, SV239

---Setting range---
0 to 18000 (mm/min) or (°/min)
However, when SV033/bitD=1, the setting range is from -32768 to 32767 (100 mm/min) or (100°/min).

【#2439】 SV239 SSCRPM Safety observation Safety motor speed

Set the motor's safety speed for the safety observation function.
Set a value to hold the following relationship.

SV239=(SV238/SV018) x (SV002/SV001)
Only when the product is 0, set to "1".

When not using, set to "0".

Related parameters: SV033/bitD, SV113/bitF, SV239

---Setting range---
0 to 32767 (r/min)

【#2440-2443】 SV240 - SV243

Not used. Set to "0".

【#2444(PR)】 SV244 DUNIT Communication interpolation unit for communication among drive units

Set the communication interpolation unit among drive units.
When set to "0", it will be regarded as 20 (0.05 μm) is set.

Related parameters: SV129

---Setting range---
0 to 2000 (1/ μm)

【#2445-2456】 SV245 - SV256

Not used. Set to "0".

5. Spindle Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

【#3001】 slimt 1 Limit rotation speed (Gear: 00)

Set the spindle speed for maximum motor speed with gear 00.
(Set the spindle speed for the S analog output 10V.)

---Setting range---
0 to 99999 (r/min)

【#3002】 slimt 2 Limit rotation speed (Gear: 01)

Set the spindle speed for maximum motor speed with gear 01.
(Set the spindle speed for the S analog output 10V.)

---Setting range---
0 to 99999 (r/min)

【#3003】 slimt 3 Limit rotation speed (Gear: 10)

Set the spindle speed for maximum motor speed with gear 10.
(Set the spindle speed for the S analog output 10V.)

---Setting range---
0 to 99999 (r/min)

【#3004】 slimt 4 Limit rotation speed (Gear: 11)

Set the spindle speed for maximum motor speed with gear 11.
(Set the spindle speed for the S analog output 10V.)

---Setting range---
0 to 99999 (r/min)

【#3005】 smax 1 Maximum rotation speed (Gear: 00)

Set the maximum spindle speed with gear 00.
Set this as slimt >= smax.
By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---
0 to 99999 (r/min)

【#3006】 smax 2 Maximum rotation speed (Gear: 01)

Set the maximum spindle speed with gear 01.
Set this as slimt >= smax.
By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---
0 to 99999 (r/min)

【#3007】 smax 3 Maximum rotation speed (Gear: 10)

Set the maximum spindle speed with gear 10.
Set this as slimt >= smax.
By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---
0 to 99999 (r/min)

【#3008】 smax 4 Maximum rotation speed (Gear: 11)

Set the maximum spindle speed with gear 11.
Set this as slimt >= smax.
By comparing the S command value and the values of gear 1 - 4, a spindle gear shift command will be output automatically.

---Setting range---
0 to 99999 (r/min)

【#3009】 ssift 1 Shift rotation speed (Gear: 00)

Set the spindle speed for gear shifting with gear 00.
(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---
0 to 32767 (r/min)

【#3010】 ssift 2 Shift rotation speed (Gear: 01)

Set the spindle speed for gear shifting with gear 01.
(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---
0 to 32767 (r/min)

【#3011】 ssift 3 Shift rotation speed (Gear: 10)

Set the spindle speed for gear shifting with gear 10.
(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---
0 to 32767 (r/min)

【#3012】 ssift 4 Shift rotation speed (Gear: 11)

Set the spindle speed for gear shifting with gear 11.
(Note) Setting too large value may cause a gear nick when changing gears.

---Setting range---
0 to 32767 (r/min)

【#3013】 stap 1 Tap rotation speed (Gear: 00)

Set the maximum spindle speed during tapping cycle with gear 00.

---Setting range---
0 to 99999 (r/min)

【#3014】 stap 2 Tap rotation speed (Gear: 01)

Set the maximum spindle speed during tapping cycle with gear 01.

---Setting range---
0 to 99999 (r/min)

【#3015】 stap 3 Tap rotation speed (Gear: 10)

Set the maximum spindle speed during tapping cycle with gear 10.

---Setting range---
0 to 99999 (r/min)

【#3016】 stap 4 Tap rotation speed (Gear: 11)

Set the maximum spindle speed during tapping cycle with gear 11.

---Setting range---
0 to 99999 (r/min)

【#3017】 stapt 1 Tap time constant (Gear: 00)

Set the time constant for constant inclination synchronous tapping cycle with gear 00 (linear acceleration/deceleration pattern).

---Setting range---
1 to 5000 (ms)

【#3018】 stapt 2 Tap time constant (Gear: 01)

Set the time constant for constant inclination synchronous tapping cycle with gear 01 (linear acceleration/deceleration pattern).

---Setting range---
1 to 5000 (ms)

【#3019】 stapt 3 Tap time constant (Gear: 10)

Set the time constant for constant inclination synchronous tapping cycle with gear 10 (linear acceleration/deceleration pattern).

---Setting range---
1 to 5000 (ms)

【#3020】 stapt 4 Tap time constant (Gear: 11)

Set the time constant for constant inclination synchronous tapping cycle with gear 11 (linear acceleration/deceleration pattern).

---Setting range---
1 to 5000 (ms)

【#3021】 sori Orientation rotation speed

Set the spindle orientation speed.
Set the speed for when the spindle rotates at the constant speed.

---Setting range---
0 to 32767 (r/min)

【#3022】 sgear Encoder gear ratio

Set the gear ratio of the spindle to the detector.
Setting value 0 ---> Detector : Spindle = 1:1
Setting value 1 ---> Detector : Spindle = 1:2
Setting value 2 ---> Detector : Spindle = 1:4
Setting value 3 ---> Detector : Spindle = 1:8
This parameter is enabled only when "S-analog" is set by the spindle connection parameter "#3024 sout".

---Setting range---
0 to 3

【#3023】 smini Minimum rotation speed

Set the minimum spindle speed.
If an S command below this setting is issued, the spindle will rotate at the minimum speed set by this parameter.

---Setting range---
0 to 32767 (r/min)

【#3024(PR)】 sout Spindle connection

Select the type of interface with a spindle drive unit.
0: No connection with a spindle
1: Dedicated network, dedicated optical communication
2 - 5: S-analog

---Setting range---
0 to 5

【#3025(PR)】 enc-on Spindle encoder

Set the connection condition of a spindle's detector.
Setting 0 ---> Not connected
Setting 1 ---> Connected (Spindle detector connection check function is enabled.)
Setting 2 ---> Serially connected

---Setting range---
0 to 2

【#3026】 cs_ori Selection of winding in orientation mode

0: Perform orientation using the coil selected when the orientation command is issued.
1: Use the coil L whenever the orientation command is issued.

【#3027】 cs_syn Selection of winding in spindle synchronous mode

0: Select the coil H or L based on the actual spindle motor speed (calculated from commanded speed) when spindle synchronization starts. (Coil switch is not performed during spindle synchronous tapping control. This control is carried out using the coil selected at start.)
If the actual spindle motor speed is less than the setting of SP020, the coil L is selected. But if the actual speed exceeds the setting of SP020, the coil H is selected.
1: Use the coil H whenever the spindle synchronization command is issued.

【#3028】 sprcmm Tap cycle spindle forward run/reverse run M command

Set the M codes for the spindle forward run/reverse run commands.
High-order 3 digits: Set the M code for spindle forward run command.
Low-order 3 digits: Set the M code for spindle reverse run command.
When "0" is set, the M code for spindle forward run command is handled as "3" and the M code for spindle reverse run command as "4".

---Setting range---
0 to 999999

【#3029】 tapsel Asynchronous tap gear selection

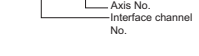
Select whether to use the tapping speed or maximum speed for the gear that is selected when an asynchronous tapping command is issued.
0: Tapping speed
1: Maximum speed
This parameter is enabled only when the M-function synchronous tapping cycle enable parameter "#1272 ext08/bit1" is ON.

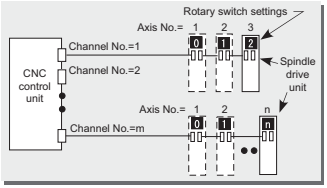
【#3030】

Not used. Set to "0".

【#3031(PR)】 smcp_no Drive unit I/F channel No. (spindle)

Set the interface channel No. of CNC control unit to which the spindle is connected and the axis No. within each channel.
Set this parameter in 4-digit (hexadecimal) format.





HEX-4 : Drive unit interface channel No.
HEX-3 : Not used. Set to "0".
HEX-2, 1 : Axis No.
For a spindle to be connected to CNC via analog interface, set to "0000".

---Setting range---
1001 to 1010, 2001 to 2010

- For MDS-DM-SPV2/SPV3 Series
These drive units have no rotary switches for axis No. selection.
The spindle axis No. is fixed to 1st axis, so set "01" as the number of axes. (last 2 digits).

【#3032】

Not used. Set to "0".

【#3035(PR)】 spunit Output unit

Select the data unit for communication with the spindle drive unit.
This selection is applied to the data communicated between the NC and spindle drive unit as well as the spindle movement data. Note, however, that this parameter is enabled only for the MDS-D Series spindle drive unit.
Spindle/C axis depends on this parameter setting and the C axis output unit (servo) is ignored.
When MDS-D Series is used, follow the setting of "#1003 ctrl_unit".

B: 1 μ m
C: 0.1 μ m
D: 10nm
E: 1nm

【#3037】 taps21 Synchronous tap switching spindle speed 2 (Gear: 00)

Set the spindle speed at which the 2nd step acceleration/deceleration time constant is to be switched with gear 00.

---Setting range---
0 to 99999 (r/min)

【#3038】 taps22 Synchronous tap switching spindle speed 2 (Gear: 01)

Set the spindle speed at which the 2nd step acceleration/deceleration time constant is to be switched with gear 01.

---Setting range---
0 to 99999 (r/min)

【#3039】 taps23 Synchronous tap switching spindle speed 2 (Gear: 10)

Set the spindle speed at which the 2nd step acceleration/deceleration time constant is to be switched with gear 10.

---Setting range---
0 to 99999 (r/min)

【#3040】 taps24 Synchronous tap switching spindle speed 2 (Gear: 11)

Set the spindle speed at which the 2nd step acceleration/deceleration time constant is to be switched with gear 11.

---Setting range---
0 to 99999 (r/min)

【#3041】 tapt21 Synchronous tap switching time constant 2 (Gear: 00)

Set the time constant to reach synchronous tapping switching spindle speed 2 (taps21- 24) with gear 00.

---Setting range---
1 to 5000 (ms)

【#3042】 tapt22 Synchronous tap switching time constant 2 (Gear: 01)

Set the time constant to reach synchronous tapping switching spindle rotation speed 2 (taps21 - 24) with gear 01.

---Setting range---
1 to 5000 (ms)

【#3043】 tapt23 Synchronous tap switching time constant 2 (Gear: 10)

Set the time constant to reach synchronous tapping switching spindle rotation speed 2 (taps21 - 24) with gear 10.

---Setting range---
1 to 5000 (ms)

【#3044】 tapt24 Synchronous tap switching time constant 2 (Gear: 11)

Set the time constant to reach synchronous tapping switching spindle rotation speed 2 (taps21 - 24) with gear 11.

---Setting range---
1 to 5000 (ms)

【#3045】 tapt31 Synchronous tap switching time constant 3 (Gear: 00)

Set the time constant to reach the maximum speed (smax1 - 4) with gear 00.

---Setting range---
1 to 5000 (ms)

【#3046】 tapt32 Synchronous tap switching time constant 3 (Gear: 01)

Set the time constant to reach the maximum speed (smax1 - 4) with gear 01.

---Setting range---
1 to 5000 (ms)

【#3047】 tapt33 Synchronous tap switching time constant 3 (Gear: 10)

Set the time constant to reach the maximum speed (smax1 - 4) with gear 10.

---Setting range---
1 to 5000 (ms)

【#3048】 tapt34 Synchronous tap switching time constant 3 (Gear: 11)

Set the time constant to reach the maximum speed (smax1 - 4) with gear 11.

---Setting range---
1 to 5000 (ms)

【#3049】 spt Spindle synchronization acceleration/deceleration time constant

Set the acceleration/deceleration time constant for when the commanded spindle synchronization speed changes under spindle synchronization control.

---Setting range---
0 to 9999 (ms)

【#3050】 sprlv Spindle synchronization rotation speed attainment level

Set the level of difference between the commanded synchronization spindle speeds and actual speeds of both the basic and synchronous spindles during spindle synchronization, below which the spindle speed synchronization complete signal will go ON.

---Setting range---
0 to 4095 (pulse) (1 pulse = 0.088°)

【#3051】 spplv Spindle phase synchronization attainment level

Set the level of phase difference between the basic and synchronous spindles during spindle synchronization, below which the spindle phase synchronization complete signal will go ON.

---Setting range---
0 to 4095 (pulse) (1 pulse = 0.088°)

【#3052】 spplr Spindle motor spindle relative polarity

Set the spindle motor and spindle's relative polarity.
0: Positive polarity
Spindle CW rotation at motor CW rotation
1: Negative polarity
Spindle CCW rotation at motor CW rotation

---Setting range---
0000/0001 (HEX)

【#3053】 sppst Spindle encoder Z -phase position

Set the deviation amount from the spindle's basic point to the spindle detector's Z phase. Obtain the deviation amount, considering a clockwise direction as positive when viewed from the spindle's front side.

---Setting range---
0 to 359999 (1/1000°)

【#3054】 sptc1 Spindle synchronization multi-step acceleration/deceleration changeover speed 1

Set the spindle speed for changing the 1st step's acceleration/deceleration time constant.

---Setting range---
0 to 99999 (r/min)

【#3055】 sptc2 Spindle synchronization multi-step acceleration/deceleration changeover speed 2

Set the spindle speed for changing the 2nd step's acceleration/deceleration time constant.

---Setting range---
0 to 99999 (r/min)

【#3056】 sptc3 Spindle synchronization multi-step acceleration/deceleration changeover speed 3

Set the spindle speed for changing the 3rd step's acceleration/deceleration time constant.

---Setting range---
0 to 99999 (r/min)

【#3057】 sptc4 Spindle synchronization multi-step acceleration/deceleration changeover speed 4

Set the spindle speed for changing the 4th step's acceleration/deceleration time constant.

---Setting range---
0 to 99999 (r/min)

【#3058】 sptc5 Spindle synchronization multi-step acceleration/deceleration changeover speed 5

Set the spindle speed for changing the 5th step's acceleration/deceleration time constant.

---Setting range---
0 to 99999 (r/min)

【#3059】 sptc6 Spindle synchronization multi-step acceleration/deceleration changeover speed 6

Set the spindle speed for changing the 6th step's acceleration/deceleration time constant.

---Setting range---
0 to 99999 (r/min)

【#3060】 sptc7 Spindle synchronization multi-step acceleration/deceleration changeover speed 7

Set the spindle speed for changing the 7th step's acceleration/deceleration time constant.

---Setting range---
0 to 99999 (r/min)

【#3061】 spdiv1 Magnification for time constant changeover speed 1

Set the acceleration/deceleration time constant from the spindle synchronization multi-step acceleration/deceleration changeover speed 1 (sptc1) to the spindle synchronization multi-step acceleration/deceleration changeover speed 2 (sptc2). Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---
0 to 127

【#3062】 spdiv2 Magnification for time constant changeover speed 2

Set the acceleration/deceleration time constant from the spindle synchronization multi-step acceleration/deceleration changeover speed 2 (sptc2) to the spindle synchronization multi-step acceleration/deceleration changeover speed 3 (sptc3). Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---
0 to 127

【#3063】 spdiv3 Magnification for time constant changeover speed 3

Set the acceleration/deceleration time constant from the spindle synchronization multi-step acceleration/deceleration changeover speed 3 (sptc3) to the spindle synchronization multi-step acceleration/deceleration changeover speed 4 (sptc4). Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---
0 to 127

【#3064】 spdiv4 Magnification for time constant changeover speed 4

Set the acceleration/deceleration time constant from the spindle synchronization multi-step acceleration/deceleration changeover speed 4 (sptc4) to the spindle synchronization multi-step acceleration/deceleration changeover speed 5 (sptc5). Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---
0 to 127

【#3065】 spdiv5 Magnification for time constant changeover speed 5

Set the acceleration/deceleration time constant from the spindle synchronization multi-step acceleration/deceleration changeover speed 5 (sptc5) to the spindle synchronization multi-step acceleration/deceleration changeover speed 6 (sptc6). Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---
0 to 127

【#3066】 spdiv6 Magnification for time constant changeover speed 6

Set the acceleration/deceleration time constant from the spindle synchronization multi-step acceleration/deceleration changeover speed 6 (sptc6) to the spindle synchronization multi-step acceleration/deceleration changeover speed 7 (sptc7). Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---
0 to 127

【#3067】 spdiv7 Magnification for time constant changeover speed 7

Set the acceleration/deceleration time constant for the spindle synchronization multi-step acceleration/deceleration changeover speed 7 (sptc7) and higher. Set this as a magnification in relation to the spindle synchronization acceleration/deceleration time constant (spt).

---Setting range---
0 to 127

【#3068】 symtm1 Phase synchronization start confirmation time

Set the time to confirm that synchronization is attained before phase synchronization control is started.
When "0" is set, the time will be 0.5 seconds. When "100" or less is set, the time will be 100ms.

---Setting range---
0 to 9999 (ms)

【#3069】 symtm2 Phase synchronization end confirmation time

Set a period of waiting time for phase synchronization control's completion as a time in which the speed stays within the attainment range.
When "0" is set, the time will be 0.5 seconds. When "100" or less is set, the time will be 100ms.

---Setting range---
0 to 9999 (ms)

【#3070】 syprt Phase synchronization speed

Set the amount of speed fluctuation of synchronous spindle during phase synchronization control. Set this as a proportion to commanded speed.
When "0" is set, the amount will be 5%.

---Setting range---
0 to 100 (%)

【#3071(PR)】 SscDrSelSp Speed monitor Door selection

Select which door group of the speed monitoring a spindle belongs to.
0000: Belong to the door 1 group.
0001: Belong to the door 1 group.
0002: Belong to the door 2 group.
0003: Belong to the door 1 and 2 groups.
(Note) Speed monitoring is not executed when SP229:SFNC9/bitF is "OFF".

---Setting range---
0000 to 0003 (HEX)

【#3072(PR)】 Ssc Svof Filter Sp Speed monitor Error detection time during servo OFF

Set the error detection time for when an error of command speed monitoring or feedback speed monitoring is detected during servo OFF.
The alarm will occur if actual speed exceeds safe speed or safe rotation speed for a period of time longer than this setting.
When "0" is set, the detection time will be 200 (ms).

---Setting range---
0 to 9999 (ms)

【#3101】 sp_t 1 Time constant for spindle rotation with S command (Gear: 00)

Set the acceleration/deceleration time constant for spindle rotation using the S command (spindle control mode = speed operation mode) with gear 00 (Linear acceleration/ deceleration pattern).

---Setting range---
0 to 30000 (ms)

【#3102】 sp_t 2 Time constant for spindle rotation with S command (Gear: 01)

Set the acceleration/deceleration time constant for spindle rotation using the S command (spindle control mode = speed operation mode) with gear 01 (Linear acceleration/ deceleration pattern).

---Setting range---
0 to 30000 (ms)

【#3103】 sp_t 3 Time constant for spindle rotation with S command (Gear: 10)

Set the acceleration/deceleration time constant for spindle rotation using the S command (spindle control mode = speed operation mode) with gear 10 (Linear acceleration/ deceleration pattern).

---Setting range---
0 to 30000 (ms)

【#3104】 sp_t 4 Time constant for spindle rotation with S command (Gear: 11)

Set the acceleration/deceleration time constant for spindle rotation using the S command (spindle control mode = speed operation mode) with gear11 (Linear acceleration/ deceleration pattern).

---Setting range---
0 to 30000 (ms)

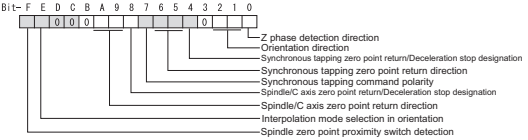
【#3105】 sut Speed reach range

Set the speed deviation rate with respect to the commanded speed, at which the speed reach signal will be output.
It will be 15% when set to "0".
If the speed deviation is smaller than 45r/min, it will be set as 45r/min.

---Setting range---
0 to 100 (%)

【#3106】 zrn_typ Zero point return specifications

Select the zero point return specification.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F : Spindle zero point detection with contactless switch

0: Normal 1: Enable spindle zero point detection using proximity switch

bit E : Interpolation mode selection in orientation

0: Interpolation mode (Use the interpolation mode gain "SP002 PGN".)
1: Non-interpolation mode (Use the non-interpolation mode gain "SP001 PGV")
Select this when vibration occurs since the gain is too high during the orientation.

bit D-B :

Not used. Set to "0".

bit A-9 : Spindle/C axis zero point return direction

bitA,9=
00: Short-cut
01: Forward run
10: Reverse run

bit 8 : Designate zero point return/deceleration stop of spindle/C axis

0: Zero point return 1: Deceleration stop

bit 7 : Synchronous tapping command polarity

0: Forward direction 1: Reverse direction

bit 6-5 : Synchronous tapping zero point return direction

bit 6,5=
00: Short-cut
01: Forward run
10: Reverse run

bit 4 : Designate zero point return/deceleration stop in synchronous tapping

0: Zero point return 1: Deceleration stop

bit 3 :

Not used. Set to "0".

bit 2-1 : Orientation direction

bit 2,1=
00: Short-cut
01: Forward run
10: Reverse run

bit 0 : Z phase detection direction

0: Forward direction 1: Reverse direction

【#3107】 ori_spd Orientation command speed

Set the spindle speed during orientation command.

---Setting range---
1 to 99999 (r/min)

【#3108】 ori_sft In-position shift amount for orientation

Set the orientation stop position.
The clockwise direction when viewed from the load side is considered as minus (-).

---Setting range---
-35999 to 35999 (0.01°)

【#3109】 zdetspd Z phase detection speed

When "#3106/bitF = 0" (Normal), set the spindle speed at initial Z phase detection.
Guideline for the initial setting value is from 50 to 300.

When "#3106/bitF = 1" (Spindle zero point proximity switch detection enabled), set the spindle speed at initial spindle zero point proximity switch detection.

(Note) When spindle zero point proximity switch detection is enabled, the rotation direction of the orientation/zero point return (synchronous tapping, spindle/C axis) will follow Z phase detection direction. And the speed will follow Z phase detection speed. Guideline for the initial setting value is from 50 to 300.

---Setting range---
1 to 99999 (r/min)

【#3110】 tap_spd Synchronous tapping zero point return speed

Set the synchronous tapping zero point return speed.

---Setting range---
1 to 99999 (r/min)

【#3111】 tap_sft Synchronous tapping zero point return shift amount

Set the synchronous tapping zero point return shift amount.

---Setting range---
0.00 to 35999 (0.01°)

【#3112】 cax_spd Spindle C axis zero point return speed

Set the spindle C axis zero point return speed.

---Setting range---
1 to 99999 (r/min)

【#3113】 cax_sft Spindle C axis zero point return shift amount

Set the spindle C axis zero point return shift amount

---Setting range---
0.00 to 359999 (0.001°)

【#3114】 cax_para_chg Spindle/C axis parameter switch

Select whether to switch detector's parameters between spindle control and C axis control during spindle/C axis control.
0: Not switch
1: Switch

---Setting range---
0/1 (Standard: 0)

【#3115】 sp2_t1 Time constant in orientation/position loop reference position return (Gear: 00)

Set the acceleration/deceleration time constant to reach the spindle's limit speed (slimt) when spindle rotates in orientation/position loop zero point return method (C axis, tapping) using gear 00 (Linear acceleration/deceleration pattern).
(Note) Set a value that is bigger than the values set by "#3101 sp_t1 - #3104 sp_t4".

---Setting range---
0 to 30000 (ms)

【#3116】 sp2_t2 Time constant in orientation/position loop reference position return (Gear: 01)

Set the acceleration/deceleration time constant to reach the spindle's limit speed (slimt), when spindle rotates in the orientation/position loop zero point return method (C axis, tapping) using gear 01 (Linear acceleration/deceleration pattern).
(Note) Set a value that is bigger than the values set by "#3101 sp_t1 - #3104 sp_t4".

---Setting range---
0 to 30000 (ms)

【#3117】 sp2_t3 Time constant in orientation/position loop reference position return (Gear: 10)

Set the acceleration/deceleration time constant to reach the spindle's limit speed (slimt), when spindle rotates in the orientation/position loop zero point return method (C axis, tapping) using gear 10 (Linear acceleration/deceleration pattern).
(Note) Set a value that is bigger than the values set by "#3101 sp_t1 - #3104 sp_t4".

---Setting range---
0 to 30000 (ms)

【#3118】 sp2_t4 Time constant in orientation/position loop reference position return (Gear: 11)

Set the acceleration/deceleration time constant to reach the spindle's limit speed (slimt), when spindle rotates in the orientation/position loop zero point return method (C axis, tapping) using gear 11 (Linear acceleration/deceleration pattern).
(Note) Set a value that is bigger than the values set by "#3101 sp_t1 - #3104 sp_t4".

---Setting range---
0 to 30000 (ms)

【#3120】 staptr Time constant reduction rate in high-speed synchronous tapping

When performing high-speed synchronous tapping, set the reduction rate of the time constant compared to the time constant in normal synchronous tapping.
(Setting "0"or "100" will be regarded as reduction rate zero, so the time constant won't be reduced.)
E.g.) When set to "10", time constant in high-speed synchronous tapping will be 90% of that in normal synchronous tapping.

---Setting range---
0 to 100(%)

【#3121】 tret Turret indexing

Select the validity of turret indexing.
0: Invalid
1: Valid

【#3122】 GRC Turret side gear ratio

Set the number of teeth on the turret side when the gear selection command (control input 4/bit6, 5) is set to 00. Set a value of GRC so that the ratio of GRC to the spindle side gear ratio (#13057 SP057) will be 1:N (an integer).
If this parameter is set to "0", it will be regarded as "1".

---Setting range---
0 to 32767

【#3123】 tret_spd Turret indexing speed

Set the turret end indexing speed when in turret indexing.
When this parameter is set to 0, the value of Orientation command speed (#3107 ori_spd) will be used for the turret indexing speed.

---Setting range---
0 to 32767(r/min)

【#3124】 tret_t Turret indexing time constant

Set the acceleration/deceleration time constant to reach Limit rotation speed (#3001 slimt) at gear 00 when in turret indexing (linear acceleration/deceleration pattern). Set this parameter to a larger value than #3115 sp2_t1 at gear 00.

---Setting range---
0 to 30000 (ms)

【#3125】 tret_inpos Turret indexing in-position width

Set the position error range in which the index positioning complete signal is output when in turret indexing. When this parameter is set to 0, the value of In-position width (#13024 SP024) will be used for this width.

---Setting range---
0 to 32767(1°/1000)

【#3126】 tret_fin_off Index positioning complete signal OFF time

Set the time to forcedly turn OFF the index positioning complete signal since the indexing start signal turns ON. If this period of time has not passed yet, the index positioning complete signal will not turn ON even at the completion of index positioning.

---Setting range---
0 to 10000 (ms)

【#3127】 SPECSP Spindle specification

bit0: Select the gear changeover method.

0: Gear change type 1
1: Gear change type 2

---Setting range---
0x0000 to 0xffff (hexadecimal)

【#3128】 ori_spec Orientation specification

bit0: Orientation imposition advance output

0: Invalid
1: Valid

---Setting range---
0x0000 to 0xffff (hexadecimal)

【#3129】 cax_spec Spindle/C axis specification

Not used. Set to "0".

【#3130】 syn_spec Spindle synchronization specification

bit0: Tool spindle synchronization II (hobbing) automatic compensation selection

1: Compensate hobbing axis delay (advance) with workpiece axis.
0: No compensation.

【#3131】 tap_spec Synchronous tapping specification

Not used. Set to "0".

【#3132】 ori_inp2 2nd in-position width for orientation

Use this when detecting a different in-position from the normal in-position detection, such as advancing the in-position signal. When using, set a bigger value than the value of the spindle parameter SP024.

---Setting range---
0 to 32767 (1deg/1000)

【#3133】 spherr Hobbing axis delay (advance) allowable angle

Set the allowable angle between the commanded position and actual position of hobbing axis when it is in tool spindle synchronization II (hobbing) mode (X18AE ON), and also when hobbing axis and workpiece axis are synchronizing (X18A9 ON).

---Setting range---
0 to 32767 (1deg/1000)

【#3134】 sphtc Primary delay time constant for hobbing axis automatic compensation

Set the primary delay time constant of hobbing axis automatic compensation primary delay filter control in tool spindle synchronization II (hobbing).
When set to 0, primary delay filter control is invalid.

---Setting range---
0 to 32767 (ms)

【#3135】 sfwd_g Feed forward gain for hobbing axis

Set the feed forward gain for the hobbing axis in tool spindle synchronization II (hobbing) mode.

---Setting range---
0 to 200 (%)

【#3137】 stap_ax_off High-speed synchronous tapping disabled axis

Set the high-speed synchronous tapping disabled axis.

bit 0-F : High-speed synchronous tapping disabled axis

0: Enabled
1: Disabled

If communication between drive units is disabled for a certain axis, set the axis's bits of all the spindles as disabled.
If communication between drive units is disabled for a certain spindle, set all the bits of the spindle as disabled (0xFFFF).
(Note) Each bit (bit0 -) corresponds to the order of the axis name parameter (#1013 axname) setting.

【#3138】 motor_type Spindle motor type

Set the spindle motor type. The set type will be displayed on the drive monitor screen, and it will be also output to the system configuration data.

---Setting range---
Character string within 26 characters including A-Z, a-z, 0-9, "." (decimal point), "-" (hyphen), "/" (slash)
(Cleared by inputting "0".)

【#3140(PR)】 S_DINSp Speed observation input door No.

Set the door signal input in the drive unit.
Use this parameter only when the axis with a door signal belongs to several door groups.
The correspondence between the door signals and bits are as follows.
bit0 : Door1 signal
bit1 : Door2 signal
If the axis does not receive any door signal, set to "0".
An error (Y20 0027) will occur in the following cases.
- Several bits are enabled.
- Any bit other than those set in "#3071 S_DSISp" is enabled.

---Setting range---
0000 to 0002 (HEX)

【#13001】 SP001 PGV Position loop gain non-interpolation mode

Set the position loop gain for "Non-interpolation" control mode.
When the setting value increases, the command tracking ability will enhance and the positioning settling time can be shorter. However, the impact on the machine during acceleration/deceleration will increase.
Use the selection command, the control mode "bit 2, 1, 0 = 000" in control input 4.
(Note) The control mode is commanded by NC.

---Setting range---
1 to 200 (1/s)

【#13002】 SP002 PGN Position loop gain interpolation mode

Set the position loop gain for "interpolation" control mode.
When the setting value increases, the command tracking ability will enhance and the positioning settling time can be shorter. However, the impact on the machine during acceleration/deceleration will increase.
Use the selection command, the control mode "bit 2, 1, 0 = 010 or 100" in control input 4.
(Note) The control mode is commanded by NC.
When carrying out the SHG control, set SP035(SFNC3) bitC to "1".

---Setting range---
1 to 200 (1/s)

【#13003】 SP003 PGS Position loop gain spindle synchronization

Set the position loop gain for "spindle synchronization" control mode.
When the setting value increases, the command tracking ability will enhance and the positioning settling time can be shorter. However, the impact on the machine during acceleration/deceleration will increase.
Use the selection command, the control mode "bit 2, 1, 0 = 001" in control input 4.
(Note) The control mode is commanded by NC.
When carrying out the SHG control, set SP036(SFNC4) bit4 to "1".

---Setting range---
1 to 200 (1/s)

【#13004】 SP004

Not used. Set to "0".

【#13005】 SP005 VGN1 Speed loop gain 1

Set the speed loop gain.
Set this according to the load inertia size.
The higher setting value will increase the accuracy of control, however, vibration tends to occur.
If vibration occurs, adjust by lowering by 20 to 30%.
The final value should be 70 to 80% of the value at which the vibration stops.

---Setting range---
1 to 9999

【#13006】 SP006 VIA1 Speed loop lead compensation 1

Set the speed loop integral control gain.
The standard setting is "1900". Adjust the value by increasing/decreasing the value by about 100.
Raise this value to improve the contour tracking accuracy in high-speed cutting.
Lower this value when the position droop does not stabilize (when the vibration of 10 to 20Hz occurs).

---Setting range---
1 to 9999

【#13007】 SP007 VIL1 Speed loop delay compensation 1

Set this parameter when the limit cycle occurs in the full-closed loop or overshooting occurs in positioning.
For MDS-D/DH-SP, the control method can be selected by SP033(SFNC1)/bit1,0(vcnt).
Normally, use "Changeover type 2".
When setting this parameter, make sure to set the torque offset "SP050(TOF)".
When not using, set to "0".

---Setting range---
0 to 32767

【#13008】 SP008 VGN2 Speed loop gain 2

Normally SP005(VGN1), SP006(VIA1), SP007(VIL1) are used.
By setting "SP035(SFNC3)/bit1(vgin), SP035(SFNC3)/bit9(vgn) or SP036(SFNC4)/bit1(vgs)=1", gain 2 can be used according to the application.
Gain 2 can also be used by setting "Speed gain set 2 changeover request (control input 5/bitC) = 1".
Refer to SP005(VGN1), SP006(VIA1), SP007(VIL1) for procedures.

---Setting range---
1 to 9999

【#13009】 SP009 VIA2 Speed loop lead compensation 2

Normally SP005(VGN1), SP006(VIA1), SP007(VIL1) are used.
By setting "SP035(SFNC3)/bit1(vgin), SP035(SFNC3)/bit9(vgn) or SP036(SFNC4)/bit1(vgs)=1", gain 2 can be used according to the application.
Gain 2 can also be used by setting "Speed gain set 2 changeover request (control input 5/bitC) = 1".
Refer to SP005(VGN1), SP006(VIA1), SP007(VIL1) for procedures.

---Setting range---
1 to 9999

【#13010】 SP010 VIL2 Speed loop delay compensation 2

Normally SP005(VGN1), SP006(VIA1), SP007(VIL1) are used.
By setting "SP035(SFNC3)/bit1(vgin), SP035(SFNC3)/bit9(vgn) or SP036(SFNC4)/bit1(vgs)=1", gain 2 can be used according to the application.
Gain 2 can also be used by setting "Speed gain set 2 changeover request (control input 5/bitC) = 1".
Refer to SP005(VGN1), SP006(VIA1), SP007(VIL1) for procedures.

---Setting range---
0 to 32767

【#13011】 SP011

Not used. Set to "0".

【#13012】 SP012

Not used. Set to "0".

【#13013】 SP013

Not used. Set to "0".

【#13014】 SP014 PY1 Minimum excitation rate 1

Set the minimum value for the variable excitation rate. The standard setting is "50".
Set to "0" when using an IPM spindle motor.
If noise including gear noise is loud, select a small value. However, a larger setting value is more effective for impact response.

(Note) When setting a value at "50 or more", check if there is no problem with gear noise, motor excitation noise, vibration during low-speed rotation or vibration when the servo is locked during orientation stop, etc.
When setting a value at "less than 50", check if there is no problem with the impact load response or rigidity during servo lock.

---Setting range---
0 to 100 (%)

【#13015】 SP015 PY2 Minimum excitation rate 2

Normally, SP014(PY1) is used.
By setting "SP035(SFNC3)/bit2(pyin), SP035(SFNC3)/bitA(pyn) or SP036(SFNC4)/ bit2(pys)=1", the excitation rate 2 can be used according to the application.
The excitation rate 2 can also be used by setting "the minimum excitation rate 2 changeover request (control input 5/ bitB) = 1". Refer to SP014(PY1) for procedures.
Set to "0" when using an IPM spindle motor.

---Setting range---
0 to 100 (%)

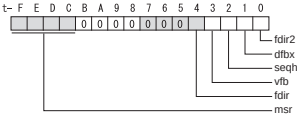
【#13016】 SP016 DDT Phase alignment deceleration rate

Set the single-rotation position alignment deceleration rate for orientation stopping, phase alignment while rotating and switching from non-interpolation mode to spindle synchronization mode while rotating.
When the load inertia is larger, the setting value should be smaller.
When the setting value is larger, the orientation in-position and single-rotation position alignment complete faster, but the impact applied on the machine will increase.
To change the deceleration rate only during rotation command (command F $\triangle$T $\neq$ 0), set this parameter together with SP070 (KDDT).

---Setting range---
1 to 32767 (0.1(r/min)/ms)

【#13017(PR)】 SP017 SPEC1 Spindle specification 1

Select the spindle specification.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-C : msr Motor series selection

0: 200V specification IM spindle motor
1: 200V specification IPM spindle motor
2: 400V specification IM spindle motor
3: 400V specification IPM spindle motor
4: 200V specification Tool spindle motor
Only "0" or "4" setting is available for MDS-D-SPJ3 Series.

- For MDS-DM Series
For MDS-DM-SPV2/SPV3, set to "0".

bit B-5 :

Not used. Set to "0".

bit 4 : fdir Position feedback

0: Forward polarity 1: Reverse polarity

bit 3 : vfb Speed feedback filter

0: Disable 1: Enable (2250Hz)

bit 2 : seqh READY ON sequence

0: Normal 1: High-speed

bit 1 : dfbx Dual feedback control

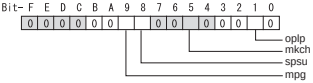
0: Stop 1: Start

bit 0 : fdir2 Speed feedback polarity

0: Forward polarity 1: Reverse polarity

【#13018(PR)】 SP018 SPEC2 Spindle specification 2

Select the spindle specification.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-A :

Not used. Set to "0".

bit 9 : mpg Earth fault detection

0: Disable 1: Enable (standard)
Set "0" and it is constantly "Enable" for MDS-D-SPJ3 Series.

bit 8 : spsu Speed setting unit

0: r/min 1: 4 r/min

bit 7-6 :

Not used. Set to "0".

bit 5 : mkch Coil switch function

0: Disable 1: Enable

bit 4-2 :

Not used. Set to "0".

bit 1 : oplp Open loop

0: Disable 1: Enable

bit 0 :

Not used. Set to "0".

【#13019(PR)】 SP019 RNG1 Sub side detector resolution

[For semi-closed loop]
Set the same value as SP020 (RNG2). (Refer to the explanation of SP020.)

[For full-closed loop]
Set the number of pulses per revolution of the speed detector.
When using ABZ pulse encoder, used this with SP097(RNG1ex).

E.g.: The setting for ABZ pulse encoder "OSE-1024-3-15-68"
SP019 = 4096
SP097 = -1

---Setting range---
-32768 to 32767 (kp/rev)
When using SP097: (p/rev)

【#13020(PR)】 SP020 RNG2 Main side detector resolution

Set the number of pulses per revolution of the main side detector.
When using the serial changer MDS-B-HR, use this with SP098(RNG2ex).

Detector
TS5691(128 teeth): SP020 = 2000
TS5691(180 teeth): SP020 = 2880
TS5691(256 teeth): SP020 = 4000
TS5691(384 teeth): SP020 = 6000
TS5691(512 teeth): SP020 = 8000

TS5690(64 teeth): SP020 = 2000
TS5690(90 teeth): SP020 = 2880
TS5690(128 teeth): SP020 = 4000
TS5690(192 teeth): SP020 = 6000
TS5690(256 teeth): SP020 = 8000
TS5690(384 teeth): SP020 =12000

ERM280(1200 teeth): SP020 = 4800
ERM280(2048 teeth): SP020 = 8000

MPCI : SP020 = 7200
MBE205: SP020 = 2000

OSA18(-A48): SP020 = 260

---Setting range---
-32768 to 32767 (kp/rev)
When using SP098: (p/rev)

【#13021(PR)】 SP021 OLT Overload detection time constant

Set the detection time constant of Overload 1 (Alarm 50). (For machine tool builder adjustment)
Normally, set to "60".
Set to "300" when using an IPM spindle motor.

---Setting range---
1 to 15300 (s)

【#13022】 SP022 OLL Overload detection level

Set the current detection level of "Overload 1" (Alarm 50) as a percentage against the motor short-time rated output current. (For machine tool builder adjustment)
Normally, set to "120".
Set to "100" when using an IPM spindle motor.

---Setting range---
1 to 200 (Short-time rated %)

【#13023】 SP023 OD1 Excessive error detection width (interpolation mode - spindle synchronization)

Set the excessive error detection width for the interpolation mode and spindle synchronization.
The standard setting is "120".
When set to "0", the excessive error detection will not be performed.

---Setting range---
1 to 32767 (°)

【#13024】 SP024 INP In-position width

Set the in-position detection width.
Set the positioning accuracy required to the machine.
Lower setting value increases the positioning accuracy, but makes the cycle time (settling time) longer.
The standard setting is "875".

---Setting range---
0 to 32767 (1° /1000)

【#13025】 SP025 INP2 2nd in-position width

Use this when detecting an in-position different from normal in-position width such as advancing the in-position signal.
The procedure is the same as SP024 (INP).
The standard setting is "875".

---Setting range---
0 to 32767 (1° /1000)

【#13026(PR)】 SP026 TSP Maximum motor speed

Set the maximum motor speed.
If the motor speed exceeds the set maximum speed, an overspeed alarm will occur.

---Setting range---
1 to 32767 (r/min)

【#13027】 SP027 ZSP Motor zero speed

Set the motor speed for detecting zero speed.
If the motor speed drops below the set speed, the zero speed detection turns ON.
The standard setting is "50".

---Setting range---
1 to 1000 (r/min)

【#13028】 SP028 SDTS Speed detection set value

Set the motor speed for detecting the speed.
If the motor speed drops below the set speed, the zero speed detection turns ON.
The standard setting is 10% of the maximum motor speed.

---Setting range---
10 to 32767 (r/min)

【#13029】 SP029 SDTR Speed detection reset width

Set the hysteresis width in which the speed detection changes from ON to OFF.
If the setting value is small, the speed detection will chatter easily.
The standard setting is "30".

---Setting range---
10 to 1000 (r/min)

【#13030】 SP030 SDT2 2nd speed detection setting value

Set the specified speed of the specified speed output.
When carrying out digital output of the specified speed output, set SP229(SFNC9)/ bitC(sdt2) to "1".
It is not available for MDS-D-SPJ3 Series.

---Setting range---
-32768 to 32767 (r/min)

【#13031(PR)】 SP031 MTYP Motor type

Set the control system of the spindle drive unit.
2200: Semi closed loop control
4200: Full closed loop control by using spindle side ABZ pulse output detector
6200: Full closed loop control by using spindle side serial output detector

【#13032(PR)】 SP032 PTYP Power supply type/ Regenerative resistor type

MDS-D/DH Series: Power supply type

When connecting a power supply unit, set a code for each power supply unit.

bit F-C : amp

Not used. Set to "0".

bit B-8 : rtyp

Not used. Set to "0".

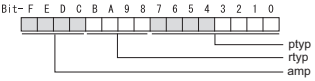
bit 7-0 : ptyp External emergency stop setting

When the emergency stop input signal of the power supply unit is "disabled"
Power supply unit is not connected : 00
MDS-D-CV-37 / MDS-DH-CV-37 : 04
MDS-D-CV-75 / MDS-DH-CV-75 : 08
MDS-D-CV-110 / MDS-DH-CV-110 : 11
MDS-D-CV-185 / MDS-DH-CV-185 : 19
MDS-D-CV-300 / MDS-DH-CV-300 : 30
MDS-D-CV-370 / MDS-DH-CV-370 : 37
MDS-D-CV-450 / MDS-DH-CV-450 : 45
MDS-D-CV-550 / MDS-DH-CV-550 : 55
MDS-DH-CV-750 : 75

When the emergency stop input signal of the power supply unit is "enabled"
(Note) Set the power supply rotary switch to "4".
Power supply unit is not connected : 00
MDS-D-CV-37 / MDS-DH-CV-37 : 44
MDS-D-CV-75 / MDS-DH-CV-75 : 48
MDS-D-CV-110 / MDS-DH-CV-110 : 51
MDS-D-CV-185 / MDS-DH-CV-185 : 59
MDS-D-CV-300 / MDS-DH-CV-300 : 70
MDS-D-CV-370 / MDS-DH-CV-370 : 77
MDS-D-CV-450 / MDS-DH-CV-450 : 85
MDS-D-CV-550 / MDS-DH-CV-550 : 95
MDS-DH-CV-750 : B5

MDS-DM-SPV Series: Power supply type

Set as follows for the spindle drive section of the MDS-DM-SPV.



bit F-C : amp

Not used. Set to "0".

bit B-8 : rtyp

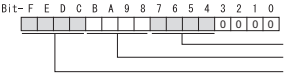
Not used. Set to "0".

bit 7-0 : ptyp External emergency stop setting

Normal : 19
External emergency stop function 59

MDS-D-SPJ3 Series: Regenerative resistor type

Set the regenerative resistor type.



bit F-8 : amp(bit F-C) / rtyp(bit B-8)

Setting prohibited : 10
Setting prohibited : 11
MR-RB032 : 12
MR-RB12 or GZG200W39OHMK : 13
MR-RB32 or GZG200W120OHMK 3 units connected in parallel : 14
MR-RB30 or GZG200W39OHMK 3 units connected in parallel : 15
MR-RB50 or GZG300W39OHMK 3 units connected in parallel : 16
MR-RB31 or GZG200W20OHMK 3 units connected in parallel : 17
MR-RB51 or GZG300W20OHMK 3 units connected in parallel : 18
Setting prohibited : 19-1F
Setting prohibited : 20-23
FCUA-RB22 : 24
FCUA-RB37 : 25
FCUA-RB55 : 26
FCUA-RB75/2 1 unit : 27
R-UNIT1 : 28
R-UNIT2 : 29
R-UNIT3 : 2A
R-UNIT4 : 2B
R-UNIT5 : 2C
FCUA-RB75/2 2 units connected in parallel: 2D
Setting prohibited : 2E,2F

bit 7-4 : emgx External emergency stop function

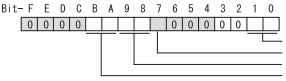
Set the external emergency stop function. (Do not set a value other than specified.)
0: Disable 4: Enable

bit 3-0 :

Not used. Set to "0".

【#13033】 SP033 SFNC1 Spindle function 1

Select the spindle specification.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-C :

Not used. Set to "0".

bit B-A : ovs Overshoot compensation

bitB,A=
00: Compensation stop
01: Setting prohibited
10: Setting prohibited
11: Compensation type 3

(Note) Set the compensation amount in SP043(OVS1) and SP042(OVS2).

bit 9-8 : lmc Lost motion compensation

bit9,8=
00: Compensation stop
01: Setting prohibited
10: Compensation type 2
11: Setting prohibited

(Note) Set the compensation amount in SP048(LMC1) and SP041(LMC2).
When "SP227/lmc3" is set to "1", the lost motion compensation type 3 is selected regardless of this setting.

bit 7 : lmc2a Lost motion compensation 2 timing

0: Normal timing 1: Timing changed

bit 6-2 :

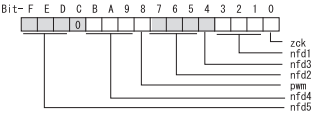
Not used. Set to "0".

bit 1-0 : vcnt Delay compensation changeover

bit1,0=
00: Disable
01: Changeover type 1
10: Changeover type 2
11: Changeover type 2

【#13034】 SP034 SFNC2 Spindle function 2

Select the spindle function.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-D : nfd5 Depth of Notch filter 5

Set the depth of Notch filter 5.
bit F,E,D=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit C :

Not used. Set to "0".

bit B-9 : nfd4 Depth of Notch filter 4

Set the depth of Notch filter 4.
bit B,A,9=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 8 : pwm Current control

0: Standard current control 1: High frequency current control

bit 7-5 : nfd2 Depth of Notch filter 2

Set the depth of Notch filter 2.
bit7,6,5=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 4 : nfd3 Notch filter 3(1125Hz)

0: Stop 1: Start

bit 3-1 : nfd1 Depth of Notch filter 1

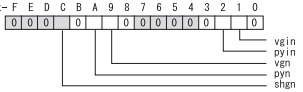
Set the depth of Notch filter 1.
bit3,2,1=
000: - ∞
001: -18.1[dB]
010: -12.0[dB]
011: -8.5[dB]
100: -6.0[dB]
101: -4.1[dB]
110: -2.5[dB]
111: -1.2[dB]

bit 0 : zck Z phase check (ALM42)

0: Enable 1: Disable

【#13035(PR)】 SP035 SFNC3 Spindle function 3

Select the spindle function.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-D :

Not used. Set to "0".

bit C : shgn SHG control

0: Stop 1: Start

bit B :

Not used. Set to "0".

bit A : pyn Excitation rate selection

0: Select Excitation rate 1 1: Select Excitation rate 2

bit 9 : vgn Speed loop gain set selection

0: Select Set 1 1: Select Set 2

bit 8-3 :

Not used. Set to "0".

bit 2 : pyin Excitation rate selection

The excitation rate after the in-position can be selected.
0: Select Excitation rate 1 1: Select Excitation rate 2

bit 1 : vgin Speed loop gain set selection

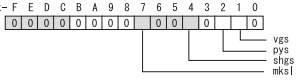
The speed loop gain set after the in-position can be selected.
0: Select Set 1 1: Select Set 2

bit 0 :

Not used. Set to "0".

【#13036(PR)】 SP036 SFNC4 Spindle function 4

Select the spindle function.
A function is allocated to each bit.
Set this in hexadecimal format.



bit F-8 :

Not used. Set to "0".

bit 7 : mksl Spindle coil selection

0: Select the coil commanded during synchronization 1: Select high-speed coil

bit 6-5 :

Not used. Set to "0".

bit 4 : shgs SHG control

0: Stop 1: Start

bit 3 :

Not used. Set to "0".

bit 2 : pys Excitation rate selection

0: Select Excitation rate 1 1: Select Excitation rate 2

bit 1 : vgs Speed loop gain set selection

0: Select Gain Set 1 1: Select Gain set 2

bit 0 :

Not used. Set to "0".

【#13037】 SP037 JL Load inertia scale

Set "the motor inertia + motor axis conversion load inertia" in proportion to the motor inertia.
SV037(JL)=(Jm+Jl)/Jm×100
Jm: Motor inertia
Jl: Motor axis conversion load inertia

---Setting range---
0 to 5000 (%)

【#13038】 SP038 FHz1 Notch filter frequency 1

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

---Setting range---
0 to 2250 (Hz)

【#13039】 SP039 LMCD Lost motion compensation timing

Set this parameter when the lost motion compensation timing does not match.
Adjust by increasing the value by 10 at a time.

---Setting range---
0 to 2000 (ms)

【#13040】 SP040 LMCT Lost motion compensation non-sensitive band

Set the non-sensitive band of the lost motion compensation in the feed forward control.
When "0" is set, 2゜/1000 is set. Adjust by increasing the value by 1゜/1000 at a time.

---Setting range---
-32768 to 32767 (1゜/1000)

【#13041】 SP041 LMC2 Lost motion compensation 2

Set this parameter with SP048(LMC1) only to vary the lost motion compensation amount depending on the command directions.
Normally, set to "0".

---Setting range---
-1 to 200 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 20000 (Short-time rated 0.01%).

【#13042】 SP042 OVS2 Overshooting compensation 2

Set this parameter with SP043(OVS1) only to vary the lost motion compensation amount depending on the command directions.
Normally, set to "0".

---Setting range---
-1 to 100 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 10000 (Short-time rated 0.01%).

【#13043】 SP043 OVS1 Overshooting compensation 1

Set this parameter when overshooting occurs during positioning. This compensates the motor torque during positioning.
This is valid only when the overshooting compensation SP033 (SFNC1/ovs) is selected.

[Type 3 "When SP033(SFNC1)/ bitB,A(ovs)=11"]
Use this when performing overshoot compensation in the feed forward control during arc cutting mode.
Set the compensation amount based on the motor short-time rated current.
Increase the value in increments of 1% to find the value where overshooting ceases.

[To vary compensation amount depending on the direction]
When SV042 (OVS2) is "0", change the SP043 (OVS1) value in both +/- directions to compensate.
To change the compensation amount depending on the command direction, set this with SP042 (OVS2).
(SP043: + direction, SP042: - direction, However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the command direction.

---Setting range---
-1 to 100 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 10000 (Short-time rated 0.01%).

【#13044】 SP044 OBS2 Disturbance observer gain

Set the disturbance observer gain. The standard setting is "100".
To use the disturbance observer, also set SP037(JL), SP045(OBS1) and SP226(SFNC6)/ bitE(obs).
When not using, set to "0".

---Setting range---
0 to 500 (%)

【#13045】 SP045 OBS1 Disturbance observer filter frequency

Set the disturbance observer filter band.
Normally, set to "100".
To use the disturbance observer, also set SP037(JL), SP044(OBS2) and SP226(SFNC6)/ bitE(obs).
When not using, set to "0".

---Setting range---
0 to 1000 (rad/s)

【#13046】 SP046 FHz2 Notch filter frequency 2

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

---Setting range---
0 to 2250 (Hz)

【#13047】 SP047 EC Inductive voltage compensation gain

Set the inductive voltage compensation gain. Normally, set to "100".
Lower the gain when the current FB peak exceeds the current command peak.

---Setting range---
0 to 200 (%)

【#13048】 SP048 LMC1 Lost motion compensation 1

Set this parameter when the protrusion (that occurs due to the non-sensitive band by friction, torsion, backlash, etc.) at quadrant change is too large.
This compensates the torque at quadrant change.
This is valid only when the overshooting compensation SP033 (SFNC1/lmc) is selected.

[Type 2 "When SP033(SFNC1)/bit9,8(lmc)=10"]
Set the compensation amount based on the motor short-time rated current.
The standard setting is double of the friction torque. The compensation amount will be 0 when "0" is set.

[Other than type 2 "When SP033(SFNC1)/bit9,8(lmc) ≠ 10"]
Lost motion compensation (Type 2) is not executed.

[To vary compensation amount depending on the direction]
When SP041 (LMC2) is "0", change SP048 (LMC1) value in both of +/- directions to compensate.
To vary the compensation amount depending on the command direction, set this with SP041 (LMC2).
(SP048: + direction, SP041: - direction, However, the directions may be opposite depending on other settings.)
When "-1" is set, the compensation will not be performed in the command direction.

---Setting range---
-1 to 200 (Short-time rated %)
Note that when SP227/bit2 is "1", the range will be -1 to 20000 (Short-time rated 0.01%).

【#13049】 SP049 FFC Acceleration rate feed forward gain

When a relative error in the synchronous control is too large, set this parameter to the axis that is delaying.
The standard setting is "0".
The standard setting in the SHG control is "100".
Adjust relative errors in acceleration/deceleration by increasing the value by 50 to 100.

---Setting range---
0 to 999 (%)

【#13050】 SP050 TOF Torque offset

Set the imbalance torque.

---Setting range---
-100 to 100 (Short-time rated %)

【#13051】 SP051 DFBT Dual feed back control time constant

Set the control time constant in dual feed back.
When the function is valid, the standard setting is "100". When "0" is set, the value is 1 ms.
When the time constant is increased, the operation will get closer to the semi-closed control and the limit of the position loop gain will be raised.
However, this cannot be used when the spindle slip occurs in machine configuration such as V-belt drive.

---Setting range---
0 to 9999 (ms)

【#13052】 SP052 DFBN Dual feedback control non-sensitive band

Set the non-sensitive band in the dual feedback control.
Normally set to "0".

---Setting range---
0 to 9999 (1/1000")

【#13053】 SP053 ODS Excessive error detection width (non-interpolation mode)

Set the excessive error detection width in non-interpolation mode.
Standard setting value: ODS = Maximum motor speed [r/min] × 6/PGV/2

When set to "0", the excessive error detection will not be performed.

---Setting range---
0 to 32767 (°)

【#13054】 SP054 ORE Overrun detection width in closed loop control

Set the overrun detection width in the full-closed loop control.
When the gap between the main side detector and the sub side detector exceeds the set value, it is judged as an overrun and "Alarm 43" is detected.
When "-1" is set, the alarm detection will not be performed.
When "0" is set, overrun will be detected with 2°.
In the full-closed loop control, normally set this parameter to "360". During V-belt drive, set to "-1".

---Setting range---
-32768 to 32767 (°)

【#13055】 SP055 EMGx Max. gate off delay time after emergency stop

Set the time required to forcibly execute READY OFF after the emergency stop is input. Normally set to "20000".
When "0" is set, READY OFF is forcibly executed with "7000ms".
When the set time is shorter than the time to decelerate and stop, the spindle will stop with the dynamic brake after the set time is out.

---Setting range---
0 to 29900 (ms)

【#13056】 SP056 EMGt Deceleration time constant at emergency stop

Set the time constant used for the deceleration control at emergency stop. Set the time required to stop from the maximum motor speed (TSP).
When "0" is set, the deceleration control is executed with "7000ms".

---Setting range---
-29900 to 29900 (ms)

【#13057(PR)】 SP057 GRA1 Spindle side gear ratio 1

Set the number of teeth on the spindle side when "the gear selection command (control input 4/bit6, 5) "is set to "00".

---Setting range---
1 to 32767

【#13058(PR)】 SP058 GRA2 Spindle side gear ratio 2

Set the number of teeth on the spindle side when "the gear selection command (control input 4/bit6, 5) " is set to "01".

---Setting range---
1 to 32767

【#13059(PR)】 SP059 GRA3 Spindle side gear ratio 3

Set the number of teeth on the spindle side when "the gear selection command (control input 4/bit6, 5) " is set to "10".

---Setting range---
1 to 32767

【#13060(PR)】 SP060 GRA4 Spindle side gear ratio 4

Set the number of teeth on the spindle side when "the gear selection command (control input 4/bit6, 5) " is set to "11".

---Setting range---
1 to 32767

【#13061(PR)】 SP061 GRB1 Motor side gear ratio 1

Set the number of teeth on the motor side when "the gear selection command (control input 4/bit6, 5) " is set to "00".

---Setting range---
1 to 32767

【#13062(PR)】 SP062 GRB2 Motor side gear ratio 2

Set the number of teeth on the motor side when "the gear selection command (control input 4/bit6, 5) " is set to "01".

---Setting range---
1 to 32767

【#13063(PR)】 SP063 GRB3 Motor side gear ratio 3

Set the number of teeth on the motor side when "the gear selection command (control input 4/bit6, 5)" is set to "10".

---Setting range---
1 to 32767

【#13064(PR)】 SP064 GRB4 Motor side gear ratio 4

Set the number of teeth on the motor side when "the gear selection command (control input 4/bit6, 5)" is set to "11".

---Setting range---
1 to 32767

【#13065】 SP065 TLM1 Torque limit 1

Set the torque limit value when "the torque limit (control input 1/bitA, 9, 8) " is set to "001".

---Setting range---
0 to 999 (Short-time rated %)

【#13066】 SP066 TLM2 Torque limit 2

Set the torque limit value when "the torque limit (control input 1/bitA, 9, 8)" is set to "010".

---Setting range---
0 to 999 (Short-time rated %)

【#13067】 SP067 TLM3 Torque limit 3

Set the torque limit value when "the torque limit (control input 1/bitA, 9, 8) " is set to "011".

---Setting range---
0 to 999 (Short-time rated %)

【#13068】 SP068 TLM4 Torque limit 4

Set the torque limit value when "the torque limit (control input 1/bitA, 9, 8) " is set to "100".

---Setting range---
0 to 999 (Short-time rated %)

【#13069】 SP069 PCMP Phase alignment completion width

Set the single-rotation position alignment completion width for phase alignment and changing from non-interpolation to spindle synchronization mode during rotation.
Set the rotation error that is required to the machine.
When the setting value decreases, the rotation error will decrease, but the cycle time (settling time) will get longer. The standard setting is "875".

---Setting range---
0 to 32767 (1° /1000)

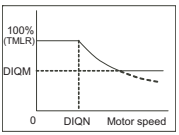
【#13070】 SP070 KDDT Phase alignment deceleration rate scale

Set the scale for SP016 (DDT) to change the deceleration rate only during rotation command (command F ⊿T ≠ 0).
When the setting value increases, the single-rotation position alignment will be completed faster, but the impact to the machine will also increase. When not using, set to "0".

---Setting range---
0 to 255 (1/16-fold)

【#13071】 SP071 DIQM Variable current limit during deceleration, lower limit value

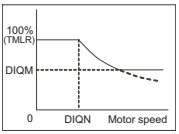
Set this parameter to adjust the deceleration time by changing the current limit value during deceleration depending on the motor speed.
As shown below, set the lower limit rate of the current limit in SP071 (DIQM), and use with SP072 (DIQN).
When DIQM is set to 100%, the current limit value in deceleration (TMRL) set in the motor constants is applied.



---Setting range---
0 to 999 (%)

【#13072】 SP072 DIQN Variable current limit during deceleration, break point speed

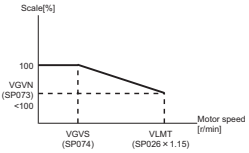
Set this parameter to adjust the deceleration time by changing the current limit value during deceleration depending on the motor speed.
As shown below, set the lower limit rate of the current limit in SP071 (DIQM), and use with SP072 (DIQN).
When DIQM is set to 100%, the current limit value in deceleration (TMRL) set in the motor constants is applied.



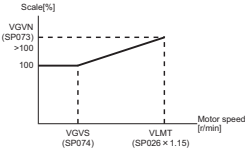
---Setting range---
1 to 32767 (r/min)

【#13073】 SP073 VGVN Variable speed gain target value

If noise is bothersome during high speed rotation, it may be reduced by lowering the speed loop gain at high speed.
Set this value to ensure the adequate response by suppressing noise and vibration at low speeds and increasing the speed loop gain at high speeds for a high-speed spindle of machining center, etc.
As shown below, set the speed loop gain rate for the overspeed detection speed in SP073 (VGVN), and use with SP074 (VGVS).
When not using, set to "0".
The overspeed detection speed (VLMT) is 115% of the maximum motor speed (TSP).
This function can be used when either VGN1 or VGN2 is selected.



When lowering the speed loop gain at high speed

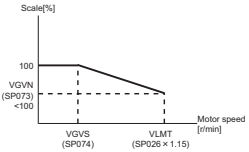


When increasing the speed loop gain at high speed

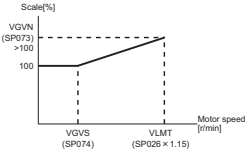
---Setting range---
0 to 999 (%)

【#13074】 SP074 VGVS Variable speed gain change start speed

If noise is bothersome during high speed rotation, it may be reduced by lowering the speed loop gain at high speed.
Set this value to ensure the adequate response by suppressing noise and vibration at low speeds and increasing the speed loop gain at high speeds for a high-speed spindle of machining center, etc.
As shown below, set the speed loop gain rate for the overspeed detection speed in SP073 (VGVN), and use with SP074 (VGVS).
When not using, set to "0".
The overspeed detection speed (VLMT) is 115% of the maximum motor speed (TSP).
This function can be used when either VGN1 or VGN2 is selected.



When lowering the speed loop gain at high speed



When increasing the speed loop gain at high speed

---Setting range---
0 to 32767 (r/min)

【#13075】 SP075 DWSH Slip compensation scale during regeneration high-speed coil

Set the slip frequency scale during deceleration.
Normally, set to "0". (For machine tool builder adjustment)

---Setting range---
0 to 255 (1/16-fold)

【#13076】 SP076 DWSL Slip compensation scale during regeneration low-speed coil

Set the slip frequency scale at deceleration when using the low-speed coil.
Normally, set to "0". (For machine tool builder adjustment)

---Setting range---
0 to 255 (1/16-fold)

【#13077】 SP077 IQA Q axis current lead compensation

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 20480

【#13078】 SP078 IDA D axis current lead compensation

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 20480

【#13079】 SP079 IQG Q axis current gain

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 8192

【#13080】 SP080 IDG D axis current gain

Set the current loop gain.
To use the coil switch function, set the current loop gain for when the high-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 8192

【#13081】 SP081 IQAL Q axis current lead compensation low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 20480

【#13082】 SP082 IDAL D axis current lead compensation low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 20480

【#13083】 SP083 IQGL Q axis current gain low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 8192

【#13084】 SP084 IDGL D axis current gain low-speed coil

When using coil switch function, set the current loop gain for when the low-speed coil is selected.
The setting value is determined by the motor's electrical characteristics so that the value is fixed to each motor used.
Set the value given in the spindle parameter list. (For machine tool builder adjustment)

---Setting range---
1 to 8192

【#13085】 SP085 LMCk Lost motion compensation 3 spring constant

Set the compensation amount for the spring constant when using lost motion compensation type 3.
When not using, set to "0".

---Setting range---
0 to 32767 (0.01%/0.001°)

【#13086】 SP086 LMCc Lost motion compensation 3 viscous coefficient

Set the compensation amount for the viscous coefficient when using lost motion compensation type 3.
When not using, set to "0".

---Setting range---
0 to 32767 (0.01% - s/ 1°)

【#13087】 SP087 FHz4 Notch filter frequency 4

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

---Setting range---
0 to 2250 (Hz)

【#13088】 SP088 FHz5 Notch filter frequency 5

Set the vibration frequency to suppress when machine vibration occurs.
(Enabled at 50 or more.)
When not using, set to "0".

---Setting range---
0 to 2250 (Hz)

【#13089】 SP089 TMKQ Spindle output stabilizing gain Q axis

Set the magnification of the torque current stabilizing gain. (For machine tool builder adjustment)
When set to "0", the torque current stabilization is disabled.
When not using, set to "0".

---Setting range---
0 to 32767

【#13090】 SP090 TMKD Spindle output stabilizing gain D axis

Set the magnification of the excitation current stabilizing gain. (For machine tool builder adjustment)
When set to "0", the excitation current stabilization is disabled.
When not using, set to "0".

---Setting range---
0 to 32767

【#13091】 SP091

Not used. Set to "0".

【#13092】 SP092

Not used. Set to "0".

【#13093】 SP093

Not used. Set to "0".

【#13094】 SP094 MPV Magnetic pole error detection speed

When not using, set to "0".
In the magnetic pole position detection function, the command motor speed and motor speed during the position command stop are monitored.
Set the command motor speed level and motor speed level during the position command stop in "r/min" unit.
When the command motor speed level is set to "0", the magnetic pole position error is detected at 10r/min.
Set to "10" as a standard setting when the magnetic pole position error detection function is enabled.
This detects the magnetic pole position error when the motor speed is "100r/min".

Ten-thousands digit, Thousands digit ---------- Command motor speed level (10r/min)
Hundreds digit, Tens digit, Ones digit ---------- Motor speed level (10r/min)

---Setting range---
0 to 31999

【#13095】 SP095 VIAX Lead compensation scale during high-response acceleration/ deceleration

Set the magnification against delay/lead compensation (SP006) of the high-response acceleration/deceleration (valid when SP226(SFNC6)/ bitD (vup) is set to "1").
Normally, set to "0". Set this parameter to suppress overshooting when the speed is reached.

---Setting range---
0 to 10000 (0.01%)

【#13096】 SP096 SDW Speed slowdown allowable width

When the spindle slows down due to multiple cutting, set the processable speed as percentage against the NC command speed.
When "0" is set, the magnification is the same as when "85" is set. When set to "-1", the allowable width will be disabled.

---Setting range---
-1,0 to 100(%)

【#13097】 SP097 RNG1ex Sub side extension detector resolution

Normally set to "0".
When setting the sub side detector resolution in pulse (p) unit, set the number of pulses to four bite data of SP097 (upper 16 bits) and SP019 (lower 16 bits).

SP097 = number of pulses / 65536 (When = 0, set SP097 = -1)
SP019 = the remainder of "number of pulses / 65536" (values can be set by the pulse)
For detectors not using the upper 16 bits, set to "-1".

When "SP019 > 32767", set "the remainder of above - 65536 (negative number)" to "SP019".

---Setting range---
-1,0 to 32767

【#13098】 SP098 RNG2ex Main side extension detector resolution

Normally set to "0".
When setting the main side detector resolution in pulse (p) unit, set the number of pulses to four bite data of SP098 (upper 16 bits) and SP020 (lower 16 bits).

SP098 = number of pulses / 65536 (When = 0, set SP098 = -1)
SP020 = the remainder of "number of pulses / 65536" (values can be set by the pulse)
For detectors not using the upper 16 bits, set to "-1".

When "SP020 > 32767", set "the remainder of above - 65536 (negative number)" to "SP020".

---Setting range---
-1,0 to 32767

【#13099】 SP099

Not used. Set to "0".

【#13100】 SP100

Not used. Set to "0".

【#13101】 SP101

Not used. Set to "0".

【#13102】 SP102

Not used. Set to "0".

【#13103】 SP103

Not used. Set to "0".

【#13104】 SP104

Not used. Set to "0".

【#13105】 SP105

Not used. Set to "0".

【#13106】 SP106

Not used. Set to "0".

【#13107】 SP107

Not used. Set to "0".

【#13108】 SP108

Not used. Set to "0".

【#13109】 SP109

Not used. Set to "0".

【#13110】 SP110

Not used. Set to "0".

【#13111】 SP111

Not used. Set to "0".

【#13112】 SP112

Not used. Set to "0".

【#13113】 SP113 OPLP Current command value for open loop

Set the current command value for when the open loop control is enabled.
When "0" is set, the state will be the same as when "50" is set.
When not using, set to "0".
The open loop control is enabled when "SP018 (SPEC2)/bit1 (oplp)" is set to "1".

---Setting range---
0 to 999 (Short-time rated %)

【#13114】 SP114 MKT Coil changeover gate cutoff timer

Set the time required to cut off the gate when turning OFF/ON the coil switch contactor.
The value should be longer than the coil switch contactor's OFF/ON time.
The standard setting is "150".

---Setting range---
0 to 3500 (ms)

【#13115】 SP115 MKT2 Coil changeover current limit timer

Set the time required to limit the current immediately after the coil switch contactor ON/OFF is completed and the gate is turned ON.
The standard setting is "250".

---Setting range---
0 to 3500 (ms)

【#13116】 SP116 MKIL Coil changeover current limit value

Set the time required to limit the current immediately after the coil switch contactor ON/OFF is completed and the gate is turned ON.
The standard setting is "120".

---Setting range---
0 to 999 (Short-time rated %)

【#13117】 SP117 SETM Excessive speed deviation timer

Set the time to detect the speed excessive error alarm.
Set the time required to the machine.
The standard setting is "12".

---Setting range---
0 to 60 (s)

【#13118(PR)】 SP118 MSFT Magnetic pole shift amount

Set the magnetic pole shift amount of IPM spindle motor.
During DC excitation of the initial setup: Set the same value displayed in the "AFLT gain" on the NC monitor screen in SP225(SFNC5)/bit4(dcd)=1.
When not using, set to "0".

---Setting range---
-18000 to 18000 (electrical angle 0.01°)

【#13119】 SP119 FSP4 Notch filter specifications 4

When not using, set to "0".
Set the target attenuation and damping coefficient of the notch filter.
To determine the value, multiply the damping coefficient by 10000, and add it to the absolute value of the target attenuation -dB.
The setting range of each coefficient is as follows.
Damping coefficient: 0.01 - 1.00 (Increment: 0.01)
When "0" is set, the actual value to be set is 1.00.
Target attenuation: -80db - -1db (Increment: 1dB)
When "0" is set, the actual value to be set is -80.
E.g.: When the target attenuation is -40dB, and damping coefficient is 1.00
1.00×10000 + ABS(-40) = 10040

---Setting range---
0 to 32767

【#13120】 SP120 FSP5 Notch filter specifications 5

When not using, set to "0".
Set the target attenuation and damping coefficient of the notch filter.
To determine the value, multiply the damping coefficient by 10000, and add it to the absolute value of the target attenuation -dB.
The setting range of each coefficient is as follows.
Damping coefficient: 0.01 - 1.00 (Increment: 0.01)
When "0" is set, the actual value to be set is 1.00.
Target attenuation: -80db - -1db (Increment: 1dB)
When "0" is set, the actual value to be set is -80.
E.g.: When the target attenuation is -40dB, and damping coefficient is 1.00
1.00×10000 + ABS(-40) = 10040

---Setting range---
0 to 32767

【#13121】 SP121 MP Kpp Magnetic pole detection position loop gain

Set the position loop gain in the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---
0 to 32767

【#13122】 SP122 MP Kvp Magnetic pole detection speed loop gain

Set the speed loop gain in the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---
0 to 32767

【#13123】 SP123 MP Kvi Magnetic pole detection speed loop lead compensation

Set the speed loop lead compensation in the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---
0 to 32767

【#13124】 SP124 ILMTsp Magnetic pole detection current limit value

Set the current limit value for the magnetic polar detection loop.
This is used in the initial magnetic polar detection when the IPM spindle motor is turned ON.
Set to "0" when using an IM spindle motor.

---Setting range---
0 to 999 (Short-time rated %)

【#13125】 SP125 DA1NO D/A output ch1 data No. / Initial DC excitation level

Input the desired data number to D/A output channel.

[When driving an IPM spindle motor (MDS-D/DH Series)]
Use in the DC excitation function.
DC excitation: Set the initial excitation level when SP225(SFNC5)/bit4(dcd)=1.
When "0" is set, the state will be the same as when "20" is set.

---Setting range---
-32768 to 32767

【#13126】 SP126 DA2NO D/A output ch2 data No. / Final DC excitation level

Input the desired data number to D/A output channel.

[When driving an IPM spindle motor (MDS-D/DH Series)]
Use in the DC excitation function.
DC excitation: Set the final excitation level when SP225(SFNC5)/bit4(dcd)=1.
When "0" is set, the state will be the same as when "50" is set.

---Setting range---
-32768 to 32767

【#13127】 SP127 DA1MPY D/A output ch1 output scale / Initial DC excitation time

Set the output scale in increments of 1/100.
When "0" is set, the scale is the same as when "100" is set.

[When driving an IPM spindle motor (MDS-D/DH Series)]
Use in the DC excitation function.
DC excitation: Set the initial excitation time when SP225(SFNC5)/bit4(dcd)=1.
When "0" is set, the state will be the same as when "10000" is set.

---Setting range---
-32768 to 32767 (1/100-fold)

【#13128】 SP128 DA2MPY D/A output ch2 output scale

Set the output scale in increments of 1/100.
When "0" is set, the scale is the same as when "100" is set.

---Setting range---
-32768 to 32767 (1/100-fold)

【#13129(PR)】 SP129

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13130(PR)】 SP130

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13131(PR)】 SP131

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13132(PR)】 SP132

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13133(PR)】 SP133

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13134(PR)】 SP134

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13135(PR)】 SP135

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13136(PR)】 SP136

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13137(PR)】 SP137

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13138(PR)】 SP138

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13139(PR)】 SP139

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13140(PR)】 SP140

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13141(PR)】 SP141

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13142(PR)】 SP142

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.
For IPM spindle motor
This parameter is used in initial magnetic pole detection of IPM spindle motor.
(1) Pulse application time: Set it in [μ s] unit.(0 < application time < 350)
(2) Pulse application coil: To select a low-speed coil, add 1000 to the pulse application time.
(3) Polarity of estimated magnetic pole: When it is set to the reverse polarity, add "-" to the total of (1) and (2).
E.g.: When performing 333 μ s pulse-applied magnetic pole estimation in a low-speed coil and selecting the reverse polarity for the estimated polarity
SP142 = -(333+1000) = -1333

【#13143(PR)】 SP143

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13144(PR)】 SP144

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13145(PR)】 SP145

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13146(PR)】 SP146

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13147(PR)】 SP147

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13148(PR)】 SP148

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13149(PR)】 SP149

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13150(PR)】 SP150

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13151(PR)】 SP151

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13152(PR)】 SP152

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13153(PR)】 SP153

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13154(PR)】 SP154

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13155(PR)】 SP155

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13156(PR)】 SP156

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13157(PR)】 SP157

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13158(PR)】 SP158

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13159(PR)】 SP159

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13160(PR)】 SP160

Set the unique constants for the spindle motor. (High-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13161(PR)】 SP161

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13162(PR)】 SP162

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13163(PR)】 SP163

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13164(PR)】 SP164

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13165(PR)】 SP165

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13166(PR)】 SP166

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13167(PR)】 SP167

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13168(PR)】 SP168

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13169(PR)】 SP169

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13170(PR)】 SP170

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13171(PR)】 SP171

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13172(PR)】 SP172

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13173(PR)】 SP173

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13174(PR)】 SP174

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13175(PR)】 SP175

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13176(PR)】 SP176

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13177(PR)】 SP177

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13178(PR)】 SP178

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13179(PR)】 SP179

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13180(PR)】 SP180

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13181(PR)】 SP181

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13182(PR)】 SP182

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13183(PR)】 SP183

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13184(PR)】 SP184

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13185(PR)】 SP185

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13186(PR)】 SP186

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13187(PR)】 SP187

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13188(PR)】 SP188

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13189(PR)】 SP189

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13190(PR)】 SP190

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13191(PR)】 SP191

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13192(PR)】 SP192

Set the unique constants for the spindle motor. (Low-speed coil)
The setting value is determined by the motor's mechanical and electrical characteristics and specifications, so normally set the value given in the spindle parameter list.

【#13193】 SP193 LMR Change magnification for load meter standard output (High-speed coil)

Set the standard output to be displayed as 100% in load meter using the short-time rated output ratio.
To display the continuous rated output as 100%, set as follows.
Continuous rated output/Short-time rated output × 100
When "0" is set, normal display will be applied.
It is not available for MDS-D-SPJ3 Series.

---Setting range---
0 to 100 (%)

【#13194】 SP194 LMN Base speed for load meter standard output (High-speed coil)

Set the base speed of the standard output to be displayed as 100% in load meter.
When "0" is set, the base speed of the short-time rated output will be applied.
It is not available for MDS-D-SPJ3 Series.

---Setting range---
0 to 32767 (r/min)

【#13195】 SP195 LMRL Change magnification for load meter standard output (Low-speed coil)

Set the standard output to be displayed as 100% in load meter using the short-time rated output ratio.
To display the continuous rated output as 100%, set as follows.
Continuous rated output/Short-time rated output × 100
When "0" is set, normal display will be applied.
It is not available for MDS-D-SPJ3 Series.

---Setting range---
0 to 100 (%)

【#13196】 SP196 LMNL Base speed for load meter standard output (Low-speed coil)

Set the base speed of the standard output to be displayed as 100% in load meter.
When "0" is set, the base speed of the short-time rated output will be applied.
It is not available for MDS-D-SPJ3 Series.

---Setting range---
0 to 32767 (r/min)

【#13197】 SP197

Not used. Set to "0".

【#13198】 SP198

Not used. Set to "0".

【#13199】 SP199

Not used. Set to "0".

【#13200】 SP200

Not used. Set to "0".

【#13201】 SP201

Not used. Set to "0".

【#13202】 SP202

Not used. Set to "0".

【#13203】 SP203

Not used. Set to "0".

【#13204】 SP204

Not used. Set to "0".

【#13205】 SP205

Not used. Set to "0".

【#13206】 SP206

Not used. Set to "0".

【#13207】 SP207

Not used. Set to "0".

【#13208】 SP208

Not used. Set to "0".

【#13209】 SP209

Not used. Set to "0".

【#13210】 SP210

Not used. Set to "0".

【#13211】 SP211

Not used. Set to "0".

【#13212】 SP212

Not used. Set to "0".

【#13213】 SP213

Not used. Set to "0".

【#13214】 SP214

Not used. Set to "0".

【#13215】 SP215

Not used. Set to "0".

【#13216】 SP216

Not used. Set to "0".

【#13217】 SP217

Not used. Set to "0".

【#13218】 SP218

Not used. Set to "0".

【#13219】 SP219

Not used. Set to "0".

【#13220】 SP220

Not used. Set to "0".

【#13221】 SP221

Not used. Set to "0".

【#13222】 SP222

Not used. Set to "0".

【#13223】 SP223

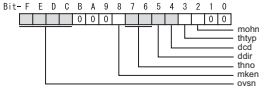
Not used. Set to "0".

【#13224】 SP224

Not used. Set to "0".

【#13225】 SP225 SFNC5 Spindle function 5

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F-C : ovsn Overshooting compensation type 3 non-sensitive band

Set the non-sensitive band of the overshooting compensation type 3 in increments of 2°/1000.
In the feed forward control, set the non-sensitive band for the model position droop and ignore the model overshooting. Set to "2°/1000" as a standard.

bit B-9 :

Not used. Set to "0".

bit 8 : mken Coil switch allowance in deceleration control

This enables a coil changeover while decelerating after an emergency stop for a spindle motor with coil changeover specification. A coil changeover may enable an excessive load inertia to stop within the maximum delay time.
0: Normal (Disable) 1: Enable

bit 7-6 : thno

Select the thermistor characteristics.
When SP225/bit3=0 (N type) is selected
bit7,6=
00: For Mitsubishi spindle motor
01: Setting prohibited
10: Setting prohibited
11: Setting prohibitedWhen SP225/bit3=1 (P type) is selected
00: KTY84-130 (Manufactured by Philips)
01: Setting prohibited
10: Setting prohibited
11: Setting prohibited

bit 5 : ddir Proximity switch signal enable edge

0: Falling edge 1: Rising edge

bit 4 : dcd DC excitation mode

0: Normal 1: Start

bit 3 : thtyp

Select the thermistor type.
0: Type N thermistor (Mitsubishi standard) 1: Type P thermistor

bit 2 : mohn Thermistor temperature detection

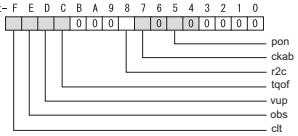
0: Normal 1: Disable (Except for TS5690/5691)

bit 1-0 :

Not used. Set to "0".

【#13226】 SP226 SFNC6 Spindle function 6

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F : clt Spindle monitor load inertia ratio

0: Normal 1: Display

bit E : obs Disturbance observer

0: Normal 1: Enable

bit D : vup High response acceleration / deceleration

This suppresses a temporal delay which occurs when the target speed is attained from acceleration and when the spindle stops from deceleration.
0: Normal acceleration/deceleration 1: High response acceleration/deceleration Enable

bit C : tqof Spindle output stabilization during acceleration

0: Normal 1: Disable

bit B-9 :

Not used. Set to "0".

bit 8 : r2c Temperature compensation adjustment indicator

0: Normal 1: Display

bit 7 : ckab No signal detection 2

0: Disable 1: Enable

- For MDS-DM Series
Not used. Set to "0".

bit 6 :

Not used. Set to "0".

bit 5 : pon IPM spindle pulse application magnetic pole estimation

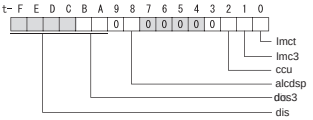
0: Normal 1: Enable
It is not available for MDS-D-SPJ3 Series.

bit 4-0 :

Not used. Set to "0".

【#13227】 SP227 SFNC7 Spindle function 7

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F-C : dis Digital signal input selection

0: No signal 1: Safety observation function door state signal 4: Proximity switch signal detection
Other settings: setting prohibited

bit B-A : dos3 Digital signal output 3 selection

bitB,A=
00: Disable
01: Setting prohibited
10: Contactor control signal output (For MDS-D-SPJ3)
11: Setting prohibited

bit 9 :

Not used. Set to "0".

bit 8 : alcdsp

0: Display alarm history 1: Display alarm counter

- For MDS-DM Series
Not used. Set to "0".

bit 7-3 :

Not used. Set to "0".

bit 2 : ccu Lost motion/overshoot compensation compensation amount setting unit

0: Short-time rated % 1: Short-time rated 0.01%

bit 1 : lmc3 Lost motion compensation 3

0: Disable 1: Enable

bit 0 : lmct Lost motion compensation 3 adjustment time measurement

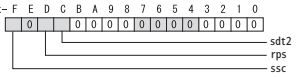
0: Disable 1: Enable

【#13228】 SP228 SFNC8 Spindle function 8

Not used. Set to "0000".

【#13229】 SP229 SFNC9 Spindle function 9

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F : ssc Safety observation function

0: Disable 1: Enable

bit E :

Not used. Set to "0".

bit D : rps Safety observation speed setting unit

0: Normal 1: 100°/min

bit C : sdt2 Specified speed output digital signal 2 output

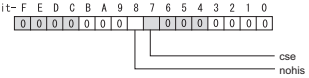
0: Normal 1: Enable

bit B-0 :

Not used. Set to "0".

【#13230】 SP230 SFNC10 Spindle function 10

Select the spindle functions.
Functions are allocated to each bit.
Set this in hexadecimal format.



bit F-9 :

Not used. Set to "0".

bit 8 : nohis Communication error alarm(34,36,38,39) between NC and DRV Specific alarm history disabled

0: Enable 1: Disable

bit 7 : cse Spindle C axis command speed monitoring function

0: Normal setting (function disabled) 1: Function enabled
It is not available for MDS-D-SPJ3 Series.

bit 6-0 :

Not used. Set to "0".

【#13231】 SP231

Not used. Set to "0".

【#13232】 SP232

Not used. Set to "0".

【#13233】 SP233 IVC/Icx Voltage non-sensitive band compensation/Current bias cx

bit F-8 :

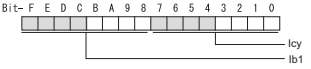
Not used. Set to "0".

bit 7-0 : IVC Voltage non-sensitive band compensation

When 100% is set, the voltage equivalent to the logical non-energized time will be compensated.
When "0" is set, 100% compensation will be performed.
Adjust in increments of 10% from the default value 100%.
If the value is too large, vibration or vibration noise may be generated.

---Setting range---
0 to 255 (%)

【#13234】 SP234 Icy/Ib1 Current bias cy/Current bias b1



bit F-8 : Ib1 Current bias 1

Normally, set to "0". (For machine tool builder adjustment)
When using this parameter, use this with SP233(Icx), SP234(Icy).

---Setting range---
0 to 255

bit 7-0 : Icy Current bias

Normally, set to "0". (For machine tool builder adjustment)
When using this parameter, use this with SP233(Icx), SP234(Ib1).

---Setting range---
0 to 255

【#13235(PR)】 SP235 R2H Temperature compensation gain

Set the magnification in converting the thermistor temperature to the control compensation amount.
When "0" is set, the temperature compensation function is disabled.
When not using, or when using an IPM spindle motor, set to "0".

---Setting range---
0 to 400 (%)

【#13236(PR)】 SP236 WIH Temperature compensation time constant

Set the delay time constant from the thermistor temperature to the control compensation amount.
When "0" is set, the delay time constant is disabled.
When not using, or when using an IPM spindle motor, set to "0".

---Setting range---
0 to 150 (min)

【#13237(PR)】 SP237 TCF Torque command filter

Set the filter for the torque command.
When not using, set to "0".
The standard value is "500" when using the motor side detector TS5690 or TS5691.

---Setting range---
0 to 4500 (Hz)

【#13238】 SP238 SSCFEED Safety observation Safety speed

Set the safety speed at the spindle end for the safety observation function.
When not using, set to "0".

---Setting range---
0 to 18000 (° /min)
However, when SP229/bitD is set to "1", the setting range is from -32768 to 32767 (100 ° /min).

【#13239】 SP239 SSCRPM Safety observation Safety motor speed

Set the motor's safety speed for the safety observation function.
When not using, set to "0".

---Setting range---
0 to 32767 (r/min)

【#13240(PR)】 SP240

Not used. Set to "0".

【#13241(PR)】 SP241

This is automatically set by the NC system.

【#13242(PR)】 SP242

This is automatically set by the NC system.

【#13243(PR)】 SP243

This is automatically set by the NC system.

【#13244(PR)】 SP244

This is automatically set by the NC system.

【#13245(PR)】 SP245

This is automatically set by the NC system.

【#13246(PR)】 SP246

This is automatically set by the NC system.

【#13247(PR)】 SP247

This is automatically set by the NC system.

【#13248(PR)】 SP248

This is automatically set by the NC system.

【#13249(PR)】 SP249

This is automatically set by the NC system.

【#13250(PR)】 SP250

This is automatically set by the NC system.

【#13251(PR)】 SP251

This is automatically set by the NC system.

【#13252(PR)】 SP252

This is automatically set by the NC system.

【#13253(PR)】 SP253

This is automatically set by the NC system.

【#13254(PR)】 SP254

This is automatically set by the NC system.

【#13255(PR)】 SP255

This is automatically set by the NC system.

【#13256(PR)】 SP256

This is automatically set by the NC system.

6. Rotary Axis Configuration Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

【#7900(PR)】 RCDAX_I Orthogonal coordinate horizontal axis name

Set the name of the horizontal axis in the orthogonal coordinate system.

---Setting range---
A,B,C,U,V,W,X,Y,Z

【#7901(PR)】 RCDAX_J Orthogonal coordinate vertical axis name

Set the name of the vertical axis in the orthogonal coordinate system.

---Setting range---
A,B,C,U,V,W,X,Y,Z

【#7902(PR)】 RCDAX_K Orthogonal coordinate height axis name

Set the name of the height axis in the orthogonal coordinate system.

---Setting range---
A,B,C,U,V,W,X,Y,Z

【#7903】 G92_CRD Origin zero set coordinate selection

Select the coordinate to preset when issuing an origin zero command (G92X_Y_Z_;).
0: Tool center coordinate
1: Holder center coordinate

【#7904】 NO_TIP Tool handle feed function selection

Select whether to enable the tool handle feed.
0: Enable (tool handle feed)
1: Disable (standard)

【#7905】 NO_ABS Selection of tool axis travel amount display at manual ABS switch ON/OFF

Select how to update the display of tool axis travel amount.
0: Update at ABS switch OFF
1: Update at every ON and OFF of ABS switch

【#7906】 PASSTYP Singular point passage type

Select the movement after passing a singular point.
0: Type 1
A/B axis rotation angle will be in the same sign direction as that when the tool center point control started.
1: Type 2
C axis rotation amount on the singular point will be smaller.

【#7907】 CHK_ANG Near singular judgment angle

Set the angle for judging a position near the singular point.

---Setting range---
0.000 to 5.000 (°)

【#7908】 SLCT_PRG_COORD Programming coordinate system selection

Select the coordinate system for the programming coordinate.
0: Table coordinate system (coordinate system that rotates together with workpiece)
1: Workpiece coordinate system

【#7909】 IJK_VEC_MR Posture vector mirror image selection

Select whether to enable the mirror image on the posture vector (IJK) when Type 2 is selected in "#7906 PASSTYP".
0: Disable
1: Enable

【#7910】 SLCT_INT_MODE Interpolation method selection

Select the interpolation method.
0: Joint interpolation method
1: Single axis rotation interpolation method

【#7911】 SLCT_STANDARD_POS Rotary axis basic position selection

Select the basic position of the rotary axis.
0: Workpiece coordinate zero point
1: The position when the tool center point is commanded.

(Note) Even if the position is changed, it is not changed during tool center point control. It is changed when next tool center point control will be commanded.

【#7912】 NO_MANUAL Selection of manual feed for 5-axis machining

Select whether to enable the manual feed for 5-axis machining.
0: Enable (manual feed for 5-axis machining)
1: Disable (standard manual feed)

【#7913】 MCHN_SPEED_CTRL Machine speed fluctuation suppression

Select whether to suppress the machine speed fluctuation due to rotary axis movement.
0: Not suppress
1: Suppress

(Note)This parameter is disabled when SSS control is enabled.

【#7914】 ROT_PREFILT Rotary axis prefilter time constant

Set the time constant for rotary axis prefilter.
Setting this parameter can smoothen the tool angle change (rotary axis' motion) under tool center point control.
When set to "0", "Rotary axis prefiltering" will be disabled.

---Setting range---
0 to 200 (ms)

【#7915】 SLCT_SLOPE_CRD_MOD Rotary axis basic position in inclined surface machining

Set the basic position of rotary axis to establish the feature coordinate system when inclined surface machining is commanded.
* The position will not change when inclined surface machining is running. It will change when the next inclined surface machining is commanded.
0: At zero degree
1: At the start position

【#7920(PR)】 SLCT_T1 Rotary axis selection

Select in which axis direction to rotate the tool rotating type base-side rotary axis.
If the tool axis is inclined, use the second digit to set the axis direction in which the tool axis is inclined.
0: Invalid
1: I axis rotation
2: J axis rotation
3: K axis rotation

(Note) 0 to 99 can be set from the screen, but if an invalid value is set, the operation error "M01 0127 Rot axis parameter error" will occur when the power supply is turned ON.

---Setting range---
0 to 3
12, 13, 21, 23, 31, 32

【#7921(PR)】 TIANGT1 Inclination angle

Set the inclination angle if the tool-rotation type base-side rotary axis is inclined. Set the angle regarding CCW direction of the inclined plane as plus direction.

---Setting range---
-359.999 to 359.999 (°)
(Follow as "#1003 iunit Input setup unit".)

【#7922(PR)】 ROTAXT1 Rotary axis name

Set the name of the tool rotating type base-side rotary axis.
Set "0" when the axis has the mechanical axis specifications. (The setting is, however, invalid in the tool center point control.)

---Setting range---
0, A, B, C, U, V, W, X, Y, Z

【#7923】 DIR_T1 Rotation direction

Select the rotation direction of the tool rotating type base-side rotary axis.
0: CW
1: CCW

【#7924】 COFST1H Horizontal axis rotation center offset

Set the distance in the horizontal axis direction between the rotation centers of the tool-side rotary axis and the base-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7925】 COFST1V Vertical axis rotation center offset

Set the distance in the vertical axis direction between the rotation centers of the tool-side rotary axis and the base-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7926】 COFST1T Height axis rotation center offset

Set the distance in the height axis direction between the rotation centers of the tool-side rotary axis and the base-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7927】 CERRT1H Horizontal axis rotation center error compensation amount

Set the error compensation amount in the horizontal axis direction of the tool rotating type base-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

【#7928】 CERRT1V Vertical axis rotation center error compensation amount

Set the error compensation amount in the vertical axis direction of the tool rotating type base-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

【#7930(PR)】 SLCT_T2 Rotary axis selection

Select in which axis direction to rotate the tool rotating type tool-side rotary axis.
If the tool axis is inclined, use the second digit to set the axis direction in which the tool axis is inclined.
0: Invalid
1: I axis rotation
2: J axis rotation
3: K axis rotation

(Note) 0 to 99 can be set from the screen, but if an invalid value is set, the operation error "M01 0127 Rot axis parameter error" will occur when the power supply is turned ON.

---Setting range---
0 to 3
12, 13, 21, 23, 31, 32

【#7931(PR)】 TIANGT2 Inclination angle

Set the inclination angle if the tool-rotation type tool-side rotary axis is inclined. Set the angle regarding CCW direction of the inclined plane as plus direction.

---Setting range---
-359.999 to 359.999 (°)
(Follow as "#1003 iunit Input setup unit".)

【#7932(PR)】 ROTAXT2 Rotary axis name

Set the name of the tool rotating type tool-side rotary axis.
Set "0" when the axis has the mechanical axis specifications. (The setting is, however, invalid in the tool center point control.)

---Setting range---
0, A, B, C, U, V, W, X, Y, Z

【#7933】 DIR_T2 Rotation direction

Set the rotation direction of the tool rotating type tool-side rotary axis.
0: CW
1: CCW

【#7934】 COFST2H Horizontal axis rotation center offset

Set the distance in the horizontal axis direction between the spindle holder center and the rotation center of the tool-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7935】 COFST2V Vertical axis rotation center offset

Set the distance in the vertical axis direction between the spindle holder center and the rotation center of the tool-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7936】 COFST2T Height axis rotation center offset

Set the distance in the height axis direction between the spindle holder center and the rotation center of the tool-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7937】 CERRT2H Horizontal axis rotation center error compensation amount

Set the error compensation amount in the horizontal axis direction of the tool rotating type tool-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

【#7938】 CERRT2V Vertical axis rotation center error compensation amount

Set the error compensation amount in the vertical axis direction of the tool rotating type tool-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

【#7940(PR)】 SLCT_W1 Rotary axis selection

Select in which axis direction to rotate the table rotating type base-side rotary axis.
If the tool axis is inclined, use the second digit to set the axis direction in which the tool axis is inclined.
0: Invalid
1: I axis rotation
2: J axis rotation
3: K axis rotation
(Note) 0 to 99 can be set from the screen, but if an invalid value is set, the operation error "M01 0127 Rot axis parameter error" will occur when the power supply is turned ON.

---Setting range---
0 to 3
12, 13, 21, 23, 31, 32

【#7941(PR)】 TIANGW1 Inclination angle

Set the inclination angle if the table-rotation type base-side rotary axis is inclined. Set the angle regarding CCW direction of the inclined plane as plus direction.

---Setting range---
-359.999 to 359.999 (°)
(Follow as "#1003 iunit Input setup unit".)

【#7942(PR)】 ROTAXW1 Rotary axis name

Set the name of the table rotating type base-side rotary axis.
Set "0" when the axis has the mechanical axis specifications. (The setting is, however, invalid in the tool center point control.)

---Setting range---
0, A, B, C, U, V, W, X, Y, Z

【#7943】 DIR_W1 Rotation direction

Set the rotation direction for the table rotating type base-side rotary axis.
0: CW
1: CCW

【#7944】 COFSW1H Horizontal axis rotation center offset

When all axes are at the machine basic point, set the distance in the horizontal axis direction from the machine basic point to the rotation center of the base-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7945】 COFSW1V Vertical axis rotation center offset

When all axes are at the machine basic point, set the distance in the vertical axis direction from the machine basic point to the rotation center of the base-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7946】 COFSW1T Height axis rotation center offset

When all axes are at the machine basic point, set the distance in the height axis direction from the machine basic point to the rotation center of the base-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7947】 CERRW1H Horizontal axis rotation center error compensation amount

Set the error compensation amount in the horizontal axis direction of the table rotating type base-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

【#7948】 CERRW1V Vertical axis rotation center error compensation amount

Set the error compensation amount in the vertical axis direction of the table rotating type base-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

【#7950(PR)】 SLCT_W2 Rotary axis selection

Set in which direction to rotate the table rotating type workpiece-side rotary axis.
If the tool axis is inclined, use the second digit to set the axis direction in which the tool axis is inclined.
0: Invalid
1: I axis rotation
2: J axis rotation
3: K axis rotation
(Note) 0 to 99 can be set from the screen, but if an invalid value is set, the operation error "M01 0127 Rot axis parameter error" will occur when the power supply is turned ON.

---Setting range---
0 to 3
12, 13, 21, 23, 31, 32

【#7951(PR)】 TIANGW2 Inclination angle

Set the inclination angle if the table rotating type workpiece-side rotary axis is inclined. Set the angle regarding CCW direction of the inclined plane as minus direction.

---Setting range---
-359.999 to 359.999 (°)
(Follow as "#1003 iunit Input setup unit".)

【#7952(PR)】 ROTAXW2 Rotary axis name

Set the name of the table rotating type workpiece-side rotary axis.
Set "0" when the axis has the mechanical axis specifications. (The setting is, however, invalid in the tool center point control.)

---Setting range---
0, A, B, C, U, V, W, X, Y, Z

【#7953】 DIR_W2 Rotation direction

Set the rotation direction for the table rotating type workpiece-side rotary axis.
0: CW
1: CCW

【#7954】 COFSW2H Horizontal axis rotation center offset

When all axes are at the machine basic point, set the distance in the horizontal axis direction between rotation centers of the base-side rotary axis and the workpiece-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7955】 COFSW2V Vertical axis rotation center offset

When all axes are at the machine basic point, set the distance in the vertical axis direction between rotation centers of the base-side rotary axis and the workpiece-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7956】 COFSW2T Height axis rotation center offset

When all axes are at the machine basic point, set the distance in the height axis direction between rotation centers of the base-side rotary axis and the workpiece-side rotary axis.

---Setting range---
-99999.999 to 99999.999 (mm)

【#7957】 CERRW2H Horizontal axis rotation center error compensation amount

Set the error compensation amount in the horizontal axis direction of the table rotating type workpiece-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

【#7958】 CERRW2V Vertical axis rotation center error compensation amount

Set the error compensation amount in the vertical axis direction of the table rotating type workpiece-side rotary axis rotation center.

---Setting range---
-99999.999 to 99999.999 (mm)
(Follow as "#1006 mcmpunit Machine error compensation unit".)

7. Machine Error Compensation Parameters

The parameters with "(PR)" requires the CNC to be turned OFF after the settings. Turn the power OFF and ON to enable the parameter settings.

【#4000(PR)】 Pinc Machine error compensation increment method

Select the method to set the machine error compensation data.
0: Absolute amount method
1: Incremental amount method

【#4001+10(n-1)】 cmpax Basic axis <n-th axis>

Set a name of the basic axis for machine error compensation.
(1) For pitch error compensation, set the name of the axis to be compensated.
(2) For relative position compensation, set the name of the axis to be the basic axis.
Set "system No. + axis name" when using the multi-part system.
(Example) Z axis for 2nd part system: 2Z

When two or more same name exist, set "axis name + serial number".
The serial number is common to all systems.
(Example) If C axis of the 1st system has 2 axes, and another C axis in the 2nd system has 1 axis, set the C axis of the 2nd system as "C3".

---Setting range---
Abbreviation as X, Y, Z, U, V, W, A, B, C, etc.

【#4002+10(n-1)】 drcax Compensation axis <n-th axis>

Set a name of the compensation axis for machine error compensation.
(1) For pitch error compensation, set the same axis name as in "#4001 cmpax".
(2) For relative position compensation, set the name of the axis to be actually compensated.
Set "system No. + axis name" when using the multi-part system.
(Example) Z axis for 2nd part system: 2Z

When two or more same name exist, set "axis name + serial number".
The serial number is common to all systems.
(Example) If C axis of the 1st system has 2 axes, and another C axis in the 2nd system has 1 axis, set the C axis of the 2nd system as "C3".

---Setting range---
Abbreviation as X, Y, Z, U, V, W, A, B, C, etc.

【#4003+10(n-1)】rdvno Division point number at reference position <n-th axis>

Set the compensation data No. corresponding to the reference position. As the reference position is actually the base position, there is no compensation No. Therefore set the number that is decremented by 1.
(Note) When two-way pitch error compensation is enabled, set compensation data No. corresponding to reference point in shifting in plus direction.

---Setting range---
4101 to 5124

【#4004+10(n-1)】 mdvno Division point number at the most negative side <n-th axis>

Set the compensation data No. at the farthest end on the negative side.
(Note) When the axis moves in positive direction with two-way pitch error compensation enabled, set compensation data No. of which locates on the nearest point to negative side. The compensation point should be set with even number.

---Setting range---
4101 to 5124

【#4005+10(n-1)】 pdvno Division point number at the most positive side <n-th axis>

Set the compensation data No. at the farthest end on the positive side.
(Note) When the axis moves in negative direction with two-way pitch error compensation enabled, set compensation data No. of which locates on the nearest point to positive side. The compensation point should be set with even number.

---Setting range---
4101 to 5124

【#4006+10(n-1)】 sc Compensation scale factor <n-th axis>

Set the scale factor for the compensation amount.

---Setting range---
0 to 99

【#4007+10(n-1)】 spcdv Division interval <n-th axis>

Set the interval to divide the basic axis.
Each compensation data will be the compensation amount for each of these intervals.

---Setting range---
1 to 9999999 (control unit applied)

【#4008+10(n-1)】 twopc Two-way pitch error compensation <n-th axis>

Select whether to enable two-way pitch error compensation.
0: Disable
1: Enable

【#4009+10(n-1)】 refcmp Reference position compensation amount <n-th axis>

When two-way pitch error compensation is enabled, set the compensation amount of the reference position when the axis moves to the position from the opposite direction of the zero point return.

---Setting range---
-32768 to 32767

(Note) The actual compensation amount will be the value obtained by multiplying the setting value with the compensation scale.

【#4101 - 5124】

Set the compensation amount for each axis.

---Setting range---
-32768 to 32767

(Note) The actual compensation amount will be the value obtained by multiplying the setting value with the compensation scale.

8. PLC Constants

【#6401,6402 - 6495,6496】 R7800-Low,R7800-High - R7847-Low,R7847-High Bit selection

This is the bit type parameter used in the PLC program (ladder).
Even if the data is set in the R register that corresponds to the PLC side when this parameter is displayed, the screen will not change. Enter a different screen once, and then select this screen again.
Some of the parameters following #6449 may be fixed according to the usage purpose. Refer to "Appendix1.21 Contents of bit selection parameters #6449 to #6496".

0 : OFF
1 : ON

【#6497,6498 - 6595,6596】 R7848-Low,R7848-High - R7897-Low,R7897-High Bit selection expansion

This is the bit type parameter (expansion) used in the PLC program (ladder).
Even if the data is set in the R register that corresponds to the PLC side when this parameter is displayed, the screen will not change. Enter a different screen once, and then select this screen again.

0 : OFF
1 : ON

【#16000 - 16703】 T0 - T703 PLC timer <10ms/100ms>

Set the time for the timer used in the PLC program (ladder).
The 10ms timer and 100ms timer are identified by the command used.

(Note1) This setting value is valid when bit selection parameter "#6449/bit0" is set to "0".

(Note2) Setting the timer setting value from the setting and display unit
The timer T setting value can be set with the following two methods.
- Method to validate the setting value (Kn) programmed with the sequence program (fixed timer)
- Method to validate the setting value set from the setting and display unit (variable timer)

(Note3) As described bellow, the setting method of timer T and No. of points can be set with the bit selection parameters (#6454/bit0 to bit3).
- #6454/bit0=0, bit1=0, bit2=0, bit3=0
  No. of points: 0
  Range: None
  Setting method: All fixed timers
- #6454/bit0=1, bit1=0, bit2=0, bit3=0
  No. of points: 100
  Range: #16000 to #16099
  Setting method: Set above range with variable timers.
- #6454/bit0=0, bit1=1, bit2=0, bit3=0
  No. of points:200
  Range: #16000 to #16199
  Setting method: Set above range with variable timers.
- #6454/bit0=1, bit1=1, bit2=0, bit3=0
  No. of points: 300
  Range: #16000 to #16299
  Setting method: Set above range with variable timers.
- #6454/bit0=0, bit1=0, bit2=1, bit3=0
  No. of points: 400
  Range: #16000 to #16399
  Setting method: Set above range with variable timers.
- #6454/bit0=1, bit1=0, bit2=1, bit3=0
  No. of points: 500
  Range: #16000 to #16499
  Setting method: Set above range with variable timers.
- #6454/bit0=0, bit1=1, bit2=1, bit3=0
  No. of points: 600
  Range: #16000 to #16599
  Setting method: Set above range with variable timers.
- #6454/bit0=1, bit1=1, bit2=1, bit3=0
  No. of points: All points
  Range: #16000 to #16703
  Setting method: All variable timers

---Setting range---
0 to 32767(x 10ms or x 100ms)

【#17000 - 17063】 ST0 - ST63 PLC integrated timer <100ms INC.>

Set the time for the integrated timer used with the PLC program (ladder).

(Note1) This setting value is valid when bit selection parameter "#6449/bit0" is set to "0".

(Note2) Setting the timer setting value from the setting and display unit
The timer T setting value can be set with the following two methods.
- Method to validate the setting value (Kn) programmed with the sequence program (fixed integrated timer)
- Method to validate the setting value set from the setting and display unit (variable integrated timer)

(Note3) As described bellow, the setting method of timer ST and No. of points can be set with the bit selection parameters (#6453/bit5 to bit7).
- #6453/bit5=0, bit6=0, bit7=0
  No. of points: 0
  Range: None
  Setting method: All fixed integrated timers
- #6453/bit5=1, bit6=0, bit7=0
  No. of points: 20
  Range: #17000 to #17019
  Setting method: Set above range with variable integrated timer.
- #6453/bit5=0, bit6=1, bit7=0
  No. of points: 40
  Range: #17000 to #17039
  Setting method: Set above range with variable integrated timer.
- #6453/bit5=1, bit6=1, bit7=0
  No. of points: All points
  Range: #17000 to #17063
  Setting method: All variable integrated timers

---Setting range---
0 to 32767(x 100ms)

【#17200 - 17455】 C000 - C255 Counter

Set the time for the counter used with the PLC program (ladder).

(Note1) This setting value is valid when bit selection parameter "#6449/bit1" is set to "0".

(Note2) Setting the counter setting value from the setting and display unit
The counter C setting value can be set with the following two methods.
- Method to validate the setting value (Kn) programmed with the sequence program (fixed counter)
- Method to validate the setting value set from the setting and display unit (variable counter)

(Note3) As described bellow, the setting method of counter C and No. of points can be set with the bit selection parameters (#6454/bit4 to bit7).
- #6454/bit4=0, bit5=0, bit6=0, bit7=0
  No. of points: 0
  Range: None
  Setting method: All fixed counters
- #6454/bit4=1, bit5=0, bit6=0, bit7=0
  No. of points: 40
  Range: #17200 to #17239
  Setting method: Set above range with variable counter.
- #6454/bit4=0, bit5=1, bit6=0, bit7=0
  No. of points: 80
  Range: #17200 to #17279
  Setting method: Set above range with variable counter.
- #6454/bit4=1, bit5=1, bit6=0, bit7=0
  No. of points: 120
  Range: #17200 to #17319
  Setting method: Set above range with variable counter.
- #6454/bit4=0, bit5=0, bit6=1, bit7=0
  No. of points: 160
  Range: #17200 to #17359
  Setting method: Set above range with variable counter.
- #6454/bit4=1, bit5=0, bit6=1, bit7=0
  No. of points: 200
  Range: #17200 to #17399
  Setting method: Set above range with variable counter.
- #6454/bit4=0, bit5=1, bit6=1, bit7=0
  No. of points: 240
  Range: #17200 to #17439
  Setting method: Set above range with variable counter.
- #6454/bit4=1, bit5=1, bit6=1, bit7=0
  No. of points: All points
  Range: #17200 to #17455
  Setting method: All variable counters

---Setting range---
0 to 32767

【#18001 - 18150】 R7500,7501 - R7798,7799 PLC constant (Base area)

Set the value to be set in the data type R register used in the PLC program (ladder).
Even if the data is set in the R register that corresponds to the PLC side when this parameter is displayed. The screen will not change.Enter a different screen once, and then select this screen again.

---Setting range---
-99999999 to 99999999

【#18151-18900】 R8300,8301 - R9798,9799 PLC constant (Extension area)

Set the value to be set in the data type R register(R8300 to R9799) used in the PLC program (ladder).
Even if the data is set in the R register that corresponds to the PLC side when this parameter is displayed, the screen will not change. Enter a different screen once, and then select this screen again.
#18151 to #18900 is used as the PLC constant extended area.
The area is valid for the number of PLC constant extension points ("#1326 PLC Const Ext. Num" setting value), starting with #18151.

---Setting range---
-99999999 to 99999999

9. Macro List

【#7001】 M[01] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7002】 M[01] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7003】 M[01] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7011】 M[02] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7012】 M[02] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7013】 M[02] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7021】 M[03] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7022】 M[03] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7023】 M[03] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7031】 M[04] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7032】 M[04] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7033】 M[04] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7041】 M[05] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7042】 M[05] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7043】 M[05] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7051】 M[06] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7052】 M[06] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7053】 M[06] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7061】 M[07] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7062】 M[07] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7063】 M[07] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7071】 M[08] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7072】 M[08] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7073】 M[08] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7081】 M[09] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7082】 M[09] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7083】 M[09] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7091】 M[10] Code

Set the M code used for calling out the macro with the M command.
This is valid when "#1195 Mmac" is set to "1".

---Setting range---
1 to 9999

【#7092】 M[10] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7093】 M[10] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7102】 M2mac Type

Set the type for when calling out the macro with the 2nd miscellaneous command.
The macro will be called out with the "#1170 M2name" address command when "#1198 M2mac" is set to "1".

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7103】 M2mac Program No.

Set the program No. for when calling out the macro with the 2nd miscellaneous command.
The macro will be called out with the "#1170 M2name" address command when "#1198 M2mac" is set to "1".
Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7201】 G[01] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7202】 G[01] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7203】 G[01] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7211】 G[02] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7212】 G[02] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7213】 G[02] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7221】 G[03] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7222】 G[03] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7223】 G[03] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7231】 G[04] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7232】 G[04] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7233】 G[04] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7241】 G[05] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7242】 G[05] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7243】 G[05] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7251】 G[06] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7252】 G[06] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7253】 G[06] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7261】 G[07] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7262】 G[07] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7263】 G[07] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7271】 G[08] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7272】 G[08] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7273】 G[08] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7281】 G[09] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7282】 G[09] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7283】 G[09] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7291】 G[10] Code

Set the G code to be used when calling the macro with a G command.
Do not set a G code used in the system.

---Setting range---
1 to 999

【#7292】 G[10] Type

Set the macro call out type.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7293】 G[10] Program No.

Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7302】 Smac Type

Set the type for when calling the macro with an S command.
This is valid when "#1196 Smac" is set to “1”.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7303】 Smac Program No.

Set the program No. for when calling the macro with an S command.
This is valid when "#1196 Smac" is set to “1”.
Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7312】 Tmac Type

Set the type for when calling the macro with a T command.
This is valid when "#1197 Tmac" is set to “1”.

0: M98 P △△△△ ; and equivalent value call
1: G65 P △△△△ ; and equivalent value call
2: G66 P △△△△ ; and equivalent value call
3: G66.1 P △△△△ ; and equivalent value call
others: M98 P △△△△ ; and equivalent value call

【#7313】 Tmac Program No.

Set the program No. for when calling the macro with a T command.
This is valid when "#1197 Tmac" is set to "1".
Set the No. of the program or file name to be called out. The file name can contain up to 32 characters.

---Setting range---
Program name or file name (up to 32 characters)

【#7401】 ASCII[01] Valid

The ASCII code macro parameters (#7402 to 7405) are validated.
0: Invalid
1: Valid

【#7402】 ASCII[01] Code

Set the ASCII code used to call macros with the ASCII code.
L system: A,B,D,F,H,I,J,K,M,Q,R,S,T
M system: A,B,F,H,I,K,M,Q,R,S,T

【#7403】 ASCII[01] Type

Set the macro call type.
0: M98
1: G65
2: G66
3: G66.1

【#7404】 ASCII[01] Program No.

Set the program No. called with macro call.

---Setting range---
Program name or file name (up to 32 characters)

【#7405】 ASCII[01] Variable

When the call type is "0", set the variable No. set after the ASCII code.

---Setting range---
100 to 149

【#7411】 ASCII[02] Valid

The ASCII code macro parameters (#7412 to 7415) are validated.
0: Invalid
1: Valid

【#7412】 ASCII[02] Code

Set the ASCII code used to call macros with the ASCII code.
L system: A,B,D,F,H,I,J,K,M,Q,R,S,T
M system: A,B,F,H,I,K,M,Q,R,S,T

【#7413】 ASCII[02] Type

Set the macro call type.
0: M98
1: G65
2: G66
3: G66.1

【#7414】 ASCII[02] Program No.

Set the program No. called with macro call.

---Setting range---
Program name or file name (up to 32 characters)

【#7415】 ASCII[02] Variable

When the call type is "0", set the variable No. set after the ASCII code.

---Setting range---
100 to 149

10. Position Switches

【#7500】 Pcheck High-speed switching of position switch

Specify whether to perform position switch area checking at high speeds.
0: Do not perform position switch area checking at high speed (do it the same as before).
1: Perform position switch area checking at high speed.

【#7501】 PSW1 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7502】 PSW1 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D00
2nd part system device: X1D20

---Setting range---
-99999.999 to 99999.999 (mm)

【#7503】 PSW1 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D00
2nd part system device: X1D20

---Setting range---
-99999.999 to 99999.999 (mm)

【#7504】 PSW1 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7511】 PSW2 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7512】 PSW2 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D01
2nd part system device: X1D21

---Setting range---
-99999.999 to 99999.999 (mm)

【#7513】 PSW2 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D01
2nd part system device: X1D21

---Setting range---
-99999.999 to 99999.999 (mm)

【#7514】 PSW2 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7521】 PSW3 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7522】 PSW3 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D02
2nd part system device: X1D22

---Setting range---
-99999.999 to 99999.999 (mm)

【#7523】 PSW3 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D02
2nd part system device: X1D22

---Setting range---
-99999.999 to 99999.999 (mm)

【#7524】 PSW3 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7531】 PSW4 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7532】 PSW4 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D03
2nd part system device: X1D23

---Setting range---
-99999.999 to 99999.999 (mm)

【#7533】 PSW4 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D03
2nd part system device: X1D23

---Setting range---
-99999.999 to 99999.999 (mm)

【#7534】 PSW4 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7541】 PSW5 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7542】 PSW5 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D04
2nd part system device: X1D24

---Setting range---
-99999.999 to 99999.999 (mm)

【#7543】 PSW5 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D04
2nd part system device: X1D24

---Setting range---
-99999.999 to 99999.999 (mm)

【#7544】 PSW5 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7551】 PSW6 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7552】 PSW6 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D05
2nd part system device: X1D25

---Setting range---
-99999.999 to 99999.999 (mm)

【#7553】 PSW6 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D05
2nd part system device: X1D25

---Setting range---
-99999.999 to 99999.999 (mm)

【#7554】 PSW6 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7561】 PSW7 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7562】 PSW7 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D06
2nd part system device: X1D26

---Setting range---
-99999.999 to 99999.999 (mm)

【#7563】 PSW7 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D06
2nd part system device: X1D26

---Setting range---
-99999.999 to 99999.999 (mm)

【#7564】 PSW7 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7571】 PSW8 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7572】 PSW8 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D07
2nd part system device: X1D27

---Setting range---
-99999.999 to 99999.999 (mm)

【#7573】 PSW8 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D07
2nd part system device: X1D27

---Setting range---
-99999.999 to 99999.999 (mm)

【#7574】 PSW8 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7581】 PSW9 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7582】 PSW9 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D08
2nd part system device: X1D28

---Setting range---
-99999.999 to 99999.999 (mm)

【#7583】 PSW9 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D08
2nd part system device: X1D28

---Setting range---
-99999.999 to 99999.999 (mm)

【#7584】 PSW9 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7591】 PSW10 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7592】 PSW10 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D09
2nd part system device: X1D29

---Setting range---
-99999.999 to 99999.999 (mm)

【#7593】 PSW10 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D09
2nd part system device: X1D29

---Setting range---
-99999.999 to 99999.999 (mm)

【#7594】 PSW10 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7601】 PSW11 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7602】 PSW11 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0A
2nd part system device: X1D2A

---Setting range---
-99999.999 to 99999.999 (mm)

【#7603】 PSW11 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0A
2nd part system device: X1D2A

---Setting range---
-99999.999 to 99999.999 (mm)

【#7604】 PSW11 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7611】 PSW12 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7612】 PSW12 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0B
2nd part system device: X1D2B

---Setting range---
-99999.999 to 99999.999 (mm)

【#7613】 PSW12 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0B
2nd part system device: X1D2B

---Setting range---
-99999.999 to 99999.999 (mm)

【#7614】 PSW12 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7621】 PSW13 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7622】 PSW13 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0C
2nd part system device: X1D2C

---Setting range---
-99999.999 to 99999.999 (mm)

【#7623】 PSW13 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0C
2nd part system device: X1D2C

---Setting range---
-99999.999 to 99999.999 (mm)

【#7624】 PSW13 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7631】 PSW14 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7632】 PSW14 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0D
2nd part system device: X1D2D

---Setting range---
-99999.999 to 99999.999 (mm)

【#7633】 PSW14 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0D
2nd part system device: X1D2D

---Setting range---
-99999.999 to 99999.999 (mm)

【#7634】 PSW14 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7641】 PSW15 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7642】 PSW15 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0E
2nd part system device: X1D2E

---Setting range---
-99999.999 to 99999.999 (mm)

【#7643】 PSW15 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0E
2nd part system device: X1D2E

---Setting range---
-99999.999 to 99999.999 (mm)

【#7644】 PSW15 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7651】 PSW16 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7652】 PSW16 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0F
2nd part system device: X1D2F

---Setting range---
-99999.999 to 99999.999 (mm)

【#7653】 PSW16 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D0F
2nd part system device: X1D2F

---Setting range---
-99999.999 to 99999.999 (mm)

【#7654】 PSW16 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7661】 PSW17 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7662】 PSW17 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D10
2nd part system device: X1D30

---Setting range---
-99999.999 to 99999.999 (mm)

【#7663】 PSW17 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D10
2nd part system device: X1D30

---Setting range---
-99999.999 to 99999.999 (mm)

【#7664】 PSW17 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7671】 PSW18 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7672】 PSW18 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D11
2nd part system device: X1D31

---Setting range---
-99999.999 to 99999.999 (mm)

【#7673】 PSW18 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D11
2nd part system device: X1D31

---Setting range---
-99999.999 to 99999.999 (mm)

【#7674】 PSW18 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7681】 PSW19 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7682】 PSW19 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D12
2nd part system device: X1D32

---Setting range---
-99999.999 to 99999.999 (mm)

【#7683】 PSW19 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D12
2nd part system device: X1D32

---Setting range---
-99999.999 to 99999.999 (mm)

【#7684】 PSW19 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7691】 PSW20 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7692】 PSW20 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D13
2nd part system device: X1D33

---Setting range---
-99999.999 to 99999.999 (mm)

【#7693】 PSW20 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D13
2nd part system device: X1D33

---Setting range---
-99999.999 to 99999.999 (mm)

【#7694】 PSW20 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7701】 PSW21 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7702】 PSW21 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D14
2nd part system device: X1D34

---Setting range---
-99999.999 to 99999.999 (mm)

【#7703】 PSW21 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D14
2nd part system device: X1D34

---Setting range---
-99999.999 to 99999.999 (mm)

【#7704】 PSW21 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7711】 PSW22 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7712】 PSW22 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D15
2nd part system device: X1D35

---Setting range---
-99999.999 to 99999.999 (mm)

【#7713】 PSW22 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D15
2nd part system device: X1D35

---Setting range---
-99999.999 to 99999.999 (mm)

【#7714】 PSW22 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.

0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7721】 PSW23 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7722】 PSW23 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D16
2nd part system device: X1D36

---Setting range---
-99999.999 to 99999.999 (mm)

【#7723】 PSW23 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D16
2nd part system device: X1D36

---Setting range---
-99999.999 to 99999.999 (mm)

【#7724】 PSW23 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

【#7731】 PSW24 axis Axis name

Specify the name of the axis for which a position switch is provided.

---Setting range---
X, Y, Z, U, V, W, A, B, or C axis address

【#7732】 PSW24 dog1 Imaginary dog position 1

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D17
2nd part system device: X1D37

---Setting range---
-99999.999 to 99999.999 (mm)

【#7733】 PSW24 dog2 Imaginary dog position 2

When the machine enters the range between imaginary dog positions 1 and 2, a signal is output to the PLC.
1st part system device: X1D17
2nd part system device: X1D37

---Setting range---
-99999.999 to 99999.999 (mm)

【#7734】 PSW24 check Selection of area check method

When position switch area checking at high speed is selected, specify the mode of area checking, i.e., whether to use the command type machine position or detector feedback position, for each position switch point.
0: Use the command type machine position as the machine position for position switch area checking.
1: Use the detector feedback position as the machine position for position switch area checking.

(Note) This parameter is valid only when "1" set in "#7500 Pcheck".

11. Auxiliary Axis Parameters

【#50001(PR)】 MSR Motor series

Set the motor series. When set to the default value ("0000"), the system will automatically judge the series.

---Setting range---
0000 to FFFF (hexadecimal)

【#50002(PR)】 RTY Regeneration option type

Set the regenerative resistor type.
Default value: 0000

Setting value of the third digit from the left
0: Drive unit standard built-in resistor (10CT has no built-in resistor)
1: Setting prohibited
2: MR-RB032 (30W)
3: MR-RB12 (100W)
4: MR-RB32 (300W)
5: MR-RB30 (300W)
6: MR-RB50 (500W)
7 to F: Setting prohibited

Do not set values that are not written here.

【#50003(PR)】 PC1 Motor side gear ratio (machine rotation ratio)

Set the number of gear teeth on the motor side and the number of gear teeth on the machine side as an integer reduced to its lowest terms.
Set the total gear ratio if there are multiple gear levels.
For rotary axes, set the motor rotation speed per machine rotation.
Default value: 1

---Setting range---
1 to 32767

【#50004(PR)】 PC2 Machine side gear ratio (motor rotation ratio)

Set the number of gear teeth on the motor side and the number of gear teeth on the machine side as an integer reduced to its lowest terms.
Set the total gear ratio if there are multiple gear levels.
For rotary axes, set the motor rotation speed per machine rotation.
Default value: 1

---Setting range---
1 to 32767

【#50005(PR)】 PIT Feed pitch

Set the feed pitch.
Set "360" (default value) for rotary axes.
Set the feed lead for linear axes.

---Setting range---
1 to 32767(° or mm)

【#50006】 INP In-position detection width

Set the position droop for the in-position detection.
In-position will be detected when the position droop reaches the setting value or less.
Default value: 50

---Setting range---
1 to 32767 (1/1000° or μm)

【#50007】 ATU Auto-tuning

Set the adjustment of the auto-tuning.
Default value: 0102

***1: Low response (low-rigidity loads, loads which easily vibrate)
***2: Standard setting value
***3:
***4:
***5: High response (high-rigidity loads, loads which do not easily vibrate)

**0*: Standard friction amount
**1*: Large friction amount (set the position loop gain slightly lower)

*0**: Only auto-tuning PG2, VG2, VIC, and GD2
*1**: Only auto-tuning PG1, PG2, VG1, VG2, VIC, and GD2 (total gain). (Standard setting)
*2**: No auto-tuning

Do not set values that are not explained here.

【#50008】 PG1 Position loop gain 1

Set the position loop gain of the model loop. This parameter determines the trackability to a position command.
Default value: 70

---Setting range---
4 to 1000 (1/s)

【#50009】

Not used. Set to "0".

【#50010】 EMGt Deceleration control time constant

Set the deceleration time from the clamp speed (Aspeed1). Set the same value as the acceleration/deceleration time constant used for the normal rapid traverse.
Default value: 500

---Setting range---
0 to 32768 (ms)

【#50011】

Not used. Set to "0".

【#50012】

Not used. Set to "0".

【#50013】 MBR Vertical axis drop prevention time

Set the time to delay the servo OFF during servo OFF command. Increase the setting by 100ms at a time and set the minimum value where the axis does not drop.
Default value: 100

---Setting range---
0 to 1000 (ms)

【#50014】 NCH Notch filter No.

Set the frequency of the machine resonance suppression filter.
0: Not used
1: 1125 (Hz)
2: 563
3: 375
4: 282
5: 225
6: 188
7: 161

【#50015】

Not used. Set to "0".

【#50016】 JIT Jitter compensation

Set the number of pulses that ignore the jitter compensation.
0: The function is not used.
1 to 3: 1 to 3 pulses ignore.

【#50017】

Not used. Set to "0".

【#50018】

Not used. Set to "0".

【#50019】 PG2 Position loop gain 2

Set the position loop gain of the actual loop.
Determine the position responsiveness to external disturbance.
Default value: 25

---Setting range---
1 to 500 (1/s)

【#50020】 VG1 Speed loop gain 1

Set the speed loop gain of the model loop.
This parameter determines the tracking ability to a speed command.
Default value: 1200

---Setting range---
20 to 5000 (1/s)

【#50021】 VG2 Speed loop gain 2

Set the speed loop gain of the actual loop.
This parameter determines the speed responsiveness to external disturbance.
Default value: 600

---Setting range---
20 to 8000 (1/s)

【#50022】 VIC Speed integral compensation

Set the characteristics of the speed low-frequency region.
Default value: 20

---Setting range---
1 to 1000 (ms)

【#50023】 VDC Speed differential compensation

Set the speed differential compensation to reduce overshoot.
When the default value "1000" is set, the normal PI control will start.
Adjust the overshoot amount by lowering in increments of 20.

---Setting range---
0 to 1000

【#50024】 DG2 Load inertia ratio

Set the ratio of load inertia to motor inertia.
Default value: 2.0

---Setting range---
0.0 to 50.0 (fold)

【#50025】

Not used. Set to "0".

【#50030(PR)】 MTY Motor type

Set the motor type. When set to the default value ("0000"), the system will automatically judge the type.

---Setting range---
0000 to FFFF (hexadecimal)

【#50050】 MD1 D/A output channel 1 data No.

Set the Nos. of the data to output on D/A output channel 1.
Default value: 0000

Setting value of the rightmost digit
0: Speed feedback (with sign) Maximum speed = 8V
1: Current feedback (with sign) Maximum current (torque) = 8V
2: Speed feedback (without sign) Maximum speed = 8V
3: Current feedback (without sign) Maximum current (torque) = 8V
4: Current command Maximum current (torque) = 8V
5: Command FDT 100000 [degrees/min] = 10V
6: Position droop 1 (1/1) 2048 [pulse] = 10V
7: Position droop 2 (1/4) 8192 [pulse] = 10V
8: Position droop 3 (1/16) 32768 [pulse] = 10V
9: Position droop 4 (1/32) 65536 [pulse] = 10V
A: Position droop 5 (1/64) 131072 [pulse] = 10V

【#50051】 MO1 D/A output channel 1 output offset

Set this parameter when the zero level of D/A output channel 1 is not equal to zero.

---Setting range---
-999 to 999 (mV)

【#50052】

Not used. Set to "0".

【#50053】 MD2 D/A output channel 2 data No.

Set the Nos. of the data to output on D/A output channel 2.
Descriptions are the same as in "#50050 MD1".
Default value: 0000

---Setting range---
0000 to FFFF (hexadecimal)

【#50054】 MO2 D/A output channel 2 output offset

Set this parameter when the zero level of D/A output channel 2 is not equal to zero.
Default value: 0

---Setting range---
-999 to 999 (mV)

【#50055】

Not used. Set to "0".

【#50100(PR)】 station Number of indexing stations

Set the number of stations.
For linear axes, this value is expressed by: number of divisions = number of stations - 1.
Default value: 2

---Setting range---
2 to 360

【#50101(PR)】 Cont1 Control parameter 1

The bits that are not explained here must be set to the default value.
Default value : bit9 = "1", Other bits ="0"

bit1:

0: High-speed zero point return after the establishment of zero point
1: Dog-type return for each reference position return

bit8:

0: Reference position return direction (+)
1: Reference position return direction (-)

bit9:

0: Rotation direction determined by operation control signal (DIR)
1: Rotation direction in the shortcut direction

bitA

0: Machine basic position becomes the basic point.
1: Electrical basic position becomes the basic point.

bitD

0: Creation of coordinate zero point is valid.
1: Zero point is established at power supply ON position.

bitE

0: Rotation direction in operation control signal (DIR) or in the shortcut direction
1: Rotation direction in the arbitrary position command sign direction

bitF

0: Stopper direction is in the positioning direction.
1: Stopper direction is in the sign direction of the stopper amount.

【#50102(PR)】 Cont2 Control parameter 2

The bits that are not explained here must be set to the default value.
Default value : bit1,2,7 = "1", Other bits ="0"

bit1:

0: Error not corrected at servo OFF
1: Error corrected at servo OFF

bit2:

0: Linear axis
1: Rotary axis

bit3:

0: Station assignment direction CW
1: Station assignment direction CCW

bit4:

0: Uniform assignment
1: Non-uniform assignment

bit5:

0: DO channel standard assignment
1: DO channel reverse assignment

bit6:

0: 2-wire detector communication
1: 4-wire detector communication

bit7:

0: Incremental detection
1: Absolute position detection

【#50103(PR)】 EmgCont Emergency stop control

The bits that are not explained here must be set to the default value.
Default value : bit0 = "1", Other bits ="0"

bit0:

0: Enable external emergency stop
1: Disable external emergency stop

bit1:

0: Dynamic brake stop at emergency stop
1: Deceleration control stop at emergency stop

bit2:

0: Enable NC bus emergency stop input
1: Disable NC bus emergency stop input

bit3:

0: Enable NC bus emergency stop output
1: Disable NC bus emergency stop output

【#50104(PR)】 tleng Linear axis stroke length

Set the travel stroke length for linear axis.
The set value for this parameter will be ignored when non-uniform assignments are set or random positions are commanded.
Default value: 100.000

---Setting range---
0.001 to 99999.999 (mm)

【#50110】 ZRNspeed Reference position return speed

Set the clamp value of the feedrate when a reference position return is carried out.
The feedrate applies the manual operation speed in the parameter group selected at the time, which is clamped by this parameter set value.
Default value: 1000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50111】 ZRNcreep Reference position return creep speed

Set the approach speed to the reference position after dog detection during a reference position return.
Default value: 200

---Setting range---
1 to 65535 (°/min or mm/min)

【#50112】 grid mask Grid mask

Set the amount that the dog is artificially extended. Normally set the half amount of the grid spacing.
Default value: 0

---Setting range---
0 to 65536 (1/1000° or μm)

【#50113(PR)】 grspc Grid spacing

Select the number of divisions in the grid spacing that is the conventional motor rotation travel amount.
The setting values "1", "2", "3" and "4" divide into 2, 4, 8 and 16 divisions respectively.
Default value: 0

---Setting range---
0 to 4 ("1 / (n-th power of 2)" divisions)

【#50114】 ZRNshift Reference position shift amount

Set the shift amount in a dog-type reference position return from the electrical basic position, which is determined on the grid, to the reference position.
Default value: 0

---Setting range---
0 to 65536 (1/1000° or μm)

【#50115】 ST. ofset Station offset

Set the distance (offset) from the reference position to station 1.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50116(PR)】 ABS base Absolute position zero point

Set the travel distance in shifting the machine coordinate basic point from the standard point during absolute position initializing.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50117】 Limit(+) Soft limit (+)

Set the upper limit for commands in the plus direction.
Commands in the plus direction beyond this set value are not possible.
If the machine is in a position exceeding the setting value, commands in the minus direction will be possible.
If "#50117 Limit(+)" and "#50118 Limit(-)" are set to the same value, the soft limit function will not operate.
Default value: 1.000

---Setting range---
-99999.999 to 99999.999 (mm)

【#50118】 Limit(-) Soft limit (-)

Set the lower limit for commands in the minus direction.
Commands in the minus direction beyond this set value are not possible.
If the machine is in a position exceeding the setting value, commands in the plus direction will be possible.
Default value: 1.000

---Setting range---
-99999.999 to 99999.999 (mm)

【#50120】 ABS Type Absolute position detection parameter

The bits that are not explained here must be set to the default value.
Default value : bit2 = "1", Other bits ="0"

bit1:

0: Dogless-type method initializing
1: Dog-type method initializing

bit2:

0: Machine end stopper method initializing
1: Marked point alignment method initializing

bit3:

0: Electrical basic position direction (+)
1: Electrical basic position direction (-)

【#50123(PR)】 ABS check Absolute position power OFF tolerable movement value

Set the tolerable amount of travel for a machine that travels during power OFF in an absolute position detection system.
The "Absolute position power OFF movement exceeded (ABS)" signal will turn ON if the machine travels more than this setting value during power OFF.
The travel amount will not be checked when this parameter is set to "0.000".
Default value: 0.000

---Setting range---
0.000 to 99999.999 (° or mm)

【#50130】 backlash Backlash compensation amount

Set the backlash compensation amount.
Default value: 0

---Setting range---
0 to 9999 (1/1000° or μm)

【#50132】

Not used. Set to "0".

【#50133】

Not used. Set to "0".

【#50134】

Not used. Set to "0".

【#50135】

Not used. Set to "0".

【#50150】 Aspeed1 Operation parameter group 1 Automatic operation speed

Set the feedrate during automatic operation when operation parameter group 1 is selected.
This parameter is regarded as the clamp value for the automatic operation speeds and manual operation speeds of all operation groups.
A speed exceeding Aspeed1 cannot be commanded, even if it is set in a parameter.
Default value: 5000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50151】 Mspeed1 Operation parameter group 1 Manual operation speed

Set the feedrate during manual operation or JOG operation when operation parameter group 1 is selected.
Default value: 2000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50152】 time1.1 Operation parameter group 1 Acceleration/deceleration time constant 1

Set the linear acceleration/deceleration time for "Operation parameter group 1 automatic operation speed" (clamp speed) when operation parameter group 1 is selected.
When operating at a lower speed than the clamp speed, the axis will linearly accelerate/decelerate at the inclination determined above.
When this is set with "Acceleration/deceleration time constant 2", S-pattern acceleration/deceleration will be carried out. In this case, this parameter determines the acceleration/deceleration time of the linear part.
Default value: 100

---Setting range---
1 to 9999 (ms)

【#50153】 time1.2 Operation parameter group 1 Acceleration/deceleration time constant 2

Set this parameter when carrying out S-pattern acceleration/deceleration. Set the total time of the non-linear parts in the S-pattern acceleration/deceleration. When "1" is set, linear acceleration/deceleration will be carried out.
In the handle feed operation mode, this setting value is regarded as time constant for the linear acceleration/deceleration.
Default value: 1

---Setting range---
1 to 999 (ms)

【#50154】 TL1 Operation parameter group 1 Torque limit value

Set the motor output torque limit value when operation parameter group 1 is selected.
At the default value, the torque is limited at the maximum torque of the motor specifications. Set the default value when torque limit is not especially required.
In the stopper positioning operation mode, this will be regarded as torque limit value when positioning to the stopper starting coordinates.
Default value: 500

---Setting range---
1 to 500 (%)

【#50155】 OD1 Operation parameter group 1 Excessive error detection width

Set the excessive error detection width when operation parameter group 1 is selected.
The excessive error alarm (S03 0052) will be detected when the position droop becomes larger than this setting value.
In the stopper positioning operation mode, this will be regarded as excessive error detection width when positioning to the stopper starting coordinates.
Default value: 100

---Setting range---
0 to 32767 (° or mm)

【#50156】 just1 Operation parameter group 1 Set position output width

Set the tolerable value at which "set position reached" (JST) or "automatic set position reached" (JSTA) signal is output when operation parameter group 1 is selected.
"Set position reached" (JST) indicates that the machine position is at any station. During automatic operation, "automatic set position reached" (JSTA) is also output under the same condition. These signals will turn OFF when the machine position moves away from the station over this value.
Default value: 0.500

---Setting range---
0.000 to 99999.999 (° or mm)

【#50157】 near1 Operation parameter group 1 Near set position output width

Set the tolerable value at which "near set position" (NEAR) signal is output when operation parameter group 1 is selected.
"Near set position" (NEAR) indicates that the machine position is near any station position. This value is generally set wider than the set position output width. During operations, this is related to the special commands when the station selection is set to "0".
Default value: 1.000

---Setting range---
0.000 to 99999.999 (° or mm)

【#50158】 Aspeed2 Operation parameter group 2 Automatic operation speed

Set the feedrate during automatic operation when operation parameter group 2 is selected.
Default value: 5000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50159】 Mspeed2 Operation parameter group 2 Manual operation speed

Set the feedrate during manual operation or JOG operation when operation parameter group 2 is selected.
Default value: 2000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50160】 time2.1 Operation parameter group 2 Acceleration/deceleration time constant 1

Set the linear acceleration/deceleration time for "Operation parameter group 1 automatic operation speed" (clamp speed) when operation parameter group 2 is selected.
When operating at a lower speed than the clamp speed, the axis will linearly accelerate/decelerate at the inclination determined above.
When this is set with "Acceleration/deceleration time constant 2", S-pattern acceleration/deceleration will be carried out. In this case, this parameter determines the acceleration/deceleration time of the linear part.
Default value: 100

---Setting range---
1 to 9999 (ms)

【#50161】 time2.2 Operation parameter group 2 Acceleration/deceleration time constant 2

Set this parameter when carrying out S-pattern acceleration/deceleration. Set the total time of the non-linear parts in the S-pattern acceleration/deceleration. When "1" is set, linear acceleration/deceleration will be carried out.
In the handle feed operation mode, this setting value is regarded as time constant for the linear acceleration/deceleration.
Default value: 1

---Setting range---
1 to 999 (ms)

【#50162】 TL2 Operation parameter group 2 Torque limit value

Set the motor output torque limit value when operation parameter group 2 is selected. At the default value, the torque is limited at the maximum torque of the motor specifications. Set the default value when torque limit is not especially required.
In the stopper positioning operation mode, this will be regarded as torque limit value during the stopper operation.
Default value: 500

---Setting range---
1 to 500 (%)

【#50163】 OD2 Operation parameter group 2 Excessive error detection width

Set the excessive error detection width when operation parameter group 2 is selected.
The excessive error alarm (S03 0052) will be detected when the position droop becomes larger than this setting value.
In the stopper positioning operation mode, this will be regarded as excessive error detection width during the stopper operation.
Default value: 100

---Setting range---
0 to 32767 (° or mm)

【#50164】 just2 Operation parameter group 2 Set position output width

Set the tolerable value at which "set position reached" (JST) or "automatic set position reached" (JSTA) signal is output when operation parameter group 2 is selected.
"Set position reached" (JST) indicates that the machine position is at any station. During automatic operation, "automatic set position reached" (JSTA) is also output under the same condition. These signals will turn OFF when the machine position moves away from the station over this value.
Default value: 0.500

---Setting range---
0.000 to 99999.999 (° or mm)

【#50165】 near2 Operation parameter group 2 Near set position output width

Set the tolerable value at which "near set position" (NEAR) signal is output when operation parameter group 2 is selected.
"Near set position" (NEAR) indicates that the machine position is near any station position. This value is generally set wider than the set position output width.
During operations, this is related to the special commands when the station selection is set to "0".
Default value: 1.000

---Setting range---
0.000 to 99999.999 (° or mm)

【#50166】 Aspeed3 Operation parameter group 3 Automatic operation speed

Set the feedrate during automatic operation when operation parameter group 3 is selected.
Default value: 5000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50167】 Mspeed3 Operation parameter group 3 Manual operation speed

Set the feedrate during manual operation or JOG operation when operation parameter group 3 is selected.
Default value: 2000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50168】 time3.1 Operation parameter group 3 Acceleration/deceleration time constant 1

Set the linear acceleration/deceleration time for "Operation parameter group 3 automatic operation speed" (clamp speed) when operation parameter group 1 is selected.
When operating at a lower speed than the clamp speed, the axis will linearly accelerate/decelerate at the inclination determined above.
When this is set with "Acceleration/deceleration time constant 2", S-pattern acceleration/deceleration will be carried out. In this case, this parameter determines the acceleration/deceleration time of the linear part.
Default value: 100

---Setting range---
1 to 9999 (ms)

【#50169】 time3.2 Operation parameter group 3 Acceleration/deceleration time constant 2

Set this parameter when carrying out S-pattern acceleration/deceleration. Set the total time of the non-linear parts in the S-pattern acceleration/deceleration. When "1" is set, linear acceleration/deceleration will be carried out.
In the handle feed operation mode, this setting value is regarded as time constant for the linear acceleration/deceleration.
Default value: 1

---Setting range---
1 to 999 (ms)

【#50170】 TL3 Operation parameter group 3 Torque limit value

Set the motor output torque limit value when operation parameter group 3 is selected.
At the default value, the torque is limited at the maximum torque of the motor specifications.
Set the default value when torque limit is not especially required.
In the stopper positioning operation mode, this will be regarded as pressing torque limit value after completion of the positioning.
Default value: 500

---Setting range---
1 to 500 (%)

【#50171】 OD3 Operation parameter group 3 Excessive error detection width

Set the excessive error detection width when operation parameter group 3 is selected. The excessive error alarm (S03 0052) will be detected when the position droop becomes larger than this setting value.
In the stopper positioning operation mode, this will be regarded as excessive error detection width during pressing after completion of the positioning.
Default value: 100

---Setting range---
0 to 32767 (° or mm)

【#50172】 just3 Operation parameter group 3 Set position output width

Set the tolerable value at which "set position reached" (JST) or "automatic set position reached" (JSTA) signal is output when operation parameter group 3 is selected.
"Set position reached" (JST) indicates that the machine position is at any station. During automatic operation, "automatic set position reached" (JSTA) is also output under the same condition. These signals will turn OFF when the machine position moves away from the station over this value.
Default value: 0.500

---Setting range---
0.000 to 99999.999 (° or mm)

【#50173】 near3 Operation parameter group 3 Near set position output width

Set the tolerable value at which "near set position" (NEAR) signal is output when operation parameter group 3 is selected.
"Near set position" (NEAR) indicates that the machine position is near any station position. This value is generally set wider than the set position output width. During operations, this is related to the special commands when the station selection is set to "0".
Default value: 1.000

---Setting range---
0.000 to 99999.999 (° or mm)

【#50174】 Aspeed4 Operation parameter group 4 Automatic operation speed

Set the feedrate during automatic operation when operation parameter group 4 is selected.
Default value: 5000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50175】 Mspeed4 Operation parameter group 4 Manual operation speed

Set the feedrate during manual operation or JOG operation when operation parameter group 4 is selected.
Default value: 2000

---Setting range---
1 to 100000 (°/min or mm/min)

【#50176】 time4.1 Operation parameter group 4 Acceleration/deceleration time constant 1

Set the linear acceleration/deceleration time for "Operation parameter group 1 automatic operation speed" (clamp speed) when operation parameter group 4 is selected.
When operating at a lower speed than the clamp speed, the axis will linearly accelerate/decelerate at the inclination determined above.
When this is set with "Acceleration/deceleration time constant 2", S-pattern acceleration/deceleration will be carried out. In this case, this parameter determines the acceleration/deceleration time of the linear part.
Default value: 100

---Setting range---
1 to 9999 (ms)

【#50177】 time4.2 Operation parameter group 4 Acceleration/deceleration time constant 2

Set this parameter when carrying out S-pattern acceleration/deceleration. Set the total time of the non-linear parts in the S-pattern acceleration/deceleration. When "1" is set, linear acceleration/deceleration will be carried out.
In the handle feed operation mode, this setting value is regarded as time constant for the linear acceleration/deceleration.
Default value: 1

---Setting range---
1 to 999 (ms)

【#50178】 TL4 Operation parameter group 4 Torque limit value

Set the motor output torque limit value when operation parameter group 4 is selected.
At the default value, the torque is limited at the maximum torque of the motor specifications. Set the default value when torque limit is not especially required.
In the stopper method initializing mode in absolute position detection system, this is regarded as torque limit value during stopper operation.
Default value: 500

---Setting range---
1 to 500 (%)

【#50179】 OD4 Operation parameter group 4 Excessive error detection width

Set the excessive error detection width when operation parameter group 4 is selected. The excessive error alarm (S03 0052) will be detected when the position droop becomes larger than this setting value.
In the stopper method initializing mode in absolute position detection system, this is regarded as excessive error detection width during stopper operation.
Default value: 100

---Setting range---
0 to 32767 (° or mm)

【#50180】 just4 Operation parameter group 4 Set position output width

Set the tolerable value at which "set position reached" (JST) or "automatic set position reached" (JSTA) signal is output when operation parameter group 4 is selected.
"Set position reached" (JST) indicates that the machine position is at any station. During automatic operation, "automatic set position reached" (JSTA) is also output under the same condition. These signals will turn OFF when the machine position moves away from the station over this value.
Default value: 0.500

---Setting range---
0.000 to 99999.999 (° or mm)

【#50181】 near4 Operation parameter group 4 Near set position output width

Set the tolerable value at which "near set position" (NEAR) signal is output when operation parameter group 4 is selected.
"Near set position" (NEAR) indicates that the machine position is near any station position. This value is generally set wider than the set position output width.
During operations, this is related to the special commands when the station selection is set to "0".
Default value: 1.000

---Setting range---
0.000 to 99999.999 (° or mm)

【#50190】 stpos2 Station 2 coordinate

Set the station 2 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50191】 stpos3 Station 3 coordinate

Set the station 3 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50192】 stpos4 Station 4 coordinate

Set the station 4 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50193】 stpos5 Station 5 coordinate

Set the station 5 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50194】 stpos6 Station 6 coordinate

Set the station 6 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50195】 stpos7 Station 7 coordinate

Set the station 7 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50196】 stpos8 Station 8 coordinate

Set the station 8 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50197】 stpos9 Station 9 coordinate

Set the station 9 coordinate value when non-uniform assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50200】 PSWcheck PSW detection method

Select the criterion for the output of position switches 1 to 8.
bit0 to 7 correspond to position switches 1 to 8.
0: Judged by the machine position of the command system.
1: Judged by the machine FB position (actual position).
The bits that are not written here must be set to "0".

【#50201】 PSW1 dog1 PSW1 area setting 1

Set "PSW1 area setting" 1 and 2 to specify the area where the position switch 1 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50202】 PSW1 dog2 PSW1 area setting 2

Set "PSW1 area setting" 1 and 2 to specify the area where the position switch 1 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50203】 PSW2 dog1 PSW2 area setting 1

Set "PSW2 area setting" 1 and 2 to specify the area where the position switch 2 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50204】 PSW2 dog2 PSW2 area setting 2

Set "PSW2 area setting" 1 and 2 to specify the area where the position switch 2 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50205】 PSW3 dog1 PSW3 area setting 1

Set "PSW3 area setting" 1 and 2 to specify the area where the position switch 3 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50206】 PSW3 dog2 PSW3 area setting 2

Set "PSW3 area setting" 1 and 2 to specify the area where the position switch 3 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50207】 PSW4 dog1 PSW4 area setting 1

Set "PSW4 area setting" 1 and 2 to specify the area where the position switch 4 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50208】 PSW4 dog2 PSW4 area setting 2

Set "PSW4 area setting" 1 and 2 to specify the area where the position switch 4 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50209】 PSW5 dog1 PSW5 area setting 1

Set "PSW5 area setting" 1 and 2 to specify the area where the position switch 5 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50210】 PSW5 dog2 PSW5 area setting 2

Set "PSW5 area setting" 1 and 2 to specify the area where the position switch 5 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50211】 PSW6 dog1 PSW6 area setting 1

Set "PSW6 area setting" 1 and 2 to specify the area where the position switch 6 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50212】 PSW6 dog2 PSW6 area setting 2

Set "PSW6 area setting" 1 and 2 to specify the area where the position switch 6 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50213】 PSW7 dog1 PSW7 area setting 1

Set "PSW7 area setting" 1 and 2 to specify the area where the position switch 7 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50214】 PSW7 dog2 PSW7 area setting 2

Set "PSW7 area setting" 1 and 2 to specify the area where the position switch 7 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50215】 PSW8 dog1 PSW8 area setting 1

Set "PSW8 area setting" 1 and 2 to specify the area where the position switch 8 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50216】 PSW8 dog2 PSW8 area setting 2

Set "PSW8 area setting" 1 and 2 to specify the area where the position switch 8 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation. For rotary axes, the output turns ON in the area excluding 0.000 degree.
Default value: 0.000

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#50220】 push.1 Stopper amount

Set the command stroke of the stopper operation in the stopper positioning.
Default value: 0.000

---Setting range---
0.000 to 359.999 (° or mm)

【#50221】 push.t1 Stopper standby time

Set the standby time from the stopper starting coordinate positioning to the stopper operation start in the stopper positioning.
Default value: 0

---Setting range---
0 to 9999 (ms)

【#50222】 push.t2 Stopper torque release time

Set the time from the completion of the stopper operation to the changeover of the stopper torque in the stopper positioning.
Default value: 0

---Setting range---
0 to 9999 (ms)

【#50223】 push.t3 Set position signal output delay time

Set the time from the completion of the stopper operation to the output of the “automatic set position reached” (JSTA), “set position reached” (JST) or “near set position” (NEAR) signal in the stopper positioning.
Default setting: 0

---Setting range---
0 to 9999 (ms)

12. Open Parameters

【#29001】 Open param 1

Set LONG data.
#29001 to #29896 are used as parameter range where C language modules can be used arbitrarily.

---Setting range---
-

【#29901】 Open param 2

Set DOUBLE data.
#29901 to #29996 are used as parameter range where C language modules can be used arbitrarily.

---Setting range---
-

13. Device Open Parameters

【#40001-40100】 Device Open Parameters

<Data typ>
Set the data format (BYTE, WORD, DWORD, WORD(BIT)) of the assignment area.
0:WORD
1:DWORD
2:BYTE
3:WORD(BIT)
<Data no>
Set the number of data in the assignment area. The number to be designated varies depending on the unit designated by the data format.
0 to 3000
(Depends on the device assignment and data format.)
<Disp typ>
Designate the status of data display format, display restrictions and input protection.

bit0: Cancellation of protection for input

Select whether to check the input protection for the data protection key 2 on the group details screen.
(Note) The name of data protection key differs between machine tool builders. Refer to manuals issued by each machine tool builder for details.
0: Check
1: Not check

bit1: Cancellation of restriction on display

Select whether to display the group details screen even when a machine tool builder password is not entered.
0: Not display
1: Display

bit4: BCD format

Display the data of the group details screen in BCD format.
0: Invalid
1: Valid

bit5: BIT format

Display the data of the group details screen in BIT format.
0: Invalid
1: Valid

bit6: HEX format (Hexadecimal format)

Display the data of the group details screen in HEX format.
0: Invalid
1: Valid

bit7: Sign (Decimal format only)

Select whether to display the data of the group details screen in a decimal format with/ without a sign.
0: With sign
1: Without sign

14. SRAM Open Parameters

【#41001-41100】 SRAM Open Parameters

<Data typ>
Set the data type (CHAR, SHORT, LONG, DOUBLE) of the assignment area.
1: CHAR
2: SHORT
3: LONG
4: DOUBLE
<Data no>
Set the number of data in the assignment area. The number to be designated varies depending on the unit and free area designated by the data format.
0 to 9999999
(Depends on the data format and free area)
<Disp typ>
Designate the status of data display format, display restrictions and input protection.

bit0: Cancellation of protection for input

Select whether to check the input protection on data protection key 2 on the group details screen.
(Note) The name of data protection key differs between machine tool builders. Refer to manuals issued by each machine tool builder for details.
0: Check
1: Not check

bit1: Cancellation of restriction on display

Select whether to display the group details screen even when a machine tool builder password is not entered.
0: Not display
1: Display

bit4: BCD format

Display the data of the group details screen in BCD format.
0: Invalid
1: Valid

bit5: BIT format

Display the data of the group details screen in BIT format.
0: Invalid
1: Valid

bit6: HEX format (Hexadecimal format)

Display the data of the group details screen in HEX format.
0: Invalid
1: Valid

bit7: Sign (Decimal format only)

Select whether to display the data of the group details screen in a decimal format with/ without a sign.
0: With sign
1: Without sign

15. CC-Link Parameters

【#24001+40(n-1)(PR)】 SLn station No. CC-Link station No.

Set the station No. of the CC-Link I/F unit.
"n" represents the expansion slot No.(n=1 to 3)
-1: Invalid
0: Master station
1 to 64: Slave station
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
-1 to 64

【#24002+40(n-1)(PR)】 SLn line-spd&Mode CC-Link transmission rate and mode

Select the transmission rate and operation mode of the CC-Link I/F unit.
"n" represents the expansion slot No.(n=1 to 3)
<Online mode>
0 : 156Kbps
1 : 625Kbps
2 : 2.5Mbps
3 : 5Mbps
4 : 10M
<Circuit test mode>
5 : 156Kbps
6 : 625Kbps
7 : 2.5Mbps
8 : 5Mbps
9 : 10Mbps
<Hardware test mode>
10 : 156Kbps
11 : 625Kbps
12 : 2.5Mbps
13 : 5Mbps
14 : 10Mbps
(Note) Perform hardware test after removing the CC-Link cable.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
0 to 14

【#24003+40(n-1)(PR)】 SLn set fault sta Setting of data link faulty station

Select whether to clear or hold the data input from the data link faulty station.
"n" represents the expansion slot No.(n=1 to 3)
0: Clear
1: Hold

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH(NA)-080394E-E)" for the details of the functions.
---Master station---
Set to "0" or "1".
---Local/standby master station---
Set to "0" or "1".

【#24004+40(n-1)】 SLn PLC stop set Setting at PLC STOP

Set whether to refresh or compulsorily clear the slave stations at PLC STOP.
"n" represents the expansion slot No.(n=1 to 3)
0: Refresh
1: Compulsorily clear

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH(NA)-080394E-E)" for the details of the functions.
---Master station---
Set to "0" or "1".
---Local/standby master station---
Set to "0" or "1".

【#24005+40(n-1)(PR)】 SLn occ stations Number of occupied stations

Set the number of occupied local and standby master stations.
"n" represents the expansion slot No.(n=1 to 3)
---Master station---
Set to "0".
---Local/standby master station---
Set to either of "1" to "4".

---Setting range---
0 to 4

【#24006+40(n-1)(PR)】 SLn extended cyc Extended cyclic setting

Set the magnification for the extended cyclic operation of the local station whose type corresponds to Ver.2.
"n" represents the expansion slot No.(n=1 to 3)
Set "1" for the local station whose type corresponds to Ver.1.
This function is out of specifications when the protocol version is Ver.1. The setting for the local station is fixed to "1".
---Master station---
Set to "0".
---Local/standby master station---
Set to either of "1", "2", "4" or "8".

---Setting range---
0,1,2,4,8 (fold)

【#24007+40(n-1)】 SLn conn modules Number of connected modules

Set the total number of remote stations, local stations, intelligent device stations, standby master station and reserved stations connected to the master station.
"n" represents the expansion slot No.(n=1 to 3)
---Master station---
Set to either of "1" to "64".
---Local/standby master station---
Set to "0".

---Setting range---
0 to 64 (modules)

【#24008+40(n-1)】 SLn num of retries Number of retries

Set the number of retries for when a communication error occurs.
"n" represents the expansion slot No.(n=1 to 3)
---Master station---
Set to either of "1" or "7".
---Local/standby master station---
Set to "0".

---Setting range---
0 to 7 (times)

【#24009+40(n-1)】 SLn auto ret mdls Number of automatic return modules

Set the total number of remote stations, local stations, intelligent device stations and standby master station that can be returned to system operation by a single link scan.
"n" represents the expansion slot No.(n=1 to 3)

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH(NA)-080394E-E)" for the details of the functions.
---Master station---
Set to either of "1" or "10".
---Local/standby master station---
Set to "0".

---Setting range---
0 to 10 (modules)

【#24010+40(n-1)(PR)】 SLn STBY master st Standby master station

Set the station No. of the standby master station.
"n" represents the expansion slot No.(n=1 to 3)
Set "0" when no standby master station is provided.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set "0" (fixed) for the local station.
Set "1" (fixed) for the standby station.

---Setting range---
0 to 64

【#24011+40(n-1)】 SLn ope at NC down Operation at NC down

Set the data link status for when the master station failure occurs.
"n" represents the expansion slot No.(n=1 to 3)
0: Fixed to stop

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH(NA)-080394E-E)" for the details of the functions.
---Master station---
Set to "0" (fixed).
---Local/standby master station---
Set to "0".

【#24012+40(n-1)】 SLn scan mode Scan mode

Select whether to synchronize the link scan with one ladder scan.
"n" represents the expansion slot No.(n=1 to 3)
0: Fixed to synchronize
---Master station---
Set to "0" (fixed).
---Local/standby master station---
Set to "0".

【#24013+40(n-1)】 SLn delay time Delay time

Set the delay time.
"n" represents the expansion slot No.(n=1 to 3)
0: (Fixed value)
---Master station---
Set to "0" (fixed).
---Local/standby master station---
Set to "0".

【#24014+40(n-1)】 SLn RX dev name Remote input (RX) refresh device name

Set the refresh device name of the remote input (RX) to be automatically refreshed.
(Example) X
"n" represents the expansion slot No.(n=1 to 3)
Set "0" when no setting is required.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
0,X,M,L,B,D,W,R

【#24015+40(n-1)】 SLn RX dev No. Remote input (RX) refresh device No.

Set the refresh device No. of the remote input (RX) to be automatically refreshed.
"n" represents the expansion slot No.(n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.
(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows; #24014+40(n-1): "X"
#24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".Confirm the refresh device No. after changing the refresh device name.

When specifying a bit device, set the address in increments of 16 points.
The operation will not be guaranteed unless the address is set in increments of 16 points.
(Example) 1000
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
X: 0 to 5FF
M: 0 to 10239
L: 0 to 511
B: 0 to 1FFF
D: 0 to 2047
W: 0 to 1FFF
R: 8300 to 9799, 9800 to 9899

【#24016+40(n-1)(PR)】 SLn RY dev name Remote output (RY) refresh device name

Set the refresh device name of the remote output (RY) to be automatically refreshed.
(Example) Y
"n" represents the expansion slot No.(n=1 to 3)
Set "0" when no setting is required.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
0,Y,M,L,B,D,W,R

【#24017+40(n-1)】 SLn RY dev No. Remote output (RY) refresh device No.

Set the refresh device No. of the remote output (RY) to be automatically refreshed.
"n" represents the expansion slot No.(n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.
(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows; #24014+40(n-1): "X" #24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".Confirm the refresh device No. after changing the refresh device name.

When specifying a bit device, set the address in increments of 16 points.
The operation will not be guaranteed unless the address is set in increments of 16 points.
(Example) 1000
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
Y: 0 to 5FF
M: 0 to 10239
L: 0 to 511
B: 0 to 1FFF
D: 0 to 2047
W: 0 to 1FFF
R: 8300 to 9799, 9800 to 9899

【#24018+40(n-1)】 SLn RWr dev name Remote register (RWr) refresh device name

Set the refresh device name of the remote register (RWr) to be automatically refreshed.
(Example) W
"n" represents the expansion slot No.(n=1 to 3)
Set "0" when no setting is required.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
0,M,L,B,D,W,R

【#24019+40(n-1)】 SLn RWr dev No. Remote register (RWr) refresh device No.

Set the refresh device No. of the remote register (RWr) to be automatically refreshed.
"n" represents the expansion slot No.(n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.
(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows; #24014+40(n-1): "X" #24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".Confirm the refresh device No. after changing the refresh device name.

When specifying a bit device, set the address in increments of 16 points.
The operation will not be guaranteed unless the address is set in increments of 16 points.
(Example) 1FF0
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
M: 0 to 10239
L: 0 to 511
B: 0 to 1FFF
D: 0 to 2047
W: 0 to 1FFF
R: 8300 to 9799, 9800 to 9899

【#24020+40(n-1)】 SLn RWw dev name Remote register (RWw) refresh device name

Set the refresh device name of the remote register (RWw) to be automatically refreshed.
(Example) W
"n" represents the expansion slot No.(n=1 to 3)
Set "0" when no setting is required.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
0,M,L,B,D,W,R

【#24021+40(n-1)】 SLn RWw dev No. Remote register (RWw) refresh device No.

Set the refresh device No. of the remote register (RWw) to be automatically refreshed.
"n" represents the expansion slot No.(n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.
(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows; #24014+40(n-1): "X" #24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".Confirm the refresh device No. after changing the refresh device name.

When specifying a bit device, set the address in increments of 16 points.
The operation will not be guaranteed unless the address is set in increments of 16 points.
(Example) 1FF0
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
M: 0 to 10239
L: 0 to 511
B: 0 to 1FFF
D: 0 to 2047
W: 0 to 1FFF
R: 8300 to 9799, 9800 to 9899

【#24022+40(n-1)】 SLn SB dev name Special relay (SB) refresh device name

Set the refresh device name of the special relay (SB) to be automatically refreshed.
(Example) SB
"n" represents the expansion slot No.(n=1 to 3)
Set "0" when no setting is required.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
0,M,L,B,D,W,R,SB

【#24023+40(n-1)】 SLn SB dev No. Special relay (SB) refresh device No.

Set the refresh device No. of the special relay (SB) to be automatically refreshed.
"n" represents the expansion slot No.(n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.
(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows; #24014+40(n-1): "X" #24015+40(n-1): "1024"

(Note 2) When the refresh device name has been set, the refresh device No. will be "0".Confirm the refresh device No. after changing the refresh device name.

When specifying a bit device, set the address in increments of 16 points.
The operation will not be guaranteed unless the address is set in increments of 16 points.
(Example) 1F0
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
M: 0 to 10239
L: 0 to 511
B: 0 to 1FFF
D: 0 to 2047
W: 0 to 1FFF
SB: 0 to 1FF
R: 8300 to 9799, 9800 to 9899

【#24024+40(n-1)】 SLn SW dev name Special relay (SW) refresh device name

Set the refresh device name of the special relay (SW) to be automatically refreshed.
"n" represents the expansion slot No.(n=1 to 3)
(Example) SW
Set "0" when no setting is required.
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
0,M,L,B,D,W,R,SW

【#24025+40(n-1)】 SLn SW dev No. Special relay (SW) refresh device No.

Set the refresh device No. of the special relay (SW) to be automatically refreshed.
"n" represents the expansion slot No.(n=1 to 3)

(Note 1) When setting parameters in ALL.PRM with using the parameter input/output function, input the device No. of decimal digit.
(Example) When setting "X400" for the remote input (RX) refresh device No., input as follows;
#24014+40(n-1): "X"
#24015+40(n-1): "1024"
(Note 2) When the refresh device name has been set, the refresh device No. will be "0".Confirm the refresh device No. after changing the refresh device name.

When specifying a bit device, set the address in increments of 16 points.
(Example) 1F0
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set a value within the setting range.

---Setting range---
M: 0 to 10239
L: 0 to 511
B: 0 to 1FFF
D: 0 to 2047
W: 0 to 1FFF
SW: 0 to 1FF
R: 8300 to 9799, 9800 to 9899

【#24026+40(n-1)(PR)】 SLn Protocol Ver Protocol version

Select the CC-Link version mode that has been set to the slide switch SW1-2 on the CC-Link unit (HN566/HN567).
"n" represents the expansion slot No.(n=1 to 3)
0: Ver.2
1: Ver.1
Ver.2 mode has been set to SW1-2 as default.
---Master station---
Set to "0" or "1".
---Local/standby master station---
Set to "0" or "1".

【#24121+15(m-1)】 CNm station type Station type

Set the type of the connected remote station, local station, intelligent device station and standby master station.
0: No setting
1: Ver.1 remote I/O station
2: Ver.1 remote device station
3: Ver.1 intelligent device station
4: Ver.2 remote device station
5: Ver.2 intelligent device station

"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
---Master station---
Set to either of "0" to "5".
---Local/standby master station---
Set to "0".

【#24122+15(m-1)】 CNm extended cyc Extended cyclic setting

Select the magnification for the extended cycling operation of the connected remote, local and intelligent stations.
Set "1" when the protocol version is Ver.1.
Set "0" when no setting is required.
"m" means the m-th connected station in ascending order of station No. (m=1 to 64)
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set to "0".

---Setting range---
0,1,2,4,8 (times)

【#24123+15(m-1)】 CNm occ stations Number of occupied stations

Set the number of the occupied stations by the connected remote, local and intelligent stations.
Set 1 for 8 points I/O and 16 points I/O.
Set "0" when no setting is required.
"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set to "0".

---Setting range---
0 to 4 (stations occupied)

【#24124+15(m-1)】 CNm station No. Station No.

Set the station No. of the connected remote, local and intelligent stations.
Set "0" when no setting is required.
"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
---Master station---
Set a value within the setting range.
---Local/standby master station---
Set to "0".

---Setting range---
0 to 64

【#24125+15(m-1)】 CNm remote sta pt Remote station points

Select the number of points of the connected remote station.
"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
The details of setting values differ with each protocol version and station type.

Protocol: Ver.2 (station type: Ver.1, remote I/O station)
0: 0 point (reserved station)
1: 8 points
2: 8 points + 8 points reserved
3: 16 points
4: 32 points
- Setting 0 is valid only for the reserved station. When 0 is set for the other stations, the number of points will be 32.
- Set the value so that the total number of points of remote I/O stations connected in series will be multiple of 16.

(Example 1) 2 units of 8 points I/O: Set "1" for each
(Example 2) 3 units of 8 points I/O: Set "1" for the first and the second I/O, "2" for the third.

Protocol: Ver.2 (station type: Ver.1 except remote I/O station)
0: 0 point (reserved station)
1 to 4: Automatically calculated
- 0 point is valid only for the reserved station. When 0 is set for the other stations, the number of points will be automatically calculated.
- Unless 0 is set, the number of points will be automatically calculated with the number of occupied stations and the setting value of the extended cycling.

Protocol: Ver.1 (for all station types)
0 to 4: Automatically calculated
- 0 cannot be set even for the reserved station.
- Automatically calculated with the setting value of the number of occupied stations.
---Master station---
Set a value corresponding to the protocol version and the station type.
---Local/standby master station---
Set to "0".

【#24126+15(m-1)】 CNm set rsvd sta Reserved station

Set the reserved/error invalid station.
"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
0: No setting
1: Reserved station
2: Error invalid station

(Note) Refer to "CC-Link System Master/Local Module User's Manual (SH(NA)-080394E-E)" for the details of the functions.

---Master station---
Set either of "0" to "2".
---Local/standby master station---
Set to "0".

【#24131+15(m-1)】 CNm send size Send buffer size

Set the allocation of the buffer memory size to the local station, standby master station and intelligent device station when in transient transmission.
"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
Set "0" when no setting is required.

(Note) The total size of the send/receive buffers must be 4096 (words) or less.

---Master station---
Set a value within the setting range.
---Local/standby master station---
Set to "0".

---Setting range---
0, 64 to 4096 (words)

【#24132+15(m-1)】 CNm receive size Receive buffer size

Set the allocation of the buffer memory size to the local station, standby master station and intelligent device station when in transient transmission.
"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
Set "0" when no setting is required.

(Note) The total size of the send/receive buffers must be 4096 (words) or less.

---Master station---
Set a value within the setting range.
---Local/standby master station---
Set to "0".

---Setting range---
0, 64 to 4096 (words)

【#24133+15(m-1)】 CNm auto bfr size Automatic update buffer size

Set the allocation of the buffer memory size to the local station, standby master station and intelligent device station when in transient transmission.
"m" means the m-th connected station in ascending order of station No. (m= 1 to 64)
Set "0" when no setting is required.

---Master station---
Set a value within the setting range.
---Local/standby master station---
Set to "0".

---Setting range---
0, 128 to 4096 (words)

16. Anshin-net Parameters 2/ MTB-net Parameters 2

【#10901(PR)】 Modem tel num

Set the PHS modem's registered No. (telephone No.).
This is used for the authentication by the host.
A hyphen "-" can be used as a delimiting character.
This parameter is used as both Anshin-net parameter 2 and MTB-net parameter 2.

---Setting range---
Within 28 characters

【#10902(PR)】 Num dispatch call

Set a call No. to Call Center.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10903(PR)】 Num arrival call 1

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10904(PR)】 Num arrival call 2

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10905(PR)】 Num arrival call 3

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10906(PR)】 Num arrival call 4

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10907(PR)】 Num arrival call 5

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10908(PR)】 Num dispatch call

Set a call No. to a machine tool builder.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10909(PR)】 Num arrival call 1

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10910(PR)】 Num arrival call 2

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10911(PR)】 Num arrival call 3

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10912(PR)】 Num arrival call 4

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10913(PR)】 Num arrival call 5

Set the caller's No.: the other party's telephone No. that is used for INIT authentication.
Enter from the area code for domestic calls.
Enter from the communication company No. for international calls.
This is used to distinguish between received calls from Call Center and those from machine tool builder.
A hyphen "-" can be used as a delimiting character.

---Setting range---
Within 28 characters

【#10914】 Auto select anet

Set whether to change to the Anshin-net screen when a call is automatically dispatched from the NC.
(Currently not used.)
0: Not change
1: Change

【#10915】 Num retry

Set the number of times to retry when a control command transmission error occurs.
Standard setting: 3

---Setting range---
0 to 255

【#10916】 Command time out

Set the timeout time for reception command standby.
Standard setting: 30 (s)

---Setting range---
0 to 65535 (s)

【#10917】 Frequ of redial

Set the number of times to redial.
Standard setting: 3
This parameter is used as both Anshin-net parameter 2 and MTB-net parameter 2.

---Setting range---
0 to 255

【#10918】 Interval of redial

Set the redial interval.
Standard setting: 100 (s)
This parameter is used as both Anshin-net parameter 2 and MTB-net parameter 2.

---Setting range---
0 to 65535 (s)

【#10919(PR)】 Modem connect port

Select the modem connection port.
1: Port 1
2: Port 2
This parameter is used as both Anshin-net parameter 2 and MTB-net parameter 2.

【#10920】 Dial mode select

Select the dialing method.
0: Fixed by modem (default)
1: Dial with tone (push) method
2: Dial with pulse (dial) method
This parameter is used as both Anshin-net parameter 2 and MTB-net parameter 2.

【#10921】 Call wait time

Set the call back waiting time.
Default value: 0
This parameter is used as both Anshin-net parameter 2 and MTB-net parameter 2.

---Setting range---
0 to 90 (s)

【#10922】 Machine Num

Set the machine's serial number as information for the machine tool builder to recognize the machine. This parameter is supposed to be input by the machine tool builder (when shipping or when starting the machine tool builder network). If this is set to blank, the system cannot connect with remote diagnosis tool kit.

---Setting range---
Within 15 characters (one-byte alphanumeric characters)

【#10951(PR)】 Condition kind 1

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note 1) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" when setting "0" for "Condition num". When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10952(PR)】 Condition num 1

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10953(PR)】 Condition kind 2

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10954(PR)】 Condition num 2

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10955(PR)】 Condition kind 3

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10956(PR)】 Condition num 3

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10957(PR)】 Condition kind 4

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10958(PR)】 Condition num 4

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10959(PR)】 Condition kind 5

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10960(PR)】 Condition num 5

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10961(PR)】 Condition kind 6

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10962(PR)】 Condition num 6

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10963(PR)】 Condition kind 7

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10964(PR)】 Condition num 7

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10965(PR)】 Condition kind 8

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10966(PR)】 Condition num 8

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10967(PR)】 Condition kind 9

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note 1) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" when setting "0" for "Condition num". When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10968(PR)】 Condition num 9

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10969(PR)】 Condition kind 10

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm type for alarm, device (register) name for PLC signal.

<Alarm>
Operation alarm (Mxx)
Stop code (Txx)
Servo alarm (Sxx)
Spindle servo alarm (Sxx)
System alarm (Zxx)
Absolute position detection alarm (Zxx)
Emergency stop (EMG)
Auxiliary axis servo alarm (Sxx)
Auxiliary axis absolute position detection alarm (Zxx)
Auxiliary axis OP error (Mxx)
Auxiliary axis MCP alarm (Yxx)
Computer link error (Lxx)
Operation error (Exx)
User PLC alarm (PLxx)

<Device (resister)>
1-bit data ... X,Y,U,W
16-bit data ... R

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 5 characters

【#10970(PR)】 Condition num 10

Set the condition (alarm or PLC signal) for the automatic notification of alarms.
Set the alarm No. for alarm, status value for PLC signal.

(Note) Set "0" to cancel (set blank for) any setting of #10951 to #10970, "Condition kind" 1 to 10 and "Condition num" 1 to 10.Input "00" to set "Condition num" to "0".When either of "Condition kind" or "Condition num" is canceled, the condition will not be available for the automatic notification of alarms.

---Setting range---
Within 4 characters

【#10971】 Complete condition

Set the of the PLC signal which will be the condition for completing the machining when "#10814 OP-notice condition" is set to "1".
<Device (Register)>
1 bit data : X,Y,M,F,L,SM,T,C
16 bit data : D,R
* T: Timer coil only / C: Counter coil only

---Setting range---
Within 6 alphanumeric characters

【#10972】 Complete CND num

Set the state values of PLC signal device which will be the condition for completing the machining when "#10814 OP-notice condition" is set to "1".
Use the device status set to "#10971 Complete condition". Set the conditions of 16 bit data in HEX format.

---Setting range---
Within 4 alphanumeric characters

17. PLC Axis Indexing Parameters

【#12800(PR)】 chgauxno Auxiliary axis number

Set the axis No. to be controlled as auxiliary axis using auxiliary axis interface.
When "0" is set, the axis will not operate as auxiliary axis.

---Setting range---
M730/M750/M730VS/M750VS/M730VW/M750VW: 0 to 6
M720/M720VS/M720VW/M70 Series/M70V Series: 0 to 4

【#12801(PR)】 aux_station Number of indexing stations

Set the number of stations.
For linear axis, this value is expressed by: number of divisions = number of stations -1.
Setting "0" or "1" sets the number of stations to 2.

---Setting range---
0 to 360

【#12802(PR)】 aux_Cont1 Control parameter 1

The bits that are not explained here must be set to "0".

Bit3:

0: Automatic reach signal isn't interlocked with the start signal.
1: Automatic reach signal is interlocked with the start signal.

Bit4:

0: Automatic reach signal is turned ON again.
1: Automatic reach signal isn't turned ON again.

Bit5:

0: Station No. Output within fixed position.
1: Station No. Constantly output.

bit9:

0: Rotation direction determined by operation control signal (DIR)
1: Rotation direction in the shortcut direction

bitE:

0: Rotation direction in operation control signal (DIR) or in the shortcut direction
1: Rotation direction in the arbitrary position command sign direction

bitF:

0: Stopper direction is in the positioning direction.
1: Stopper direction is in the sign direction of the stopper amount.

【#12803(PR)】 aux_Cont2 Control parameter 2

The bits that are not explained here must be set to "0".

bit4:

0: Uniform assignment
1: Arbitrary coordinate assignment

【#12804(PR)】 aux_tleng Linear axis stroke length

Set the movement stroke length for linear axes.
(Note 1)Setting "0.000" causes an MCP alarm at the power ON.
(Note 2)This parameter is meaningless at the arbitrary coordinate assignment or with the arbitrary coordinate designation method.

---Setting range---
0.000 to 99999.999 (mm)

【#12805】 aux_ST.offset Station offset

Set the distance (offset) from the reference position to station 1.

---Setting range---
-99999.999 to 99999.999 (° or mm)

【#12810+10(n-1)】 aux_Aspeedn Operation parameter group n Automatic operation speed

Set the feedrate during automatic operation when "operation parameter group n" is selected.
"#12810 aux_Aspeed1" is regarded as the clamp value for the automatic operation speeds and manual operation speeds of all operation groups.
A speed exceeding "aux_Aspeed1" cannot be commanded, even if it is set in a parameter.
(Note)Setting "0" causes an operation error at the "Operation start" signal's ON.

---Setting range---
0 to 100000 (°/min or mm/min)

【#12811+10(n-1)】 aux_Mspeedn Operation parameter group n Manual operation speed

Set the feedrate during manual operation or JOG operation when "operation parameter group n" is selected.
(Note)Setting "0" causes an operation error at the "Operation start" signal's ON.

---Setting range---
0 to 100000 (°/min or mm/min)

【#12812+10(n-1)】 aux_timen.1 Operation parameter group n Acceleration/deceleration time constant 1

Set the linear acceleration/deceleration time for "Operation parameter group 1 automatic operation speed" (clamp speed) when "operation parameter group n" is selected.
When this is set with "Acceleration/deceleration time constant 2", S-pattern acceleration/deceleration will be carried out. In this case, this parameter determines the acceleration/deceleration time of the linear part.
When operating at a speed less than the clamp speed, if "#1361 aux_acc" is set to "0", the axis will accelerate/decelerate with the time constant set in this parameter. If "#1361 aux_acc" is set to "1", the axis will accelerate/decelerate at the constant inclination determined by this parameter and "aux_Aspeed1".
Setting "0" cancels acceleration/deceleration: The axis will move with the time constant "0".

---Setting range---
0 to 4000 (ms)

【#12813+10(n-1)】 aux_timen.2 Operation parameter group n Acceleration/deceleration time constant 2

Set the total time of the non-linear parts in the S-pattern acceleration/deceleration.
In the handle feed operation mode, this setting value is regarded as time constant for the linear acceleration/deceleration.
(Note)If this parameter is set to "0" while "#12818 aux_smgst1"is set to "F", an MCP alarm will occur.

---Setting range---
0 to 4000 (ms)

【#12814+10(n-1)】 aux_TLn Operation parameter group n Torque limit value

Set the motor output torque limit value when "operation parameter group n" is selected.
At the default value, the torque is limited at the maximum torque of the motor specifications.
Set the default value when torque limit is not especially required.
In the stopper positioning operation mode, this will be regarded as torque limit value when positioning to the stopper starting coordinates.

---Setting range---
0 to 500 (%)

【#12815+10(n-1)】 aux_ODn Operation parameter group n Excessive error detection width

Set the excessive error detection width when "operation parameter group n" is selected.
The excessive error alarm (S03 0052) will be detected when the position droop becomes larger than this setting value.
In the stopper positioning operation mode, this will be regarded as excessive error detection width when positioning to the stopper starting coordinates. .

---Setting range---
0 to 32767(° or mm)

【#12816+10(n-1)】 aux_justn Operation parameter group n Set position output width

Set the tolerable value at which "set position reached" (JST) or "automatic set position reached" (JSTA) signal is output when "operation parameter group n" is selected.
"Set position reached" (JST) indicates that the machine position is at any station.
During automatic operation, "automatic set position reached" (JSTA) is also output under the same condition.
These signals will turn OFF when the machine position moves away from the station over this value.

---Setting range---
0.000 to 99999.999(° or mm)

【#12817+10(n-1)】 aux_nearn Operation parameter group n Near set position output width

Set the tolerable value at which "near set position" (NEAR) signal is output when "operation parameter group n" is selected.
"Near set position" (NEAR) indicates that the machine position is near any station position.
This value is generally set wider than the set position output width. During operations, this is related to the special commands when the station selection is set to "0".

---Setting range---
0.000 to 99999.999(° or mm)

【#12818+10(n-1)(PR)】 aux_smgstn Operation parameter group n Acceleration/Deceleration type

Select the acceleration/deceleration type when "operation parameter group n" is selected.
0, 1: Linear acceleration/deceleration
F: S-pattern acceleration/deceleration

【#12850】 aux_stpos2 Station 2 coordinate

Set the station 2 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12851】 aux_stpos3 Station 3 coordinate

Set the station 3 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12852】 aux_stpos4 Station 4 coordinate

Set the station 4 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12853】 aux_stpos5 Station 5 coordinate

Set the station 5 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12854】 aux_stpos6 Station 6 coordinate

Set the station 6 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12855】 aux_stpos7 Station 7 coordinate

Set the station 7 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12856】 aux_stpos8 Station 8 coordinate

Set the station 8 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12857】 aux_stpos9 Station 9 coordinate

Set the coordinate of each station when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12858】 aux_stpos10 Station 10 coordinate

Set the station 10 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12859】 aux_stpos11 Station 11 coordinate

Set the station 11 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12860】 aux_stpos12 Station 12 coordinate

Set the station 12 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12861】 aux_stpos13 Station 13 coordinate

Set the station 13 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12862】 aux_stpos14 Station 14 coordinate

Set the station 14 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12863】 aux_stpos15 Station 15 coordinate

Set the station 15 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12864】 aux_stpos16 Station 16 coordinate

Set the station 16 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12865】 aux_stpos17 Station 17 coordinate

Set the station 17 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12866】 aux_stpos18 Station 18 coordinate

Set the station 18 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12867】 aux_stpos19 Station 19 coordinate

Set the station 19 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12868】 aux_stpos20 Station 20 coordinate

Set the station 20 coordinate value when arbitrary coordinate assignment is selected.
The station 1 coordinate value is fixed at "0.000" (machine coordinate zero point).

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12870】 aux_PSWcheck PSW detection method

Select the criterion for the output of position switches 1 to 15.
bit0 to E correspond to position switches 1 to 15.
0: Judged by the machine position of the command system.
1: Judged by the machine FB position (actual position).

(Note) The bits that are not explained here must be set to "0".

【#12871】 aux_PSW1dog1 PSW1 area setting 1

Set "PSW1 area setting" 1 and 2 to specify the area where the position switch 1 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12872】 aux_PSW1dog2 PSW1 area setting 2

Set "PSW1 area setting" 1 and 2 to specify the area where the position switch 1 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12873】 aux_PSW2dog1 PSW2 area setting 1

Set "PSW2 area setting" 1 and 2 to specify the area where the position switch 2 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12874】 aux_PSW2dog2 PSW2 area setting 2

Set "PSW2 area setting" 1 and 2 to specify the area where the position switch 2 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12875】 aux_PSW3dog1 PSW3 area setting 1

Set "PSW3 area setting" 1 and 2 to specify the area where the position switch 3 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12876】 aux_PSW3dog2 PSW3 area setting 2

Set "PSW3 area setting" 1 and 2 to specify the area where the position switch 3 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12877】 aux_PSW4dog1 PSW4 area setting 1

Set "PSW4 area setting" 1 and 2 to specify the area where the position switch 4 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12878】 aux_PSW4dog2 PSW4 area setting 2

Set "PSW4 area setting" 1 and 2 to specify the area where the position switch 4 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12879】 aux_PSW5dog1 PSW5 area setting 1

Set "PSW5 area setting" 1 and 2 to specify the area where the position switch 5 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12880】 aux_PSW5dog2 PSW5 area setting 2

Set "PSW5 area setting" 1 and 2 to specify the area where the position switch 5 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12881】 aux_PSW6dog1 PSW6 area setting 1

Set "PSW6 area setting" 1 and 2 to specify the area where the position switch 6 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12882】 aux_PSW6dog2 PSW6 area setting 2

Set "PSW6 area setting" 1 and 2 to specify the area where the position switch 6 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12883】 aux_PSW7dog1 PSW7 area setting 1

Set "PSW7 area setting" 1 and 2 to specify the area where the position switch 7 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12884】 aux_PSW7dog2 PSW7 area setting 2

Set "PSW7 area setting" 1 and 2 to specify the area where the position switch 7 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12885】 aux_PSW8dog1 PSW8 area setting 1

Set "PSW8 area setting" 1 and 2 to specify the area where the position switch 8 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12886】 aux_PSW8dog2 PSW8 area setting 2

Set "PSW8 area setting" 1 and 2 to specify the area where the position switch 8 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12887】 aux_PSW9dog1 PSW9 area setting 1

Set "PSW9 area setting" 1 and 2 to specify the area where the position switch 9 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12888】 aux_PSW9dog2 PSW9 area setting 2

Set "PSW9 area setting" 1 and 2 to specify the area where the position switch 9 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12889】 aux_PSW10dog1 PSW10 area setting 1

Set "PSW10 area setting" 1 and 2 to specify the area where the position switch 10 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12890】 aux_PSW10dog2 PSW10 area setting 2

Set "PSW10 area setting" 1 and 2 to specify the area where the position switch 10 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12891】 aux_PSW11dog1 PSW11 area setting 1

Set "PSW11 area setting" 1 and 2 to specify the area where the position switch 11 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12892】 aux_PSW11dog2 PSW11 area setting 2

Set "PSW11 area setting" 1 and 2 to specify the area where the position switch 11 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12893】 aux_PSW12dog1 PSW12 area setting 1

Set "PSW12 area setting" 1 and 2 to specify the area where the position switch 12 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12894】 aux_PSW12dog2 PSW12 area setting 2

Set "PSW12 area setting" 1 and 2 to specify the area where the position switch 12 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12895】 aux_PSW13dog1 PSW13 area setting 1

Set "PSW13 area setting" 1 and 2 to specify the area where the position switch 13 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12896】 aux_PSW13dog2 PSW13 area setting 2

Set "PSW13 area setting" 1 and 2 to specify the area where the position switch 13 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12897】 aux_PSW14dog1 PSW14 area setting 1

Set "PSW14 area setting" 1 and 2 to specify the area where the position switch 14 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12898】 aux_PSW14dog2 PSW14 area setting 2

Set "PSW14 area setting" 1 and 2 to specify the area where the position switch 14 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12899】 aux_PSW15dog1 PSW15 area setting 1

Set "PSW15 area setting" 1 and 2 to specify the area where the position switch 15 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12900】 aux_PSW15dog2 PSW15 area setting 2

Set "PSW15 area setting" 1 and 2 to specify the area where the position switch 15 will turn ON when the machine is positioned.
Whether the value of setting 1 is larger than setting 2 (or vice versa) does not affect the position switch operation.
For rotary axes, the output turns ON in the area excluding 0.000 degree.

---Setting range---
-99999.999 to 99999.999(° or mm)

【#12910】 aux_push Stopper amount

Set the command stroke of the stopper operation in the stopper positioning.

---Setting range---
0.000 to 359.999(° or mm)

【#12911】 aux_pusht1 Stopper standby time

Set the standby time from the stopper starting coordinate positioning to the stopper operation start in the stopper positioning.

---Setting range---
0 to 9999(ms)

【#12912】 aux_pusht2 Stopper torque release time

Set the time from the completion of the stopper operation to the changeover of the stopper torque in the stopper positioning.

---Setting range---
0 to 9999(ms)

【#12913】 aux_pusht3 Set position signal output delay time

Set the time from the completion of the stopper operation to the output of the "automatic set position reached" (JSTA), "set position reached" (JST) or "near set position" (NEAR) signal in the stopper positioning.

---Setting range---
0 to 9999(ms)

III PLC Devices

1. Bit Type Input Signals (CNC->PLC)

(Note) Signals marked with "▲" are prepared for a specific machine tool builder.

Device	Abbrev.	Signal name
X2F0	BRST	Board reset
X707		Power OFF processing
X70E	BATWR	Battery warning
X70F	BATAL	Battery alarm
X711		Optimum acceleration/deceleration switching parameter completion [spindle] ▲
X722		Diagnosis data output completion
X723		Collecting diagnosis data
X724		In remote program input ▲
X725		Remote program input completion ▲
X726		Remote program input error ▲
X727		In tool ID communication ▲
X728	MDBUSIF	Modbus/TCP communicating ▲
X729	MDBUSER1	Modbus time-out 1 ▲
X72A	MDBUSER2	Modbus time-out 2 ▲
X72F		Power OFF required after parameter change
X752	CNOP	24 hours continuous operation
X753	MSOE	In multi-step speed monitor ▲
X758		Pallet program registration Ext. workpiece coordinate transfer completion
X760		$1 Display
X761		$2 Display
X762		$3 Display
X763		$4 Display
X780	RDY11	Servo ready 1st-axis $1
X781	RDY21	Servo ready 2nd-axis $1
X782	RDY31	Servo ready 3nd-axis $1
X783	RDY41	Servo ready 4th-axis $1
X784	RDY51	Servo ready 5th-axis $1
X785	RDY61	Servo ready 6th-axis $1
X786	RDY71	Servo ready 7th-axis $1
X787	RDY81	Servo ready 8th-axis $1
X788	RDY12	Servo ready 1st-axis $2
X789	RDY22	Servo ready 2nd-axis $2
X78A	RDY32	Servo ready 3nd-axis $2
X78B	RDY42	Servo ready 4th-axis $2
X78C	RDY52	Servo ready 5th-axis $2
X78D	RDY62	Servo ready 6th-axis $2
X78E	RDY72	Servo ready 7th-axis $2
X78F	RDY82	Servo ready 8th-axis $2
X790	RDY13	Servo ready 1st-axis $3
X791	RDY23	Servo ready 2nd-axis $3
X792	RDY33	Servo ready 3nd-axis $3
X793	RDY43	Servo ready 4th-axis $3
X794	RDY53	Servo ready 5th-axis $3
X795	RDY63	Servo ready 6th-axis $3
X796	RDY73	Servo ready 7th-axis $3
X797	RDY83	Servo ready 8th-axis $3
X798	RDY14	Servo ready 1st-axis $4
X799	RDY24	Servo ready 2nd-axis $4
X79A	RDY34	Servo ready 3nd-axis $4
X79B	RDY44	Servo ready 4th-axis $4
X79C	RDY54	Servo ready 5th-axis $4
X79D	RDY64	Servo ready 6th-axis $4
X79E	RDY74	Servo ready 7th-axis $4
X79F	RDY84	Servo ready 8th-axis $4
X7A0	AX11	Axis selection 1st-axis $1
X7A1	AX21	Axis selection 2nd-axis $1
X7A2	AX31	Axis selection 3nd-axis $1
X7A3	AX41	Axis selection 4th-axis $1
X7A4	AX51	Axis selection 5th-axis $1
X7A5	AX61	Axis selection 6th-axis $1
X7A6	AX71	Axis selection 7th-axis $1
X7A7	AX81	Axis selection 8th-axis $1
X7A8	AX12	Axis selection 1st-axis $2
X7A9	AX22	Axis selection 2nd-axis $2
X7AA	AX32	Axis selection 3nd-axis $2
X7AB	AX42	Axis selection 4th-axis $2
X7AC	AX52	Axis selection 5th-axis $2
X7AD	AX62	Axis selection 6th-axis $2

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Device	Abbrev.	Signal name
X7AE	AX72	Axis selection 7th-axis $2
X7AF	AX82	Axis selection 8th-axis $2
X7B0	AX13	Axis selection 1st-axis $3
X7B1	AX23	Axis selection 2nd-axis $3
X7B2	AX33	Axis selection 3nd-axis $3
X7B3	AX43	Axis selection 4th-axis $3
X7B4	AX53	Axis selection 5th-axis $3
X7B5	AX63	Axis selection 6th-axis $3
X7B6	AX73	Axis selection 7th-axis $3
X7B7	AX83	Axis selection 8th-axis $3
X7B8	AX14	Axis selection 1st-axis $4
X7B9	AX24	Axis selection 2nd-axis $4
X7BA	AX34	Axis selection 3nd-axis $4
X7BB	AX44	Axis selection 4th-axis $4
X7BC	AX54	Axis selection 5th-axis $4
X7BD	AX64	Axis selection 6th-axis $4
X7BE	AX74	Axis selection 7th-axis $4
X7BF	AX84	Axis selection 8th-axis $4
X7C0	MVP11	In axis plus motion 1st-axis $1
X7C1	MVP21	In axis plus motion 2nd-axis $1
X7C2	MVP31	In axis plus motion 3nd-axis $1
X7C3	MVP41	In axis plus motion 4th-axis $1
X7C4	MVP51	In axis plus motion 5th-axis $1
X7C5	MVP61	In axis plus motion 6th-axis $1
X7C6	MVP71	In axis plus motion 7th-axis $1
X7C7	MVP81	In axis plus motion 8th-axis $1
X7C8	MVP12	In axis plus motion 1st-axis $2
X7C9	MVP22	In axis plus motion 2nd-axis $2
X7CA	MVP32	In axis plus motion 3nd-axis $2
X7CB	MVP42	In axis plus motion 4th-axis $2
X7CC	MVP52	In axis plus motion 5th-axis $2
X7CD	MVP62	In axis plus motion 6th-axis $2
X7CE	MVP72	In axis plus motion 7th-axis $2
X7CF	MVP82	In axis plus motion 8th-axis $2
X7D0	MVP13	In axis plus motion 1st-axis $3
X7D1	MVP23	In axis plus motion 2nd-axis $3
X7D2	MVP33	In axis plus motion 3nd-axis $3
X7D3	MVP43	In axis plus motion 4th-axis $3
X7D4	MVP53	In axis plus motion 5th-axis $3
X7D5	MVP63	In axis plus motion 6th-axis $3
X7D6	MVP73	In axis plus motion 7th-axis $3
X7D7	MVP83	In axis plus motion 8th-axis $3
X7D8	MVP14	In axis plus motion 1st-axis $4
X7D9	MVP24	In axis plus motion 2nd-axis $4
X7DA	MVP34	In axis plus motion 3nd-axis $4
X7DB	MVP44	In axis plus motion 4th-axis $4
X7DC	MVP54	In axis plus motion 5th-axis $4
X7DD	MVP64	In axis plus motion 6th-axis $4
X7DE	MVP74	In axis plus motion 7th-axis $4
X7DF	MVP84	In axis plus motion 8th-axis $4
X7E0	MVM11	In axis minus motion 1st-axis $1
X7E1	MVM21	In axis minus motion 2nd-axis $1
X7E2	MVM31	In axis minus motion 3nd-axis $1
X7E3	MVM41	In axis minus motion 4th-axis $1
X7E4	MVM51	In axis minus motion 5th-axis $1
X7E5	MVM61	In axis minus motion 6th-axis $1
X7E6	MVM71	In axis minus motion 7th-axis $1
X7E7	MVM81	In axis minus motion 8th-axis $1
X7E8	MVM12	In axis minus motion 1st-axis $2
X7E9	MVM22	In axis minus motion 2nd-axis $2
X7EA	MVM32	In axis minus motion 3nd-axis $2
X7EB	MVM42	In axis minus motion 4th-axis $2
X7EC	MVM52	In axis minus motion 5th-axis $2
X7ED	MVM62	In axis minus motion 6th-axis $2
X7EE	MVM72	In axis minus motion 7th-axis $2
X7EF	MVM82	In axis minus motion 8th-axis $2
X7F0	MVM13	In axis minus motion 1st-axis $3
X7F1	MVM23	In axis minus motion 2nd-axis $3
X7F2	MVM33	In axis minus motion 3nd-axis $3
X7F3	MVM43	In axis minus motion 4th-axis $3
X7F4	MVM53	In axis minus motion 5th-axis $3
X7F5	MVM63	In axis minus motion 6th-axis $3
X7F6	MVM73	In axis minus motion 7th-axis $3
X7F7	MVM83	In axis minus motion 8th-axis $3

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Device	Abbrev.	Signal name
X7F8	MVM14	In axis minus motion 1st-axis $4
X7F9	MVM24	In axis minus motion 2nd-axis $4
X7FA	MVM34	In axis minus motion 3nd-axis $4
X7FB	MVM44	In axis minus motion 4th-axis $4
X7FC	MVM54	In axis minus motion 5th-axis $4
X7FD	MVM64	In axis minus motion 6th-axis $4
X7FE	MVM74	In axis minus motion 7th-axis $4
X7FF	MVM84	In axis minus motion 8th-axis $4
X800	ZP111	1st reference position reached 1st-axis $1
X801	ZP121	1st reference position reached 2nd-axis $1
X802	ZP131	1st reference position reached 3nd-axis $1
X803	ZP141	1st reference position reached 4th-axis $1
X804	ZP151	1st reference position reached 5th-axis $1
X805	ZP161	1st reference position reached 6th-axis $1
X806	ZP171	1st reference position reached 7th-axis $1
X807	ZP181	1st reference position reached 8th-axis $1
X808	ZP112	1st reference position reached 1st-axis $2
X809	ZP122	1st reference position reached 2nd-axis $2
X80A	ZP132	1st reference position reached 3nd-axis $2
X80B	ZP142	1st reference position reached 4th-axis $2
X80C	ZP152	1st reference position reached 5th-axis $2
X80D	ZP162	1st reference position reached 6th-axis $2
X80E	ZP172	1st reference position reached 7th-axis $2
X80F	ZP182	1st reference position reached 8th-axis $2
X810	ZP113	1st reference position reached 1st-axis $3
X811	ZP123	1st reference position reached 2nd-axis $3
X812	ZP133	1st reference position reached 3nd-axis $3
X813	ZP143	1st reference position reached 4th-axis $3
X814	ZP153	1st reference position reached 5th-axis $3
X815	ZP163	1st reference position reached 6th-axis $3
X816	ZP173	1st reference position reached 7th-axis $3
X817	ZP183	1st reference position reached 8th-axis $3
X818	ZP114	1st reference position reached 1st-axis $4
X819	ZP124	1st reference position reached 2nd-axis $4
X81A	ZP134	1st reference position reached 3nd-axis $4
X81B	ZP144	1st reference position reached 4th-axis $4
X81C	ZP154	1st reference position reached 5th-axis $4
X81D	ZP164	1st reference position reached 6th-axis $4
X81E	ZP174	1st reference position reached 7th-axis $4
X81F	ZP184	1st reference position reached 8th-axis $4
X820	ZP211	2nd reference position reached 1st-axis $1
X821	ZP221	2nd reference position reached 2nd-axis $1
X822	ZP231	2nd reference position reached 3nd-axis $1
X823	ZP241	2nd reference position reached 4th-axis $1
X824	ZP251	2nd reference position reached 5th-axis $1
X825	ZP261	2nd reference position reached 6th-axis $1
X826	ZP271	2nd reference position reached 7th-axis $1
X827	ZP281	2nd reference position reached 8th-axis $1
X828	ZP212	2nd reference position reached 1st-axis $2
X829	ZP222	2nd reference position reached 2nd-axis $2
X82A	ZP232	2nd reference position reached 3nd-axis $2
X82B	ZP242	2nd reference position reached 4th-axis $2
X82C	ZP252	2nd reference position reached 5th-axis $2
X82D	ZP262	2nd reference position reached 6th-axis $2
X82E	ZP272	2nd reference position reached 7th-axis $2
X82F	ZP282	2nd reference position reached 8th-axis $2
X830	ZP213	2nd reference position reached 1st-axis $3
X831	ZP223	2nd reference position reached 2nd-axis $3
X832	ZP233	2nd reference position reached 3nd-axis $3
X833	ZP243	2nd reference position reached 4th-axis $3
X834	ZP253	2nd reference position reached 5th-axis $3
X835	ZP263	2nd reference position reached 6th-axis $3
X836	ZP273	2nd reference position reached 7th-axis $3
X837	ZP283	2nd reference position reached 8th-axis $3
X838	ZP214	2nd reference position reached 1st-axis $4
X839	ZP224	2nd reference position reached 2nd-axis $4
X83A	ZP234	2nd reference position reached 3nd-axis $4
X83B	ZP244	2nd reference position reached 4th-axis $4
X83C	ZP254	2nd reference position reached 5th-axis $4
X83D	ZP264	2nd reference position reached 6th-axis $4
X83E	ZP274	2nd reference position reached 7th-axis $4
X83F	ZP284	2nd reference position reached 8th-axis $4
X840	ZP311	3rd reference position reached 1st-axis $1
X841	ZP321	3rd reference position reached 2nd-axis $1

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
X842	ZP331	3rd reference position reached 3nd-axis $1
X843	ZP341	3rd reference position reached 4th-axis $1
X844	ZP351	3rd reference position reached 5th-axis $1
X845	ZP361	3rd reference position reached 6th-axis $1
X846	ZP371	3rd reference position reached 7th-axis $1
X847	ZP381	3rd reference position reached 8th-axis $1
X848	ZP312	3rd reference position reached 1st-axis $2
X849	ZP322	3rd reference position reached 2nd-axis $2
X84A	ZP332	3rd reference position reached 3nd-axis $2
X84B	ZP342	3rd reference position reached 4th-axis $2
X84C	ZP352	3rd reference position reached 5th-axis $2
X84D	ZP362	3rd reference position reached 6th-axis $2
X84E	ZP372	3rd reference position reached 7th-axis $2
X84F	ZP382	3rd reference position reached 8th-axis $2
X850	ZP313	3rd reference position reached 1st-axis $3
X851	ZP323	3rd reference position reached 2nd-axis $3
X852	ZP333	3rd reference position reached 3nd-axis $3
X853	ZP343	3rd reference position reached 4th-axis $3
X854	ZP353	3rd reference position reached 5th-axis $3
X855	ZP363	3rd reference position reached 6th-axis $3
X856	ZP373	3rd reference position reached 7th-axis $3
X857	ZP383	3rd reference position reached 8th-axis $3
X858	ZP314	3rd reference position reached 1st-axis $4
X859	ZP324	3rd reference position reached 2nd-axis $4
X85A	ZP334	3rd reference position reached 3nd-axis $4
X85B	ZP344	3rd reference position reached 4th-axis $4
X85C	ZP354	3rd reference position reached 5th-axis $4
X85D	ZP364	3rd reference position reached 6th-axis $4
X85E	ZP374	3rd reference position reached 7th-axis $4
X85F	ZP384	3rd reference position reached 8th-axis $4
X860	ZP411	4th reference position reached 1st-axis $1
X861	ZP421	4th reference position reached 2nd-axis $1
X862	ZP431	4th reference position reached 3nd-axis $1
X863	ZP441	4th reference position reached 4th-axis $1
X864	ZP451	4th reference position reached 5th-axis $1
X865	ZP461	4th reference position reached 6th-axis $1
X866	ZP471	4th reference position reached 7th-axis $1
X867	ZP481	4th reference position reached 8th-axis $1
X868	ZP412	4th reference position reached 1st-axis $2
X869	ZP422	4th reference position reached 2nd-axis $2
X86A	ZP432	4th reference position reached 3nd-axis $2
X86B	ZP442	4th reference position reached 4th-axis $2
X86C	ZP452	4th reference position reached 5th-axis $2
X86D	ZP462	4th reference position reached 6th-axis $2
X86E	ZP472	4th reference position reached 7th-axis $2
X86F	ZP482	4th reference position reached 8th-axis $2
X870	ZP413	4th reference position reached 1st-axis $3
X871	ZP423	4th reference position reached 2nd-axis $3
X872	ZP433	4th reference position reached 3nd-axis $3
X873	ZP443	4th reference position reached 4th-axis $3
X874	ZP453	4th reference position reached 5th-axis $3
X875	ZP463	4th reference position reached 6th-axis $3
X876	ZP473	4th reference position reached 7th-axis $3
X877	ZP483	4th reference position reached 8th-axis $3
X878	ZP414	4th reference position reached 1st-axis $4
X879	ZP424	4th reference position reached 2nd-axis $4
X87A	ZP434	4th reference position reached 3nd-axis $4
X87B	ZP444	4th reference position reached 4th-axis $4
X87C	ZP454	4th reference position reached 5th-axis $4
X87D	ZP464	4th reference position reached 6th-axis $4
X87E	ZP474	4th reference position reached 7th-axis $4
X87F	ZP484	4th reference position reached 8th-axis $4
X880	NRF11	Near reference position 1st-axis $1
X881	NRF21	Near reference position 2nd-axis $1
X882	NRF31	Near reference position 3nd-axis $1
X883	NRF41	Near reference position 4th-axis $1
X884	NRF51	Near reference position 5th-axis $1
X885	NRF61	Near reference position 6th-axis $1
X886	NRF71	Near reference position 7th-axis $1
X887	NRF81	Near reference position 8th-axis $1
X888	NRF12	Near reference position 1st-axis $2
X889	NRF22	Near reference position 2nd-axis $2
X88A	NRF32	Near reference position 3nd-axis $2
X88B	NRF42	Near reference position 4th-axis $2

III PLC Devices
Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
X88C	NRF52	Near reference position 5th-axis $2
X88D	NRF62	Near reference position 6th-axis $2
X88E	NRF72	Near reference position 7th-axis $2
X88F	NRF82	Near reference position 8th-axis $2
X890	NRF13	Near reference position 1st-axis $3
X891	NRF23	Near reference position 2nd-axis $3
X892	NRF33	Near reference position 3nd-axis $3
X893	NRF43	Near reference position 4th-axis $3
X894	NRF53	Near reference position 5th-axis $3
X895	NRF63	Near reference position 6th-axis $3
X896	NRF73	Near reference position 7th-axis $3
X897	NRF83	Near reference position 8th-axis $3
X898	NRF14	Near reference position 1st-axis $4
X899	NRF24	Near reference position 2nd-axis $4
X89A	NRF34	Near reference position 3nd-axis $4
X89B	NRF44	Near reference position 4th-axis $4
X89C	NRF54	Near reference position 5th-axis $4
X89D	NRF64	Near reference position 6th-axis $4
X89E	NRF74	Near reference position 7th-axis $4
X89F	NRF84	Near reference position 8th-axis $4
X8C0	ZSF11	Zero point initialization set completed 1st-axis $1
X8C1	ZSF21	Zero point initialization set completed 2nd-axis $1
X8C2	ZSF31	Zero point initialization set completed 3nd-axis $1
X8C3	ZSF41	Zero point initialization set completed 4th-axis $1
X8C4	ZSF51	Zero point initialization set completed 5th-axis $1
X8C5	ZSF61	Zero point initialization set completed 6th-axis $1
X8C6	ZSF71	Zero point initialization set completed 7th-axis $1
X8C7	ZSF81	Zero point initialization set completed 8th-axis $1
X8C8	ZSF12	Zero point initialization set completed 1st-axis $2
X8C9	ZSF22	Zero point initialization set completed 2nd-axis $2
X8CA	ZSF32	Zero point initialization set completed 3nd-axis $2
X8CB	ZSF42	Zero point initialization set completed 4th-axis $2
X8CC	ZSF52	Zero point initialization set completed 5th-axis $2
X8CD	ZSF62	Zero point initialization set completed 6th-axis $2
X8CE	ZSF72	Zero point initialization set completed 7th-axis $2
X8CF	ZSF82	Zero point initialization set completed 8th-axis $2
X8D0	ZSF13	Zero point initialization set completed 1st-axis $3
X8D1	ZSF23	Zero point initialization set completed 2nd-axis $3
X8D2	ZSF33	Zero point initialization set completed 3nd-axis $3
X8D3	ZSF43	Zero point initialization set completed 4th-axis $3
X8D4	ZSF53	Zero point initialization set completed 5th-axis $3
X8D5	ZSF63	Zero point initialization set completed 6th-axis $3
X8D6	ZSF73	Zero point initialization set completed 7th-axis $3
X8D7	ZSF83	Zero point initialization set completed 8th-axis $3
X8D8	ZSF14	Zero point initialization set completed 1st-axis $4
X8D9	ZSF24	Zero point initialization set completed 2nd-axis $4
X8DA	ZSF34	Zero point initialization set completed 3nd-axis $4
X8DB	ZSF44	Zero point initialization set completed 4th-axis $4
X8DC	ZSF54	Zero point initialization set completed 5th-axis $4
X8DD	ZSF64	Zero point initialization set completed 6th-axis $4
X8DE	ZSF74	Zero point initialization set completed 7th-axis $4
X8DF	ZSF84	Zero point initialization set completed 8th-axis $4
X8E0	ZSE11	Zero point initialization set error completed 1st-axis $1
X8E1	ZSE21	Zero point initialization set error completed 2nd-axis $1
X8E2	ZSE31	Zero point initialization set error completed 3nd-axis $1
X8E3	ZSE41	Zero point initialization set error completed 4th-axis $1
X8E4	ZSE51	Zero point initialization set error completed 5th-axis $1
X8E5	ZSE61	Zero point initialization set error completed 6th-axis $1
X8E6	ZSE71	Zero point initialization set error completed 7th-axis $1
X8E7	ZSE81	Zero point initialization set error completed 8th-axis $1
X8E8	ZSE12	Zero point initialization set error completed 1st-axis $2
X8E9	ZSE22	Zero point initialization set error completed 2nd-axis $2
X8EA	ZSE32	Zero point initialization set error completed 3nd-axis $2
X8EB	ZSE42	Zero point initialization set error completed 4th-axis $2
X8EC	ZSE52	Zero point initialization set error completed 5th-axis $2
X8ED	ZSE62	Zero point initialization set error completed 6th-axis $2
X8EE	ZSE72	Zero point initialization set error completed 7th-axis $2
X8EF	ZSE82	Zero point initialization set error completed 8th-axis $2
X8F0	ZSE13	Zero point initialization set error completed 1st-axis $3
X8F1	ZSE23	Zero point initialization set error completed 2nd-axis $3
X8F2	ZSE33	Zero point initialization set error completed 3nd-axis $3
X8F3	ZSE43	Zero point initialization set error completed 4th-axis $3
X8F4	ZSE53	Zero point initialization set error completed 5th-axis $3
X8F5	ZSE63	Zero point initialization set error completed 6th-axis $3

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
X8F6	ZSE73	Zero point initialization set error completed 7th-axis $3
X8F7	ZSE83	Zero point initialization set error completed 8th-axis $3
X8F8	ZSE14	Zero point initialization set error completed 1st-axis $4
X8F9	ZSE24	Zero point initialization set error completed 2nd-axis $4
X8FA	ZSE34	Zero point initialization set error completed 3nd-axis $4
X8FB	ZSE44	Zero point initialization set error completed 4th-axis $4
X8FC	ZSE54	Zero point initialization set error completed 5th-axis $4
X8FD	ZSE64	Zero point initialization set error completed 6th-axis $4
X8FE	ZSE74	Zero point initialization set error completed 7th-axis $4
X8FF	ZSE84	Zero point initialization set error completed 8th-axis $4
X900	ILI11	In current limit 1st-axis $1
X901	ILI21	In current limit 2nd-axis $1
X902	ILI31	In current limit 3nd-axis $1
X903	ILI41	In current limit 4th-axis $1
X904	ILI51	In current limit 5th-axis $1
X905	ILI61	In current limit 6th-axis $1
X906	ILI71	In current limit 7th-axis $1
X907	ILI81	In current limit 8th-axis $1
X908	ILI12	In current limit 1st-axis $2
X909	ILI22	In current limit 2nd-axis $2
X90A	ILI32	In current limit 3nd-axis $2
X90B	ILI42	In current limit 4th-axis $2
X90C	ILI52	In current limit 5th-axis $2
X90D	ILI62	In current limit 6th-axis $2
X90E	ILI72	In current limit 7th-axis $2
X90F	ILI82	In current limit 8th-axis $2
X910	ILI13	In current limit 1st-axis $3
X911	ILI23	In current limit 2nd-axis $3
X912	ILI33	In current limit 3nd-axis $3
X913	ILI43	In current limit 4th-axis $3
X914	ILI53	In current limit 5th-axis $3
X915	ILI63	In current limit 6th-axis $3
X916	ILI73	In current limit 7th-axis $3
X917	ILI83	In current limit 8th-axis $3
X918	ILI14	In current limit 1st-axis $4
X919	ILI24	In current limit 2nd-axis $4
X91A	ILI34	In current limit 3nd-axis $4
X91B	ILI44	In current limit 4th-axis $4
X91C	ILI54	In current limit 5th-axis $4
X91D	ILI64	In current limit 6th-axis $4
X91E	ILI74	In current limit 7th-axis $4
X91F	ILI84	In current limit 8th-axis $4
X920	ILA11	Current limit reached 1st-axis $1
X921	ILA21	Current limit reached 2nd-axis $1
X922	ILA31	Current limit reached 3nd-axis $1
X923	ILA41	Current limit reached 4th-axis $1
X924	ILA51	Current limit reached 5th-axis $1
X925	ILA61	Current limit reached 6th-axis $1
X926	ILA71	Current limit reached 7th-axis $1
X927	ILA81	Current limit reached 8th-axis $1
X928	ILA12	Current limit reached 1st-axis $2
X929	ILA22	Current limit reached 2nd-axis $2
X92A	ILA32	Current limit reached 3nd-axis $2
X92B	ILA42	Current limit reached 4th-axis $2
X92C	ILA52	Current limit reached 5th-axis $2
X92D	ILA62	Current limit reached 6th-axis $2
X92E	ILA72	Current limit reached 7th-axis $2
X92F	ILA82	Current limit reached 8th-axis $2
X930	ILA13	Current limit reached 1st-axis $3
X931	ILA23	Current limit reached 2nd-axis $3
X932	ILA33	Current limit reached 3nd-axis $3
X933	ILA43	Current limit reached 4th-axis $3
X934	ILA53	Current limit reached 5th-axis $3
X935	ILA63	Current limit reached 6th-axis $3
X936	ILA73	Current limit reached 7th-axis $3
X937	ILA83	Current limit reached 8th-axis $3
X938	ILA14	Current limit reached 1st-axis $4
X939	ILA24	Current limit reached 2nd-axis $4
X93A	ILA34	Current limit reached 3nd-axis $4
X93B	ILA44	Current limit reached 4th-axis $4
X93C	ILA54	Current limit reached 5th-axis $4
X93D	ILA64	Current limit reached 6th-axis $4
X93E	ILA74	Current limit reached 7th-axis $4
X93F	ILA84	Current limit reached 8th-axis $4

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
X940	ARRF11	NC axis up-to-speed 1st-axis $1
X941	ARRF21	NC axis up-to-speed 2nd-axis $1
X942	ARRF31	NC axis up-to-speed 3nd-axis $1
X943	ARRF41	NC axis up-to-speed 4th-axis $1
X944	ARRF51	NC axis up-to-speed 5th-axis $1
X945	ARRF61	NC axis up-to-speed 6th-axis $1
X946	ARRF71	NC axis up-to-speed 7th-axis $1
X947	ARRF81	NC axis up-to-speed 8th-axis $1
X948	ARRF12	NC axis up-to-speed 1st-axis $2
X949	ARRF22	NC axis up-to-speed 2nd-axis $2
X94A	ARRF32	NC axis up-to-speed 3nd-axis $2
X94B	ARRF42	NC axis up-to-speed 4th-axis $2
X94C	ARRF52	NC axis up-to-speed 5th-axis $2
X94D	ARRF62	NC axis up-to-speed 6th-axis $2
X94E	ARRF72	NC axis up-to-speed 7th-axis $2
X94F	ARRF82	NC axis up-to-speed 8th-axis $2
X950	ARRF13	NC axis up-to-speed 1st-axis $3
X951	ARRF23	NC axis up-to-speed 2nd-axis $3
X952	ARRF33	NC axis up-to-speed 3nd-axis $3
X953	ARRF43	NC axis up-to-speed 4th-axis $3
X954	ARRF53	NC axis up-to-speed 5th-axis $3
X955	ARRF63	NC axis up-to-speed 6th-axis $3
X956	ARRF73	NC axis up-to-speed 7th-axis $3
X957	ARRF83	NC axis up-to-speed 8th-axis $3
X958	ARRF14	NC axis up-to-speed 1st-axis $4
X959	ARRF24	NC axis up-to-speed 2nd-axis $4
X95A	ARRF34	NC axis up-to-speed 3nd-axis $4
X95B	ARRF44	NC axis up-to-speed 4th-axis $4
X95C	ARRF54	NC axis up-to-speed 5th-axis $4
X95D	ARRF64	NC axis up-to-speed 6th-axis $4
X95E	ARRF74	NC axis up-to-speed 7th-axis $4
X95F	ARRF84	NC axis up-to-speed 8th-axis $4
X960	UCLP11	Unclamp command 1st-axis $1
X961	UCLP21	Unclamp command 2nd-axis $1
X962	UCLP31	Unclamp command 3nd-axis $1
X963	UCLP41	Unclamp command 4th-axis $1
X964	UCLP51	Unclamp command 5th-axis $1
X965	UCLP61	Unclamp command 6th-axis $1
X966	UCLP71	Unclamp command 7th-axis $1
X967	UCLP81	Unclamp command 8th-axis $1
X968	UCLP12	Unclamp command 1st-axis $2
X969	UCLP22	Unclamp command 2nd-axis $2
X96A	UCLP32	Unclamp command 3nd-axis $2
X96B	UCLP42	Unclamp command 4th-axis $2
X96C	UCLP52	Unclamp command 5th-axis $2
X96D	UCLP62	Unclamp command 6th-axis $2
X96E	UCLP72	Unclamp command 7th-axis $2
X96F	UCLP82	Unclamp command 8th-axis $2
X970	UCLP13	Unclamp command 1st-axis $3
X971	UCLP23	Unclamp command 2nd-axis $3
X972	UCLP33	Unclamp command 3nd-axis $3
X973	UCLP43	Unclamp command 4th-axis $3
X974	UCLP53	Unclamp command 5th-axis $3
X975	UCLP63	Unclamp command 6th-axis $3
X976	UCLP73	Unclamp command 7th-axis $3
X977	UCLP83	Unclamp command 8th-axis $3
X978	UCLP14	Unclamp command 1st-axis $4
X979	UCLP24	Unclamp command 2nd-axis $4
X97A	UCLP34	Unclamp command 3nd-axis $4
X97B	UCLP44	Unclamp command 4th-axis $4
X97C	UCLP54	Unclamp command 5th-axis $4
X97D	UCLP64	Unclamp command 6th-axis $4
X97E	UCLP74	Unclamp command 7th-axis $4
X97F	UCLP84	Unclamp command 8th-axis $4
X980		In mixed control (cross axis control) 1st axis $1
X981		In mixed control (cross axis control) 2nd axis $1
X982		In mixed control (cross axis control) 3rd axis $1
X983		In mixed control (cross axis control) 4th axis $1
X984		In mixed control (cross axis control) 5th axis $1
X985		In mixed control (cross axis control) 6th axis $1
X986		In mixed control (cross axis control) 7th axis $1
X987		In mixed control (cross axis control) 8th axis $1
X988		In mixed control (cross axis control) 1st axis $2
X989		In mixed control (cross axis control) 2nd axis $2

Device	Abbrev.	Signal name
X98A		In mixed control (cross axis control) 3rd axis $2
X98B		In mixed control (cross axis control) 4th axis $2
X98C		In mixed control (cross axis control) 5th axis $2
X98D		In mixed control (cross axis control) 6th axis $2
X98E		In mixed control (cross axis control) 7th axis $2
X98F		In mixed control (cross axis control) 8th axis $2
X990		In mixed control (cross axis control) 1st axis $3
X991		In mixed control (cross axis control) 2nd axis $3
X992		In mixed control (cross axis control) 3rd axis $3
X993		In mixed control (cross axis control) 4th axis $3
X994		In mixed control (cross axis control) 5th axis $3
X995		In mixed control (cross axis control) 6th axis $3
X996		In mixed control (cross axis control) 7th axis $3
X997		In mixed control (cross axis control) 8th axis $3
X998		In mixed control (cross axis control) 1st axis $4
X999		In mixed control (cross axis control) 2nd axis $4
X99A		In mixed control (cross axis control) 3rd axis $4
X99B		In mixed control (cross axis control) 4th axis $4
X99C		In mixed control (cross axis control) 5th axis $4
X99D		In mixed control (cross axis control) 6th axis $4
X99E		In mixed control (cross axis control) 7th axis $4
X99F		In mixed control (cross axis control) 8th axis $4
X9A0		In synchronous/superimposition control 1st axis $1
X9A1		In synchronous/superimposition control 2nd axis $1
X9A2		In synchronous/superimposition control 3rd axis $1
X9A3		In synchronous/superimposition control 4th axis $1
X9A4		In synchronous/superimposition control 5th axis $1
X9A5		In synchronous/superimposition control 6th axis $1
X9A6		In synchronous/superimposition control 7th axis $1
X9A7		In synchronous/superimposition control 8th axis $1
X9A8		In synchronous/superimposition control 1st axis $2
X9A9		In synchronous/superimposition control 2nd axis $2
X9AA		In synchronous/superimposition control 3rd axis $2
X9AB		In synchronous/superimposition control 4th axis $2
X9AC		In synchronous/superimposition control 5th axis $2
X9AD		In synchronous/superimposition control 6th axis $2
X9AE		In synchronous/superimposition control 7th axis $2
X9AF		In synchronous/superimposition control 8th axis $2
X9B0		In synchronous/superimposition control 1st axis $3
X9B1		In synchronous/superimposition control 2nd axis $3
X9B2		In synchronous/superimposition control 3rd axis $3
X9B3		In synchronous/superimposition control 4th axis $3
X9B4		In synchronous/superimposition control 5th axis $3
X9B5		In synchronous/superimposition control 6th axis $3
X9B6		In synchronous/superimposition control 7th axis $3
X9B7		In synchronous/superimposition control 8th axis $3
X9B8		In synchronous/superimposition control 1st axis $4
X9B9		In synchronous/superimposition control 2nd axis $4
X9BA		In synchronous/superimposition control 3rd axis $4
X9BB		In synchronous/superimposition control 4th axis $4
X9BC		In synchronous/superimposition control 5th axis $4
X9BD		In synchronous/superimposition control 6th axis $4
X9BE		In synchronous/superimposition control 7th axis $4
X9BF		In synchronous/superimposition control 8th axis $4
X9C0	MIR11	In mirror image 1st axis $1
X9C1	MIR21	In mirror image 2nd axis $1
X9C2	MIR31	In mirror image 3rd axis $1
X9C3	MIR41	In mirror image 4th axis $1
X9C4	MIR51	In mirror image 5th axis $1
X9C5	MIR61	In mirror image 6th axis $1
X9C6	MIR71	In mirror image 7th axis $1
X9C7	MIR81	In mirror image 8th axis $1
X9C8	MIR12	In mirror image 1st axis $2
X9C9	MIR22	In mirror image 2nd axis $2
X9CA	MIR32	In mirror image 3rd axis $2
X9CB	MIR42	In mirror image 4th axis $2
X9CC	MIR52	In mirror image 5th axis $2
X9CD	MIR62	In mirror image 6th axis $2
X9CE	MIR72	In mirror image 7th axis $2
X9CF	MIR82	In mirror image 8th axis $2
X9D0	MIR13	In mirror image 1st axis $3
X9D1	MIR23	In mirror image 2nd axis $3
X9D2	MIR33	In mirror image 3rd axis $3
X9D3	MIR43	In mirror image 4th axis $3

Device	Abbrev.	Signal name
X9D4	MIR53	In mirror image 5th axis $3
X9D5	MIR63	In mirror image 6th axis $3
X9D6	MIR73	In mirror image 7th axis $3
X9D7	MIR83	In mirror image 8th axis $3
X9D8	MIR14	In mirror image 1st axis $4
X9D9	MIR24	In mirror image 2nd axis $4
X9DA	MIR34	In mirror image 3rd axis $4
X9DB	MIR44	In mirror image 4th axis $4
X9DC	MIR54	In mirror image 5th axis $4
X9DD	MIR64	In mirror image 6th axis $4
X9DE	MIR74	In mirror image 7th axis $4
X9DF	MIR84	In mirror image 8th axis $4
X9E0		Reference position establishment 1st axis $1
X9E1		Reference position establishment 2nd axis $1
X9E2		Reference position establishment 3rd axis $1
X9E3		Reference position establishment 4th axis $1
X9E4		Reference position establishment 5th axis $1
X9E5		Reference position establishment 6th axis $1
X9E6		Reference position establishment 7th axis $1
X9E7		Reference position establishment 8th axis $1
X9E8		Reference position establishment 1st axis $2
X9E9		Reference position establishment 2nd axis $2
X9EA		Reference position establishment 3rd axis $2
X9EB		Reference position establishment 4th axis $2
X9EC		Reference position establishment 5th axis $2
X9ED		Reference position establishment 6th axis $2
X9EE		Reference position establishment 7th axis $2
X9EF		Reference position establishment 8th axis $2
X9F0		Reference position establishment 1st axis $3
X9F1		Reference position establishment 2nd axis $3
X9F2		Reference position establishment 3rd axis $3
X9F3		Reference position establishment 4th axis $3
X9F4		Reference position establishment 5th axis $3
X9F5		Reference position establishment 6th axis $3
X9F6		Reference position establishment 7th axis $3
X9F7		Reference position establishment 8th axis $3
X9F8		Reference position establishment 1st axis $4
X9F9		Reference position establishment 2nd axis $4
X9FA		Reference position establishment 3rd axis $4
X9FB		Reference position establishment 4th axis $4
X9FC		Reference position establishment 5th axis $4
X9FD		Reference position establishment 6th axis $4
X9FE		Reference position establishment 7th axis $4
X9FF		Reference position establishment 8th axis $4
XA00		Reference position return direction 1st axis $1
XA01		Reference position return direction 2nd axis $1
XA02		Reference position return direction 3rd axis $1
XA03		Reference position return direction 4th axis $1
XA04		Reference position return direction 5th axis $1
XA05		Reference position return direction 6th axis $1
XA06		Reference position return direction 7th axis $1
XA07		Reference position return direction 8th axis $1
XA08		Reference position return direction 1st axis $2
XA09		Reference position return direction 2nd axis $2
XA0A		Reference position return direction 3rd axis $2
XA0B		Reference position return direction 4th axis $2
XA0C		Reference position return direction 5th axis $2
XA0D		Reference position return direction 6th axis $2
XA0E		Reference position return direction 7th axis $2
XA0F		Reference position return direction 8th axis $2
XA10		Reference position return direction 1st axis $3
XA11		Reference position return direction 2nd axis $3
XA12		Reference position return direction 3rd axis $3
XA13		Reference position return direction 4th axis $3
XA14		Reference position return direction 5th axis $3
XA15		Reference position return direction 6th axis $3
XA16		Reference position return direction 7th axis $3
XA17		Reference position return direction 8th axis $3
XA18		Reference position return direction 1st axis $4
XA19		Reference position return direction 2nd axis $4
XA1A		Reference position return direction 3rd axis $4
XA1B		Reference position return direction 4th axis $4
XA1C		Reference position return direction 5th axis $4
XA1D		Reference position return direction 6th axis $4

Device	Abbrev.	Signal name
XA1E		Reference position return direction 7th axis $4
XA1F		Reference position return direction 8th axis $4
XA20		In NC axis control 1st axis $1
XA21		In NC axis control 2nd axis $1
XA22		In NC axis control 3rd axis $1
XA23		In NC axis control 4th axis $1
XA24		In NC axis control 5th axis $1
XA25		In NC axis control 6th axis $1
XA26		In NC axis control 7th axis $1
XA27		In NC axis control 8th axis $1
XA28		In NC axis control 1st axis $2
XA29		In NC axis control 2nd axis $2
XA2A		In NC axis control 3rd axis $2
XA2B		In NC axis control 4th axis $2
XA2C		In NC axis control 5th axis $2
XA2D		In NC axis control 6th axis $2
XA2E		In NC axis control 7th axis $2
XA2F		In NC axis control 8th axis $2
XA30		In NC axis control 1st axis $3
XA31		In NC axis control 2nd axis $3
XA32		In NC axis control 3rd axis $3
XA33		In NC axis control 4th axis $3
XA34		In NC axis control 5th axis $3
XA35		In NC axis control 6th axis $3
XA36		In NC axis control 7th axis $3
XA37		In NC axis control 8th axis $3
XA38		In NC axis control 1st axis $4
XA39		In NC axis control 2nd axis $4
XA3A		In NC axis control 3rd axis $4
XA3B		In NC axis control 4th axis $4
XA3C		In NC axis control 5th axis $4
XA3D		In NC axis control 6th axis $4
XA3E		In NC axis control 7th axis $4
XA3F		In NC axis control 8th axis $4
XA40	ECIL1	Ext. machine coordinate system offset data illegal 1st axis $1
XA41	ECIL2	Ext. machine coordinate system offset data illegal 2nd axis $1
XA42	ECIL3	Ext. machine coordinate system offset data illegal 3rd axis $1
XA43	ECIL4	Ext. machine coordinate system offset data illegal 4th axis $1
XA44	ECIL5	Ext. machine coordinate system offset data illegal 5th axis $1
XA45	ECIL6	Ext. machine coordinate system offset data illegal 6th axis $1
XA46	ECIL7	Ext. machine coordinate system offset data illegal 7th axis $1
XA47	ECIL8	Ext. machine coordinate system offset data illegal 8th axis $1
XA48	ECIL1	Ext. machine coordinate system offset data illegal 1st axis $2
XA49	ECIL2	Ext. machine coordinate system offset data illegal 2nd axis $2
XA4A	ECIL3	Ext. machine coordinate system offset data illegal 3rd axis $2
XA4B	ECIL4	Ext. machine coordinate system offset data illegal 4th axis $2
XA4C	ECIL5	Ext. machine coordinate system offset data illegal 5th axis $2
XA4D	ECIL6	Ext. machine coordinate system offset data illegal 6th axis $2
XA4E	ECIL7	Ext. machine coordinate system offset data illegal 7th axis $2
XA4F	ECIL8	Ext. machine coordinate system offset data illegal 8th axis $2
XA50	ECIL1	Ext. machine coordinate system offset data illegal 1st axis $3
XA51	ECIL2	Ext. machine coordinate system offset data illegal 2nd axis $3
XA52	ECIL3	Ext. machine coordinate system offset data illegal 3rd axis $3
XA53	ECIL4	Ext. machine coordinate system offset data illegal 4th axis $3
XA54	ECIL5	Ext. machine coordinate system offset data illegal 5th axis $3
XA55	ECIL6	Ext. machine coordinate system offset data illegal 6th axis $3
XA56	ECIL7	Ext. machine coordinate system offset data illegal 7th axis $3
XA57	ECIL8	Ext. machine coordinate system offset data illegal 8th axis $3
XA58	ECIL1	Ext. machine coordinate system offset data illegal 1st axis $4
XA59	ECIL2	Ext. machine coordinate system offset data illegal 2nd axis $4
XA5A	ECIL3	Ext. machine coordinate system offset data illegal 3rd axis $4
XA5B	ECIL4	Ext. machine coordinate system offset data illegal 4th axis $4
XA5C	ECIL5	Ext. machine coordinate system offset data illegal 5th axis $4
XA5D	ECIL6	Ext. machine coordinate system offset data illegal 6th axis $4
XA5E	ECIL7	Ext. machine coordinate system offset data illegal 7th axis $4
XA5F	ECIL8	Ext. machine coordinate system offset data illegal 8th axis $4
XA60		Vertical axis pull-up prevented 1st axis $1
XA61		Vertical axis pull-up prevented 2nd axis $1
XA62		Vertical axis pull-up prevented 3rd axis $1
XA63		Vertical axis pull-up prevented 4th axis $1
XA64		Vertical axis pull-up prevented 5th axis $1
XA65		Vertical axis pull-up prevented 6th axis $1
XA66		Vertical axis pull-up prevented 7th axis $1
XA67		Vertical axis pull-up prevented 8th axis $1
XA68		Vertical axis pull-up prevented 1st axis $2
XA69		Vertical axis pull-up prevented 2nd axis $2
XA6A		Vertical axis pull-up prevented 3rd axis $2

Device	Abbrev.	Signal name
XA6B		Vertical axis pull-up prevented 4th axis $2
XA6C		Vertical axis pull-up prevented 5th axis $2
XA6D		Vertical axis pull-up prevented 6th axis $2
XA6E		Vertical axis pull-up prevented 7th axis $2
XA6F		Vertical axis pull-up prevented 8th axis $2
XA70		Vertical axis pull-up prevented 1st axis $3
XA71		Vertical axis pull-up prevented 2nd axis $3
XA72		Vertical axis pull-up prevented 3rd axis $3
XA73		Vertical axis pull-up prevented 4th axis $3
XA74		Vertical axis pull-up prevented 5th axis $3
XA75		Vertical axis pull-up prevented 6th axis $3
XA76		Vertical axis pull-up prevented 7th axis $3
XA77		Vertical axis pull-up prevented 8th axis $3
XA78		Vertical axis pull-up prevented 1st axis $4
XA79		Vertical axis pull-up prevented 2nd axis $4
XA7A		Vertical axis pull-up prevented 3rd axis $4
XA7B		Vertical axis pull-up prevented 4th axis $4
XA7C		Vertical axis pull-up prevented 5th axis $4
XA7D		Vertical axis pull-up prevented 6th axis $4
XA7E		Vertical axis pull-up prevented 7th axis $4
XA7F		Vertical axis pull-up prevented 8th axis $4
XB00		Clamp command 1st axis $1 ▲
XB01		Clamp command 2nd axis $1 ▲
XB02		Clamp command 3rd axis $1 ▲
XB03		Clamp command 4th axis $1 ▲
XB04		Clamp command 5th axis $1 ▲
XB05		Clamp command 6th axis $1 ▲
XB06		Clamp command 7th axis $1 ▲
XB07		Clamp command 8th axis $1 ▲
XB08		Clamp command 1st axis $2 ▲
XB09		Clamp command 2nd axis $2 ▲
XB0A		Clamp command 3rd axis $2 ▲
XB0B		Clamp command 4th axis $2 ▲
XB0C		Clamp command 5th axis $2 ▲
XB0D		Clamp command 6th axis $2 ▲
XB0E		Clamp command 7th axis $2 ▲
XB0F		Clamp command 8th axis $2 ▲
XB10		Clamp command 1st axis $3 ▲
XB11		Clamp command 2nd axis $3 ▲
XB12		Clamp command 3rd axis $3 ▲
XB13		Clamp command 4th axis $3 ▲
XB14		Clamp command 5th axis $3 ▲
XB15		Clamp command 6th axis $3 ▲
XB16		Clamp command 7th axis $3 ▲
XB17		Clamp command 8th axis $3 ▲
XB18		Clamp command 1st axis $4 ▲
XB19		Clamp command 2nd axis $4 ▲
XB1A		Clamp command 3rd axis $4 ▲
XB1B		Clamp command 4th axis $4 ▲
XB1C		Clamp command 5th axis $4 ▲
XB1D		Clamp command 6th axis $4 ▲
XB1E		Clamp command 7th axis $4 ▲
XB1F		Clamp command 8th axis $4 ▲
XC00	JO1	In jog mode $1
XC01	HO1	In handle mode $1
XC02	SO1	In incremental mode $1
XC03	PTPO1	In manual arbitrary feed mode $1
XC04	ZRNO1	In reference position return mode $1
XC05	ASTO1	In automatic initial set mode $1
XC06		In jog-handle simultaneous mode $1
XC08	MEMO1	In memory mode $1
XC09	TO1	In tape mode $1
XC0A		In online operation mode $1
XC0B	DO1	In MDI mode $1
XC10	MA1	Controller ready completion $1
XC11	SA1	Servo ready completion $1
XC12	OP1	In automatic operation "run" $1
XC13	STL1	In automatic operation "start" $1
XC14	SPL1	In automatic operation "pause" $1
XC15	RST1	In "reset" $1
XC16	CXN1	In manual arbitrary feed $1
XC17	RWD1	In rewind $1
XC18	DEN1	Motion command completion $1
XC19	TIMP1	All axes in-position $1

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
XC1A	TSMZ1	All axes smoothing zero $1
XC1C	CXFIN1	Manual arbitrary feed completion $1
XC1D	ETSE1	External search finished $1
XC1F		In high-speed machining mode (G05) $1
XC20	RPN1	In rapid traverse $1
XC21	CUT1	In cutting feed $1
XC22	TAP1	In tapping $1
XC23	THRD1	In thread cutting $1
XC24	SYN1	In synchronous feed $1
XC25	CSS1	In constant surface speed $1
XC26	SKIP1	In skip $1
XC27	ZRNN1	In reference position return $1
XC28	INCH1	In inch unit selection $1
XC29	DLKN1	In display lock $1
XC2A	F1DN1	F 1-digit commanded $1
XC2B	TLFO1	In tool life management $1
XC2E	TLOV1	Tool life over $1
XC2F		Tool group life over $1
XC30	F111	F 1-digit No. code 1 $1
XC31	F121	F 1-digit No. code 2 $1
XC32	F141	F 1-digit No. code 4 $1
XC33	F181	F 1-digit No. code 8 $1
XC34		Waiting between part systems $1
XC35	PCINO	In PLC interrupt $1
XC37	ASLE1	Illegal axis selected $1
XC40	DM001	M code independent output M00 $1
XC41	DM011	M code independent output M01 $1
XC42	DM021	M code independent output M02 $1
XC43	DM301	M code independent output M30 $1
XC48		In manual speed command valid $1
XC49	MMS1	Manual numerical command $1
XC4A		In tool escape and return mode $1
XC4F		In circular feed in manual mode $1
XC60	MF11	M function strobe 1 $1
XC61	MF21	M function strobe 2 $1
XC62	MF31	M function strobe 3 $1
XC63	MF41	M function strobe 4 $1
XC64	SF11	S function strobe 1 $1
XC65	SF21	S function strobe 2 $1
XC66	SF31	S function strobe 3 $1
XC67	SF41	S function strobe 4 $1
XC68	TF11	T function strobe 1 $1
XC69	TF21	T function strobe 2 $1
XC6A	TF31	T function strobe 3 $1
XC6B	TF41	T function strobe 4 $1
XC6C	BF11	2nd M function strobe 1 $1
XC6D	BF21	2nd M function strobe 2 $1
XC6E	BF31	2nd M function strobe 3 $1
XC6F	BF41	2nd M function strobe 4 $1
XC7F	CHPRCC1	Chopping compensation update prevented $1
XC80	CHOP1	In chopping start $1
XC81	CHP11	Basic position -> upper dead point path flag $1
XC82	CHP21	Upper dead point -> bottom dead point path flag $1
XC83	CHP31	Bottom dead point -> upper dead point path flag $1
XC84	CHP41	Upper dead point -> basic position path flag $1
XC85	CHPMD1	In chopping mode $1
XC86		Stroke compensation completion $1
XC87		Tool escape and return transit point recognition completed $1
XC8A	SSE1	Search & start (error) $1
XC8B	SSG1	Search & start (search) $1
XC93	TCP1	Tool change position return completion $1
XC94	TCRQ1	New tool change $1
XC95		All spindles simultaneous control (G47.1) $1
XC96		Life prediction $1
XC98	AL11	NC alarm 1 $1
XC99	AL21	NC alarm 2 (Servo alarm) $1
XC9A	AL31	NC alarm 3 (Program error) $1
XC9B	AL41	NC alarm 4 (Operation error) $1
XC9C	WR11	NC warning (Servo warning) $1
XCA0		Load monitor in execution $1 ▲
XCA1		Load monitor teaching mode valid $1 ▲
XCA2		Load monitor monitor mode valid $1 ▲
XCA3		Adaptive control in execution $1 ▲
XCA5	TRVE1	Tap retract possible $1

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
XCA6	PCNT1	No. of work machining over $1
XCA7	ABSW1	Absolute position warning $1
XCA9		In axis name switch $1
XCAA		Optimum acceleration/deceleration parameter switch completion [axis] $1 ▲
XCB0		In Spindle-NC axis polygon mode $1
XCB1	AL51	NC alarm 5 $1
XCB2		In Spindle-Spindle polygon mode $1
XCB3		Spindle-spindle polygon synchronization completion $1
XCB9		In 3-dimensional coordinate conversion $1
XCC0	RTAP1	In synchronized tapping selection (M command) $1
XCC1		In small diameter deep hole cycle $1
XCC2		High-speed retract function valid state $1 ▲
XCC3		In high-speed retract function operation $1 ▲
XCC8		In barrier valid (left) $1
XCC9		In barrier valid (right) $1
XCCA	TLMSFIN1	Tool length measurement completion $1 ▲
XCCB	TLMSERR1	Tool length measurement error $1 ▲
XCCE	TLMSSELO1	Tool length measurement sub-side selected $1 ▲
XCCF		Tool retract position reached $1 ▲
XCD0	TRME1	With tool retract amount command $1 ▲
XCD1	TRRP1	In tool repositioning $1 ▲
XCD8	DROPNS1	Door open enable $1
XCE8		Door open enable (2 channels per 1 part system) $1
XCE9		Door open enable (3 channels per 1 part system) spare $1
XCED		Optimum machining diagnosis in progress $1 ▲
XCEE		Cutting torque estimation in progress $1 ▲
XCEF		Cutting torque estimation completed $1 ▲
XD18	MJST1	Tool axis coordinate system in manual feed for 5-axis machining (JOG, INC) $1
XD19	MJSB1	Table coordinate system in manual feed for 5-axis machining (JOG, INC) $1
XD1A	MJSF1	Feature coordinate system in manual feed for 5-axis machining (JOG, INC) $1
XD1B	MH1ST1	Tool axis coordinate system in manual feed for 5-axis machining (1st handle) $1
XD1C	MH1SB1	Table coordinate system in manual feed for 5-axis machining (1st handle) $1
XD1D	MH1SF1	Feature coordinate system in manual feed for 5-axis machining (1st handle) $1
XD1E	MH2ST1	Tool axis coordinate system in manual feed for 5-axis machining (2nd handle) $1
XD1F	MH2SB1	Table coordinate system in manual feed for 5-axis machining (2nd handle) $1
XD20	MH2SF1	Feature coordinate system in manual feed for 5-axis machining (2nd handle) $1
XD21	MH3ST1	Tool axis coordinate system in manual feed for 5-axis machining (3rd handle) $1
XD22	MH3SB1	Table coordinate system in manual feed for 5-axis machining (3rd handle) $1
XD23	MH3SF1	Feature coordinate system in manual feed for 5-axis machining (3rd handle) $1
XD27	TCPRS1	In tool center point rotation $1
XD40	JO2	In jog mode $2
XD41	HO2	In handle mode $2
XD42	SO2	In incremental mode $2
XD43	PTPO2	In manual arbitrary feed mode $2
XD44	ZRNO2	In reference position return mode $2
XD45	ASTO2	In automatic initial set mode $2
XD46		In jog-handle simultaneous mode $2
XD48	MEMO2	In memory mode $2
XD49	TO2	In tape mode $2
XD4A		In online operation mode $2
XD4B	DO2	In MDI mode $2
XD50	MA2	Controller ready completion $2
XD51	SA2	Servo ready completion $2
XD52	OP2	In automatic operation "run" $2
XD53	STL2	In automatic operation "start" $2
XD54	SPL2	In automatic operation "pause" $2
XD55	RST2	In "reset" $2
XD56	CXN2	In manual arbitrary feed $2
XD57	RWD2	In rewind $2
XD58	DEN2	Motion command completion $2
XD59	TIMP2	All axes in-position $2
XD5A	TSMZ2	All axes smoothing zero $2
XD5C	CXFIN2	Manual arbitrary feed completion $2

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
XD5D	ETSE2	External search finished $2
XD5F		In high-speed machining mode (G05) $2
XD60	RPN2	In rapid traverse $2
XD61	CUT2	In cutting feed $2
XD62	TAP2	In tapping $2
XD63	THRD2	In thread cutting $2
XD64	SYN2	In synchronous feed $2
XD65	CSS2	In constant surface speed $2
XD66	SKIP2	In skip $2
XD67	ZRNN2	In reference position return $2
XD68	INCH2	In inch unit selection $2
XD69	DLKN2	In display lock $2
XD6A	F1DN2	F 1-digit commanded $2
XD6B	TLFO2	In tool life management $2
XD6E	TLOV2	Tool life over $2
XD6F		Tool group life over $2
XD70	F112	F 1-digit No. code 1 $2
XD71	F122	F 1-digit No. code 2 $2
XD72	F142	F 1-digit No. code 4 $2
XD73	F182	F 1-digit No. code 8 $2
XD74		Waiting between part systems $2
XD75	PCINO	In PLC interrupt $2
XD77	ASLE2	Illegal axis selected $2
XD80	DM002	M code independent output M00 $2
XD81	DM012	M code independent output M01 $2
XD82	DM022	M code independent output M02 $2
XD83	DM302	M code independent output M30 $2
XD88		In manual speed command valid $2
XD89	MMS2	Manual numerical command $2
XD8A		In tool escape and return mode $2
XD8F		In circular feed in manual mode $2
XDA0	MF12	M function strobe 1 $2
XDA1	MF22	M function strobe 2 $2
XDA2	MF32	M function strobe 3 $2
XDA3	MF42	M function strobe 4 $2
XDA4	SF12	S function strobe 1 $2
XDA5	SF22	S function strobe 2 $2
XDA6	SF32	S function strobe 3 $2
XDA7	SF42	S function strobe 4 $2
XDA8	TF12	T function strobe 1 $2
XDA9	TF22	T function strobe 2 $2
XDAA	TF32	T function strobe 3 $2
XDAB	TF42	T function strobe 4 $2
XDAC	BF12	2nd M function strobe 1 $2
XDAD	BF22	2nd M function strobe 2 $2
XDAE	BF32	2nd M function strobe 3 $2
XDAF	BF42	2nd M function strobe 4 $2
XDBF	CHPRCC2	Chopping compensation update prevented $2
XDC0	CHOP2	In chopping start $2
XDC1	CHP12	Basic position -> upper dead point path flag $2
XDC2	CHP22	Upper dead point -> bottom dead point path flag $2
XDC3	CHP32	Bottom dead point -> upper dead point path flag $2
XDC4	CHP42	Upper dead point -> basic position path flag $2
XDC5	CHPMD2	In chopping mode $2
XDC6		Stroke compensation completion $2
XDC7		Tool escape and return transit point recognition completed $2
XDCA	SSE2	Search & start (error) $2
XDCB	SSG2	Search & start (search) $2
XDD3	TCP2	Tool change position return completion $2
XDD4	TCRQ2	New tool change $2
XDD5		All spindles simultaneous control (G47.1) $2
XDD6		Life prediction $2
XDD8	AL12	NC alarm 1 $2
XDD9	AL22	NC alarm 2 (Servo alarm) $2
XDDA	AL32	NC alarm 3 (Program error) $2
XDDB	AL42	NC alarm 4 (Operation error) $2
XDDC	WR12	NC warning (Servo warning) $2
XDE0		Load monitor in execution $2 ▲
XDE1		Load monitor teaching mode valid $2 ▲
XDE2		Load monitor monitor mode valid $2 ▲
XDE3		Adaptive control in execution $2 ▲
XDE5	TRVE2	Tap retract possible $2
XDE6	PCNT2	No. of work machining over $2
XDE7	ABSW2	Absolute position warning $2

Device	Abbrev.	Signal name
XDE9		In axis name switch $2
XDEA		Optimum acceleration/deceleration parameter switch completion [axis] $2
XDF0		In Spindle-NC axis polygon mode $2
XDF1	AL52	NC alarm 5 $2
XDF2		In Spindle-Spindle polygon mode $2
XDF3		Spindle-spindle polygon synchronization completion $2
XDF9		In 3-dimensional coordinate conversion $2
XE00	RTAP2	In synchronized tapping selection (M command) $2
XE01		In small diameter deep hole cycle $2
XE02		High-speed retract function valid state $2 ▲
XE03		In high-speed retract function operation $2 ▲
XE08		In barrier valid (left) $2
XE09		In barrier valid (right) $2
XE0A	TLMSFIN2	Tool length measurement completion $2 ▲
XE0B	TLMSERR2	Tool length measurement error $2 ▲
XE0E	TLMSSELO2	Tool length measurement sub-side selected $2 ▲
XE0F		Tool retract position reached $2 ▲
XE10	TRME2	With tool retract amount command $2 ▲
XE11	TRRP2	In tool repositioning $2 ▲
XE18	DROPNS2	Door open enable $2
XE28		Door open enable (2 channels per 1 part system) $2
XE29		Door open enable (3 channels per 1 part system) spare $2
XE2D		Optimum machining diagnosis in progress $2 ▲
XE2E		Cutting torque estimation in progress $2 ▲
XE2F		Cutting torque estimation completed $2 ▲
XE58	MJST2	Tool axis coordinate system in manual feed for 5-axis machining (JOG, INC) $2
XE59	MJSB2	Table coordinate system in manual feed for 5-axis machining (JOG, INC) $2
XE5A	MJSF2	Feature coordinate system in manual feed for 5-axis machining (JOG, INC) $2
XE5B	MH1ST2	Tool axis coordinate system in manual feed for 5-axis machining (1st handle) $2
XE5C	MH1SB2	Table coordinate system in manual feed for 5-axis machining (1st handle) $2
XE5D	MH1SF2	Feature coordinate system in manual feed for 5-axis machining (1st handle) $2
XE5E	MH2ST2	Tool axis coordinate system in manual feed for 5-axis machining (2nd handle) $2
XE5F	MH2SB2	Table coordinate system in manual feed for 5-axis machining (2nd handle) $2
XE60	MH2SF2	Feature coordinate system in manual feed for 5-axis machining (2nd handle) $2
XE61	MH3ST2	Tool axis coordinate system in manual feed for 5-axis machining (3rd handle) $2
XE62	MH3SB2	Table coordinate system in manual feed for 5-axis machining (3rd handle) $2
XE63	MH3SF2	Feature coordinate system in manual feed for 5-axis machining (3rd handle) $2
XE67	TCPRS2	In tool center point rotation $2
XE80	JO3	In jog mode $3
XE81	HO3	In handle mode $3
XE82	SO3	In incremental mode $3
XE83	PTPO3	In manual arbitrary feed mode $3
XE84	ZRNO3	In reference position return mode $3
XE85	ASTO3	In automatic initial set mode $3
XE86		In jog-handle simultaneous mode $3
XE88	MEMO3	In memory mode $3
XE89	TO3	In tape mode $3
XE8A		In online operation mode $3
XE8B	DO3	In MDI mode $3
XE90	MA3	Controller ready completion $3
XE91	SA3	Servo ready completion $3
XE92	OP3	In automatic operation "run" $3
XE93	STL3	In automatic operation "start" $3
XE94	SPL3	In automatic operation "pause" $3
XE95	RST3	In "reset" $3
XE96	CXN3	In manual arbitrary feed $3
XE97	RWD3	In rewind $3
XE98	DEN3	Motion command completion $3
XE99	TIMP3	All axes in-position $3
XE9A	TSMZ3	All axes smoothing zero $3
XE9C	CXFIN3	Manual arbitrary feed completion $3
XE9D	ETSE3	External search finished $3
XE9F		In high-speed machining mode (G05) $3

III PLC Devices
Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
XEA0	RPN3	In rapid traverse $3
XEA1	CUT3	In cutting feed $3
XEA2	TAP3	In tapping $3
XEA3	THRD3	In thread cutting $3
XEA4	SYN3	In synchronous feed $3
XEA5	CSS3	In constant surface speed $3
XEA6	SKIP3	In skip $3
XEA7	ZRNN3	In reference position return $3
XEA8	INCH3	In inch unit selection $3
XEA9	DLKN3	In display lock $3
XEAA	F1DN3	F 1-digit commanded $3
XEAB	TLFO3	In tool life management $3
XEAE	TLOV3	Tool life over $3
XEAF		Tool group life over $3
XEB0	F113	F 1-digit No. code 1 $3
XEB1	F123	F 1-digit No. code 2 $3
XEB2	F143	F 1-digit No. code 4 $3
XEB3	F183	F 1-digit No. code 8 $3
XEB4		Waiting between part systems $3
XEB5	PCINO	In PLC interrupt $3
XEB7	ASLE3	Illegal axis selected $3
XEC0	DM003	M code independent output M00 $3
XEC1	DM013	M code independent output M01 $3
XEC2	DM023	M code independent output M02 $3
XEC3	DM303	M code independent output M30 $3
XEC8		In manual speed command valid $3
XEC9	MMS3	Manual numerical command $3
XECA		In tool escape and return mode $3
XECF		In circular feed in manual mode $3
XEE0	MF13	M function strobe 1 $3
XEE1	MF23	M function strobe 2 $3
XEE2	MF33	M function strobe 3 $3
XEE3	MF43	M function strobe 4 $3
XEE4	SF13	S function strobe 1 $3
XEE5	SF23	S function strobe 2 $3
XEE6	SF33	S function strobe 3 $3
XEE7	SF43	S function strobe 4 $3
XEE8	TF13	T function strobe 1 $3
XEE9	TF23	T function strobe 2 $3
XEEA	TF33	T function strobe 3 $3
XEEB	TF43	T function strobe 4 $3
XEEC	BF13	2nd M function strobe 1 $3
XEED	BF23	2nd M function strobe 2 $3
XEEE	BF33	2nd M function strobe 3 $3
XEEF	BF43	2nd M function strobe 4 $3
XEFF	CHPRCC3	Chopping compensation update prevented $3
XF00	CHOP3	In chopping start $3
XF01	CHP13	Basic position -> upper dead point path flag $3
XF02	CHP23	Upper dead point -> bottom dead point path flag $3
XF03	CHP33	Bottom dead point -> upper dead point path flag $3
XF04	CHP43	Upper dead point -> basic position path flag $3
XF05	CHPMD3	In chopping mode $3
XF06		Stroke compensation completion $3
XF07		Tool escape and return transit point recognition completed $3
XF0A	SSE3	Search & start (error) $3
XF0B	SSG3	Search & start (search) $3
XF13	TCP3	Tool change position return completion $3
XF14	TCRQ3	New tool change $3
XF15		All spindles simultaneous control (G47.1) $3
XF16		Life prediction $3
XF18	AL13	NC alarm 1 $3
XF19	AL23	NC alarm 2 (Servo alarm) $3
XF1A	AL33	NC alarm 3 (Program error) $3
XF1B	AL43	NC alarm 4 (Operation error) $3
XF1C	WR13	NC warning (Servo warning) $3
XF20		Load monitor in execution $3 ▲
XF21		Load monitor teaching mode valid $3 ▲
XF22		Load monitor monitor mode valid $3 ▲
XF23		Adaptive control in execution $3 ▲
XF25	TRVE3	Tap retract possible $3
XF26	PCNT3	No. of work machining over $3
XF27	ABSW3	Absolute position warning $3
XF29		In axis name switch $3
XF2A		Optimum acceleration/deceleration parameter switch completion [axis] $3

Device	Abbrev.	Signal name
XF30		In Spindle-NC axis polygon mode $3
XF31	AL53	NC alarm 5 $3
XF32		In Spindle-Spindle polygon mode $3
XF33		Spindle-spindle polygon synchronization completion $3
XF39		In 3-dimensional coordinate conversion $3
XF40	RTAP3	In synchronized tapping selection (M command) $3
XF41		In small diameter deep hole cycle $3
XF42		High-speed retract function valid state $3 ▲
XF43		In high-speed retract function operation $3 ▲
XF48		In barrier valid (left) $3
XF49		In barrier valid (right) $3
XF4A	TLMSFIN3	Tool length measurement completion $3 ▲
XF4B	TLMSERR3	Tool length measurement error $3 ▲
XF4E	TLMSSELO3	Tool length measurement sub-side selected $3 ▲
XF4F		Tool retract position reached $3 ▲
XF50	TRME3	With tool retract amount command $3 ▲
XF51	TRRP3	In tool repositioning $3 ▲
XF58	DROPNS3	Door open enable $3
XF68		Door open enable (2 channels per 1 part system) $3
XF69		Door open enable (3 channels per 1 part system) spare $3
XF6D		Optimum machining diagnosis in progress $3 ▲
XF6E		Cutting torque estimation in progress $3 ▲
XF6F		Cutting torque estimation completed $3 ▲
XF98	MJST3	Tool axis coordinate system in manual feed for 5-axis machining (JOG, INC) $3
XF99	MJSB3	Table coordinate system in manual feed for 5-axis machining (JOG, INC) $3
XF9A	MJSF3	Feature coordinate system in manual feed for 5-axis machining (JOG, INC) $3
XF9B	MH1ST3	Tool axis coordinate system in manual feed for 5-axis machining (1st handle) $3
XF9C	MH1SB3	Table coordinate system in manual feed for 5-axis machining (1st handle) $3
XF9D	MH1SF3	Feature coordinate system in manual feed for 5-axis machining (1st handle) $3
XF9E	MH2ST3	Tool axis coordinate system in manual feed for 5-axis machining (2nd handle) $3
XF9F	MH2SB3	Table coordinate system in manual feed for 5-axis machining (2nd handle) $3
XFA0	MH2SF3	Feature coordinate system in manual feed for 5-axis machining (2nd handle) $3
XFA1	MH3ST3	Tool axis coordinate system in manual feed for 5-axis machining (3rd handle) $3
XFA2	MH3SB3	Table coordinate system in manual feed for 5-axis machining (3rd handle) $3
XFA3	MH3SF3	Feature coordinate system in manual feed for 5-axis machining (3rd handle) $3
XFA7	TCPRS3	In tool center point rotation $3
XFC0	JO4	In jog mode $4
XFC1	HO4	In handle mode $4
XFC2	SO4	In incremental mode $4
XFC3	PTPO4	In manual arbitrary feed mode $4
XFC4	ZRNO4	In reference position return mode $4
XFC5	ASTO4	In automatic initial set mode $4
XFC6		In jog-handle simultaneous mode $4
XFC8	MEMO4	In memory mode $4
XFC9	TO4	In tape mode $4
XFCA		In online operation mode $4
XFCB	DO4	In MDI mode $4
XFD0	MA4	Controller ready completion $4
XFD1	SA4	Servo ready completion $4
XFD2	OP4	In automatic operation "run" $4
XFD3	STL4	In automatic operation "start" $4
XFD4	SPL4	In automatic operation "pause" $4
XFD5	RST4	In "reset" $4
XFD6	CXN4	In manual arbitrary feed $4
XFD7	RWD4	In rewind $4
XFD8	DEN4	Motion command completion $4
XFD9	TIMP4	All axes in-position $4
XFDA	TSMZ4	All axes smoothing zero $4
XFDC	CXFIN4	Manual arbitrary feed completion $4
XFDD	ETSE4	External search finished $4
XFDF		In high-speed machining mode (G05) $4
XFE0	RPN4	In rapid traverse $4
XFE1	CUT4	In cutting feed $4
XFE2	TAP4	In tapping $4

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
XFE3	THRD4	In thread cutting $4
XFE4	SYN4	In synchronous feed $4
XFE5	CSS4	In constant surface speed $4
XFE6	SKIP4	In skip $4
XFE7	ZRNN4	In reference position return $4
XFE8	INCH4	In inch unit selection $4
XFE9	DLKN4	In display lock $4
XFEA	F1DN4	F 1-digit commanded $4
XFEB	TLFO4	In tool life management $4
XFEE	TLOV4	Tool life over $4
XFEF		Tool group life over $4
XFF0	F114	F 1-digit No. code 1 $4
XFF1	F124	F 1-digit No. code 2 $4
XFF2	F144	F 1-digit No. code 4 $4
XFF3	F184	F 1-digit No. code 8 $4
XFF4		Waiting between part systems $4
XFF5	PCINO	In PLC interrupt $4
XFF7	ASLE4	Illegal axis selected $4
X1000	DM004	M code independent output M00 $4
X1001	DM014	M code independent output M01 $4
X1002	DM024	M code independent output M02 $4
X1003	DM304	M code independent output M30 $4
X1008		In manual speed command valid $4
X1009	MMS4	Manual numerical command $4
X100A		In tool escape and return mode $4
X100F		In circular feed in manual mode $4
X1020	MF14	M function strobe 1 $4
X1021	MF24	M function strobe 2 $4
X1022	MF34	M function strobe 3 $4
X1023	MF44	M function strobe 4 $4
X1024	SF14	S function strobe 1 $4
X1025	SF24	S function strobe 2 $4
X1026	SF34	S function strobe 3 $4
X1027	SF44	S function strobe 4 $4
X1028	TF14	T function strobe 1 $4
X1029	TF24	T function strobe 2 $4
X102A	TF34	T function strobe 3 $4
X102B	TF44	T function strobe 4 $4
X102C	BF14	2nd M function strobe 1 $4
X102D	BF24	2nd M function strobe 2 $4
X102E	BF34	2nd M function strobe 3 $4
X102F	BF44	2nd M function strobe 4 $4
X103F	CHPRCC4	Chopping compensation update prevented $4
X1040	CHOP4	In chopping start $4
X1041	CHP14	Basic position -> upper dead point path flag $4
X1042	CHP24	Upper dead point -> bottom dead point path flag $4
X1043	CHP34	Bottom dead point -> upper dead point path flag $4
X1044	CHP44	Upper dead point -> basic position path flag $4
X1045	CHPMD4	In chopping mode $4
X1046		Stroke compensation completion $4
X1047		Tool escape and return transit point recognition completed $4
X104A	SSE4	Search & start (error) $4
X104B	SSG4	Search & start (search) $4
X1053	TCP4	Tool change position return completion $4
X1054	TCRQ4	New tool change $4
X1055		All spindles simultaneous control (G47.1) $4
X1056		Life prediction $4
X1058	AL14	NC alarm 1 $4
X1059	AL24	NC alarm 2 (Servo alarm) $4
X105A	AL34	NC alarm 3 (Program error) $4
X105B	AL44	NC alarm 4 (Operation error) $4
X105C	WR14	NC warning (Servo warning) $4
X1060		Load monitor in execution $4 ▲
X1061		Load monitor teaching mode valid $4 ▲
X1062		Load monitor monitor mode valid $4 ▲
X1063		Adaptive control in execution $4 ▲
X1065	TRVE4	Tap retract possible $4
X1066	PCNT4	No. of work machining over $4
X1067	ABSW4	Absolute position warning $4
X1069		In axis name switch $4
X106A		Optimum acceleration/deceleration parameter switch completion [axis] $4
X1070		In Spindle-NC axis polygon mode $4
X1071	AL54	NC alarm 5 $4
X1072		In Spindle-Spindle polygon mode $4

Device	Abbrev.	Signal name
X1073		Spindle-spindle polygon synchronization completion $4
X1079		In 3-dimensional coordinate conversion $4
X1080	RTAP4	In synchronized tapping selection (M command) $4
X1081		In small diameter deep hole cycle $4
X1082		High-speed retract function valid state $4 ▲
X1083		In high-speed retract function operation $4 ▲
X1088		In barrier valid (left) $4
X1089		In barrier valid (right) $4
X108A	TLMSFIN4	Tool length measurement completion $4 ▲
X108B	TLMSERR4	Tool length measurement error $4 ▲
X108E	TLMSSELO4	Tool length measurement sub-side selected $4 ▲
X108F		Tool retract position reached $4 ▲
X1090	TRME4	With tool retract amount command $4 ▲
X1091	TRRP4	In tool repositioning $4 ▲
X1098	DROPNS4	Door open enable $4
X10A8		Door open enable (2 channels per 1 part system) $4
X10A9		Door open enable (3 channels per 1 part system) spare $4
X10AD		Optimum machining diagnosis in progress $4 ▲
X10AE		Cutting torque estimation in progress $4 ▲
X10AF		Cutting torque estimation completed $4 ▲
X10D8	MJST4	Tool axis coordinate system in manual feed for 5-axis machining (JOG, INC) $4
X10D9	MJSB4	Table coordinate system in manual feed for 5-axis machining (JOG, INC) $4
X10DA	MJSF4	Feature coordinate system in manual feed for 5-axis machining (JOG, INC) $4
X10DB	MH1ST4	Tool axis coordinate system in manual feed for 5-axis machining (1st handle) $4
X10DC	MH1SB4	Table coordinate system in manual feed for 5-axis machining (1st handle) $4
X10DD	MH1SF4	Feature coordinate system in manual feed for 5-axis machining (1st handle) $4
X10DE	MH2ST4	Tool axis coordinate system in manual feed for 5-axis machining (2nd handle) $4
X10DF	MH2SB4	Table coordinate system in manual feed for 5-axis machining (2nd handle) $4
X10E0	MH2SF4	Feature coordinate system in manual feed for 5-axis machining (2nd handle) $4
X10E1	MH3ST4	Tool axis coordinate system in manual feed for 5-axis machining (3rd handle) $4
X10E2	MH3SB4	Table coordinate system in manual feed for 5-axis machining (3rd handle) $4
X10E3	MH3SF4	Feature coordinate system in manual feed for 5-axis machining (3rd handle) $4
X10E7	TCPRS4	In tool center point rotation $4
X1878		Edit/Search window displayed
X1882	SIGE1	S command gear No. illegal 1st-Spindle
X1883	SOVE1	S command max./min. command value over 1st-Spindle
X1884	SNGE1	S command no gear selected 1st-Spindle
X1885	GR11	Spindle gear shift command 1 1st-Spindle
X1886	GR21	Spindle gear shift command 2 1st-Spindle
X1887		(Always "0") 1st-Spindle
X1888	ORA2O1	Spindle 2nd in-position 1st-Spindle
X1889	CDO1	Current detection 1st-Spindle
X188A	VRO1	Speed detection 1st-Spindle
X188B	FLO1	In spindle alarm 1st-Spindle
X188C	ZSO1	Zero speed 1st-Spindle
X188D	USO1	Spindle up-to-speed 1st-Spindle
X188E	ORAO1	Spindle in-position 1st-Spindle
X188F	LCSA1	In L coil selection 1st-Spindle
X1890	SMA1	Spindle ready-ON 1st-Spindle
X1891	SSA1	Spindle servo-ON 1st-Spindle
X1892	SENG1	In spindle emergency stop 1st-Spindle
X1893	SSRN1	In spindle forward run 1st-Spindle
X1894	SSRI1	In spindle reverse run 1st-Spindle
X1895	SZPH1	Z-phase passed 1st-Spindle
X1896	SIMP1	Position loop in-position 1st-Spindle
X1897	STLQ1	In spindle Spindle torque limit 1st-Spindle
X1898	M1SEL1	In motor 1 selection 1st-Spindle
X1899	M2SEL1	In motor 2 selection 1st-Spindle
X189D	SD21	Speed detection 2 1st-Spindle
X189E	MCSA1	In M coil selection 1st-Spindle
X189F		Index positioning completion 1st-Spindle
X18A0	ENB1	Spindle enable 1st-spindle
X18A8	SPSYN11	In spindle synchronization 1st-Spindle
X18A9	FSPRV1	Spindle rotation speed synchronization completion 1st-Spindle

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
X18AA	FSPPH1	Spindle phase synchronization completion 1st-Spindle
X18AB	SPSYN21	In spindle synchronization 2 1st-Spindle
X18AE	SPSYN3	In tool spindle synchronization II 1st-spindle
X18B3	PHOVR	Hob axis delay excess 1st-spindle
X18B5	EXOFN	In spindle holding force up 1st-spindle
X18E0	SUPP2	Spindle speed upper limit over 2nd-Spindle
X18E1	SLOW2	Spindle speed lower limit over 2nd-Spindle
X18E2	SIGE2	S command gear No. illegal 2nd-Spindle
X18E3	SOVE2	S command max./min. command value over 2nd-Spindle
X18E4	SNGE2	S command no gear selected 2nd-Spindle
X18E5	GR12	Spindle gear shift command 1 2nd-Spindle
X18E6	GR22	Spindle gear shift command 2 2nd-Spindle
X18E7		(Always "0") 2nd-Spindle
X18E8	ORA2O2	Spindle 2nd in-position 2nd-Spindle
X18E9	CDO2	Current detection 2nd-Spindle
X18EA	VRO2	Speed detection 2nd-Spindle
X18EB	FLO2	In spindle alarm 2nd-Spindle
X18EC	ZSO2	Zero speed 2nd-Spindle
X18ED	USO2	Spindle up-to-speed 2nd-Spindle
X18EE	ORAO2	Spindle in-position 2nd-Spindle
X18EF	LCSA2	In L coil selection 2nd-Spindle
X18F0	SMA2	Spindle ready-ON 2nd-Spindle
X18F1	SSA2	Spindle servo-ON 2nd-Spindle
X18F2	SENG2	In spindle emergency stop 2nd-Spindle
X18F3	SSRN2	In spindle forward run 2nd-Spindle
X18F4	SSRI2	In spindle reverse run 2nd-Spindle
X18F5	SZPH2	Z-phase passed 2nd-Spindle
X18F6	SIMP2	Position loop in-position 2nd-Spindle
X18F7	STLQ2	In spindle torque limit 2nd-Spindle
X18F8	M1SEL2	In motor 1 selection 2nd-Spindle
X18F9	M2SEL2	In motor 2 selection 2nd-Spindle
X18FD	SD22	Speed detection 2 2nd-Spindle
X18FE	MCSA1	In M coil selection 2nd-Spindle
X18FF		Index positioning completion 2nd-Spindle
X1900	ENB2	Spindle enable 2nd-spindle
X1908	SPSYN12	In spindle synchronization 2nd-Spindle
X1909	FSPRV2	Spindle rotation speed synchronization completion 2nd-Spindle
X190A	FSPPH2	Spindle phase synchronization completion 2nd-Spindle
X190B	SPSYN22	In spindle synchronization 2 2nd-Spindle
X190E	SPSYN3	In tool spindle synchronization II 2nd-spindle
X1913	PHOVR	Hob axis delay excess 2nd-spindle
X1915	EXOFN	In spindle holding force up 2nd-spindle
X1940	SUPP3	Spindle speed upper limit over 3rd-Spindle
X1941	SLOW3	Spindle speed lower limit over 3rd-Spindle
X1942	SIGE3	S command gear No. illegal 3rd-Spindle
X1943	SOVE3	S command max./min. command value over 3rd-Spindle
X1944	SNGE3	S command no gear selected 3rd-Spindle
X1945	GR13	Spindle gear shift command 1 3rd-Spindle
X1946	GR23	Spindle gear shift command 2 3rd-Spindle
X1947		(Always "0") 3rd-Spindle
X1948	ORA2O3	Spindle 2nd in-position 3rd-Spindle
X1949	CDO3	Current detection 3rd-Spindle
X194A	VRO3	Speed detection 3rd-Spindle
X194B	FLO3	In spindle alarm 3rd-Spindle
X194C	ZSO3	Zero speed 3rd-Spindle
X194D	USO3	Spindle up-to-speed 3rd-Spindle
X194E	ORAO3	Spindle in-position 3rd-Spindle
X194F	LCSA3	In L coil selection 3rd-Spindle
X1950	SMA3	Spindle ready-ON 3rd-Spindle
X1951	SSA3	Spindle servo-ON 3rd-Spindle
X1952	SENG3	In spindle emergency stop 3rd-Spindle
X1953	SSRN3	In spindle forward run 3rd-Spindle
X1954	SSRI3	In spindle reverse run 3rd-Spindle
X1955	SZPH3	Z-phase passed 3rd-Spindle
X1956	SIMP3	Position loop in-position 3rd-Spindle
X1957	STLQ3	In spindle torque limit 3rd-Spindle
X1958	M1SEL3	In motor 1 selection 3rd-Spindle
X1959	M2SEL3	In motor 2 selection 3rd-Spindle
X195D	SD23	Speed detection 2 3rd-Spindle
X195E	MCSA1	In M coil selection 3rd-Spindle
X195F		Index positioning completion 3rd-Spindle
X1960	ENB3	Spindle enable 3rd-spindle
X1968	SPSYN13	In spindle synchronization 3rd-Spindle
X1969	FSPRV3	Spindle rotation speed synchronization completion 3rd-Spindle

Device	Abbrev.	Signal name
X196A	FSPPH3	Spindle phase synchronization completion 3rd-Spindle
X196B	SPSYN23	In spindle synchronization 2 3rd-Spindle
X196E	SPSYN3	In tool spindle synchronization II 3rd-spindle
X1973	PHOVR	Hob axis delay excess 3rd-spindle
X1975	EXOFN	In spindle holding force up 3rd-spindle
X19A0	SUPP4	Spindle speed upper limit over 4th-Spindle
X19A1	SLOW4	Spindle speed lower limit over 4th-Spindle
X19A2	SIGE4	S command gear No. illegal 4th-Spindle
X19A3	SOVE4	S command max./min. command value over 4th-Spindle
X19A4	SNGE4	S command no gear selected 4th-Spindle
X19A5	GR14	Spindle gear shift command 1 4th-Spindle
X19A6	GR24	Spindle gear shift command 2 4th-Spindle
X19A7		(Always "0") 4th-Spindle
X19A8	ORA2O4	Spindle 2nd in-position 4th-Spindle
X19A9	CDO4	Current detection 4th-Spindle
X19AA	VRO4	Speed detection 4th-Spindle
X19AB	FLO4	In spindle alarm 4th-Spindle
X19AC	ZSO4	Zero speed 4th-Spindle
X19AD	USO4	Spindle up-to-speed 4th-Spindle
X19AE	ORAO4	Spindle in-position 4th-Spindle
X19AF	LCSA4	In L coil selection 4th-Spindle
X19B0	SMA4	Spindle ready-ON 4th-Spindle
X19B1	SSA4	Spindle servo-ON 4th-Spindle
X19B2	SENG4	In spindle emergency stop 4th-Spindle
X19B3	SSRN4	In spindle forward run 4th-Spindle
X19B4	SSRI4	In spindle reverse run 4th-Spindle
X19B5	SZPH4	Z-phase passed 4th-Spindle
X19B6	SIMP4	Position loop in-position 4th-Spindle
X19B7	STLQ4	In spindle torque limit 4th-Spindle
X19B8	M1SEL4	In motor 1 selection 4th-Spindle
X19B9	M2SEL4	In motor 2 selection 4th-Spindle
X19BD	SD24	Speed detection 2 4th-Spindle
X19BE	MCSA1	In M coil selection 4th-Spindle
X19BF		Index positioning completion 4th-Spindle
X19C0	ENB4	Spindle enable 4th-spindle
X19C8	SPSYN14	In spindle synchronization 4th-Spindle
X19C9	FSPRV4	Spindle rotation speed synchronization completion 4th-Spindle
X19CA	FSPPH4	Spindle phase synchronization completion 4th-Spindle
X19CB	SPSYN24	In spindle synchronization 2 4th-Spindle
X19CE	SPSYN3	In tool spindle synchronization II 4th-spindle
X19D3	PHOVR	Hob axis delay excess 4th-spindle
X19D5	EXOFN	In spindle holding force up 4th-spindle
X1A00	SUPP5	Spindle speed upper limit over 5th-Spindle
X1A01	SLOW5	Spindle speed lower limit over 5th-Spindle
X1A02	SIGE5	S command gear No. illegal 5th-Spindle
X1A03	SOVE5	S command max./min. command value over 5th-Spindle
X1A04	SNGE5	S command no gear selected 5th-Spindle
X1A05	GR15	Spindle gear shift command 1 5th-Spindle
X1A06	GR25	Spindle gear shift command 2 5th-Spindle
X1A08	ORA2O5	Spindle 2nd in-position 5th-Spindle
X1A09	CDO5	Current detection 5th-Spindle
X1A0A	VRO5	Speed detection 5th-Spindle
X1A0B	FLO5	In spindle alarm 5th-Spindle
X1A0C	ZSO5	Zero speed 5th-Spindle
X1A0D	USO5	Spindle up-to-speed 5th-Spindle
X1A0E	ORAO5	Spindle in-position 5th-Spindle
X1A0F	LCSA5	In L coil selection 5th-Spindle
X1A10	SMA5	Spindle ready-ON 5th-Spindle
X1A12	SENG5	In spindle emergency stop 5th-Spindle
X1A13	SSRN5	In spindle forward run 5th-Spindle
X1A14	SSRI5	In spindle reverse run 5th-Spindle
X1A15	SZPH5	Z-phase passed 5th-Spindle
X1A16	SIMP5	Position loop in-position 5th-Spindle
X1A17	STLQ5	In spindle torque limit 5th-Spindle
X1A18	M1SEL5	In motor 1 selection 5th-Spindle
X1A19	M2SEL5	In motor 2 selection 5th-Spindle
X1A1D	SD2n	Speed detection 2 5th-Spindle
X1A1E	MCSA1	In M coil selection 5th-Spindle
X1A1F		Index positioning completion 5th-Spindle
X1A20	ENB1	Spindle enable 5th-spindle
X1A28	SPSYN11	In spindle synchronization 5th-Spindle
X1A29	FSPRV1	Spindle rotation speed synchronization completion 5th-Spindle
X1A2A	FSPPH1	Spindle phase synchronization completion 5th-Spindle
X1A2B	SPSYN21	In spindle synchronization 2 5th-Spindle

Bit Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
X1A2C	SPCMP1	Chuck close confirmation 5th-spindle
X1A2E	SPSYN3	In tool spindle synchronization II 5th-spindle
X1A33	PHOVR	Hob axis delay excess 5th-spindle
X1A35	EXOFN	In spindle holding force up 5th-spindle
X1A60	SUPP6	Spindle speed upper limit over 6th-Spindle
X1A61	SLOW6	Spindle speed lower limit over 6th-Spindle
X1A62	SIGE6	S command gear No. illegal 6th-Spindle
X1A63	SOVE6	S command max./min. command value over 6th-Spindle
X1A64	SNGE6	S command no gear selected 6th-Spindle
X1A65	GR16	Spindle gear shift command 1 6th-Spindle
X1A66	GR26	Spindle gear shift command 2 6th-Spindle
X1A68	ORA2O6	Spindle 2nd in-position 6th-Spindle
X1A69	CDO6	Current detection 6th-Spindle
X1A6A	VRO6	Speed detection 6th-Spindle
X1A6B	FLO6	In spindle alarm 6th-Spindle
X1A6C	ZSO6	Zero speed 6th-Spindle
X1A6D	USO6	Spindle up-to-speed 6th-Spindle
X1A6E	ORAO6	Spindle in-position 6th-Spindle
X1A6F	LCSA6	In L coil selection 6th-Spindle
X1A70	SMA6	Spindle ready-ON 6th-Spindle
X1A72	SENG6	In spindle emergency stop 6th-Spindle
X1A73	SSRN6	In spindle forward run 6th-Spindle
X1A74	SSRI6	In spindle reverse run 6th-Spindle
X1A75	SZPH6	Z-phase passed 6th-Spindle
X1A76	SIMP6	Position loop in-position 6th-Spindle
X1A77	STLQ6	In spindle torque limit 6th-Spindle
X1A78	M1SEL6	In motor 1 selection 6th-Spindle
X1A79	M2SEL6	In motor 2 selection 6th-Spindle
X1A7D	SD2n	Speed detection 2 6th-Spindle
X1A7E	MCSA1	In M coil selection 6th-Spindle
X1A7F		Index positioning completion 6th-Spindle
X1A80	ENB1	Spindle enable 6th-spindle
X1A88	SPSYN11	In spindle synchronization 6th-Spindle
X1A89	FSPRV1	Spindle rotation speed synchronization completion 6th-Spindle
X1A8A	FSPPH1	Spindle phase synchronization completion 6th-Spindle
X1A8B	SPSYN21	In spindle synchronization 2 6th-Spindle
X1A8C	SPCMP1	Chuck close confirmation 6th-spindle
X1A8E	SPSYN3	In tool spindle synchronization II 5th-spindle
X1A93	PHOVR	Hob axis delay excess 6th-spindle
X1A95	EXOFN	In spindle holding force up 6th-spindle
X1CD0		Handy terminal key 1
X1CD1		Handy terminal key 2
X1CD2		Handy terminal key 3
X1CD3		Handy terminal key 4
X1CD4		Handy terminal key 5
X1CD5		Handy terminal key 6
X1CD6		Handy terminal key 7
X1CD7		Handy terminal key 8
X1CD8		Handy terminal key 9
X1CD9		Handy terminal key 10
X1CDA		Handy terminal key 11
X1CDB		Handy terminal key 12
X1CDC		Handy terminal key 13
X1CDD		Handy terminal key 14
X1CDE		Handy terminal key 15
X1CDF		Handy terminal key 16
X1CE0		Handy terminal key 17
X1CE1		Handy terminal key 18
X1CE2		Handy terminal key 19
X1CE3		Handy terminal key 20
X1CE4		Handy terminal key 21
X1CE5		Handy terminal key 22
X1CE6		Handy terminal key 23
X1CE7		Handy terminal key 24
X1CE8		Handy terminal key 25
X1CE9		Handy terminal key 26
X1CEA		Handy terminal key 27
X1CEB		Handy terminal key 28
X1CEC		Handy terminal key 29
X1CED		Handy terminal key 30
X1CEE		Handy terminal key 31
X1CEF		Handy terminal key 32
X1CF0		Handy terminal key 33
X1CF1		Handy terminal key 34

Device	Abbrev.	Signal name
X1CF2		Handy terminal key 35
X1CF3		Handy terminal key 36
X1CF4		Handy terminal key 37
X1CF5		Handy terminal key 38
X1CF6		Handy terminal key 39
X1CF7		Handy terminal key 40
X1CF8		Handy terminal key 41
X1CF9		Handy terminal key 42
X1CFA		Handy terminal key 43
X1CFB		Handy terminal key 44
X1CFC		Handy terminal key 45
X1D00	PSW11	Position switch 1 $1
X1D01	PSW21	Position switch 2 $1
X1D02	PSW31	Position switch 3 $1
X1D03	PSW41	Position switch 4 $1
X1D04	PSW51	Position switch 5 $1
X1D05	PSW61	Position switch 6 $1
X1D06	PSW71	Position switch 7 $1
X1D07	PSW81	Position switch 8 $1
X1D08	PSW91	Position switch 9 $1
X1D09	PSW101	Position switch 10 $1
X1D0A	PSW111	Position switch 11 $1
X1D0B	PSW121	Position switch 12 $1
X1D0C	PSW131	Position switch 13 $1
X1D0D	PSW141	Position switch 14 $1
X1D0E	PSW151	Position switch 15 $1
X1D0F	PSW161	Position switch 16 $1
X1D10	PSW171	Position switch 17 $1
X1D11	PSW181	Position switch 18 $1
X1D12	PSW191	Position switch 19 $1
X1D13	PSW201	Position switch 20 $1
X1D14	PSW211	Position switch 21 $1
X1D15	PSW221	Position switch 22 $1
X1D16	PSW231	Position switch 23 $1
X1D17	PSW241	Position switch 24 $1
X1D20	PSW12	Position switch 1 $2
X1D21	PSW22	Position switch 2 $2
X1D22	PSW32	Position switch 3 $2
X1D23	PSW42	Position switch 4 $2
X1D24	PSW52	Position switch 5 $2
X1D25	PSW62	Position switch 6 $2
X1D26	PSW72	Position switch 7 $2
X1D27	PSW82	Position switch 8 $2
X1D28	PSW92	Position switch 9 $2
X1D29	PSW102	Position switch 10 $2
X1D2A	PSW112	Position switch 11 $2
X1D2B	PSW122	Position switch 12 $2
X1D2C	PSW132	Position switch 13 $2
X1D2D	PSW142	Position switch 14 $2
X1D2E	PSW152	Position switch 15 $2
X1D2F	PSW162	Position switch 16 $2
X1D30	PSW172	Position switch 17 $2
X1D31	PSW182	Position switch 18 $2
X1D32	PSW192	Position switch 19 $2
X1D33	PSW202	Position switch 20 $2
X1D34	PSW212	Position switch 21 $2
X1D35	PSW222	Position switch 22 $2
X1D36	PSW232	Position switch 23 $2
X1D37	PSW242	Position switch 24 $2
X1D40	PSW13	Position switch 1 $3
X1D41	PSW23	Position switch 2 $3
X1D42	PSW33	Position switch 3 $3
X1D43	PSW43	Position switch 4 $3
X1D44	PSW53	Position switch 5 $3
X1D45	PSW63	Position switch 6 $3
X1D46	PSW73	Position switch 7 $3
X1D47	PSW83	Position switch 8 $3
X1D48	PSW93	Position switch 9 $3
X1D49	PSW103	Position switch 10 $3
X1D4A	PSW113	Position switch 11 $3
X1D4B	PSW123	Position switch 12 $3
X1D4C	PSW133	Position switch 13 $3
X1D4D	PSW143	Position switch 14 $3
X1D4E	PSW153	Position switch 15 $3

Device	Abbrev.	Signal name
X1D4F	PSW163	Position switch 16 $3
X1D50	PSW173	Position switch 17 $3
X1D51	PSW183	Position switch 18 $3
X1D52	PSW193	Position switch 19 $3
X1D53	PSW203	Position switch 20 $3
X1D54	PSW213	Position switch 21 $3
X1D55	PSW223	Position switch 22 $3
X1D56	PSW233	Position switch 23 $3
X1D57	PSW243	Position switch 24 $3
X1D60	PSW14	Position switch 1 $4
X1D61	PSW24	Position switch 2 $4
X1D62	PSW34	Position switch 3 $4
X1D63	PSW44	Position switch 4 $4
X1D64	PSW54	Position switch 5 $4
X1D65	PSW64	Position switch 6 $4
X1D66	PSW74	Position switch 7 $4
X1D67	PSW84	Position switch 8 $4
X1D68	PSW94	Position switch 9 $4
X1D69	PSW104	Position switch 10 $4
X1D6A	PSW114	Position switch 11 $4
X1D6B	PSW124	Position switch 12 $4
X1D6C	PSW134	Position switch 13 $4
X1D6D	PSW144	Position switch 14 $4
X1D6E	PSW154	Position switch 15 $4
X1D6F	PSW164	Position switch 16 $4
X1D70	PSW174	Position switch 17 $4
X1D71	PSW184	Position switch 18 $4
X1D72	PSW194	Position switch 19 $4
X1D73	PSW204	Position switch 20 $4
X1D74	PSW214	Position switch 21 $4
X1D75	PSW224	Position switch 22 $4
X1D76	PSW234	Position switch 23 $4
X1D77	PSW244	Position switch 24 $4

2. Data Type Input Signals (CNC->PLC)

(Note) Signals marked with "▲" are prepared for a specific machine tool builder.

Device	Abbrev.	Signal name
R0	AI1	Analog input 1
R1	AI2	Analog input 2
R2	AI3	Analog input 3
R3	AI4	Analog input 4
R4	AI5	Analog input 5
R5	AI6	Analog input 6
R6	AI7	Analog input 7
R7	AI8	Analog input 8
R8		KEY IN 1
R9		(Full key)
R11		Clock data Month/Year
R12		Clock data Hour/Date
R13		Clock data Second/Minute
R16		CNC software version code
R17		CNC software version code
R18		CNC software version code
R19		CNC software version code
R25		PLC high-speed process time
R26		Turret interference check status
R27		Interference object alarm information
R30		Remote program input error information ▲
R31		MELDAS-NET output
R37		PLC window parameter status
R56		Battery drop cause
R57		Temperature warning cause
R58		5V/24V error cause
R59		Control unit temperature 2
R60		Control unit temperature
R62		Tool ID communication error information ▲
R68		PLC main scan time
R69		Emergency stop cause
R70		DIO card information
R72		Ball screw thermal displacement compensation Compensation amount 1st axis
R73		Ball screw thermal displacement compensation Compensation amount 2nd axis
R74		Ball screw thermal displacement compensation Compensation amount 3rd axis
R75		Ball screw thermal displacement compensation Compensation amount 4th axis
R83		Modbus/RTU received packet monitor ▲
R84		Modbus/RTU communication error monitor ▲
R85		Modal task data update cycle
R90		Modbus/TCP connection request monitor ▲
R91		Modbus/TCP number of connections monitor ▲
R92		Modbus/TCP received packet monitor ▲
R93		Modbus/TCP communication error monitor ▲
R94		Modbus/TCP protocol error packet monitor ▲
R96	SMODEN	Speed monitor door open possible
R97	SODIO	Safety observation I/O signal status
R98	SOPFN	Multi-step speed monitor selected speed output ▲
R168		PLC axis alarm/warning No. 1st axis
R169		PLC axis alarm/warning No. 2nd axis
R170		PLC axis alarm/warning No. 3rd axis
R171		PLC axis alarm/warning No. 4th axis
R172		PLC axis alarm/warning No. 5th axis
R173		PLC axis alarm/warning No. 6th axis
R210		Displayed screen No.
R500		External search status $1
R504		M code data 1 $1
R505		M code data 1 $1
R506		M code data 2 $1
R507		M code data 2 $1
R508		M code data 3 $1
R509		M code data 3 $1
R510		M code data 4 $1
R511		M code data 4 $1
R512		S code data 1 $1
R513		S code data 1 $1
R514		S code data 2 $1
R515		S code data 2 $1
R516		S code data 3 $1

Data Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
R517		S code data 3 $1
R518		S code data 4 $1
R519		S code data 4 $1
R536		T code data 1 $1
R537		T code data 1 $1
R538		T code data 2 $1
R539		T code data 2 $1
R540		T code data 3 $1
R541		T code data 3 $1
R542		T code data 4 $1
R543		T code data 4 $1
R544		2nd M function data 1 $1
R545		2nd M function data 1 $1
R546		2nd M function data 2 $1
R547		2nd M function data 2 $1
R548		2nd M function data 3 $1
R549		2nd M function data 3 $1
R550		2nd M function data 4 $1
R551		2nd M function data 4 $1
R554		Chopping error No. $1
R555		Manual measurement status $1
R564		Load monitor warning axis $1 ▲
R565		Load monitor alarm axis $1 ▲
R566		Load monitor data alarm information $1 ▲
R567		Group in tool life management $1
R571		Adaptive control override $1 ▲
R572		CNC completion standby status $1
R573		(Blank) $1
R574		In initialization $1
R575		Initialization incompletion $1
R576		Reference position adjustment value parameter setting completed $1
R578		Measurement tool tip point No. $1 ▲
R580		Near reference position (per reference position) $1
R581		Near reference position (per reference position) $1
R582		Presetter contact $1
R583		Presetter interlock $1
R584		Area signal X axis on/off $1 ▲
R585		Area signal Z axis on/off $1 ▲
R586		Area signal X axis (-) on/off $1 ▲
R587		Area signal Z axis (-) on/off $1 ▲
R588		Takt time (ms) $1 (L)
R589		Takt time (ms) $1 (H)
R590		Takt time (min) $1 (L)
R591		Takt time (min) $1 (H)
R596		Load monitor status (1) $1 ▲
R597		Load monitor status (2) $1 ▲
R598		Load monitor status (3) $1 ▲
R599		Load monitor status (4) $1 ▲
R600		Load monitor status (5) $1 ▲
R601		Load monitor status (6) $1 ▲
R602		Load monitor status (7) $1 ▲
R603		Load monitor status (8) $1 ▲
R604		Load monitor status (9) $1 ▲
R605		Load monitor status (10) $1 ▲
R606		No. of work machining (current value) $1
R607		No. of work machining (current value) $1
R628		Tool life usage data $1
R629		Tool life usage data $1
R630		Number of registered tool life control tools $1
R636		Circular feed in manual mode current position X $1
R637		Circular feed in manual mode current position X $1
R638		Circular feed in manual mode current position X $1
R639		Circular feed in manual mode current position X $1
R640		Circular feed in manual mode current position Y $1
R641		Circular feed in manual mode current position Y $1
R642		Circular feed in manual mode current position Y $1
R643		Circular feed in manual mode current position Y $1
R646		Machining mode state $1 ▲
R652	TLMSLNO11	Censor ON Tool length compensation No. (BCD output) $1 ▲
R653	TLMSWNO11	Censor ON Tool wear compensation No. (BCD output) $1 ▲
R654	TLMSLNO21	Compensation data update Tool length compensation No. (BCD output) $1 ▲
R655	TLMSWNO21	Compensation data update Tool wear compensation No. (BCD output) $1 ▲

Data Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
R684		Specific user NC status 1 $1 ▲
R688		Specific user Manual skip Axis in skip motion $1 ▲
R689		Specific user Manual skip Skip motion direction $1 ▲
R690		Specific user Error/Warning detail $1 ▲
R700		External search status $2
R704		M code data 1 $2
R705		M code data 1 $2
R706		M code data 2 $2
R707		M code data 2 $2
R708		M code data 3 $2
R709		M code data 3 $2
R710		M code data 4 $2
R711		M code data 4 $2
R712		S code data 1 $2
R713		S code data 1 $2
R714		S code data 2 $2
R715		S code data 2 $2
R716		S code data 3 $2
R717		S code data 3 $2
R718		S code data 4 $2
R719		S code data 4 $2
R736		T code data 1 $2
R737		T code data 1 $2
R738		T code data 2 $2
R739		T code data 2 $2
R740		T code data 3 $2
R741		T code data 3 $2
R742		T code data 4 $2
R743		T code data 4 $2
R744		2nd M function data 1 $2
R745		2nd M function data 1 $2
R746		2nd M function data 2 $2
R747		2nd M function data 2 $2
R748		2nd M function data 3 $2
R749		2nd M function data 3 $2
R750		2nd M function data 4 $2
R751		2nd M function data 4 $2
R754		Chopping error No. $2
R755		Manual measurement status $2
R764		Load monitor warning axis $2 ▲
R765		Load monitor alarm axis $2 ▲
R766		Load monitor data alarm information $2 ▲
R767		Group in tool life management $2
R771		Adaptive control override $2 ▲
R772		CNC completion standby status $2
R773		(Blank) $2
R774		In initialization $2
R775		Initialization incompletion $2
R776		Reference position adjustment value parameter setting completed $2
R778		Measurement tool tip point No. $2 ▲
R780		Near reference position (per reference position) $2
R781		Near reference position (per reference position) $2
R782		Presetter contact $2
R783		Presetter interlock $2
R784		Area signal X axis on/off $2 ▲
R785		Area signal Z axis on/off $2 ▲
R786		Area signal X axis (-) on/off $2 ▲
R787		Area signal Z axis (-) on/off $2 ▲
R788		Takt time (ms) $2 (L)
R789		Takt time (ms) $2 (H)
R790		Takt time (min) $2 (L)
R791		Takt time (min) $2 (H)
R796		Load monitor status (1) $2 ▲
R797		Load monitor status (2) $2 ▲
R798		Load monitor status (3) $2 ▲
R799		Load monitor status (4) $2 ▲
R800		Load monitor status (5) $2 ▲
R801		Load monitor status (6) $2 ▲
R802		Load monitor status (7) $2 ▲
R803		Load monitor status (8) $2 ▲
R804		Load monitor status (9) $2 ▲
R805		Load monitor status (10) $2 ▲
R806		No. of work machining (current value) $2
R807		No. of work machining (current value) $2

Data Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
R828		Tool life usage data $2
R829		Tool life usage data $2
R830		Number of registered tool life control tools $2
R836		Circular feed in manual mode current position X $2
R837		Circular feed in manual mode current position X $2
R838		Circular feed in manual mode current position X $2
R839		Circular feed in manual mode current position X $2
R840		Circular feed in manual mode current position Y $2
R841		Circular feed in manual mode current position Y $2
R842		Circular feed in manual mode current position Y $2
R843		Circular feed in manual mode current position Y $2
R846		Machining mode state $2 ▲
R852	TLMSLNO12	Censor ON Tool length compensation No. (BCD output) $2 ▲
R853	TLMSWNO12	Censor ON Tool wear compensation No. (BCD output) $2 ▲
R854	TLMSLNO22	Compensation data update Tool length compensation No. (BCD output) $2 ▲
R855	TLMSWNO22	Compensation data update Tool wear compensation No. (BCD output) $2 ▲
R884		Specific user NC status 1 $2 ▲
R888		Specific user Manual skip Axis in skip motion $2 ▲
R889		Specific user Manual skip Skip motion direction $2 ▲
R890		Specific user Error/Warning detail $2 ▲
R900		External search status $3
R904		M code data 1 $3
R905		M code data 1 $3
R906		M code data 2 $3
R907		M code data 2 $3
R908		M code data 3 $3
R909		M code data 3 $3
R910		M code data 4 $3
R911		M code data 4 $3
R912		S code data 1 $3
R913		S code data 1 $3
R914		S code data 2 $3
R915		S code data 2 $3
R916		S code data 3 $3
R917		S code data 3 $3
R918		S code data 4 $3
R919		S code data 4 $3
R936		T code data 1 $3
R937		T code data 1 $3
R938		T code data 2 $3
R939		T code data 2 $3
R940		T code data 3 $3
R941		T code data 3 $3
R942		T code data 4 $3
R943		T code data 4 $3
R944		2nd M function data 1 $3
R945		2nd M function data 1 $3
R946		2nd M function data 2 $3
R947		2nd M function data 2 $3
R948		2nd M function data 3 $3
R949		2nd M function data 3 $3
R950		2nd M function data 4 $3
R951		2nd M function data 4 $3
R954		Chopping error No. $3
R955		Manual measurement status $3
R964		Load monitor warning axis $3 ▲
R965		Load monitor alarm axis $3 ▲
R966		Load monitor data alarm information $3 ▲
R967		Group in tool life management $3
R971		Adaptive control override $3 ▲
R972		CNC completion standby status $3
R973		(Blank) $3
R974		In initialization $3
R975		Initialization incompletion $3
R976		Reference position adjustment value parameter setting completed $3
R978		Measurement tool tip point No. $3 ▲
R980		Near reference position (per reference position) $3
R981		Near reference position (per reference position) $3
R982		Presetter contact $3
R983		Presetter interlock $3
R984		Area signal X axis on/off $3 ▲
R985		Area signal Z axis on/off $3 ▲

Device	Abbrev.	Signal name
R986		Area signal X axis (-) on/off $3 ▲
R987		Area signal Z axis (-) on/off $3 ▲
R988		Takt time (ms) $3 (L)
R989		Takt time (ms) $3 (H)
R990		Takt time (min) $3 (L)
R991		Takt time (min) $3 (H)
R996		Load monitor status (1) $3 ▲
R997		Load monitor status (2) $3 ▲
R998		Load monitor status (3) $3 ▲
R999		Load monitor status (4) $3 ▲
R1000		Load monitor status (5) $3 ▲
R1001		Load monitor status (6) $3 ▲
R1002		Load monitor status (7) $3 ▲
R1003		Load monitor status (8) $3 ▲
R1004		Load monitor status (9) $3 ▲
R1005		Load monitor status (10) $3 ▲
R1006		No. of work machining (current value) $3
R1007		No. of work machining (current value) $3
R1028		Tool life usage data $3
R1029		Tool life usage data $3
R1030		Number of registered tool life control tools $3
R1036		Circular feed in manual mode current position X $3
R1037		Circular feed in manual mode current position X $3
R1038		Circular feed in manual mode current position X $3
R1039		Circular feed in manual mode current position X $3
R1040		Circular feed in manual mode current position Y $3
R1041		Circular feed in manual mode current position Y $3
R1042		Circular feed in manual mode current position Y $3
R1043		Circular feed in manual mode current position Y $3
R1046		Machining mode state $3 ▲
R1052	TLMSLNO13	Censor ON Tool length compensation No. (BCD output) $3 ▲
R1053	TLMSWNO13	Censor ON Tool wear compensation No. (BCD output) $3 ▲
R1054	TLMSLNO23	Compensation data update Tool length compensation No. (BCD output) $3 ▲
R1055	TLMSWNO23	Compensation data update Tool wear compensation No. (BCD output) $3 ▲
R1084		Specific user NC status 1 $3 ▲
R1088		Specific user Manual skip Axis in skip motion $3 ▲
R1089		Specific user Manual skip Skip motion direction $3 ▲
R1090		Specific user Error/Warning detail $3 ▲
R1100		External search status $4
R1104		M code data 1 $4
R1105		M code data 1 $4
R1106		M code data 2 $4
R1107		M code data 2 $4
R1108		M code data 3 $4
R1109		M code data 3 $4
R1110		M code data 4 $4
R1111		M code data 4 $4
R1112		S code data 1 $4
R1113		S code data 1 $4
R1114		S code data 2 $4
R1115		S code data 2 $4
R1116		S code data 3 $4
R1117		S code data 3 $4
R1118		S code data 4 $4
R1119		S code data 4 $4
R1136		T code data 1 $4
R1137		T code data 1 $4
R1138		T code data 2 $4
R1139		T code data 2 $4
R1140		T code data 3 $4
R1141		T code data 3 $4
R1142		T code data 4 $4
R1143		T code data 4 $4
R1144		2nd M function data 1 $4
R1145		2nd M function data 1 $4
R1146		2nd M function data 2 $4
R1147		2nd M function data 2 $4
R1148		2nd M function data 3 $4
R1149		2nd M function data 3 $4
R1150		2nd M function data 4 $4
R1151		2nd M function data 4 $4
R1154		Chopping error No. $4

Device	Abbrev.	Signal name
R1155		Manual measurement status $4
R1164		Load monitor warning axis $4 ▲
R1165		Load monitor alarm axis $4 ▲
R1166		Load monitor data alarm information $4 ▲
R1167		Group in tool life management $4
R1171		Adaptive control override $4 ▲
R1172		CNC completion standby status $4
R1173		(Blank) $4
R1174		In initialization $4
R1175		Initialization incompletion $4
R1176		Reference position adjustment value parameter setting completed $4
R1178		Measurement tool tip point No. $4 ▲
R1180		Near reference position (per reference position) $4
R1181		Near reference position (per reference position) $4
R1182		Presetter contact $4
R1183		Presetter interlock $4
R1184		Area signal X axis on/off $4 ▲
R1185		Area signal Z axis on/off $4 ▲
R1186		Area signal X axis (-) on/off $4 ▲
R1187		Area signal Z axis (-) on/off $4 ▲
R1188		Takt time (ms) $4 (L)
R1189		Takt time (ms) $4 (H)
R1190		Takt time (min) $4 (L)
R1191		Takt time (min) $4 (H)
R1196		Load monitor status (1) $4
R1197		Load monitor status (2) $4
R1198		Load monitor status (3) $4
R1199		Load monitor status (4) $4
R1200		Load monitor status (5) $4
R1201		Load monitor status (6) $4
R1202		Load monitor status (7) $4
R1203		Load monitor status (8) $4
R1204		Load monitor status (9) $4
R1205		Load monitor status (10) $4
R1206		No. of work machining (current value) $4
R1207		No. of work machining (current value) $4
R1228		Tool life usage data $4
R1229		Tool life usage data $4
R1230		Number of registered tool life control tools $4
R1236		Circular feed in manual mode current position X $4
R1237		Circular feed in manual mode current position X $4
R1238		Circular feed in manual mode current position X $4
R1239		Circular feed in manual mode current position X $4
R1240		Circular feed in manual mode current position Y $4
R1241		Circular feed in manual mode current position Y $4
R1242		Circular feed in manual mode current position Y $4
R1243		Circular feed in manual mode current position Y $4
R1246		Machining mode state $4 ▲
R1252	TLMSLNO14	Censor ON Tool length compensation No. (BCD output) $4 ▲
R1253	TLMSWNO14	Censor ON Tool wear compensation No. (BCD output) $4 ▲
R1254	TLMSLNO24	Compensation data update Tool length compensation No. (BCD output) $4 ▲
R1255	TLMSWNO24	Compensation data update Tool wear compensation No. (BCD output) $4 ▲
R1284		Specific user NC status 1 $4 ▲
R1288		Specific user Manual skip Axis in skip motion $4 ▲
R1289		Specific user Manual skip Skip motion direction $4 ▲
R1290		Specific user Error/Warning detail $4 ▲
R2592		Reference position adjustment completion $1
R2618		Tool length measurement 2 Tool No. $1
R2619		Tool length measurement 2 Tool No. $1
R2625		Servo ready completion output designation $1
R2636		Circular feed in manual mode Operation mode data $1 (L)
R2637		Circular feed in manual mode Operation mode data $1 (H)
R2638		Circular feed in manual mode Part system designation $1
R2640		Circular feed in manual mode Horizontal axis designation $1
R2641		Circular feed in manual mode Vertical axis designation $1
R2644		Circular feed in manual mode Basic point X data $1 (L)
R2645		Circular feed in manual mode Basic point X data $1 (H)
R2648		Circular feed in manual mode Basic point Y data $1 (L)
R2649		Circular feed in manual mode Basic point Y data $1 (H)
R2652		Circular feed in manual mode Travel range X+ data $1 (L)
R2653		Circular feed in manual mode Travel range X+ data $1 (H)
R2656		Circular feed in manual mode Travel range X-data $1 (L)

Device	Abbrev.	Signal name
R2657		Circular feed in manual mode Travel range X-data $1 (L)
R2660		Circular feed in manual mode Travel range Y+ data $1 (L)
R2661		Circular feed in manual mode Travel range Y+ data $1 (H)
R2664		Circular feed in manual mode Travel range Y- data $1 (L)
R2665		Circular feed in manual mode Travel range Y- data $1 (H)
R2668		Circular feed in manual mode Gradient/arc center X data $1 (L)
R2669		Circular feed in manual mode Gradient/arc center X data $1 (H)
R2672		Circular feed in manual mode Gradient/arc center Y data $1 (L)
R2673		Circular feed in manual mode Gradient/arc center Y data $1 (H)
R2792		Reference position adjustment completion $2
R2818		Tool length measurement 2 tool No. $2
R2819		Tool length measurement 2 tool No. $2
R2825		Servo ready completion output designation $2
R2836		Circular feed in manual mode Operation mode data $2 (L)
R2837		Circular feed in manual mode Operation mode data $2 (H)
R2838		Circular feed in manual mode Part system designation $2
R2840		Circular feed in manual mode Horizontal axis designation $2
R2841		Circular feed in manual mode Vertical axis designation $2
R2844		Circular feed in manual mode Basic point X data $2 (L)
R2845		Circular feed in manual mode Basic point X data $2 (H)
R2848		Circular feed in manual mode Basic point Y data $2 (L)
R2849		Circular feed in manual mode Basic point Y data $2 (H)
R2852		Circular feed in manual mode Travel range X+ data $2 (L)
R2853		Circular feed in manual mode Travel range X+ data $2 (H)
R2856		Circular feed in manual mode Travel range X-data $2 (L)
R2857		Circular feed in manual mode Travel range X-data $2 (L)
R2860		Circular feed in manual mode Travel range Y+ data $2 (L)
R2861		Circular feed in manual mode Travel range Y+ data $2 (H)
R2864		Circular feed in manual mode Travel range Y- data $2 (L)
R2865		Circular feed in manual mode Travel range Y- data $2 (H)
R2868		Circular feed in manual mode Gradient/arc center X data $2 (L)
R2869		Circular feed in manual mode Gradient/arc center X data $2 (H)
R2872		Circular feed in manual mode Gradient/arc center Y data $2 (L)
R2873		Circular feed in manual mode Gradient/arc center Y data $2 (H)
R2992		Reference position adjustment completion $3
R3018		Tool length measurement 2 Tool No. $3
R3019		Tool length measurement 2 Tool No. $3
R3025		Servo ready completion output designation $3
R3036		Circular feed in manual mode Operation mode data $3 (L)
R3037		Circular feed in manual mode Operation mode data $3 (H)
R3038		Circular feed in manual mode Part system designation $3
R3040		Circular feed in manual mode Horizontal axis designation $3
R3041		Circular feed in manual mode Vertical axis designation $3
R3044		Circular feed in manual mode Basic point X data $3 (L)
R3045		Circular feed in manual mode Basic point X data $3 (H)
R3048		Circular feed in manual mode Basic point Y data $3 (L)
R3049		Circular feed in manual mode Basic point Y data $3 (H)
R3052		Circular feed in manual mode Travel range X+ data $3 (L)
R3053		Circular feed in manual mode Travel range X+ data $3 (H)
R3056		Circular feed in manual mode Travel range X-data $3 (L)
R3057		Circular feed in manual mode Travel range X-data $3 (L)
R3060		Circular feed in manual mode Travel range Y+ data $3 (L)
R3061		Circular feed in manual mode Travel range Y+ data $3 (H)
R3064		Circular feed in manual mode Travel range Y- data $3 (L)
R3065		Circular feed in manual mode Travel range Y- data $3 (H)
R3068		Circular feed in manual mode Gradient/arc center X data $3 (L)
R3069		Circular feed in manual mode Gradient/arc center X data $3 (H)
R3072		Circular feed in manual mode Gradient/arc center Y data $3 (L)
R3073		Circular feed in manual mode Gradient/arc center Y data $3 (H)
R3192		Reference position adjustment completion $4
R3218		Tool length measurement 2 Tool No. $4
R3219		Tool length measurement 2 Tool No. $4
R3225		Servo ready completion output designation $4
R3236		Circular feed in manual mode Operation mode data $4 (L)
R3237		Circular feed in manual mode Operation mode data $4 (H)
R3238		Circular feed in manual mode Part system designation $4
R3240		Circular feed in manual mode Horizontal axis designation $4
R3241		Circular feed in manual mode Vertical axis designation $4
R3244		Circular feed in manual mode Basic point X data $4 (L)
R3245		Circular feed in manual mode Basic point X data $4 (H)
R3248		Circular feed in manual mode Basic point Y data $4 (L)
R3249		Circular feed in manual mode Basic point Y data $4 (H)
R3252		Circular feed in manual mode Travel range X+ data $4 (L)
R3253		Circular feed in manual mode Travel range X+ data $4 (H)

Data Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
R3256		Circular feed in manual mode Travel range X-data $4 (L)
R3257		Circular feed in manual mode Travel range X-data $4 (L)
R3260		Circular feed in manual mode Travel range Y+ data $4 (L)
R3261		Circular feed in manual mode Travel range Y+ data $4 (H)
R3264		Circular feed in manual mode Travel range Y- data $4 (L)
R3265		Circular feed in manual mode Travel range Y- data $4 (H)
R3268		Circular feed in manual mode Gradient/arc center X data $4 (L)
R3269		Circular feed in manual mode Gradient/arc center X data $4 (H)
R3272		Circular feed in manual mode Gradient/arc center Y data $4 (L)
R3273		Circular feed in manual mode Gradient/arc center Y data $4 (H)
R4500		Machine position 1st axis $1
R4501		Machine position 1st axis $1
R4504		Machine position 2nd axis $1
R4505		Machine position 2nd axis $1
R4508		Machine position 3rd axis $1
R4509		Machine position 3rd axis $1
R4512		Machine position 4th axis $1
R4513		Machine position 4th axis $1
R4516		Machine position 5th axis $1
R4517		Machine position 5th axis $1
R4520		Machine position 6th axis $1
R4521		Machine position 6th axis $1
R4524		Machine position 7th axis $1
R4525		Machine position 7th axis $1
R4528		Machine position 8th axis $1
R4529		Machine position 8th axis $1
R4532		Machine position 1st axis $2
R4533		Machine position 1st axis $2
R4536		Machine position 2nd axis $2
R4537		Machine position 2nd axis $2
R4540		Machine position 3rd axis $2
R4541		Machine position 3rd axis $2
R4544		Machine position 4th axis $2
R4545		Machine position 4th axis $2
R4548		Machine position 5th axis $2
R4549		Machine position 5th axis $2
R4552		Machine position 6th axis $2
R4553		Machine position 6th axis $2
R4556		Machine position 7th axis $2
R4557		Machine position 7th axis $2
R4560		Machine position 8th axis $2
R4561		Machine position 8th axis $2
R4564		Machine position 1st axis $3
R4565		Machine position 1st axis $3
R4568		Machine position 2nd axis $3
R4569		Machine position 2nd axis $3
R4572		Machine position 3rd axis $3
R4573		Machine position 3rd axis $3
R4576		Machine position 4th axis $3
R4577		Machine position 4th axis $3
R4580		Machine position 5th axis $3
R4581		Machine position 5th axis $3
R4584		Machine position 6th axis $3
R4585		Machine position 6th axis $3
R4588		Machine position 7th axis $3
R4589		Machine position 7th axis $3
R4592		Machine position 8th axis $3
R4593		Machine position 8th axis $3
R4596		Machine position 1st axis $4
R4597		Machine position 1st axis $4
R4600		Machine position 2nd axis $4
R4601		Machine position 2nd axis $4
R4604		Machine position 3rd axis $4
R4605		Machine position 3rd axis $4
R4608		Machine position 4th axis $4
R4609		Machine position 4th axis $4
R4612		Machine position 5th axis $4
R4613		Machine position 5th axis $4
R4616		Machine position 6th axis $4
R4617		Machine position 6th axis $4
R4620		Machine position 7th axis $4
R4621		Machine position 7th axis $4
R4624		Machine position 8th axis $4
R4625		Machine position 8th axis $4

Device	Abbrev.	Signal name
R4628		Feedback machine position 1st axis $1
R4629		Feedback machine position 1st axis $1
R4632		Feedback machine position 2nd axis $1
R4633		Feedback machine position 2nd axis $1
R4636		Feedback machine position 3rd axis $1
R4637		Feedback machine position 3rd axis $1
R4640		Feedback machine position 4th axis $1
R4641		Feedback machine position 4th axis $1
R4644		Feedback machine position 5th axis $1
R4645		Feedback machine position 5th axis $1
R4648		Feedback machine position 6th axis $1
R4649		Feedback machine position 6th axis $1
R4652		Feedback machine position 7th axis $1
R4653		Feedback machine position 7th axis $1
R4656		Feedback machine position 8th axis $1
R4657		Feedback machine position 8th axis $1
R4660		Feedback machine position 1st axis $2
R4661		Feedback machine position 1st axis $2
R4664		Feedback machine position 2nd axis $2
R4665		Feedback machine position 2nd axis $2
R4668		Feedback machine position 3rd axis $2
R4669		Feedback machine position 3rd axis $2
R4672		Feedback machine position 4th axis $2
R4673		Feedback machine position 4th axis $2
R4676		Feedback machine position 5th axis $2
R4677		Feedback machine position 5th axis $2
R4680		Feedback machine position 6th axis $2
R4681		Feedback machine position 6th axis $2
R4684		Feedback machine position 7th axis $2
R4685		Feedback machine position 7th axis $2
R4688		Feedback machine position 8th axis $2
R4689		Feedback machine position 8th axis $2
R4692		Feedback machine position 1st axis $3
R4693		Feedback machine position 1st axis $3
R4696		Feedback machine position 2nd axis $3
R4697		Feedback machine position 2nd axis $3
R4700		Feedback machine position 3rd axis $3
R4701		Feedback machine position 3rd axis $3
R4704		Feedback machine position 4th axis $3
R4705		Feedback machine position 4th axis $3
R4708		Feedback machine position 5th axis $3
R4709		Feedback machine position 5th axis $3
R4712		Feedback machine position 6th axis $3
R4713		Feedback machine position 6th axis $3
R4716		Feedback machine position 7th axis $3
R4717		Feedback machine position 7th axis $3
R4720		Feedback machine position 8th axis $3
R4721		Feedback machine position 8th axis $3
R4724		Feedback machine position 1st axis $4
R4725		Feedback machine position 1st axis $4
R4728		Feedback machine position 2nd axis $4
R4729		Feedback machine position 2nd axis $4
R4732		Feedback machine position 3rd axis $4
R4733		Feedback machine position 3rd axis $4
R4736		Feedback machine position 4th axis $4
R4737		Feedback machine position 4th axis $4
R4740		Feedback machine position 5th axis $4
R4741		Feedback machine position 5th axis $4
R4744		Feedback machine position 6th axis $4
R4745		Feedback machine position 6th axis $4
R4748		Feedback machine position 7th axis $4
R4749		Feedback machine position 7th axis $4
R4752		Feedback machine position 8th axis $4
R4753		Feedback machine position 8th axis $4
R4756		Servo deflection amount 1st axis $1
R4757		Servo deflection amount 1st axis $1
R4758		Servo deflection amount 2nd axis $1
R4759		Servo deflection amount 2nd axis $1
R4760		Servo deflection amount 3rd axis $1
R4761		Servo deflection amount 3rd axis $1
R4762		Servo deflection amount 4th axis $1
R4763		Servo deflection amount 4th axis $1
R4764		Servo deflection amount 5th axis $1
R4765		Servo deflection amount 5th axis $1

Device	Abbrev.	Signal name
R4766		Servo deflection amount 6th axis $1
R4767		Servo deflection amount 6th axis $1
R4768		Servo deflection amount 7th axis $1
R4769		Servo deflection amount 7th axis $1
R4770		Servo deflection amount 8th axis $1
R4771		Servo deflection amount 8th axis $1
R4772		Servo deflection amount 1st axis $2
R4773		Servo deflection amount 1st axis $2
R4774		Servo deflection amount 2nd axis $2
R4775		Servo deflection amount 2nd axis $2
R4776		Servo deflection amount 3rd axis $2
R4777		Servo deflection amount 3rd axis $2
R4778		Servo deflection amount 4th axis $2
R4779		Servo deflection amount 4th axis $2
R4780		Servo deflection amount 5th axis $2
R4781		Servo deflection amount 5th axis $2
R4782		Servo deflection amount 6th axis $2
R4783		Servo deflection amount 6th axis $2
R4784		Servo deflection amount 7th axis $2
R4785		Servo deflection amount 7th axis $2
R4786		Servo deflection amount 8th axis $2
R4787		Servo deflection amount 8th axis $2
R4788		Servo deflection amount 1st axis $3
R4789		Servo deflection amount 1st axis $3
R4790		Servo deflection amount 2nd axis $3
R4791		Servo deflection amount 2nd axis $3
R4792		Servo deflection amount 3rd axis $3
R4793		Servo deflection amount 3rd axis $3
R4794		Servo deflection amount 4th axis $3
R4795		Servo deflection amount 4th axis $3
R4796		Servo deflection amount 5th axis $3
R4797		Servo deflection amount 5th axis $3
R4798		Servo deflection amount 6th axis $3
R4799		Servo deflection amount 6th axis $3
R4800		Servo deflection amount 7th axis $3
R4801		Servo deflection amount 7th axis $3
R4802		Servo deflection amount 8th axis $3
R4803		Servo deflection amount 8th axis $3
R4804		Servo deflection amount 1st axis $4
R4805		Servo deflection amount 1st axis $4
R4806		Servo deflection amount 2nd axis $4
R4807		Servo deflection amount 2nd axis $4
R4808		Servo deflection amount 3rd axis $4
R4809		Servo deflection amount 3rd axis $4
R4810		Servo deflection amount 4th axis $4
R4811		Servo deflection amount 4th axis $4
R4812		Servo deflection amount 5th axis $4
R4813		Servo deflection amount 5th axis $4
R4814		Servo deflection amount 6th axis $4
R4815		Servo deflection amount 6th axis $4
R4816		Servo deflection amount 7th axis $4
R4817		Servo deflection amount 7th axis $4
R4818		Servo deflection amount 8th axis $4
R4819		Servo deflection amount 8th axis $4
R4820		Motor rotation speed 1st axis $1
R4821		Motor rotation speed 1st axis $1
R4822		Motor rotation speed 2nd axis $1
R4823		Motor rotation speed 2nd axis $1
R4824		Motor rotation speed 3rd axis $1
R4825		Motor rotation speed 3rd axis $1
R4826		Motor rotation speed 4th axis $1
R4827		Motor rotation speed 4th axis $1
R4828		Motor rotation speed 5th axis $1
R4829		Motor rotation speed 5th axis $1
R4830		Motor rotation speed 6th axis $1
R4831		Motor rotation speed 6th axis $1
R4832		Motor rotation speed 7th axis $1
R4833		Motor rotation speed 7th axis $1
R4834		Motor rotation speed 8th axis $1
R4835		Motor rotation speed 8th axis $1
R4836		Motor rotation speed 1st axis $2
R4837		Motor rotation speed 1st axis $2
R4838		Motor rotation speed 2nd axis $2
R4839		Motor rotation speed 2nd axis $2

Device	Abbrev.	Signal name
R4840		Motor rotation speed 3rd axis $2
R4841		Motor rotation speed 3rd axis $2
R4842		Motor rotation speed 4th axis $2
R4843		Motor rotation speed 4th axis $2
R4844		Motor rotation speed 5th axis $2
R4845		Motor rotation speed 5th axis $2
R4846		Motor rotation speed 6th axis $2
R4847		Motor rotation speed 6th axis $2
R4848		Motor rotation speed 7th axis $2
R4849		Motor rotation speed 7th axis $2
R4850		Motor rotation speed 8th axis $2
R4851		Motor rotation speed 8th axis $2
R4852		Motor rotation speed 1st axis $3
R4853		Motor rotation speed 1st axis $3
R4854		Motor rotation speed 2nd axis $3
R4855		Motor rotation speed 2nd axis $3
R4856		Motor rotation speed 3rd axis $3
R4857		Motor rotation speed 3rd axis $3
R4858		Motor rotation speed 4th axis $3
R4859		Motor rotation speed 4th axis $3
R4860		Motor rotation speed 5th axis $3
R4861		Motor rotation speed 5th axis $3
R4862		Motor rotation speed 6th axis $3
R4863		Motor rotation speed 6th axis $3
R4864		Motor rotation speed 7th axis $3
R4865		Motor rotation speed 7th axis $3
R4866		Motor rotation speed 8th axis $3
R4867		Motor rotation speed 8th axis $3
R4868		Motor rotation speed 1st axis $4
R4869		Motor rotation speed 1st axis $4
R4870		Motor rotation speed 2nd axis $4
R4871		Motor rotation speed 2nd axis $4
R4872		Motor rotation speed 3rd axis $4
R4873		Motor rotation speed 3rd axis $4
R4874		Motor rotation speed 4th axis $4
R4875		Motor rotation speed 4th axis $4
R4876		Motor rotation speed 5th axis $4
R4877		Motor rotation speed 5th axis $4
R4878		Motor rotation speed 6th axis $4
R4879		Motor rotation speed 6th axis $4
R4880		Motor rotation speed 7th axis $4
R4881		Motor rotation speed 7th axis $4
R4882		Motor rotation speed 8th axis $4
R4883		Motor rotation speed 8th axis $4
R4884		Motor load current 1st axis $1
R4885		Motor load current 1st axis $1
R4886		Motor load current 2nd axis $1
R4887		Motor load current 2nd axis $1
R4888		Motor load current 3rd axis $1
R4889		Motor load current 3rd axis $1
R4890		Motor load current 4th axis $1
R4891		Motor load current 4th axis $1
R4892		Motor load current 5th axis $1
R4893		Motor load current 5th axis $1
R4894		Motor load current 6th axis $1
R4895		Motor load current 6th axis $1
R4896		Motor load current 7th axis $1
R4897		Motor load current 7th axis $1
R4898		Motor load current 8th axis $1
R4899		Motor load current 8th axis $1
R4900		Motor load current 1st axis $2
R4901		Motor load current 1st axis $2
R4902		Motor load current 2nd axis $2
R4903		Motor load current 2nd axis $2
R4904		Motor load current 3rd axis $2
R4905		Motor load current 3rd axis $2
R4906		Motor load current 4th axis $2
R4907		Motor load current 4th axis $2
R4908		Motor load current 5th axis $2
R4909		Motor load current 5th axis $2
R4910		Motor load current 6th axis $2
R4911		Motor load current 6th axis $2
R4912		Motor load current 7th axis $2
R4913		Motor load current 7th axis $2

Device	Abbrev.	Signal name
R4914		Motor load current 8th axis $2
R4915		Motor load current 8th axis $2
R4916		Motor load current 1st axis $3
R4917		Motor load current 1st axis $3
R4918		Motor load current 2nd axis $3
R4919		Motor load current 2nd axis $3
R4920		Motor load current 3rd axis $3
R4921		Motor load current 3rd axis $3
R4922		Motor load current 4th axis $3
R4923		Motor load current 4th axis $3
R4924		Motor load current 5th axis $3
R4925		Motor load current 5th axis $3
R4926		Motor load current 6th axis $3
R4927		Motor load current 6th axis $3
R4928		Motor load current 7th axis $3
R4929		Motor load current 7th axis $3
R4930		Motor load current 8th axis $3
R4931		Motor load current 8th axis $3
R4932		Motor load current 1st axis $4
R4933		Motor load current 1st axis $4
R4934		Motor load current 2nd axis $4
R4935		Motor load current 2nd axis $4
R4936		Motor load current 3rd axis $4
R4937		Motor load current 3rd axis $4
R4938		Motor load current 4th axis $4
R4939		Motor load current 4th axis $4
R4940		Motor load current 5th axis $4
R4941		Motor load current 5th axis $4
R4942		Motor load current 6th axis $4
R4943		Motor load current 6th axis $4
R4944		Motor load current 7th axis $4
R4945		Motor load current 7th axis $4
R4946		Motor load current 8th axis $4
R4947		Motor load current 8th axis $4
R4948		Skip coordinate position 1st axis $1
R4949		Skip coordinate position 1st axis $1
R4952		Skip coordinate position 2nd axis $1
R4953		Skip coordinate position 2nd axis $1
R4956		Skip coordinate position 3rd axis $1
R4957		Skip coordinate position 3rd axis $1
R4960		Skip coordinate position 4th axis $1
R4961		Skip coordinate position 4th axis $1
R4964		Skip coordinate position 5th axis $1
R4965		Skip coordinate position 5th axis $1
R4968		Skip coordinate position 6th axis $1
R4969		Skip coordinate position 6th axis $1
R4972		Skip coordinate position 7th axis $1
R4973		Skip coordinate position 7th axis $1
R4976		Skip coordinate position 8th axis $1
R4977		Skip coordinate position 8th axis $1
R4980		Skip coordinate position 1st axis $2
R4981		Skip coordinate position 1st axis $2
R4984		Skip coordinate position 2nd axis $2
R4985		Skip coordinate position 2nd axis $2
R4988		Skip coordinate position 3rd axis $2
R4989		Skip coordinate position 3rd axis $2
R4992		Skip coordinate position 4th axis $2
R4993		Skip coordinate position 4th axis $2
R4996		Skip coordinate position 5th axis $2
R4997		Skip coordinate position 5th axis $2
R5000		Skip coordinate position 6th axis $2
R5001		Skip coordinate position 6th axis $2
R5004		Skip coordinate position 7th axis $2
R5005		Skip coordinate position 7th axis $2
R5008		Skip coordinate position 8th axis $2
R5009		Skip coordinate position 8th axis $2
R5012		Skip coordinate position 1st axis $3
R5013		Skip coordinate position 1st axis $3
R5016		Skip coordinate position 2nd axis $3
R5017		Skip coordinate position 2nd axis $3
R5020		Skip coordinate position 3rd axis $3
R5021		Skip coordinate position 3rd axis $3
R5024		Skip coordinate position 4th axis $3
R5025		Skip coordinate position 4th axis $3

Data Type Input Signals (CNC->PLC)

Device	Abbrev.	Signal name
R5028		Skip coordinate position 5th axis $3
R5029		Skip coordinate position 5th axis $3
R5032		Skip coordinate position 6th axis $3
R5033		Skip coordinate position 6th axis $3
R5036		Skip coordinate position 7th axis $3
R5037		Skip coordinate position 7th axis $3
R5040		Skip coordinate position 8th axis $3
R5041		Skip coordinate position 8th axis $3
R5044		Skip coordinate position 1st axis $4
R5045		Skip coordinate position 1st axis $4
R5048		Skip coordinate position 2nd axis $4
R5049		Skip coordinate position 2nd axis $4
R5052		Skip coordinate position 3rd axis $4
R5053		Skip coordinate position 3rd axis $4
R5056		Skip coordinate position 4th axis $4
R5057		Skip coordinate position 4th axis $4
R5060		Skip coordinate position 5th axis $4
R5061		Skip coordinate position 5th axis $4
R5064		Skip coordinate position 6th axis $4
R5065		Skip coordinate position 6th axis $4
R5068		Skip coordinate position 7th axis $4
R5069		Skip coordinate position 7th axis $4
R5072		Skip coordinate position 8th axis $4
R5073		Skip coordinate position 8th axis $4
R5076		Synchronous error amount 1st, 9th, 17th, 25th axis $1
R5077		Synchronous error amount 1st, 9th, 17th, 25th axis $1
R5078		Synchronous error amount 2nd, 10th, 18th, 26th axis $1
R5079		Synchronous error amount 2nd, 10th, 18th, 26th axis $1
R5080		Synchronous error amount 3rd, 11th, 19th, 27th axis $1
R5081		Synchronous error amount 3rd, 11th, 19th, 27th axis $1
R5082		Synchronous error amount 4th, 12th, 20th, 28th axis $1
R5083		Synchronous error amount 4th, 12th, 20th, 28th axis $1
R5084		Synchronous error amount 5th, 13th, 21st, 29th axis $1
R5085		Synchronous error amount 5th, 13th, 21st, 29th axis $1
R5086		Synchronous error amount 6th, 14th, 22nd, 30th axis $1
R5087		Synchronous error amount 6th, 14th, 22nd, 30th axis $1
R5088		Synchronous error amount 7th, 15th, 23rd, 31st axis $1
R5089		Synchronous error amount 7th, 15th, 23rd, 31st axis $1
R5090		Synchronous error amount 8th, 16th, 24th, 32nd axis $1
R5091		Synchronous error amount 8th, 16th, 24th, 32nd axis $1
R5092		Synchronous error amount 1st, 9th, 17th, 25th axis $2
R5093		Synchronous error amount 1st, 9th, 17th, 25th axis $2
R5094		Synchronous error amount 2nd, 10th, 18th, 26th axis $2
R5095		Synchronous error amount 2nd, 10th, 18th, 26th axis $2
R5096		Synchronous error amount 3rd, 11th, 19th, 27th axis $2
R5097		Synchronous error amount 3rd, 11th, 19th, 27th axis $2
R5098		Synchronous error amount 4th, 12th, 20th, 28th axis $2
R5099		Synchronous error amount 4th, 12th, 20th, 28th axis $2
R5100		Synchronous error amount 5th, 13th, 21st, 29th axis $2
R5101		Synchronous error amount 5th, 13th, 21st, 29th axis $2
R5102		Synchronous error amount 6th, 14th, 22nd, 30th axis $2
R5103		Synchronous error amount 6th, 14th, 22nd, 30th axis $2
R5104		Synchronous error amount 7th, 15th, 23rd, 31st axis $2
R5105		Synchronous error amount 7th, 15th, 23rd, 31st axis $2
R5106		Synchronous error amount 8th, 16th, 24th, 32nd axis $2
R5107		Synchronous error amount 8th, 16th, 24th, 32nd axis $2
R5108		Synchronous error amount 1st, 9th, 17th, 25th axis $3
R5109		Synchronous error amount 1st, 9th, 17th, 25th axis $3
R5110		Synchronous error amount 2nd, 10th, 18th, 26th axis $3
R5111		Synchronous error amount 2nd, 10th, 18th, 26th axis $3
R5112		Synchronous error amount 3rd, 11th, 19th, 27th axis $3
R5113		Synchronous error amount 3rd, 11th, 19th, 27th axis $3
R5114		Synchronous error amount 4th, 12th, 20th, 28th axis $3
R5115		Synchronous error amount 4th, 12th, 20th, 28th axis $3
R5116		Synchronous error amount 5th, 13th, 21st, 29th axis $3
R5117		Synchronous error amount 5th, 13th, 21st, 29th axis $3
R5118		Synchronous error amount 6th, 14th, 22nd, 30th axis $3
R5119		Synchronous error amount 6th, 14th, 22nd, 30th axis $3
R5120		Synchronous error amount 7th, 15th, 23rd, 31st axis $3
R5121		Synchronous error amount 7th, 15th, 23rd, 31st axis $3
R5122		Synchronous error amount 8th, 16th, 24th, 32nd axis $3
R5123		Synchronous error amount 8th, 16th, 24th, 32nd axis $3
R5124		Synchronous error amount 1st, 9th, 17th, 25th axis $4
R5125		Synchronous error amount 1st, 9th, 17th, 25th axis $4

Device	Abbrev.	Signal name
R5126		Synchronous error amount 2nd, 10th, 18th, 26th axis $4
R5127		Synchronous error amount 2nd, 10th, 18th, 26th axis $4
R5128		Synchronous error amount 3rd, 11th, 19th, 27th axis $4
R5129		Synchronous error amount 3rd, 11th, 19th, 27th axis $4
R5130		Synchronous error amount 4th, 12th, 20th, 28th axis $4
R5131		Synchronous error amount 4th, 12th, 20th, 28th axis $4
R5132		Synchronous error amount 5th, 13th, 21st, 29th axis $4
R5133		Synchronous error amount 5th, 13th, 21st, 29th axis $4
R5134		Synchronous error amount 6th, 14th, 22nd, 30th axis $4
R5135		Synchronous error amount 6th, 14th, 22nd, 30th axis $4
R5136		Synchronous error amount 7th, 15th, 23rd, 31st axis $4
R5137		Synchronous error amount 7th, 15th, 23rd, 31st axis $4
R5138		Synchronous error amount 8th, 16th, 24th, 32nd axis $4
R5139		Synchronous error amount 8th, 16th, 24th, 32nd axis $4
R5140		Optimum acceleration/deceleration parameter group currently selected [axis] 1st axis $1 ▲
R5141		Optimum acceleration/deceleration parameter group currently selected [axis] 2nd axis $1 ▲
R5142		Optimum acceleration/deceleration parameter group currently selected [axis] 3rd axis $1 ▲
R5143		Optimum acceleration/deceleration parameter group currently selected [axis] 4th axis $1 ▲
R5144		Optimum acceleration/deceleration parameter group currently selected [axis] 5th axis $1 ▲
R5145		Optimum acceleration/deceleration parameter group currently selected [axis] 6th axis $1 ▲
R5146		Optimum acceleration/deceleration parameter group currently selected [axis] 7th axis $1 ▲
R5147		Optimum acceleration/deceleration parameter group currently selected [axis] 8th axis $1 ▲
R5148		Optimum acceleration/deceleration parameter group currently selected [axis] 1st axis $2 ▲
R5149		Optimum acceleration/deceleration parameter group currently selected [axis] 2nd axis $2 ▲
R5150		Optimum acceleration/deceleration parameter group currently selected [axis] 3rd axis $2 ▲
R5151		Optimum acceleration/deceleration parameter group currently selected [axis] 4th axis $2 ▲
R5152		Optimum acceleration/deceleration parameter group currently selected [axis] 5th axis $2 ▲
R5153		Optimum acceleration/deceleration parameter group currently selected [axis] 6th axis $2 ▲
R5154		Optimum acceleration/deceleration parameter group currently selected [axis] 7th axis $2 ▲
R5155		Optimum acceleration/deceleration parameter group currently selected [axis] 8th axis $2 ▲
R5156		Optimum acceleration/deceleration parameter group currently selected [axis] 1st axis $3 ▲
R5157		Optimum acceleration/deceleration parameter group currently selected [axis] 2nd axis $3 ▲
R5158		Optimum acceleration/deceleration parameter group currently selected [axis] 3rd axis $3 ▲
R5159		Optimum acceleration/deceleration parameter group currently selected [axis] 4th axis $3 ▲
R5160		Optimum acceleration/deceleration parameter group currently selected [axis] 5th axis $3 ▲
R5161		Optimum acceleration/deceleration parameter group currently selected [axis] 6th axis $3 ▲
R5162		Optimum acceleration/deceleration parameter group currently selected [axis] 7th axis $3 ▲
R5163		Optimum acceleration/deceleration parameter group currently selected [axis] 8th axis $3 ▲
R5164		Optimum acceleration/deceleration parameter group currently selected [axis] 1st axis $4 ▲
R5165		Optimum acceleration/deceleration parameter group currently selected [axis] 2nd axis $4 ▲
R5166		Optimum acceleration/deceleration parameter group currently selected [axis] 3rd axis $4 ▲
R5167		Optimum acceleration/deceleration parameter group currently selected [axis] 4th axis $4 ▲
R5168		Optimum acceleration/deceleration parameter group currently selected [axis] 5th axis $4 ▲
R5169		Optimum acceleration/deceleration parameter group currently selected [axis] 6th axis $4 ▲
R5170		Optimum acceleration/deceleration parameter group currently selected [axis] 7th axis $4 ▲

Device	Abbrev.	Signal name
R5171		Optimum acceleration/deceleration parameter group currently selected [axis] 8th axis $4 ▲
R5172		Cutting feed movement amount 1st axis $1
R5173		Cutting feed movement amount 1st axis $1
R5174		Cutting feed movement amount 1st axis $1
R5175		Cutting feed movement amount 1st axis $1
R5176		Cutting feed movement amount 2nd axis $1
R5177		Cutting feed movement amount 2nd axis $1
R5178		Cutting feed movement amount 2nd axis $1
R5179		Cutting feed movement amount 2nd axis $1
R5180		Cutting feed movement amount 3rd axis $1
R5181		Cutting feed movement amount 3rd axis $1
R5182		Cutting feed movement amount 3rd axis $1
R5183		Cutting feed movement amount 3rd axis $1
R5184		Cutting feed movement amount 4th axis $1
R5185		Cutting feed movement amount 4th axis $1
R5186		Cutting feed movement amount 4th axis $1
R5187		Cutting feed movement amount 4th axis $1
R5188		Cutting feed movement amount 5th axis $1
R5189		Cutting feed movement amount 5th axis $1
R5190		Cutting feed movement amount 5th axis $1
R5191		Cutting feed movement amount 5th axis $1
R5192		Cutting feed movement amount 6th axis $1
R5193		Cutting feed movement amount 6th axis $1
R5194		Cutting feed movement amount 6th axis $1
R5195		Cutting feed movement amount 6th axis $1
R5196		Cutting feed movement amount 7th axis $1
R5197		Cutting feed movement amount 7th axis $1
R5198		Cutting feed movement amount 7th axis $1
R5199		Cutting feed movement amount 7th axis $1
R5200		Cutting feed movement amount 8th axis $1
R5201		Cutting feed movement amount 8th axis $1
R5202		Cutting feed movement amount 8th axis $1
R5203		Cutting feed movement amount 8th axis $1
R5204		Cutting feed movement amount 1st axis $2
R5205		Cutting feed movement amount 1st axis $2
R5206		Cutting feed movement amount 1st axis $2
R5207		Cutting feed movement amount 1st axis $2
R5208		Cutting feed movement amount 2nd axis $2
R5209		Cutting feed movement amount 2nd axis $2
R5210		Cutting feed movement amount 2nd axis $2
R5211		Cutting feed movement amount 2nd axis $2
R5212		Cutting feed movement amount 3rd axis $2
R5213		Cutting feed movement amount 3rd axis $2
R5214		Cutting feed movement amount 3rd axis $2
R5215		Cutting feed movement amount 3rd axis $2
R5216		Cutting feed movement amount 4th axis $2
R5217		Cutting feed movement amount 4th axis $2
R5218		Cutting feed movement amount 4th axis $2
R5219		Cutting feed movement amount 4th axis $2
R5220		Cutting feed movement amount 5th axis $2
R5221		Cutting feed movement amount 5th axis $2
R5222		Cutting feed movement amount 5th axis $2
R5223		Cutting feed movement amount 5th axis $2
R5224		Cutting feed movement amount 6th axis $2
R5225		Cutting feed movement amount 6th axis $2
R5226		Cutting feed movement amount 6th axis $2
R5227		Cutting feed movement amount 6th axis $2
R5228		Cutting feed movement amount 7th axis $2
R5229		Cutting feed movement amount 7th axis $2
R5230		Cutting feed movement amount 7th axis $2
R5231		Cutting feed movement amount 7th axis $2
R5232		Cutting feed movement amount 8th axis $2
R5233		Cutting feed movement amount 8th axis $2
R5234		Cutting feed movement amount 8th axis $2
R5235		Cutting feed movement amount 8th axis $2
R5236		Cutting feed movement amount 1st axis $3
R5237		Cutting feed movement amount 1st axis $3
R5238		Cutting feed movement amount 1st axis $3
R5239		Cutting feed movement amount 1st axis $3
R5240		Cutting feed movement amount 2nd axis $3
R5241		Cutting feed movement amount 2nd axis $3
R5242		Cutting feed movement amount 2nd axis $3
R5243		Cutting feed movement amount 2nd axis $3

Device	Abbrev.	Signal name
R5244		Cutting feed movement amount 3rd axis $3
R5245		Cutting feed movement amount 3rd axis $3
R5246		Cutting feed movement amount 3rd axis $3
R5247		Cutting feed movement amount 3rd axis $3
R5248		Cutting feed movement amount 4th axis $3
R5249		Cutting feed movement amount 4th axis $3
R5250		Cutting feed movement amount 4th axis $3
R5251		Cutting feed movement amount 4th axis $3
R5252		Cutting feed movement amount 5th axis $3
R5253		Cutting feed movement amount 5th axis $3
R5254		Cutting feed movement amount 5th axis $3
R5255		Cutting feed movement amount 5th axis $3
R5256		Cutting feed movement amount 6th axis $3
R5257		Cutting feed movement amount 6th axis $3
R5258		Cutting feed movement amount 6th axis $3
R5259		Cutting feed movement amount 6th axis $3
R5260		Cutting feed movement amount 7th axis $3
R5261		Cutting feed movement amount 7th axis $3
R5262		Cutting feed movement amount 7th axis $3
R5263		Cutting feed movement amount 7th axis $3
R5264		Cutting feed movement amount 8th axis $3
R5265		Cutting feed movement amount 8th axis $3
R5266		Cutting feed movement amount 8th axis $3
R5267		Cutting feed movement amount 8th axis $3
R5268		Cutting feed movement amount 1st axis $4
R5269		Cutting feed movement amount 1st axis $4
R5270		Cutting feed movement amount 1st axis $4
R5271		Cutting feed movement amount 1st axis $4
R5272		Cutting feed movement amount 2nd axis $4
R5273		Cutting feed movement amount 2nd axis $4
R5274		Cutting feed movement amount 2nd axis $4
R5275		Cutting feed movement amount 2nd axis $4
R5276		Cutting feed movement amount 3rd axis $4
R5277		Cutting feed movement amount 3rd axis $4
R5278		Cutting feed movement amount 3rd axis $4
R5279		Cutting feed movement amount 3rd axis $4
R5280		Cutting feed movement amount 4th axis $4
R5281		Cutting feed movement amount 4th axis $4
R5282		Cutting feed movement amount 4th axis $4
R5283		Cutting feed movement amount 4th axis $4
R5284		Cutting feed movement amount 5th axis $4
R5285		Cutting feed movement amount 5th axis $4
R5286		Cutting feed movement amount 5th axis $4
R5287		Cutting feed movement amount 5th axis $4
R5288		Cutting feed movement amount 6th axis $4
R5289		Cutting feed movement amount 6th axis $4
R5290		Cutting feed movement amount 6th axis $4
R5291		Cutting feed movement amount 6th axis $4
R5292		Cutting feed movement amount 7th axis $4
R5293		Cutting feed movement amount 7th axis $4
R5294		Cutting feed movement amount 7th axis $4
R5295		Cutting feed movement amount 7th axis $4
R5296		Cutting feed movement amount 8th axis $4
R5297		Cutting feed movement amount 8th axis $4
R5298		Cutting feed movement amount 8th axis $4
R5299		Cutting feed movement amount 8th axis $4
R5332		Servo alarm/warning No.1st axis $1
R5333		Servo alarm/warning No.2nd axis $1
R5334		Servo alarm/warning No.3rd axis $1
R5335		Servo alarm/warning No.4th axis $1
R5336		Servo alarm/warning No.5th axis $1
R5337		Servo alarm/warning No.6th axis $1
R5338		Servo alarm/warning No.7th axis $1
R5339		Servo alarm/warning No.8th axis $1
R5340		Servo alarm/warning No.1st axis $2
R5341		Servo alarm/warning No.2nd axis $2
R5342		Servo alarm/warning No.3rd axis $2
R5343		Servo alarm/warning No.4th axis $2
R5344		Servo alarm/warning No.5th axis $2
R5345		Servo alarm/warning No.6th axis $2
R5346		Servo alarm/warning No.7th axis $2
R5347		Servo alarm/warning No.8th axis $2
R5348		Servo alarm/warning No.1st axis $3
R5349		Servo alarm/warning No.2nd axis $3
R5350		Servo alarm/warning No.3rd axis $3
R5351		Servo alarm/warning No.4th axis $3

Device	Abbrev.	Signal name
R5352		Servo alarm/warning No.5th axis $3
R5353		Servo alarm/warning No.6th axis $3
R5354		Servo alarm/warning No.7th axis $3
R5355		Servo alarm/warning No.8th axis $3
R5356		Servo alarm/warning No.1st axis $4
R5357		Servo alarm/warning No.2nd axis $4
R5358		Servo alarm/warning No.3rd axis $4
R5359		Servo alarm/warning No.4th axis $4
R5360		Servo alarm/warning No.5th axis $4
R5361		Servo alarm/warning No.6th axis $4
R5362		Servo alarm/warning No.7th axis $4
R5363		Servo alarm/warning No.8th axis $4
R5364		Skip coordinate position 1st axis feature coordinate $1 (L)[M]
R5365		Skip coordinate position 1st axis feature coordinate $1 (H)[M]
R5368		Skip coordinate position 2nd axis feature coordinate $1 (L)[M]
R5369		Skip coordinate position 2nd axis feature coordinate $1 (H)[M]
R5372		Skip coordinate position 3rd axis feature coordinate $1 (L)[M]
R5373		Skip coordinate position 3rd axis feature coordinate $1 (H)[M]
R5376		Skip coordinate position 4th axis feature coordinate $1 (L)[M]
R5377		Skip coordinate position 4th axis feature coordinate $1 (H)[M]
R5380		Skip coordinate position 5th axis feature coordinate $1 (L)[M]
R5381		Skip coordinate position 5th axis feature coordinate $1 (H)[M]
R5384		Skip coordinate position 6th axis feature coordinate $1 (L)[M]
R5385		Skip coordinate position 6th axis feature coordinate $1 (H)[M]
R5388		Skip coordinate position 7th axis feature coordinate $1 (L)[M]
R5389		Skip coordinate position 7th axis feature coordinate $1 (H)[M]
R5392		Skip coordinate position 8th axis feature coordinate $1 (L)[M]
R5393		Skip coordinate position 8th axis feature coordinate $1 (H)[M]
R5396		Skip coordinate position 1st axis feature coordinate $2 (L)[M]
R5397		Skip coordinate position 1st axis feature coordinate $2 (H)[M]
R5400		Skip coordinate position 2nd axis feature coordinate $2 (L)[M]
R5401		Skip coordinate position 2nd axis feature coordinate $2 (H)[M]
R5404		Skip coordinate position 3rd axis feature coordinate $2 (L)[M]
R5405		Skip coordinate position 3rd axis feature coordinate $2 (H)[M]
R5408		Skip coordinate position 4th axis feature coordinate $2 (L)[M]
R5409		Skip coordinate position 4th axis feature coordinate $2 (H)[M]
R5412		Skip coordinate position 5th axis feature coordinate $2 (L)[M]
R5413		Skip coordinate position 5th axis feature coordinate $2 (H)[M]
R5416		Skip coordinate position 6th axis feature coordinate $2 (L)[M]
R5417		Skip coordinate position 6th axis feature coordinate $2 (H)[M]
R5420		Skip coordinate position 7th axis feature coordinate $2 (L)[M]
R5421		Skip coordinate position 7th axis feature coordinate $2 (H)[M]
R5424		Skip coordinate position 8th axis feature coordinate $2 (L)[M]
R5425		Skip coordinate position 8th axis feature coordinate $2 (H)[M]
R5428		Skip coordinate position 1st axis feature coordinate $3 (L)[M]
R5429		Skip coordinate position 1st axis feature coordinate $3 (H)[M]
R5432		Skip coordinate position 2nd axis feature coordinate $3 (L)[M]
R5433		Skip coordinate position 2nd axis feature coordinate $3 (H)[M]
R5436		Skip coordinate position 3rd axis feature coordinate $3 (L)[M]
R5437		Skip coordinate position 3rd axis feature coordinate $3 (H)[M]
R5440		Skip coordinate position 4th axis feature coordinate $3 (L)[M]
R5441		Skip coordinate position 4th axis feature coordinate $3 (H)[M]
R5444		Skip coordinate position 5th axis feature coordinate $3 (L)[M]
R5445		Skip coordinate position 5th axis feature coordinate $3 (H)[M]
R5448		Skip coordinate position 6th axis feature coordinate $3 (L)[M]
R5449		Skip coordinate position 6th axis feature coordinate $3 (H)[M]
R5452		Skip coordinate position 7th axis feature coordinate $3 (L)[M]
R5453		Skip coordinate position 7th axis feature coordinate $3 (H)[M]
R5456		Skip coordinate position 8th axis feature coordinate $3 (L)[M]
R5457		Skip coordinate position 8th axis feature coordinate $3 (H)[M]
R5460		Skip coordinate position 1st axis feature coordinate $4 (L)[M]
R5461		Skip coordinate position 1st axis feature coordinate $4 (H)[M]
R5464		Skip coordinate position 2nd axis feature coordinate $4 (L)[M]
R5465		Skip coordinate position 2nd axis feature coordinate $4 (H)[M]
R5468		Skip coordinate position 3rd axis feature coordinate $4 (L)[M]
R5469		Skip coordinate position 3rd axis feature coordinate $4 (H)[M]
R5472		Skip coordinate position 4th axis feature coordinate $4 (L)[M]
R5473		Skip coordinate position 4th axis feature coordinate $4 (H)[M]
R5476		Skip coordinate position 5th axis feature coordinate $4 (L)[M]
R5477		Skip coordinate position 5th axis feature coordinate $4 (H)[M]
R5480		Skip coordinate position 6th axis feature coordinate $4 (L)[M]
R5481		Skip coordinate position 6th axis feature coordinate $4 (H)[M]
R5484		Skip coordinate position 7th axis feature coordinate $4 (L)[M]
R5485		Skip coordinate position 7th axis feature coordinate $4 (H)[M]
R5488		Skip coordinate position 8th axis feature coordinate $4 (L)[M]
R5489		Skip coordinate position 8th axis feature coordinate $4 (H)[M]
R5492		Cutting torque output value 1st axis $1 ▲
R5493		Cutting torque output value 2nd axis $1 ▲
R5494		Cutting torque output value 3rd axis $1 ▲
R5495		Cutting torque output value 4th axis $1 ▲

Device	Abbrev.	Signal name
R5496		Cutting torque output value 5th axis $1 ▲
R5497		Cutting torque output value 6th axis $1 ▲
R5498		Cutting torque output value 7th axis $1 ▲
R5499		Cutting torque output value 8th axis $1 ▲
R5500		Cutting torque output value 1st axis $2 ▲
R5501		Cutting torque output value 2nd axis $2 ▲
R5502		Cutting torque output value 3rd axis $2 ▲
R5503		Cutting torque output value 4th axis $2 ▲
R5504		Cutting torque output value 5th axis $2 ▲
R5505		Cutting torque output value 6th axis $2 ▲
R5506		Cutting torque output value 7th axis $2 ▲
R5507		Cutting torque output value 8th axis $2 ▲
R5508		Cutting torque output value 1st axis $3 ▲
R5509		Cutting torque output value 2nd axis $3 ▲
R5510		Cutting torque output value 3rd axis $3 ▲
R5511		Cutting torque output value 4th axis $3 ▲
R5512		Cutting torque output value 5th axis $3 ▲
R5513		Cutting torque output value 6th axis $3 ▲
R5514		Cutting torque output value 7th axis $3 ▲
R5515		Cutting torque output value 8th axis $3 ▲
R5516		Cutting torque output value 1st axis $4 ▲
R5517		Cutting torque output value 2nd axis $4 ▲
R5518		Cutting torque output value 3rd axis $4 ▲
R5519		Cutting torque output value 4th axis $4 ▲
R5520		Cutting torque output value 5th axis $4 ▲
R5521		Cutting torque output value 6th axis $4 ▲
R5522		Cutting torque output value 7th axis $4 ▲
R5523		Cutting torque output value 8th axis $4 ▲
R5524		Actual machining time 1st axis $1 ▲
R5525		Actual machining time 2nd axis $1 ▲
R5526		Actual machining time 3rd axis $1 ▲
R5527		Actual machining time 4th axis $1 ▲
R5528		Actual machining time 5th axis $1 ▲
R5529		Actual machining time 6th axis $1 ▲
R5530		Actual machining time 7th axis $1 ▲
R5531		Actual machining time 8th axis $1 ▲
R5532		Actual machining time 1st axis $2 ▲
R5533		Actual machining time 2nd axis $2 ▲
R5534		Actual machining time 3rd axis $2 ▲
R5535		Actual machining time 4th axis $2 ▲
R5536		Actual machining time 5th axis $2 ▲
R5537		Actual machining time 6th axis $2 ▲
R5538		Actual machining time 7th axis $2 ▲
R5539		Actual machining time 8th axis $2 ▲
R5540		Actual machining time 1st axis $3 ▲
R5541		Actual machining time 2nd axis $3 ▲
R5542		Actual machining time 3rd axis $3 ▲
R5543		Actual machining time 4th axis $3 ▲
R5544		Actual machining time 5th axis $3 ▲
R5545		Actual machining time 6th axis $3 ▲
R5546		Actual machining time 7th axis $3 ▲
R5547		Actual machining time 8th axis $3 ▲
R5548		Actual machining time 1st axis $4 ▲
R5549		Actual machining time 2nd axis $4 ▲
R5550		Actual machining time 3rd axis $4 ▲
R5551		Actual machining time 4th axis $4 ▲
R5552		Actual machining time 5th axis $4 ▲
R5553		Actual machining time 6th axis $4 ▲
R5554		Actual machining time 7th axis $4 ▲
R5555		Actual machining time 8th axis $4 ▲
R6372		User macro output #1132(NC -> PLC) $1
R6373		User macro output #1132(NC -> PLC) $1
R6374		User macro output #1133(NC -> PLC) $1
R6375		User macro output #1133(NC -> PLC) $1
R6376		User macro output #1134(NC -> PLC) $1
R6377		User macro output #1134(NC -> PLC) $1
R6378		User macro output #1135(NC -> PLC) $1
R6379		User macro output #1135(NC -> PLC) $1
R6380		User macro output #1132(NC -> PLC) $2
R6381		User macro output #1132(NC -> PLC) $2
R6382		User macro output #1133(NC -> PLC) $2
R6383		User macro output #1133(NC -> PLC) $2
R6384		User macro output #1134(NC -> PLC) $2
R6385		User macro output #1134(NC -> PLC) $2

Device	Abbrev.	Signal name
R6386		User macro output #1135(NC -> PLC) $2
R6387		User macro output #1135(NC -> PLC) $2
R6388		User macro output #1132(NC -> PLC) $3
R6389		User macro output #1132(NC -> PLC) $3
R6390		User macro output #1133(NC -> PLC) $3
R6391		User macro output #1133(NC -> PLC) $3
R6392		User macro output #1134(NC -> PLC) $3
R6393		User macro output #1134(NC -> PLC) $3
R6394		User macro output #1135(NC -> PLC) $3
R6395		User macro output #1135(NC -> PLC) $3
R6396		User macro output #1132(NC -> PLC) $4
R6397		User macro output #1132(NC -> PLC) $4
R6398		User macro output #1133(NC -> PLC) $4
R6399		User macro output #1133(NC -> PLC) $4
R6400		User macro output #1134(NC -> PLC) $4
R6401		User macro output #1134(NC -> PLC) $4
R6402		User macro output #1135(NC -> PLC) $4
R6403		User macro output #1135(NC -> PLC) $4
R6500		Spindle command rotation speed input 1st-Spindle
R6501		Spindle command rotation speed input 1st-Spindle
R6502		Spindle command final data (Rotation speed) 1st-Spindle
R6503		Spindle command final data (Rotation speed) 1st-Spindle
R6504		Spindle command final data (12-bit binary) 1st-Spindle
R6505		Spindle command final data (12-bit binary) 1st-Spindle
R6506		Spindle actual speed 1st-Spindle
R6507		Spindle actual speed 1st-Spindle
R6514		Optimum acceleration/deceleration estimated inertia ratio [spindle] 1st-Spindle ▲
R6515		Optimum acceleration/deceleration parameter group currently selected [spindle] 1st-Spindle ▲
R6516		Spindle synchronization phase error / Hob axis delay angle 1st-Spindle
R6517		Spindle synchronization Maximum phase error / Maximum hob axis delay angle 1st-spindle
R6518		Spindle synchronization Phase offset data 1st-Spindle
R6519		Spindle synchronization Phase error monitor 1st-Spindle
R6520		Spindle synchronization Phase error monitor (lower limit) 1st-Spindle
R6521		Spindle synchronization Phase error monitor (upper limit) 1st-Spindle
R6522		Spindle synchronization phase error 1 1st-Spindle
R6523		Spindle synchronization phase error 2 1st-Spindle
R6527		Spindle actual machining time 1st-Spindle ▲
R6528		Spindle cutting torque output value 1st-Spindle ▲
R6529		Spindle alarm/warning No. 1st-Spindle
R6532		Synchronous tapping Current error width (L) 1st-spindle
R6533		Synchronous tapping Current error width (H) 1st-spindle
R6534		Synchronous tapping Maximum error width (L) 1st-spindle
R6535		Synchronous tapping Maximum error width (H) 1st-spindle
R6536		Synchronous tapping Current error angle (L) 1st-spindle
R6537		Synchronous tapping Current error angle (H) 1st-spindle
R6538		Synchronous tapping Maximum error angle (L) 1st-spindle
R6539		Synchronous tapping Maximum error angle (H) 1st-spindle
R6550		Spindle command rotation speed input 2nd-Spindle
R6551		Spindle command rotation speed input 2nd-Spindle
R6552		Spindle command final data (Rotation speed) 2nd-Spindle
R6553		Spindle command final data (Rotation speed) 2nd-Spindle
R6554		Spindle command final data (12-bit binary) 2nd-Spindle
R6555		Spindle command final data (12-bit binary) 2nd-Spindle
R6556		Spindle actual speed 2nd-Spindle
R6557		Spindle actual speed 2nd-Spindle
R6564		Optimum acceleration/deceleration estimated inertia ratio [spindle] 2nd-Spindle ▲
R6565		Optimum acceleration/deceleration parameter group currently selected [spindle] 2nd-Spindle ▲
R6566		Spindle synchronization phase error / Hob axis delay angle 2nd-Spindle
R6567		Spindle synchronization Maximum phase error / Maximum hob axis delay angle 2nd-spindle
R6568		Spindle synchronization Phase offset data 2nd-Spindle
R6569		Spindle synchronization Phase error monitor 2nd-Spindle
R6570		Spindle synchronization Phase error monitor (lower limit) 2nd-Spindle
R6571		Spindle synchronization Phase error monitor (upper limit) 2nd-Spindle
R6572		Spindle synchronization phase error 1 2nd-Spindle
R6573		Spindle synchronization phase error 2 2nd-Spindle
R6577		Spindle actual machining time 2nd-Spindle ▲
R6578		Spindle cutting torque output value 2nd-Spindle ▲

Device	Abbrev.	Signal name
R6579		Spindle alarm/warning No. 2nd-Spindle
R6582		Synchronous tapping Current error width (L) 2nd-spindle
R6583		Synchronous tapping Current error width (H) 2nd-spindle
R6584		Synchronous tapping Maximum error width (L) 2nd-spindle
R6585		Synchronous tapping Maximum error width (H) 2nd-spindle
R6586		Synchronous tapping Current error angle (L) 2nd-spindle
R6587		Synchronous tapping Current error angle (H) 2nd-spindle
R6588		Synchronous tapping Maximum error angle (L) 2nd-spindle
R6589		Synchronous tapping Maximum error angle (H) 2nd-spindle
R6600		Spindle command rotation speed input 3rd-Spindle
R6601		Spindle command rotation speed input 3rd-Spindle
R6602		Spindle command final data (Rotation speed) 3rd-Spindle
R6603		Spindle command final data (Rotation speed) 3rd-Spindle
R6604		Spindle command final data (12-bit binary) 3rd-Spindle
R6605		Spindle command final data (12-bit binary) 3rd-Spindle
R6606		Spindle actual speed 3rd-Spindle
R6607		Spindle actual speed 3rd-Spindle
R6614		Optimum acceleration/deceleration estimated inertia ratio [spindle] 3rd-Spindle ▲
R6615		Optimum acceleration/deceleration parameter group currently selected [spindle] 3rd-Spindle ▲
R6616		Spindle synchronization phase error / Hob axis delay angle 3rd-Spindle
R6617		Spindle synchronization Maximum phase error / Maximum hob axis delay angle 3rd-spindle
R6618		Spindle synchronization Phase offset data 3rd-Spindle
R6619		Spindle synchronization Phase error monitor 3rd-Spindle
R6620		Spindle synchronization Phase error monitor (lower limit) 3rd-Spindle
R6621		Spindle synchronization Phase error monitor (upper limit) 3rd-Spindle
R6622		Spindle synchronization phase error 1 3rd-Spindle
R6623		Spindle synchronization phase error 2 3rd-Spindle
R6627		Spindle actual machining time 3rd-Spindle ▲
R6628		Spindle cutting torque output value 3rd-Spindle ▲
R6629		Spindle alarm/warning No. 3rd-Spindle
R6632		Synchronous tapping Current error width (L) 3rd-spindle
R6633		Synchronous tapping Current error width (H) 3rd-spindle
R6634		Synchronous tapping Maximum error width (L) 3rd-spindle
R6635		Synchronous tapping Maximum error width (H) 3rd-spindle
R6636		Synchronous tapping Current error angle (L) 3rd-spindle
R6637		Synchronous tapping Current error angle (H) 3rd-spindle
R6638		Synchronous tapping Maximum error angle (L) 3rd-spindle
R6639		Synchronous tapping Maximum error angle (H) 3rd-spindle
R6650		Spindle command rotation speed input 4th-Spindle
R6651		Spindle command rotation speed input 4th-Spindle
R6652		Spindle command final data (Rotation speed) 4th-Spindle
R6653		Spindle command final data (Rotation speed) 4th-Spindle
R6654		Spindle command final data (12-bit binary) 4th-Spindle
R6655		Spindle command final data (12-bit binary) 4th-Spindle
R6656		Spindle actual speed 4th-Spindle
R6657		Spindle actual speed 4th-Spindle
R6664		Optimum acceleration/deceleration estimated inertia ratio [spindle] 4th-Spindle ▲
R6665		Optimum acceleration/deceleration parameter group currently selected [spindle] 4th-Spindle ▲
R6666		Spindle synchronization phase error / Hob axis delay angle 4th-Spindle
R6667		Spindle synchronization Maximum phase error / Maximum hob axis delay angle 4th-spindle
R6668		Spindle synchronization Phase offset data 4th-Spindle
R6669		Spindle synchronization Phase error monitor 4th-Spindle
R6670		Spindle synchronization Phase error monitor (lower limit) 4th-Spindle
R6671		Spindle synchronization Phase error monitor (upper limit) 4th-Spindle
R6672		Spindle synchronization phase error 1 4th-Spindle
R6673		Spindle synchronization phase error 2 4th-Spindle
R6677		Spindle actual machining time 4th-Spindle ▲
R6678		Spindle cutting torque output value 4th-Spindle ▲
R6679		Spindle alarm/warning No. 4th-Spindle
R6682		Synchronous tapping Current error width (L) 4th-spindle
R6683		Synchronous tapping Current error width (H) 4th-spindle
R6684		Synchronous tapping Maximum error width (L) 4th-spindle
R6685		Synchronous tapping Maximum error width (H) 4th-spindle
R6686		Synchronous tapping Current error angle (L) 4th-spindle
R6687		Synchronous tapping Current error angle (H) 4th-spindle
R6688		Synchronous tapping Maximum error angle (L) 4th-spindle
R6689		Synchronous tapping Maximum error angle (H) 4th-spindle

Device	Abbrev.	Signal name
R6700		Spindle command rotation speed input 5th-Spindle
R6701		Spindle command rotation speed input 5th-Spindle
R6702		Spindle command final data (Rotation speed) 5th-Spindle
R6703		Spindle command final data (Rotation speed) 5th-Spindle
R6704		Spindle command final data (12-bit binary) 5th-Spindle
R6705		Spindle command final data (12-bit binary) 5th-Spindle
R6706		Spindle actual speed 5th-Spindle
R6707		Spindle actual speed 5th-Spindle
R6714		Optimum acceleration/deceleration estimated inertia ratio [spindle] 5th-Spindle ▲
R6715		Optimum acceleration/deceleration parameter group currently selected [spindle] 5th-Spindle ▲
R6716		Spindle synchronization phase error / Hob axis delay angle 5th-spindle
R6717		Spindle synchronization Maximum phase error / Maximum hob axis delay angle 5th-spindle
R6718		Spindle synchronization Phase offset data 5th-Spindle
R6719		Spindle synchronization Phase error monitor 5th-Spindle
R6720		Spindle synchronization Phase error monitor (lower limit) 5th-Spindle
R6721		Spindle synchronization Phase error monitor (upper limit) 5th-Spindle
R6722		Spindle synchronization phase error 1 5th-Spindle
R6723		Spindle synchronization phase error 2 5th-Spindle
R6727		Spindle actual machining time 5th-Spindle ▲
R6728		Spindle cutting torque output value 5th-Spindle ▲
R6729		Spindle alarm/warning No. 5th-Spindle
R6732		Synchronous tapping Current error width (L) 5th-spindle
R6733		Synchronous tapping Current error width (H) 5th-spindle
R6734		Synchronous tapping Maximum error width (L) 5th-spindle
R6735		Synchronous tapping Maximum error width (H) 5th-spindle
R6736		Synchronous tapping Current error angle (L) 5th-spindle
R6737		Synchronous tapping Current error angle (H) 5th-spindle
R6738		Synchronous tapping Maximum error angle (L) 5th-spindle
R6739		Synchronous tapping Maximum error angle (H) 5th-spindle
R6750		Spindle command rotation speed input 6th-Spindle
R6751		Spindle command rotation speed input 6th-Spindle
R6752		Spindle command final data (Rotation speed) 6th-Spindle
R6753		Spindle command final data (Rotation speed) 6th-Spindle
R6754		Spindle command final data (12-bit binary) 6th-Spindle
R6755		Spindle command final data (12-bit binary) 6th-Spindle
R6756		Spindle actual speed 6th-Spindle
R6757		Spindle actual speed 6th-Spindle
R6764		Optimum acceleration/deceleration estimated inertia ratio [spindle] 6th-Spindle ▲
R6765		Optimum acceleration/deceleration parameter group currently selected [spindle] 6th-Spindle ▲
R6766		Spindle synchronization phase error / Hob axis delay angle 6th-spindle
R6767		Spindle synchronization Maximum phase error / Maximum hob axis delay angle 6th-spindle
R6768		Spindle synchronization Phase offset data 6th-Spindle
R6769		Spindle synchronization Phase error monitor 6th-Spindle
R6770		Spindle synchronization Phase error monitor (lower limit) 6th-Spindle
R6771		Spindle synchronization Phase error monitor (upper limit) 6th-Spindle
R6772		Spindle synchronization phase error 1 6th-Spindle
R6773		Spindle synchronization phase error 2 6th-Spindle
R6777		Spindle actual machining time 6th-Spindle ▲
R6778		Spindle cutting torque output value 6th-Spindle ▲
R6779		Spindle alarm/warning No. 6th-Spindle
R6782		Synchronous tapping Current error width (L) 6th-spindle
R6783		Synchronous tapping Current error width (H) 6th-spindle
R6784		Synchronous tapping Maximum error width (L) 6th-spindle
R6785		Synchronous tapping Maximum error width (H) 6th-spindle
R6786		Synchronous tapping Current error angle (L) 6th-spindle
R6787		Synchronous tapping Current error angle (H) 6th-spindle
R6788		Synchronous tapping Maximum error angle (L) 6th-spindle
R6789		Synchronous tapping Maximum error angle (H) 6th-spindle
R9900		J2CT control status 4
R9901		J2CT control status 3
R9902		J2CT control status 2
R9903		J2CT control status 1
R9904		J2CT control Machine position (L) 1st axis
R9905		J2CT control Machine position (H) 1st axis
R9906		J2CT control status 4
R9907		J2CT control status 3
R9908		J2CT control status 2

Device	Abbrev.	Signal name
R9909		J2CT control status 1
R9910		J2CT control Machine position (L) 2nd axis
R9911		J2CT control Machine position (H) 2nd axis
R9912		J2CT control status 4
R9913		J2CT control status 3
R9914		J2CT control status 2
R9915		J2CT control status 1
R9916		J2CT control Machine position (L) 3rd axis
R9917		J2CT control Machine position (H) 3rd axis
R9918		J2CT control status 4
R9919		J2CT control status 3
R9920		J2CT control status 2
R9921		J2CT control status 1
R9922		J2CT control Machine position (L) 4th axis
R9923		J2CT control Machine position (H) 4th axis
R9924		J2CT control status 4
R9925		J2CT control status 3
R9926		J2CT control status 2
R9927		J2CT control status 1
R9928		J2CT control Machine position (L) 5th axis
R9929		J2CT control Machine position (H) 5th axis
R9930		J2CT control status 4
R9931		J2CT control status 3
R9932		J2CT control status 2
R9933		J2CT control status 1
R9934		J2CT control Machine position (L) 6th axis
R9935		J2CT control Machine position (H) 6th axis
R9940		J2CT control Machine position (L) 7th axis
R9941		J2CT control Machine position (H) 7th axis
R9946		J2CT control Machine position (L) 8th axis
R9947		J2CT control Machine position (H) 8th axis
R9948		J2CT in operation adjustment mode
R10000		RIO1 No. of error occurrences 1st ch
R10001		RIO1 No. of error occurrences 2nd ch
R10002		RIO1 No. of error occurrences 3rd ch
R10003		RIO1 No. of error occurrences 4th ch
R10004		RIO1 No. of error occurrences 5th ch
R10005		RIO1 No. of error occurrences 6th ch
R10006		RIO1 No. of error occurrences 7th ch
R10007		RIO1 No. of error occurrences 8th ch
R10008		RIO2 No. of error occurrences 1st ch
R10009		RIO2 No. of error occurrences 2nd ch
R10010		RIO2 No. of error occurrences 3rd ch
R10011		RIO2 No. of error occurrences 4th ch
R10012		RIO2 No. of error occurrences 5th ch
R10013		RIO2 No. of error occurrences 6th ch
R10014		RIO2 No. of error occurrences 7th ch
R10015		RIO2 No. of error occurrences 8th ch
R10016		RIO3 No. of error occurrences 1st ch
R10017		RIO3 No. of error occurrences 2nd ch
R10018		RIO3 No. of error occurrences 3rd ch
R10019		RIO3 No. of error occurrences 4th ch
R10020		RIO3 No. of error occurrences 5th ch
R10021		RIO3 No. of error occurrences 6th ch
R10022		RIO3 No. of error occurrences 7th ch
R10023		RIO3 No. of error occurrences 8th ch
R10064		Connection status of each channel RIO1,2
R10065		Connection status of each channel RIO3
R10068		CRC warning channel RIO1,2
R10069		CRC warning channel RIO3
R10600		ATC control parameter
R11800		Spare tool: Group No. $1 (L)
R11801		Spare tool: Group No. $1 (H)
R11802		Spare tool: Tool No. $1 (L)
R11803		Spare tool: Tool No. $1 (H)
R11804		Spare tool: Tool data flag/Status $1
R11805		Spare tool: Auxiliary data $1
R11806		Spare tool: cumulative usage time $1
R11807		Spare tool: cumulative usage time $1
R11808		Spare tool: service lifetime $1
R11809		Spare tool: service lifetime $1
R11810		Spare tool: cumulative usage count $1
R11811		Spare tool: service life count $1
R11812		Spare tool: cumulative usage wear amount $1
R11813		Spare tool: cumulative usage wear amount $1

Device	Abbrev.	Signal name
R11814		Spare tool: service life wear amount $1
R11815		Spare tool: service life wear amount $1
R11820		Spare tool: length wear amount $1
R11821		Spare tool: length wear amount $1
R11822		Spare tool: radius wear amount $1
R11823		Spare tool: radius wear amount $1
R11830		Active tool: Cumulative usage time $1
R11831		Active tool: Cumulative usage time $1
R11832		Active tool: Service lifetime $1
R11833		Active tool: Service lifetime $1
R11834		Active tool: Cumulative usage count $1
R11835		Active tool: Cumulative usage wear amount $1
R11836		Active tool: Service life wear amount $1
R11837		Active tool: Service life wear amount $1
R11838		Active tool: Length compensation amount $1
R11839		Active tool: Length compensation amount $1
R11844		Active tool: Length wear amount $1
R11845		Active tool: Length wear amount $1
R11846		Active tool: Radius wear amount $1
R11847		Active tool: Radius wear amount $1
R11850		Spare tool: Group No. $2 (L)
R11851		Spare tool: Group No. $2 (H)
R11852		Spare tool: Tool No. $2 (L)
R11853		Spare tool: Tool No. $2 (H)
R11854		Spare tool: Tool data flag/Status $2
R11855		Spare tool: Auxiliary data $2
R11856		Spare tool: cumulative usage time $2
R11857		Spare tool: cumulative usage time $2
R11858		Spare tool: service lifetime $2
R11859		Spare tool: service lifetime $2
R11860		Spare tool: cumulative usage count $2
R11861		Spare tool: service life count $2
R11862		Spare tool: cumulative usage wear amount $2
R11863		Spare tool: cumulative usage wear amount $2
R11864		Spare tool: service life wear amount $2
R11865		Spare tool: service life wear amount $2
R11870		Spare tool: length wear amount $2
R11871		Spare tool: length wear amount $2
R11872		Spare tool: radius wear amount $2
R11873		Spare tool: radius wear amount $2
R11880		Active tool: Cumulative usage time $2
R11881		Active tool: Cumulative usage time $2
R11882		Active tool: Service lifetime $2
R11883		Active tool: Service lifetime $2
R11884		Active tool: Cumulative usage count $2
R11885		Active tool: Cumulative usage wear amount $2
R11886		Active tool: Service life wear amount $2
R11887		Active tool: Service life wear amount $2
R11888		Active tool: Length compensation amount $2
R11889		Active tool: Length compensation amount $2
R11894		Active tool: Length wear amount $2
R11895		Active tool: Length wear amount $2
R11896		Active tool: Radius wear amount $2
R11897		Active tool: Radius wear amount $2
R11900		Spare tool: Group No. $3 (L)
R11901		Spare tool: Group No. $3 (H)
R11902		Spare tool: Tool No. $3 (L)
R11903		Spare tool: Tool No. $3 (H)
R11904		Spare tool: Tool data flag/Status $3
R11905		Spare tool: Auxiliary data $3
R11906		Spare tool: cumulative usage time $3
R11907		Spare tool: cumulative usage time $3
R11908		Spare tool: service lifetime $3
R11909		Spare tool: service lifetime $3
R11910		Spare tool: cumulative usage count $3
R11911		Spare tool: service life count $3
R11912		Spare tool: cumulative usage wear amount $3
R11913		Spare tool: cumulative usage wear amount $3
R11914		Spare tool: service life wear amount $3
R11915		Spare tool: service life wear amount $3
R11920		Spare tool: length wear amount $3
R11921		Spare tool: length wear amount $3
R11922		Spare tool: radius wear amount $3
R11923		Spare tool: radius wear amount $3
R11930		Active tool: Cumulative usage time $3

Device	Abbrev.	Signal name
R11931		Active tool: Cumulative usage time $3
R11932		Active tool: Service lifetime $3
R11933		Active tool: Service lifetime $3
R11934		Active tool: Cumulative usage count $3
R11935		Active tool: Cumulative usage wear amount $3
R11936		Active tool: Service life wear amount $3
R11937		Active tool: Service life wear amount $3
R11938		Active tool: Length compensation amount $3
R11939		Active tool: Length compensation amount $3
R11944		Active tool: Length wear amount $3
R11945		Active tool: Length wear amount $3
R11946		Active tool: Radius wear amount $3
R11947		Active tool: Radius wear amount $3
R11950		Spare tool: Group No. $4 (L)
R11951		Spare tool: Group No. $4 (H)
R11952		Spare tool: Tool No. $4 (L)
R11953		Spare tool: Tool No. $4 (H)
R11954		Spare tool: Tool data flag/Status $4
R11955		Spare tool: Auxiliary data $4
R11956		Spare tool: cumulative usage time $4
R11957		Spare tool: cumulative usage time $4
R11958		Spare tool: service lifetime $4
R11959		Spare tool: service lifetime $4
R11960		Spare tool: cumulative usage count $4
R11961		Spare tool: service life count $4
R11962		Spare tool: cumulative usage wear amount $4
R11963		Spare tool: cumulative usage wear amount $4
R11964		Spare tool: service life wear amount $4
R11965		Spare tool: service life wear amount $4
R11970		Spare tool: length wear amount $4
R11971		Spare tool: length wear amount $4
R11972		Spare tool: radius wear amount $4
R11973		Spare tool: radius wear amount $4
R11980		Active tool: Cumulative usage time $4
R11981		Active tool: Cumulative usage time $4
R11982		Active tool: Service lifetime $4
R11983		Active tool: Service lifetime $4
R11984		Active tool: Cumulative usage count $4
R11985		Active tool: Cumulative usage wear amount $4
R11986		Active tool: Service life wear amount $4
R11987		Active tool: Service life wear amount $4
R11988		Active tool: Length compensation amount $4
R11989		Active tool: Length compensation amount $4
R11994		Active tool: Length wear amount $4
R11995		Active tool: Length wear amount $4
R11996		Active tool: Radius wear amount $4
R11997		Active tool: Radius wear amount $4
R20516		Appropriate machining diagnosis error axis $1 ▲
R20716		Appropriate machining diagnosis error axis $2 ▲
R20916		Appropriate machining diagnosis error axis $3 ▲
R21116		Appropriate machining diagnosis error axis $4 ▲

3. Bit Type Output Signals (PLC->CNC)

(Note) Signals marked with "▲" are prepared for a specific machine tool builder.

Device	Abbrev.	Signal name
Y704	RHD1	Integration time input 1
Y705	RHD2	Integration time input 2
Y706	MDBUSRST 1	Modbus Time-out 1 cancel ▲
Y707	MDBUSRST 2	Modbus Time-out 2 cancel ▲
Y708	*KEY1	Data protect key 1
Y709	*KEY2	Data protect key 2
Y70A	*KEY3	Data protect key 3
Y70C	PDISP1	Program display during operation $1
Y70D		Handle pulse encoder communication connector priority
Y711		Optimum acceleration/deceleration parameter switch request [spindle] ▲
Y718	*PCD1	PLC axis near point detection 1
Y719	*PCD2	PLC axis near point detection 2
Y71A	*PCD3	PLC axis near point detection 3
Y71B	*PCD4	PLC axis near point detection 4
Y71C	*PCD5	PLC axis near point detection 5th axis
Y71D	*PCD6	PLC axis near point detection 6th axis
Y720	PCH1	PLC axis 1st handle valid
Y721	PCH2	PLC axis 2st handle valid
Y722	PCH3	PLC axis 3st handle valid
Y723	PABMI	PLC axis control buffering mode valid
Y728	CRTFN	CRT changeover completion
Y729	CSRON	Screen display request
Y72B		Collecting diagnosis data stop
Y72C	SMPTRG	NC data sampling trigger
Y72E		Pallet program registration In APC execution
Y72F		Ext. workpiece coordinate transfer ready
Y730	DISP1	Display changeover $1
Y731	DISP2	Display changeover $2
Y732	DISP3	Display changeover $3
Y733	DISP4	Display changeover $4
Y73F	CCHK	Interference check valid
Y740		Tool IC new read ▲
Y741		Tool IC exchange read ▲
Y742	MCT	Contactor shutoff test signal
Y747		Turret interference check valid
Y748		PLC skip 1
Y749		PLC skip 2
Y74A		PLC skip 3
Y74B		PLC skip 4
Y74C		PLC skip 5
Y74D		PLC skip 6
Y74E		PLC skip 7
Y74F		PLC skip 8
Y75D		Automatic power OFF request
Y764		Encoder 1 arbitrary pulse selection
Y765		Encoder 2 arbitrary pulse selection
Y766		Encoder 1 arbitrary pulse valid
Y767		Encoder 2 arbitrary pulse valid
Y768	DOOR1	Door open I
Y76C		Remote program input start ▲
Y76D		Tool ID data read ▲
Y76E		Tool ID data write ▲
Y76F		Tool ID data erase ▲
Y770	PLCAE1	PLC axis control valid 1st axis
Y771	PLCAE2	PLC axis control valid 2nd axis
Y772	PLCAE3	PLC axis control valid 3rd axis
Y773	PLCAE4	PLC axis control valid 4th axis
Y774	PLCAE5	PLC axis control valid 5th axis
Y775	PLCAE6	PLC axis control valid 6th axis
Y780	DTCH11	Control axis detach 1st-axis $1
Y781	DTCH21	Control axis detach 2nd-axis $1
Y782	DTCH31	Control axis detach 3nd-axis $1
Y783	DTCH41	Control axis detach 4th-axis $1
Y784	DTCH51	Control axis detach 5th-axis $1
Y785	DTCH61	Control axis detach 6th-axis $1
Y786	DTCH71	Control axis detach 7th-axis $1
Y787	DTCH81	Control axis detach 8th-axis $1
Y788	DTCH12	Control axis detach 1st-axis $2

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y789	DTCH22	Control axis detach 2nd-axis $2
Y78A	DTCH32	Control axis detach 3nd-axis $2
Y78B	DTCH42	Control axis detach 4th-axis $2
Y78C	DTCH52	Control axis detach 5th-axis $2
Y78D	DTCH62	Control axis detach 6th-axis $2
Y78E	DTCH72	Control axis detach 7th-axis $2
Y78F	DTCH82	Control axis detach 8th-axis $2
Y790	DTCH13	Control axis detach 1st-axis $3
Y791	DTCH23	Control axis detach 2nd-axis $3
Y792	DTCH33	Control axis detach 3nd-axis $3
Y793	DTCH43	Control axis detach 4th-axis $3
Y794	DTCH53	Control axis detach 5th-axis $3
Y795	DTCH63	Control axis detach 6th-axis $3
Y796	DTCH73	Control axis detach 7th-axis $3
Y797	DTCH83	Control axis detach 8th-axis $3
Y798	DTCH14	Control axis detach 1st-axis $4
Y799	DTCH24	Control axis detach 2nd-axis $4
Y79A	DTCH34	Control axis detach 3nd-axis $4
Y79B	DTCH44	Control axis detach 4th-axis $4
Y79C	DTCH54	Control axis detach 5th-axis $4
Y79D	DTCH64	Control axis detach 6th-axis $4
Y79E	DTCH74	Control axis detach 7th-axis $4
Y79F	DTCH84	Control axis detach 8th-axis $4
Y7A0	*SVF11	Servo OFF 1st-axis $1
Y7A1	*SVF21	Servo OFF 2nd-axis $1
Y7A2	*SVF31	Servo OFF 3nd-axis $1
Y7A3	*SVF41	Servo OFF 4th-axis $1
Y7A4	*SVF51	Servo OFF 5th-axis $1
Y7A5	*SVF61	Servo OFF 6th-axis $1
Y7A6	*SVF71	Servo OFF 7th-axis $1
Y7A7	*SVF81	Servo OFF 8th-axis $1
Y7A8	*SVF12	Servo OFF 1st-axis $2
Y7A9	*SVF22	Servo OFF 2nd-axis $2
Y7AA	*SVF32	Servo OFF 3nd-axis $2
Y7AB	*SVF42	Servo OFF 4th-axis $2
Y7AC	*SVF52	Servo OFF 5th-axis $2
Y7AD	*SVF62	Servo OFF 6th-axis $2
Y7AE	*SVF72	Servo OFF 7th-axis $2
Y7AF	*SVF82	Servo OFF 8th-axis $2
Y7B0	*SVF13	Servo OFF 1st-axis $3
Y7B1	*SVF23	Servo OFF 2nd-axis $3
Y7B2	*SVF33	Servo OFF 3nd-axis $3
Y7B3	*SVF43	Servo OFF 4th-axis $3
Y7B4	*SVF53	Servo OFF 5th-axis $3
Y7B5	*SVF63	Servo OFF 6th-axis $3
Y7B6	*SVF73	Servo OFF 7th-axis $3
Y7B7	*SVF83	Servo OFF 8th-axis $3
Y7B8	*SVF14	Servo OFF 1st-axis $4
Y7B9	*SVF24	Servo OFF 2nd-axis $4
Y7BA	*SVF34	Servo OFF 3nd-axis $4
Y7BB	*SVF44	Servo OFF 4th-axis $4
Y7BC	*SVF54	Servo OFF 5th-axis $4
Y7BD	*SVF64	Servo OFF 6th-axis $4
Y7BE	*SVF74	Servo OFF 7th-axis $4
Y7BF	*SVF84	Servo OFF 8th-axis $4
Y7C0	MI11	Mirror image 1st-axis $1
Y7C1	MI21	Mirror image 2nd-axis $1
Y7C2	MI31	Mirror image 3nd-axis $1
Y7C3	MI41	Mirror image 4th-axis $1
Y7C4	MI51	Mirror image 5th-axis $1
Y7C5	MI61	Mirror image 6th-axis $1
Y7C6	MI71	Mirror image 7th-axis $1
Y7C7	MI81	Mirror image 8th-axis $1
Y7C8	MI12	Mirror image 1st-axis $2
Y7C9	MI22	Mirror image 2nd-axis $2
Y7CA	MI32	Mirror image 3nd-axis $2
Y7CB	MI42	Mirror image 4th-axis $2
Y7CC	MI52	Mirror image 5th-axis $2
Y7CD	MI62	Mirror image 6th-axis $2
Y7CE	MI72	Mirror image 7th-axis $2
Y7CF	MI82	Mirror image 8th-axis $2
Y7D0	MI13	Mirror image 1st-axis $3
Y7D1	MI23	Mirror image 2nd-axis $3
Y7D2	MI33	Mirror image 3nd-axis $3

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y7D3	MI43	Mirror image 4th-axis $3
Y7D4	MI53	Mirror image 5th-axis $3
Y7D5	MI63	Mirror image 6th-axis $3
Y7D6	MI73	Mirror image 7th-axis $3
Y7D7	MI83	Mirror image 8th-axis $3
Y7D8	MI14	Mirror image 1st-axis $4
Y7D9	MI24	Mirror image 2nd-axis $4
Y7DA	MI34	Mirror image 3nd-axis $4
Y7DB	MI44	Mirror image 4th-axis $4
Y7DC	MI54	Mirror image 5th-axis $4
Y7DD	MI64	Mirror image 6th-axis $4
Y7DE	MI74	Mirror image 7th-axis $4
Y7DF	MI84	Mirror image 8th-axis $4
Y7E0	*+EDT11	External deceleration + 1st-axis $1
Y7E1	*+EDT21	External deceleration + 2nd-axis $1
Y7E2	*+EDT31	External deceleration + 3nd-axis $1
Y7E3	*+EDT41	External deceleration + 4th-axis $1
Y7E4	*+EDT51	External deceleration + 5th-axis $1
Y7E5	*+EDT61	External deceleration + 6th-axis $1
Y7E6	*+EDT71	External deceleration + 7th-axis $1
Y7E7	*+EDT81	External deceleration + 8th-axis $1
Y7E8	*+EDT12	External deceleration + 1st-axis $2
Y7E9	*+EDT22	External deceleration + 2nd-axis $2
Y7EA	*+EDT32	External deceleration + 3nd-axis $2
Y7EB	*+EDT42	External deceleration + 4th-axis $2
Y7EC	*+EDT52	External deceleration + 5th-axis $2
Y7ED	*+EDT62	External deceleration + 6th-axis $2
Y7EE	*+EDT72	External deceleration + 7th-axis $2
Y7EF	*+EDT82	External deceleration + 8th-axis $2
Y7F0	*+EDT13	External deceleration + 1st-axis $3
Y7F1	*+EDT23	External deceleration + 2nd-axis $3
Y7F2	*+EDT33	External deceleration + 3nd-axis $3
Y7F3	*+EDT43	External deceleration + 4th-axis $3
Y7F4	*+EDT53	External deceleration + 5th-axis $3
Y7F5	*+EDT63	External deceleration + 6th-axis $3
Y7F6	*+EDT73	External deceleration + 7th-axis $3
Y7F7	*+EDT83	External deceleration + 8th-axis $3
Y7F8	*+EDT14	External deceleration + 1st-axis $4
Y7F9	*+EDT24	External deceleration + 2nd-axis $4
Y7FA	*+EDT34	External deceleration + 3nd-axis $4
Y7FB	*+EDT44	External deceleration + 4th-axis $4
Y7FC	*+EDT54	External deceleration + 5th-axis $4
Y7FD	*+EDT64	External deceleration + 6th-axis $4
Y7FE	*+EDT74	External deceleration + 7th-axis $4
Y7FF	*+EDT84	External deceleration + 8th-axis $4
Y800	*-EDT11	External deceleration - 1st-axis $1
Y801	*-EDT21	External deceleration - 2nd-axis $1
Y802	*-EDT31	External deceleration - 3nd-axis $1
Y803	*-EDT41	External deceleration - 4th-axis $1
Y804	*-EDT51	External deceleration - 5th-axis $1
Y805	*-EDT61	External deceleration - 6th-axis $1
Y806	*-EDT71	External deceleration - 7th-axis $1
Y807	*-EDT81	External deceleration - 8th-axis $1
Y808	*-EDT12	External deceleration - 1st-axis $2
Y809	*-EDT22	External deceleration - 2nd-axis $2
Y80A	*-EDT32	External deceleration - 3nd-axis $2
Y80B	*-EDT42	External deceleration - 4th-axis $2
Y80C	*-EDT52	External deceleration - 5th-axis $2
Y80D	*-EDT62	External deceleration - 6th-axis $2
Y80E	*-EDT72	External deceleration - 7th-axis $2
Y80F	*-EDT82	External deceleration - 8th-axis $2
Y810	*-EDT13	External deceleration - 1st-axis $3
Y811	*-EDT23	External deceleration - 2nd-axis $3
Y812	*-EDT33	External deceleration - 3nd-axis $3
Y813	*-EDT43	External deceleration - 4th-axis $3
Y814	*-EDT53	External deceleration - 5th-axis $3
Y815	*-EDT63	External deceleration - 6th-axis $3
Y816	*-EDT73	External deceleration - 7th-axis $3
Y817	*-EDT83	External deceleration - 8th-axis $3
Y818	*-EDT14	External deceleration - 1st-axis $4
Y819	*-EDT24	External deceleration - 2nd-axis $4
Y81A	*-EDT34	External deceleration - 3nd-axis $4
Y81B	*-EDT44	External deceleration - 4th-axis $4
Y81C	*-EDT54	External deceleration - 5th-axis $4

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y81D	*-EDT64	External deceleration - 6th-axis $4
Y81E	*-EDT74	External deceleration - 7th-axis $4
Y81F	*-EDT84	External deceleration - 8th-axis $4
Y820	*+AIT11	Automatic interlock + 1st-axis $1
Y821	*+AIT21	Automatic interlock + 2nd-axis $1
Y822	*+AIT31	Automatic interlock + 3nd-axis $1
Y823	*+AIT41	Automatic interlock + 4th-axis $1
Y824	*+AIT51	Automatic interlock + 5th-axis $1
Y825	*+AIT61	Automatic interlock + 6th-axis $1
Y826	*+AIT71	Automatic interlock + 7th-axis $1
Y827	*+AIT81	Automatic interlock + 8th-axis $1
Y828	*+AIT12	Automatic interlock + 1st-axis $2
Y829	*+AIT22	Automatic interlock + 2nd-axis $2
Y82A	*+AIT32	Automatic interlock + 3nd-axis $2
Y82B	*+AIT42	Automatic interlock + 4th-axis $2
Y82C	*+AIT52	Automatic interlock + 5th-axis $2
Y82D	*+AIT62	Automatic interlock + 6th-axis $2
Y82E	*+AIT72	Automatic interlock + 7th-axis $2
Y82F	*+AIT82	Automatic interlock + 8th-axis $2
Y830	*+AIT13	Automatic interlock + 1st-axis $3
Y831	*+AIT23	Automatic interlock + 2nd-axis $3
Y832	*+AIT33	Automatic interlock + 3nd-axis $3
Y833	*+AIT43	Automatic interlock + 4th-axis $3
Y834	*+AIT53	Automatic interlock + 5th-axis $3
Y835	*+AIT63	Automatic interlock + 6th-axis $3
Y836	*+AIT73	Automatic interlock + 7th-axis $3
Y837	*+AIT83	Automatic interlock + 8th-axis $3
Y838	*+AIT14	Automatic interlock + 1st-axis $4
Y839	*+AIT24	Automatic interlock + 2nd-axis $4
Y83A	*+AIT34	Automatic interlock + 3nd-axis $4
Y83B	*+AIT44	Automatic interlock + 4th-axis $4
Y83C	*+AIT54	Automatic interlock + 5th-axis $4
Y83D	*+AIT64	Automatic interlock + 6th-axis $4
Y83E	*+AIT74	Automatic interlock + 7th-axis $4
Y83F	*+AIT84	Automatic interlock + 8th-axis $4
Y840	*-AIT11	Automatic interlock - 1st-axis $1
Y841	*-AIT21	Automatic interlock - 2nd-axis $1
Y842	*-AIT31	Automatic interlock - 3nd-axis $1
Y843	*-AIT41	Automatic interlock - 4th-axis $1
Y844	*-AIT51	Automatic interlock - 5th-axis $1
Y845	*-AIT61	Automatic interlock - 6th-axis$1
Y846	*-AIT71	Automatic interlock - 7th-axis$1
Y847	*-AIT81	Automatic interlock - 8th-axis $1
Y848	*-AIT12	Automatic interlock - 1st-axis $2
Y849	*-AIT22	Automatic interlock - 2nd-axis $2
Y84A	*-AIT32	Automatic interlock - 3nd-axis $2
Y84B	*-AIT42	Automatic interlock - 4th-axis $2
Y84C	*-AIT52	Automatic interlock - 5th-axis $2
Y84D	*-AIT62	Automatic interlock - 6th-axis$2
Y84E	*-AIT72	Automatic interlock - 7th-axis$2
Y84F	*-AIT82	Automatic interlock - 8th-axis $2
Y850	*-AIT13	Automatic interlock - 1st-axis $3
Y851	*-AIT23	Automatic interlock - 2nd-axis $3
Y852	*-AIT33	Automatic interlock - 3nd-axis $3
Y853	*-AIT43	Automatic interlock - 4th-axis $3
Y854	*-AIT53	Automatic interlock - 5th-axis $3
Y855	*-AIT63	Automatic interlock - 6th-axis$3
Y856	*-AIT73	Automatic interlock - 7th-axis$3
Y857	*-AIT83	Automatic interlock - 8th-axis $3
Y858	*-AIT14	Automatic interlock - 1st-axis $4
Y859	*-AIT24	Automatic interlock - 2nd-axis $4
Y85A	*-AIT34	Automatic interlock - 3nd-axis $4
Y85B	*-AIT44	Automatic interlock - 4th-axis $4
Y85C	*-AIT54	Automatic interlock - 5th-axis $4
Y85D	*-AIT64	Automatic interlock - 6th-axis$4
Y85E	*-AIT74	Automatic interlock - 7th-axis$4
Y85F	*-AIT84	Automatic interlock - 8th-axis $4
Y860	*+MIT11	Manual interlock + 1st-axis $1
Y861	*+MIT21	Manual interlock + 2nd-axis $1
Y862	*+MIT31	Manual interlock + 3nd-axis $1
Y863	*+MIT41	Manual interlock + 4th-axis $1
Y864	*+MIT51	Manual interlock + 5th-axis $1
Y865	*+MIT61	Manual interlock + 6th-axis $1
Y866	*+MIT71	Manual interlock + 7th-axis $1

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y867	*+MIT81	Manual interlock + 8th-axis $1
Y868	*+MIT12	Manual interlock + 1st-axis $2
Y869	*+MIT22	Manual interlock + 2nd-axis $2
Y86A	*+MIT32	Manual interlock + 3nd-axis $2
Y86B	*+MIT42	Manual interlock + 4th-axis $2
Y86C	*+MIT52	Manual interlock + 5th-axis $2
Y86D	*+MIT62	Manual interlock + 6th-axis $2
Y86E	*+MIT72	Manual interlock + 7th-axis $2
Y86F	*+MIT82	Manual interlock + 8th-axis $2
Y870	*+MIT13	Manual interlock + 1st-axis $3
Y871	*+MIT23	Manual interlock + 2nd-axis $3
Y872	*+MIT33	Manual interlock + 3nd-axis $3
Y873	*+MIT43	Manual interlock + 4th-axis $3
Y874	*+MIT53	Manual interlock + 5th-axis $3
Y875	*+MIT63	Manual interlock + 6th-axis $3
Y876	*+MIT73	Manual interlock + 7th-axis $3
Y877	*+MIT83	Manual interlock + 8th-axis $3
Y878	*+MIT14	Manual interlock + 1st-axis $4
Y879	*+MIT24	Manual interlock + 2nd-axis $4
Y87A	*+MIT34	Manual interlock + 3nd-axis $4
Y87B	*+MIT44	Manual interlock + 4th-axis $4
Y87C	*+MIT54	Manual interlock + 5th-axis $4
Y87D	*+MIT64	Manual interlock + 6th-axis $4
Y87E	*+MIT74	Manual interlock + 7th-axis $4
Y87F	*+MIT84	Manual interlock + 8th-axis $4
Y880	*-MIT11	Manual interlock - 1st-axis $1
Y881	*-MIT21	Manual interlock - 2nd-axis $1
Y882	*-MIT31	Manual interlock - 3nd-axis $1
Y883	*-MIT41	Manual interlock - 4th-axis $1
Y884	*-MIT51	Manual interlock - 5th-axis $1
Y885	*-MIT61	Manual interlock - 6th-axis $1
Y886	*-MIT71	Manual interlock - 7th-axis $1
Y887	*-MIT81	Manual interlock - 8th-axis $1
Y888	*-MIT12	Manual interlock - 1st-axis $2
Y889	*-MIT22	Manual interlock - 2nd-axis $2
Y88A	*-MIT32	Manual interlock - 3nd-axis $2
Y88B	*-MIT42	Manual interlock - 4th-axis $2
Y88C	*-MIT52	Manual interlock - 5th-axis $2
Y88D	*-MIT62	Manual interlock - 6th-axis $2
Y88E	*-MIT72	Manual interlock - 7th-axis $2
Y88F	*-MIT82	Manual interlock - 8th-axis $2
Y890	*-MIT13	Manual interlock - 1st-axis $3
Y891	*-MIT23	Manual interlock - 2nd-axis $3
Y892	*-MIT33	Manual interlock - 3nd-axis $3
Y893	*-MIT43	Manual interlock - 4th-axis $3
Y894	*-MIT53	Manual interlock - 5th-axis $3
Y895	*-MIT63	Manual interlock - 6th-axis $3
Y896	*-MIT73	Manual interlock - 7th-axis $3
Y897	*-MIT83	Manual interlock - 8th-axis $3
Y898	*-MIT14	Manual interlock - 1st-axis $4
Y899	*-MIT24	Manual interlock - 2nd-axis $4
Y89A	*-MIT34	Manual interlock - 3nd-axis $4
Y89B	*-MIT44	Manual interlock - 4th-axis $4
Y89C	*-MIT54	Manual interlock - 5th-axis $4
Y89D	*-MIT64	Manual interlock - 6th-axis $4
Y89E	*-MIT74	Manual interlock - 7th-axis $4
Y89F	*-MIT84	Manual interlock - 8th-axis $4
Y8A0	AMLK11	Automatic machine lock 1st-axis $1
Y8A1	AMLK21	Automatic machine lock 2nd-axis $1
Y8A2	AMLK31	Automatic machine lock 3nd-axis $1
Y8A3	AMLK41	Automatic machine lock 4th-axis $1
Y8A4	AMLK51	Automatic machine lock 5th-axis $1
Y8A5	AMLK61	Automatic machine lock 6th-axis $1
Y8A6	AMLK71	Automatic machine lock 7th-axis $1
Y8A7	AMLK81	Automatic machine lock 8th-axis $1
Y8A8	AMLK12	Automatic machine lock 1st-axis $2
Y8A9	AMLK22	Automatic machine lock 2nd-axis $2
Y8AA	AMLK32	Automatic machine lock 3nd-axis $2
Y8AB	AMLK42	Automatic machine lock 4th-axis $2
Y8AC	AMLK52	Automatic machine lock 5th-axis $2
Y8AD	AMLK62	Automatic machine lock 6th-axis $2
Y8AE	AMLK72	Automatic machine lock 7th-axis $2
Y8AF	AMLK82	Automatic machine lock 8th-axis $2
Y8B0	AMLK13	Automatic machine lock 1st-axis $3

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y8B1	AMLK23	Automatic machine lock 2nd-axis $3
Y8B2	AMLK33	Automatic machine lock 3nd-axis $3
Y8B3	AMLK43	Automatic machine lock 4th-axis $3
Y8B4	AMLK53	Automatic machine lock 5th-axis $3
Y8B5	AMLK63	Automatic machine lock 6th-axis $3
Y8B6	AMLK73	Automatic machine lock 7th-axis $3
Y8B7	AMLK83	Automatic machine lock 8th-axis $3
Y8B8	AMLK14	Automatic machine lock 1st-axis $4
Y8B9	AMLK24	Automatic machine lock 2nd-axis $4
Y8BA	AMLK34	Automatic machine lock 3nd-axis $4
Y8BB	AMLK44	Automatic machine lock 4th-axis $4
Y8BC	AMLK54	Automatic machine lock 5th-axis $4
Y8BD	AMLK64	Automatic machine lock 6th-axis $4
Y8BE	AMLK74	Automatic machine lock 7th-axis $4
Y8BF	AMLK84	Automatic machine lock 8th-axis $4
Y8C0	MMLK11	Manual machine lock 1st-axis $1
Y8C1	MMLK21	Manual machine lock 2nd-axis $1
Y8C2	MMLK31	Manual machine lock 3nd-axis $1
Y8C3	MMLK41	Manual machine lock 4th-axis $1
Y8C4	MMLK51	Manual machine lock 5th-axis $1
Y8C5	MMLK61	Manual machine lock 6th-axis $1
Y8C6	MMLK71	Manual machine lock 7th-axis $1
Y8C7	MMLK81	Manual machine lock 8th-axis $1
Y8C8	MMLK12	Manual machine lock 1st-axis $2
Y8C9	MMLK22	Manual machine lock 2nd-axis $2
Y8CA	MMLK32	Manual machine lock 3nd-axis $2
Y8CB	MMLK42	Manual machine lock 4th-axis $2
Y8CC	MMLK52	Manual machine lock 5th-axis $2
Y8CD	MMLK62	Manual machine lock 6th-axis $2
Y8CE	MMLK72	Manual machine lock 7th-axis $2
Y8CF	MMLK82	Manual machine lock 8th-axis $2
Y8D0	MMLK13	Manual machine lock 1st-axis $3
Y8D1	MMLK23	Manual machine lock 2nd-axis $3
Y8D2	MMLK33	Manual machine lock 3nd-axis $3
Y8D3	MMLK43	Manual machine lock 4th-axis $3
Y8D4	MMLK53	Manual machine lock 5th-axis $3
Y8D5	MMLK63	Manual machine lock 6th-axis $3
Y8D6	MMLK73	Manual machine lock 7th-axis $3
Y8D7	MMLK83	Manual machine lock 8th-axis $3
Y8D8	MMLK14	Manual machine lock 1st-axis $4
Y8D9	MMLK24	Manual machine lock 2nd-axis $4
Y8DA	MMLK34	Manual machine lock 3nd-axis $4
Y8DB	MMLK44	Manual machine lock 4th-axis $4
Y8DC	MMLK54	Manual machine lock 5th-axis $4
Y8DD	MMLK64	Manual machine lock 6th-axis $4
Y8DE	MMLK74	Manual machine lock 7th-axis $4
Y8DF	MMLK84	Manual machine lock 8th-axis $4
Y8E0	+J11	Feed axis selection + 1st-axis $1
Y8E1	+J21	Feed axis selection + 2nd-axis $1
Y8E2	+J31	Feed axis selection + 3nd-axis $1
Y8E3	+J41	Feed axis selection + 4th-axis $1
Y8E4	+J51	Feed axis selection + 5th-axis $1
Y8E5	+J61	Feed axis selection + 6th-axis $1
Y8E6	+J71	Feed axis selection + 7th-axis $1
Y8E7	+J81	Feed axis selection + 8th-axis $1
Y8E8	+J12	Feed axis selection + 1st-axis $2
Y8E9	+J22	Feed axis selection + 2nd-axis $2
Y8EA	+J32	Feed axis selection + 3nd-axis $2
Y8EB	+J42	Feed axis selection + 4th-axis $2
Y8EC	+J52	Feed axis selection + 5th-axis $2
Y8ED	+J62	Feed axis selection + 6th-axis $2
Y8EE	+J72	Feed axis selection + 7th-axis $2
Y8EF	+J82	Feed axis selection + 8th-axis $2
Y8F0	+J13	Feed axis selection + 1st-axis $3
Y8F1	+J23	Feed axis selection + 2nd-axis $3
Y8F2	+J33	Feed axis selection + 3nd-axis $3
Y8F3	+J43	Feed axis selection + 4th-axis $3
Y8F4	+J53	Feed axis selection + 5th-axis $3
Y8F5	+J63	Feed axis selection + 6th-axis $3
Y8F6	+J73	Feed axis selection + 7th-axis $3
Y8F7	+J83	Feed axis selection + 8th-axis $3
Y8F8	+J14	Feed axis selection + 1st-axis $4
Y8F9	+J24	Feed axis selection + 2nd-axis $4
Y8FA	+J34	Feed axis selection + 3nd-axis $4

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y8FB	+J44	Feed axis selection + 4th-axis $4
Y8FC	+J54	Feed axis selection + 5th-axis $4
Y8FD	+J64	Feed axis selection + 6th-axis $4
Y8FE	+J74	Feed axis selection + 7th-axis $4
Y8FF	+J84	Feed axis selection + 8th-axis $4
Y900	-J11	Feed axis selection - 1st-axis $1
Y901	-J21	Feed axis selection - 2nd-axis $1
Y902	-J31	Feed axis selection - 3nd-axis $1
Y903	-J41	Feed axis selection - 4th-axis $1
Y904	-J51	Feed axis selection - 5th-axis $1
Y905	-J61	Feed axis selection - 6th-axis $1
Y906	-J71	Feed axis selection - 7th-axis $1
Y907	-J81	Feed axis selection - 8th-axis $1
Y908	-J12	Feed axis selection - 1st-axis $2
Y909	-J22	Feed axis selection - 2nd-axis $2
Y90A	-J32	Feed axis selection - 3nd-axis $2
Y90B	-J42	Feed axis selection - 4th-axis $2
Y90C	-J52	Feed axis selection - 5th-axis $2
Y90D	-J62	Feed axis selection - 6th-axis $2
Y90E	-J72	Feed axis selection - 7th-axis $2
Y90F	-J82	Feed axis selection - 8th-axis $2
Y910	-J13	Feed axis selection - 1st-axis $3
Y911	-J23	Feed axis selection - 2nd-axis $3
Y912	-J33	Feed axis selection - 3nd-axis $3
Y913	-J43	Feed axis selection - 4th-axis $3
Y914	-J53	Feed axis selection - 5th-axis $3
Y915	-J63	Feed axis selection - 6th-axis $3
Y916	-J73	Feed axis selection - 7th-axis $3
Y917	-J83	Feed axis selection - 8th-axis $3
Y918	-J14	Feed axis selection - 1st-axis $4
Y919	-J24	Feed axis selection - 2nd-axis $4
Y91A	-J34	Feed axis selection - 3nd-axis $4
Y91B	-J44	Feed axis selection - 4th-axis $4
Y91C	-J54	Feed axis selection - 5th-axis $4
Y91D	-J64	Feed axis selection - 6th-axis $4
Y91E	-J74	Feed axis selection - 7th-axis $4
Y91F	-J84	Feed axis selection - 8th-axis $4
Y920	MAE11	Manual/Automatic simultaneous valid 1st-axis $1
Y921	MAE21	Manual/Automatic simultaneous valid 2nd-axis $1
Y922	MAE31	Manual/Automatic simultaneous valid 3nd-axis $1
Y923	MAE41	Manual/Automatic simultaneous valid 4th-axis $1
Y924	MAE51	Manual/Automatic simultaneous valid 5th-axis $1
Y925	MAE61	Manual/Automatic simultaneous valid 6th-axis $1
Y926	MAE71	Manual/Automatic simultaneous valid 7th-axis $1
Y927	MAE81	Manual/Automatic simultaneous valid 8th-axis $1
Y928	MAE12	Manual/Automatic simultaneous valid 1st-axis $2
Y929	MAE22	Manual/Automatic simultaneous valid 2nd-axis $2
Y92A	MAE32	Manual/Automatic simultaneous valid 3nd-axis $2
Y92B	MAE42	Manual/Automatic simultaneous valid 4th-axis $2
Y92C	MAE52	Manual/Automatic simultaneous valid 5th-axis $2
Y92D	MAE62	Manual/Automatic simultaneous valid 6th-axis $2
Y92E	MAE72	Manual/Automatic simultaneous valid 7th-axis $2
Y92F	MAE82	Manual/Automatic simultaneous valid 8th-axis $2
Y930	MAE13	Manual/Automatic simultaneous valid 1st-axis $3
Y931	MAE23	Manual/Automatic simultaneous valid 2nd-axis $3
Y932	MAE33	Manual/Automatic simultaneous valid 3nd-axis $3
Y933	MAE43	Manual/Automatic simultaneous valid 4th-axis $3
Y934	MAE53	Manual/Automatic simultaneous valid 5th-axis $3
Y935	MAE63	Manual/Automatic simultaneous valid 6th-axis $3
Y936	MAE73	Manual/Automatic simultaneous valid 7th-axis $3
Y937	MAE83	Manual/Automatic simultaneous valid 8th-axis $3
Y938	MAE14	Manual/Automatic simultaneous valid 1st-axis $4
Y939	MAE24	Manual/Automatic simultaneous valid 2nd-axis $4
Y93A	MAE34	Manual/Automatic simultaneous valid 3nd-axis $4
Y93B	MAE44	Manual/Automatic simultaneous valid 4th-axis $4
Y93C	MAE54	Manual/Automatic simultaneous valid 5th-axis $4
Y93D	MAE64	Manual/Automatic simultaneous valid 6th-axis $4
Y93E	MAE74	Manual/Automatic simultaneous valid 7th-axis $4
Y93F	MAE84	Manual/Automatic simultaneous valid 8th-axis $4
Y940	FBE11	Manual feedrate B valid 1st axis $1
Y941	FBE21	Manual feedrate B valid 2nd axis $1
Y942	FBE31	Manual feedrate B valid 3rd axis $1
Y943	FBE41	Manual feedrate B valid 4th axis $1
Y944	FBE51	Manual feedrate B valid 5th axis $1

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y945	FBE61	Manual feedrate B valid 6th axis $1
Y946	FBE71	Manual feedrate B valid 7th axis $1
Y947	FBE81	Manual feedrate B valid 8th axis $1
Y948	FBE12	Manual feedrate B valid 1st axis $2
Y949	FBE22	Manual feedrate B valid 2nd axis $2
Y94A	FBE32	Manual feedrate B valid 3rd axis $2
Y94B	FBE42	Manual feedrate B valid 4th axis $2
Y94C	FBE52	Manual feedrate B valid 5th axis $2
Y94D	FBE62	Manual feedrate B valid 6th axis $2
Y94E	FBE72	Manual feedrate B valid 7th axis $2
Y94F	FBE82	Manual feedrate B valid 8th axis $2
Y950	FBE13	Manual feedrate B valid 1st axis $3
Y951	FBE23	Manual feedrate B valid 2nd axis $3
Y952	FBE33	Manual feedrate B valid 3rd axis $3
Y953	FBE43	Manual feedrate B valid 4th axis $3
Y954	FBE53	Manual feedrate B valid 5th axis $3
Y955	FBE63	Manual feedrate B valid 6th axis $3
Y956	FBE73	Manual feedrate B valid 7th axis $3
Y957	FBE83	Manual feedrate B valid 8th axis $3
Y958	FBE14	Manual feedrate B valid 1st axis $4
Y959	FBE24	Manual feedrate B valid 2nd axis $4
Y95A	FBE34	Manual feedrate B valid 3rd axis $4
Y95B	FBE44	Manual feedrate B valid 4th axis $4
Y95C	FBE54	Manual feedrate B valid 5th axis $4
Y95D	FBE64	Manual feedrate B valid 6th axis $4
Y95E	FBE74	Manual feedrate B valid 7th axis $4
Y95F	FBE84	Manual feedrate B valid 8th axis $4
Y960	AZS11	Zero point initialization set mode 1st-axis $1
Y961	AZS21	Zero point initialization set mode 2nd-axis $1
Y962	AZS31	Zero point initialization set mode 3nd-axis $1
Y963	AZS41	Zero point initialization set mode 4th-axis $1
Y964	AZS51	Zero point initialization set mode 5th-axis $1
Y965	AZS61	Zero point initialization set mode 6th-axis $1
Y966	AZS71	Zero point initialization set mode 7th-axis $1
Y967	AZS81	Zero point initialization set mode 8th-axis $1
Y968	AZS12	Zero point initialization set mode 1st-axis $2
Y969	AZS22	Zero point initialization set mode 2nd-axis $2
Y96A	AZS32	Zero point initialization set mode 3nd-axis $2
Y96B	AZS42	Zero point initialization set mode 4th-axis $2
Y96C	AZS52	Zero point initialization set mode 5th-axis $2
Y96D	AZS62	Zero point initialization set mode 6th-axis $2
Y96E	AZS72	Zero point initialization set mode 7th-axis $2
Y96F	AZS82	Zero point initialization set mode 8th-axis $2
Y970	AZS13	Zero point initialization set mode 1st-axis $3
Y971	AZS23	Zero point initialization set mode 2nd-axis $3
Y972	AZS33	Zero point initialization set mode 3nd-axis $3
Y973	AZS43	Zero point initialization set mode 4th-axis $3
Y974	AZS53	Zero point initialization set mode 5th-axis $3
Y975	AZS63	Zero point initialization set mode 6th-axis $3
Y976	AZS73	Zero point initialization set mode 7th-axis $3
Y977	AZS83	Zero point initialization set mode 8th-axis $3
Y978	AZS14	Zero point initialization set mode 1st-axis $4
Y979	AZS24	Zero point initialization set mode 2nd-axis $4
Y97A	AZS34	Zero point initialization set mode 3nd-axis $4
Y97B	AZS44	Zero point initialization set mode 4th-axis $4
Y97C	AZS54	Zero point initialization set mode 5th-axis $4
Y97D	AZS64	Zero point initialization set mode 6th-axis $4
Y97E	AZS74	Zero point initialization set mode 7th-axis $4
Y97F	AZS84	Zero point initialization set mode 8th-axis $4
Y980	ZST11	Zero point initialization set start 1st-axis $1
Y981	ZST21	Zero point initialization set start 2nd-axis $1
Y982	ZST31	Zero point initialization set start 3nd-axis $1
Y983	ZST41	Zero point initialization set start 4th-axis $1
Y984	ZST51	Zero point initialization set start 5th-axis $1
Y985	ZST61	Zero point initialization set start 6th-axis $1
Y986	ZST71	Zero point initialization set start 7th-axis $1
Y987	ZST81	Zero point initialization set start 8th-axis $1
Y988	ZST12	Zero point initialization set start 1st-axis $2
Y989	ZST22	Zero point initialization set start 2nd-axis $2
Y98A	ZST32	Zero point initialization set start 3nd-axis $2
Y98B	ZST42	Zero point initialization set start 4th-axis $2
Y98C	ZST52	Zero point initialization set start 5th-axis $2
Y98D	ZST62	Zero point initialization set start 6th-axis $2
Y98E	ZST72	Zero point initialization set start 7th-axis $2

Device	Abbrev.	Signal name
Y98F	ZST82	Zero point initialization set start 8th-axis $2
Y990	ZST13	Zero point initialization set start 1st-axis $3
Y991	ZST23	Zero point initialization set start 2nd-axis $3
Y992	ZST33	Zero point initialization set start 3nd-axis $3
Y993	ZST43	Zero point initialization set start 4th-axis $3
Y994	ZST53	Zero point initialization set start 5th-axis $3
Y995	ZST63	Zero point initialization set start 6th-axis $3
Y996	ZST73	Zero point initialization set start 7th-axis $3
Y997	ZST83	Zero point initialization set start 8th-axis $3
Y998	ZST14	Zero point initialization set start 1st-axis $4
Y999	ZST24	Zero point initialization set start 2nd-axis $4
Y99A	ZST34	Zero point initialization set start 3nd-axis $4
Y99B	ZST44	Zero point initialization set start 4th-axis $4
Y99C	ZST54	Zero point initialization set start 5th-axis $4
Y99D	ZST64	Zero point initialization set start 6th-axis $4
Y99E	ZST74	Zero point initialization set start 7th-axis $4
Y99F	ZST84	Zero point initialization set start 8th-axis $4
Y9A0	ILC11	Current limit changeover 1st-axis $1
Y9A1	ILC21	Current limit changeover 2nd-axis $1
Y9A2	ILC31	Current limit changeover 3nd-axis $1
Y9A3	ILC41	Current limit changeover 4th-axis $1
Y9A4	ILC51	Current limit changeover 5th-axis $1
Y9A5	ILC61	Current limit changeover 6th-axis $1
Y9A6	ILC71	Current limit changeover 7th-axis $1
Y9A7	ILC81	Current limit changeover 8th-axis $1
Y9A8	ILC12	Current limit changeover 1st-axis $2
Y9A9	ILC22	Current limit changeover 2nd-axis $2
Y9AA	ILC32	Current limit changeover 3nd-axis $2
Y9AB	ILC42	Current limit changeover 4th-axis $2
Y9AC	ILC52	Current limit changeover 5th-axis $2
Y9AD	ILC62	Current limit changeover 6th-axis $2
Y9AE	ILC72	Current limit changeover 7th-axis $2
Y9AF	ILC82	Current limit changeover 8th-axis $2
Y9B0	ILC13	Current limit changeover 1st-axis $3
Y9B1	ILC23	Current limit changeover 2nd-axis $3
Y9B2	ILC33	Current limit changeover 3nd-axis $3
Y9B3	ILC43	Current limit changeover 4th-axis $3
Y9B4	ILC53	Current limit changeover 5th-axis $3
Y9B5	ILC63	Current limit changeover 6th-axis $3
Y9B6	ILC73	Current limit changeover 7th-axis $3
Y9B7	ILC83	Current limit changeover 8th-axis $3
Y9B8	ILC14	Current limit changeover 1st-axis $4
Y9B9	ILC24	Current limit changeover 2nd-axis $4
Y9BA	ILC34	Current limit changeover 3nd-axis $4
Y9BB	ILC44	Current limit changeover 4th-axis $4
Y9BC	ILC54	Current limit changeover 5th-axis $4
Y9BD	ILC64	Current limit changeover 6th-axis $4
Y9BE	ILC74	Current limit changeover 7th-axis $4
Y9BF	ILC84	Current limit changeover 8th-axis $4
Y9C0	DOR11	Droop release request 1st-axis $1
Y9C1	DOR21	Droop release request 2nd-axis $1
Y9C2	DOR31	Droop release request 3nd-axis $1
Y9C3	DOR41	Droop release request 4th-axis $1
Y9C4	DOR51	Droop release request 5th-axis $1
Y9C5	DOR61	Droop release request 6th-axis $1
Y9C6	DOR71	Droop release request 7th-axis $1
Y9C7	DOR81	Droop release request 8th-axis $1
Y9C8	DOR12	Droop release request 1st-axis $2
Y9C9	DOR22	Droop release request 2nd-axis $2
Y9CA	DOR32	Droop release request 3nd-axis $2
Y9CB	DOR42	Droop release request 4th-axis $2
Y9CC	DOR52	Droop release request 5th-axis $2
Y9CD	DOR62	Droop release request 6th-axis $2
Y9CE	DOR72	Droop release request 7th-axis $2
Y9CF	DOR82	Droop release request 8th-axis $2
Y9D0	DOR13	Droop release request 1st-axis $3
Y9D1	DOR23	Droop release request 2nd-axis $3
Y9D2	DOR33	Droop release request 3nd-axis $3
Y9D3	DOR43	Droop release request 4th-axis $3
Y9D4	DOR53	Droop release request 5th-axis $3
Y9D5	DOR63	Droop release request 6th-axis $3
Y9D6	DOR73	Droop release request 7th-axis $3
Y9D7	DOR83	Droop release request 8th-axis $3
Y9D8	DOR14	Droop release request 1st-axis $4

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y9D9	DOR24	Droop release request 2nd-axis $4
Y9DA	DOR34	Droop release request 3nd-axis $4
Y9DB	DOR44	Droop release request 4th-axis $4
Y9DC	DOR54	Droop release request 5th-axis $4
Y9DD	DOR64	Droop release request 6th-axis $4
Y9DE	DOR74	Droop release request 7th-axis $4
Y9DF	DOR84	Droop release request 8th-axis $4
Y9E0		Workpiece coordinate Measurement 1st axis (Spare) $1
Y9E1		Workpiece coordinate Measurement 2nd axis $1
Y9E2		Workpiece coordinate Measurement 3rd axis (Spare) $1
Y9E3		Workpiece coordinate Measurement 4th axis (Spare) $1
Y9E4		Workpiece coordinate Measurement 5th axis (Spare) $1
Y9E5		Workpiece coordinate Measurement 6th axis (Spare) $1
Y9E6		Workpiece coordinate Measurement 7th axis (Spare) $1
Y9E7		Workpiece coordinate Measurement 8th axis (Spare) $1
Y9E8		Workpiece coordinate Measurement 1st axis (Spare) $2
Y9E9		Workpiece coordinate Measurement 2nd axis $2
Y9EA		Workpiece coordinate Measurement 3rd axis (Spare) $2
Y9EB		Workpiece coordinate Measurement 4th axis (Spare) $2
Y9EC		Workpiece coordinate Measurement 5th axis (Spare) $2
Y9ED		Workpiece coordinate Measurement 6th axis (Spare) $2
Y9EE		Workpiece coordinate Measurement 7th axis (Spare) $2
Y9EF		Workpiece coordinate Measurement 8th axis (Spare) $2
Y9F0		Workpiece coordinate Measurement 1st axis (Spare) $3
Y9F1		Workpiece coordinate Measurement 2nd axis $3
Y9F2		Workpiece coordinate Measurement 3rd axis (Spare) $3
Y9F3		Workpiece coordinate Measurement 4th axis (Spare) $3
Y9F4		Workpiece coordinate Measurement 5th axis (Spare) $3
Y9F5		Workpiece coordinate Measurement 6th axis (Spare) $3
Y9F6		Workpiece coordinate Measurement 7th axis (Spare) $3
Y9F7		Workpiece coordinate Measurement 8th axis (Spare) $3
Y9F8		Workpiece coordinate Measurement 1st axis (Spare) $4
Y9F9		Workpiece coordinate Measurement 2nd axis $4
Y9FA		Workpiece coordinate Measurement 3rd axis (Spare) $4
Y9FB		Workpiece coordinate Measurement 4th axis (Spare) $4
Y9FC		Workpiece coordinate Measurement 5th axis (Spare) $4
Y9FD		Workpiece coordinate Measurement 6th axis (Spare) $4
Y9FE		Workpiece coordinate Measurement 7th axis (Spare) $4
Y9FF		Workpiece coordinate Measurement 8th axis (Spare) $4
YA00	DTCH211	Control axis detach 2 1st-axis $1
YA01	DTCH221	Control axis detach 2 2nd-axis $1
YA02	DTCH231	Control axis detach 2 3nd-axis $1
YA03	DTCH241	Control axis detach 2 4th-axis $1
YA04	DTCH251	Control axis detach 2 5th-axis $1
YA05	DTCH261	Control axis detach 2 6th-axis $1
YA06	DTCH271	Control axis detach 2 7th-axis $1
YA07	DTCH281	Control axis detach 2 8th-axis $1
YA08	DTCH212	Control axis detach 2 1st-axis $2
YA09	DTCH222	Control axis detach 2 2nd-axis $2
YA0A	DTCH232	Control axis detach 2 3nd-axis $2
YA0B	DTCH242	Control axis detach 2 4th-axis $2
YA0C	DTCH252	Control axis detach 2 5th-axis $2
YA0D	DTCH262	Control axis detach 2 6th-axis $2
YA0E	DTCH272	Control axis detach 2 7th-axis $2
YA0F	DTCH282	Control axis detach 2 8th-axis $2
YA10	DTCH213	Control axis detach 2 1st-axis $3
YA11	DTCH223	Control axis detach 2 2nd-axis $3
YA12	DTCH233	Control axis detach 2 3nd-axis $3
YA13	DTCH243	Control axis detach 2 4th-axis $3
YA14	DTCH253	Control axis detach 2 5th-axis $3
YA15	DTCH263	Control axis detach 2 6th-axis $3
YA16	DTCH273	Control axis detach 2 7th-axis $3
YA17	DTCH283	Control axis detach 2 8th-axis $3
YA18	DTCH214	Control axis detach 2 1st-axis $4
YA19	DTCH224	Control axis detach 2 2nd-axis $4
YA1A	DTCH234	Control axis detach 2 3nd-axis $4
YA1B	DTCH244	Control axis detach 2 4th-axis $4
YA1C	DTCH254	Control axis detach 2 5th-axis $4
YA1D	DTCH264	Control axis detach 2 6th-axis $4
YA1E	DTCH274	Control axis detach 2 7th-axis $4
YA1F	DTCH284	Control axis detach 2 8th-axis $4
YA20	UCLPF11	Unclamp completion 1st-axis $1
YA21	UCLPF21	Unclamp completion 2nd-axis $1
YA22	UCLPF31	Unclamp completion 3nd-axis $1

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YA23	UCLPF41	Unclamp completion 4th-axis $1
YA24	UCLPF51	Unclamp completion 5th-axis $1
YA25	UCLPF61	Unclamp completion 6th-axis $1
YA26	UCLPF71	Unclamp completion 7th-axis $1
YA27	UCLPF81	Unclamp completion 8th-axis $1
YA28	UCLPF12	Unclamp completion 1st-axis $2
YA29	UCLPF22	Unclamp completion 2nd-axis $2
YA2A	UCLPF32	Unclamp completion 3nd-axis $2
YA2B	UCLPF42	Unclamp completion 4th-axis $2
YA2C	UCLPF52	Unclamp completion 5th-axis $2
YA2D	UCLPF62	Unclamp completion 6th-axis $2
YA2E	UCLPF72	Unclamp completion 7th-axis $2
YA2F	UCLPF82	Unclamp completion 8th-axis $2
YA30	UCLPF13	Unclamp completion 1st-axis $3
YA31	UCLPF23	Unclamp completion 2nd-axis $3
YA32	UCLPF33	Unclamp completion 3nd-axis $3
YA33	UCLPF43	Unclamp completion 4th-axis $3
YA34	UCLPF53	Unclamp completion 5th-axis $3
YA35	UCLPF63	Unclamp completion 6th-axis $3
YA36	UCLPF73	Unclamp completion 7th-axis $3
YA37	UCLPF83	Unclamp completion 8th-axis $3
YA38	UCLPF14	Unclamp completion 1st-axis $4
YA39	UCLPF24	Unclamp completion 2nd-axis $4
YA3A	UCLPF34	Unclamp completion 3nd-axis $4
YA3B	UCLPF44	Unclamp completion 4th-axis $4
YA3C	UCLPF54	Unclamp completion 5th-axis $4
YA3D	UCLPF64	Unclamp completion 6th-axis $4
YA3E	UCLPF74	Unclamp completion 7th-axis $4
YA3F	UCLPF84	Unclamp completion 8th-axis $4
YA40	ZR11	Each axis reference position return 1st-axis $1
YA41	ZR21	Each axis reference position return 2nd-axis $1
YA42	ZR31	Each axis reference position return 3nd-axis $1
YA43	ZR41	Each axis reference position return 4th-axis $1
YA44	ZR51	Each axis reference position return 5th-axis $1
YA45	ZR61	Each axis reference position return 6th-axis $1
YA46	ZR71	Each axis reference position return 7th-axis $1
YA47	ZR81	Each axis reference position return 8th-axis $1
YA48	ZR12	Each axis reference position return 1st-axis $2
YA49	ZR22	Each axis reference position return 2nd-axis $2
YA4A	ZR32	Each axis reference position return 3nd-axis $2
YA4B	ZR42	Each axis reference position return 4th-axis $2
YA4C	ZR52	Each axis reference position return 5th-axis $2
YA4D	ZR62	Each axis reference position return 6th-axis $2
YA4E	ZR72	Each axis reference position return 7th-axis $2
YA4F	ZR82	Each axis reference position return 8th-axis $2
YA50	ZR13	Each axis reference position return 1st-axis $3
YA51	ZR23	Each axis reference position return 2nd-axis $3
YA52	ZR33	Each axis reference position return 3nd-axis $3
YA53	ZR43	Each axis reference position return 4th-axis $3
YA54	ZR53	Each axis reference position return 5th-axis $3
YA55	ZR63	Each axis reference position return 6th-axis $3
YA56	ZR73	Each axis reference position return 7th-axis $3
YA57	ZR83	Each axis reference position return 8th-axis $3
YA58	ZR14	Each axis reference position return 1st-axis $4
YA59	ZR24	Each axis reference position return 2nd-axis $4
YA5A	ZR34	Each axis reference position return 3nd-axis $4
YA5B	ZR44	Each axis reference position return 4th-axis $4
YA5C	ZR54	Each axis reference position return 5th-axis $4
YA5D	ZR64	Each axis reference position return 6th-axis $4
YA5E	ZR74	Each axis reference position return 7th-axis $4
YA5F	ZR84	Each axis reference position return 8th-axis $4
YA60		Mixed control (cross axis control) request 1st axis $1
YA61		Mixed control (cross axis control) request 2nd axis $1
YA62		Mixed control (cross axis control) request 3rd axis $1
YA63		Mixed control (cross axis control) request 4th axis $1
YA64		Mixed control (cross axis control) request 5th axis $1
YA65		Mixed control (cross axis control) request 6th axis $1
YA66		Mixed control (cross axis control) request 7th axis $1
YA67		Mixed control (cross axis control) request 8th axis $1
YA68		Mixed control (cross axis control) request 1st axis $2
YA69		Mixed control (cross axis control) request 2nd axis $2
YA6A		Mixed control (cross axis control) request 3rd axis $2
YA6B		Mixed control (cross axis control) request 4th axis $2
YA6C		Mixed control (cross axis control) request 5th axis $2

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YA6D		Mixed control (cross axis control) request 6th axis $2
YA6E		Mixed control (cross axis control) request 7th axis $2
YA6F		Mixed control (cross axis control) request 8th axis $2
YA70		Mixed control (cross axis control) request 1st axis $3
YA71		Mixed control (cross axis control) request 2nd axis $3
YA72		Mixed control (cross axis control) request 3rd axis $3
YA73		Mixed control (cross axis control) request 4th axis $3
YA74		Mixed control (cross axis control) request 5th axis $3
YA75		Mixed control (cross axis control) request 6th axis $3
YA76		Mixed control (cross axis control) request 7th axis $3
YA77		Mixed control (cross axis control) request 8th axis $3
YA78		Mixed control (cross axis control) request 1st axis $4
YA79		Mixed control (cross axis control) request 2nd axis $4
YA7A		Mixed control (cross axis control) request 3rd axis $4
YA7B		Mixed control (cross axis control) request 4th axis $4
YA7C		Mixed control (cross axis control) request 5th axis $4
YA7D		Mixed control (cross axis control) request 6th axis $4
YA7E		Mixed control (cross axis control) request 7th axis $4
YA7F		Mixed control (cross axis control) request 8th axis $4
YA80	SYNC11	Synchronous control request 1st axis $1
YA81	SYNC21	Synchronous control request 2nd axis $1
YA82	SYNC31	Synchronous control request 3rd axis $1
YA83	SYNC41	Synchronous control request 4th axis $1
YA84	SYNC51	Synchronous control request 5th axis $1
YA85	SYNC61	Synchronous control request 6th axis $1
YA86	SYNC71	Synchronous control request 7th axis $1
YA87	SYNC81	Synchronous control request 8th axis $1
YA88	SYNC12	Synchronous control request 1st axis $2
YA89	SYNC22	Synchronous control request 2nd axis $2
YA8A	SYNC32	Synchronous control request 3rd axis $2
YA8B	SYNC42	Synchronous control request 4th axis $2
YA8C	SYNC52	Synchronous control request 5th axis $2
YA8D	SYNC62	Synchronous control request 6th axis $2
YA8E	SYNC72	Synchronous control request 7th axis $2
YA8F	SYNC82	Synchronous control request 8th axis $2
YA90	SYNC13	Synchronous control request 1st axis $3
YA91	SYNC23	Synchronous control request 2nd axis $3
YA92	SYNC33	Synchronous control request 3rd axis $3
YA93	SYNC43	Synchronous control request 4th axis $3
YA94	SYNC53	Synchronous control request 5th axis $3
YA95	SYNC63	Synchronous control request 6th axis $3
YA96	SYNC73	Synchronous control request 7th axis $3
YA97	SYNC83	Synchronous control request 8th axis $3
YA98	SYNC14	Synchronous control request 1st axis $4
YA99	SYNC24	Synchronous control request 2nd axis $4
YA9A	SYNC34	Synchronous control request 3rd axis $4
YA9B	SYNC44	Synchronous control request 4th axis $4
YA9C	SYNC54	Synchronous control request 5th axis $4
YA9D	SYNC64	Synchronous control request 6th axis $4
YA9E	SYNC74	Synchronous control request 7th axis $4
YA9F	SYNC84	Synchronous control request 8th axis $4
YAA0	PILE11	Superimposition control request 1st axis $1
YAA1	PILE21	Superimposition control request 2nd axis $1
YAA2	PILE31	Superimposition control request 3rd axis $1
YAA3	PILE41	Superimposition control request 4th axis $1
YAA4	PILE51	Superimposition control request 5th axis $1
YAA5	PILE61	Superimposition control request 6th axis $1
YAA6	PILE71	Superimposition control request 7th axis $1
YAA7	PILE81	Superimposition control request 8th axis $1
YAA8	PILE12	Superimposition control request 1st axis $2
YAA9	PILE22	Superimposition control request 2nd axis $2
YAAA	PILE32	Superimposition control request 3rd axis $2
YAAB	PILE42	Superimposition control request 4th axis $2
YAAC	PILE52	Superimposition control request 5th axis $2
YAAD	PILE62	Superimposition control request 6th axis $2
YAAE	PILE72	Superimposition control request 7th axis $2
YAAF	PILE82	Superimposition control request 8th axis $2
YAB0	PILE13	Superimposition control request 1st axis $3
YAB1	PILE23	Superimposition control request 2nd axis $3
YAB2	PILE33	Superimposition control request 3rd axis $3
YAB3	PILE43	Superimposition control request 4th axis $3
YAB4	PILE53	Superimposition control request 5th axis $3
YAB5	PILE63	Superimposition control request 6th axis $3
YAB6	PILE73	Superimposition control request 7th axis $3

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YAB7	PILE83	Superimposition control request 8th axis $3
YAB8	PILE14	Superimposition control request 1st axis $4
YAB9	PILE24	Superimposition control request 2nd axis $4
YABA	PILE34	Superimposition control request 3rd axis $4
YABB	PILE44	Superimposition control request 4th axis $4
YABC	PILE54	Superimposition control request 5th axis $4
YABD	PILE64	Superimposition control request 6th axis $4
YABE	PILE74	Superimposition control request 7th axis $4
YABF	PILE84	Superimposition control request 8th axis $4
YAC0		NC axis control selection 1st axis $1
YAC1		NC axis control selection 2nd axis $1
YAC2		NC axis control selection 3rd axis $1
YAC3		NC axis control selection 4th axis $1
YAC4		NC axis control selection 5th axis $1
YAC5		NC axis control selection 6th axis $1
YAC6		NC axis control selection 7th axis $1
YAC7		NC axis control selection 8th axis $1
YAC8		NC axis control selection 1st axis $2
YAC9		NC axis control selection 2nd axis $2
YACA		NC axis control selection 3rd axis $2
YACB		NC axis control selection 4th axis $2
YACC		NC axis control selection 5th axis $2
YACD		NC axis control selection 6th axis $2
YACE		NC axis control selection 7th axis $2
YACF		NC axis control selection 8th axis $2
YAD0		NC axis control selection 1st axis $3
YAD1		NC axis control selection 2nd axis $3
YAD2		NC axis control selection 3rd axis $3
YAD3		NC axis control selection 4th axis $3
YAD4		NC axis control selection 5th axis $3
YAD5		NC axis control selection 6th axis $3
YAD6		NC axis control selection 7th axis $3
YAD7		NC axis control selection 8th axis $3
YAD8		NC axis control selection 1st axis $4
YAD9		NC axis control selection 2nd axis $4
YADA		NC axis control selection 3rd axis $4
YADB		NC axis control selection 4th axis $4
YADC		NC axis control selection 5th axis $4
YADD		NC axis control selection 6th axis $4
YADE		NC axis control selection 7th axis $4
YADF		NC axis control selection 8th axis $4
YAE0		Vertical axis pull-up prevention request 1st axis $1
YAE1		Vertical axis pull-up prevention request 2nd axis $1
YAE2		Vertical axis pull-up prevention request 3rd axis $1
YAE3		Vertical axis pull-up prevention request 4th axis $1
YAE4		Vertical axis pull-up prevention request 5th axis $1
YAE5		Vertical axis pull-up prevention request 6th axis $1
YAE6		Vertical axis pull-up prevention request 7th axis $1
YAE7		Vertical axis pull-up prevention request 8th axis $1
YAE8		Vertical axis pull-up prevention request 1st axis $2
YAE9		Vertical axis pull-up prevention request 2nd axis $2
YAEA		Vertical axis pull-up prevention request 3rd axis $2
YAEB		Vertical axis pull-up prevention request 4th axis $2
YAEC		Vertical axis pull-up prevention request 5th axis $2
YAED		Vertical axis pull-up prevention request 6th axis $2
YAEE		Vertical axis pull-up prevention request 7th axis $2
YAEF		Vertical axis pull-up prevention request 8th axis $2
YAF0		Vertical axis pull-up prevention request 1st axis $3
YAF1		Vertical axis pull-up prevention request 2nd axis $3
YAF2		Vertical axis pull-up prevention request 3rd axis $3
YAF3		Vertical axis pull-up prevention request 4th axis $3
YAF4		Vertical axis pull-up prevention request 5th axis $3
YAF5		Vertical axis pull-up prevention request 6th axis $3
YAF6		Vertical axis pull-up prevention request 7th axis $3
YAF7		Vertical axis pull-up prevention request 8th axis $3
YAF8		Vertical axis pull-up prevention request 1st axis $4
YAF9		Vertical axis pull-up prevention request 2nd axis $4
YAFA		Vertical axis pull-up prevention request 3rd axis $4
YAFB		Vertical axis pull-up prevention request 4th axis $4
YAFC		Vertical axis pull-up prevention request 5th axis $4
YAFD		Vertical axis pull-up prevention request 6th axis $4
YAFE		Vertical axis pull-up prevention request 7th axis $4
YAFF		Vertical axis pull-up prevention request 8th axis $4
YB00		Clamp completion 1st axis $1 ▲

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YB01		Clamp completion 2nd axis $1 ▲
YB02		Clamp completion 3rd axis $1 ▲
YB03		Clamp completion 4th axis $1 ▲
YB04		Clamp completion 5th axis $1 ▲
YB05		Clamp completion 6th axis $1 ▲
YB06		Clamp completion 7th axis $1 ▲
YB07		Clamp completion 8th axis $1 ▲
YB08		Clamp completion 1st axis $2 ▲
YB09		Clamp completion 2nd axis $2 ▲
YB0A		Clamp completion 3rd axis $2 ▲
YB0B		Clamp completion 4th axis $2 ▲
YB0C		Clamp completion 5th axis $2 ▲
YB0D		Clamp completion 6th axis $2 ▲
YB0E		Clamp completion 7th axis $2 ▲
YB0F		Clamp completion 8th axis $2 ▲
YB10		Clamp completion 1st axis $3 ▲
YB11		Clamp completion 2nd axis $3 ▲
YB12		Clamp completion 3rd axis $3 ▲
YB13		Clamp completion 4th axis $3 ▲
YB14		Clamp completion 5th axis $3 ▲
YB15		Clamp completion 6th axis $3 ▲
YB16		Clamp completion 7th axis $3 ▲
YB17		Clamp completion 8th axis $3 ▲
YB18		Clamp completion 1st axis $4 ▲
YB19		Clamp completion 2nd axis $4 ▲
YB1A		Clamp completion 3rd axis $4 ▲
YB1B		Clamp completion 4th axis $4 ▲
YB1C		Clamp completion 5th axis $4 ▲
YB1D		Clamp completion 6th axis $4 ▲
YB1E		Clamp completion 7th axis $4 ▲
YB1F		Clamp completion 8th axis $4 ▲
YC00	J1	Jog mode $1
YC01	H1	Handle mode $1
YC02	S1	Incremental mode $1
YC03	PTP1	Manual arbitrary feed mode $1
YC04	ZRN1	Reference position return mode $1
YC05	AST1	Automatic initialization mode $1
YC08	MEM1	Memory mode $1
YC09	T1	Tape mode $1
YC0A		Online operation mode (Computer link B) $1
YC0B	D1	MDI mode $1
YC10	ST1	Automatic operation "start" command (Cycle start) $1
YC11	*SP1	Automatic operation "pause" command (Feed hold) $1
YC12	SBK1	Single block $1
YC13	*BSL1	Block start interlock $1
YC14	*CSL1	Cutting block start interlock $1
YC15	DRN1	Dry run $1
YC17	ERD1	Error detection $1
YC18	NRST11	NC reset 1 $1
YC19	NRST21	NC reset 2 $1
YC1A	RRW1	Reset & rewind $1
YC1B	*CDZ1	Chamfering $1
YC1C	ARST1	Automatic restart $1
YC1D	EXTSS1	External search strobe $1
YC1E	FIN11	M function finish 1 $1
YC1F	FIN21	M function finish 2 $1
YC20	TLM1	Tool length measurement 1 $1
YC21	TLMS1	Tool length measurement 2 $1
YC22	SYCM1	Synchronization correction mode $1
YC23	PRST1	Program restart $1
YC24	PB1	Playback $1
YC25	UIT1	Macro interrupt $1
YC26	RT1	Rapid traverse $1
YC27		Reverse run $1
YC28	ABS1	Manual absolute $1
YC29	DLK1	Display lock $1
YC2A	F1D1	F1-digit speed change valid $1
YC2B	CRQ1	Recalculation request $1
YC2C	QEMG1	PLC emergency stop $1
YC2D	RTN1	Reference position retract $1
YC2E	PIT1	PLC interrupt $1
YC30	CHPS1	Chopping $1
YC31	RSST1	Search & start $1
YC32		Magazine index check valid (ATC high-speed) $1

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YC34		Chopping parameter valid $1
YC35		Inclined axis control valid $1
YC36		Inclined axis control:no z axis compensation $1
YC37	BDT11	Optional block skip 1 $1
YC38	BDT21	Optional block skip 2 $1
YC39	BDT31	Optional block skip 3 $1
YC3A	BDT41	Optional block skip 4 $1
YC3B	BDT51	Optional block skip 5 $1
YC3C	BDT61	Optional block skip 6 $1
YC3D	BDT71	Optional block skip 7 $1
YC3E	BDT81	Optional block skip 8 $1
YC3F	BDT91	Optional block skip 9 $1
YC40	HS111	1st handle axis selection code 1 $1
YC41	HS121	1st handle axis selection code 2 $1
YC42	HS141	1st handle axis selection code 4 $1
YC43	HS181	1st handle axis selection code 8 $1
YC44	HS1161	1st handle axis selection code 16 $1
YC47	HS1S1	1st handle valid $1
YC48	HS211	2nd handle axis selection code 1 $1
YC49	HS221	2nd handle axis selection code 2 $1
YC4A	HS241	2nd handle axis selection code 4 $1
YC4B	HS281	2nd handle axis selection code 8 $1
YC4C	HS2161	2nd handle axis selection code 16 $1
YC4F	HS2S1	2nd handle valid $1
YC50	HS311	3rd handle axis selection code 1 $1
YC51	HS321	3rd handle axis selection code 2 $1
YC52	HS341	3rd handle axis selection code 4 $1
YC53	HS381	3rd handle axis selection code 8 $1
YC54	HS3161	3rd handle axis selection code 16 $1
YC57	HS3S1	3rd handle valid $1
YC58	OVC1	Override cancel $1
YC59	OVSL1	Manual override method selection $1
YC5A	AFL1	Miscellaneous function lock $1
YC5C	TRV1	Tap retract $1
YC5E		Tool handle feed mode $1
YC60	*FV111	Cutting feedrate override code 1 $1
YC61	*FV121	Cutting feedrate override code 2 $1
YC62	*FV141	Cutting feedrate override code 4 $1
YC63	*FV181	Cutting feedrate override code 8 $1
YC64	*FV1161	Cutting feedrate override code 16 $1
YC66	FV2E1	2nd cutting feedrate override valid $1
YC67	FVS1	Cutting feedrade override method selection $1
YC68	ROV11	Rapid traverse override code 1 $1
YC69	ROV21	Rapid traverse override code 2 $1
YC6F	ROVS1	Rapid traverse override method selection $1
YC70	*JV11	Manual feedrate code 1 $1
YC71	*JV21	Manual feedrate code 2 $1
YC72	*JV41	Manual feedrate code 4 $1
YC73	*JV81	Manual feedrate code 8 $1
YC74	*JV161	Manual feedrate code 16 $1
YC77	JVS1	Manual feedrate method selection $1
YC78	PCF11	Feedrate least increment code 1 $1
YC79	PCF21	Feedrate least increment code 2 $1
YC7A	JSYN1	Jog synchronous feed valid $1
YC7B	JHAN1	Jog•handle synchronous $1
YC7C		Each axis manual feedrate B valid $1
YC7D		Manual feedrate B surface speed control valid $1
YC7E		Circular feed in manual mode valid $1
YC80	MP11	Handle/incremental feed multiplication code 1 $1
YC81	MP21	Handle/incremental feed multiplication code 2 $1
YC82	MP41	Handle/incremental feed multiplication code 4 $1
YC86	MPP1	Magnification valid for each handle $1
YC87	MPS1	Handle/incremental feed magnification method selection $1
YC88	TAL11	Tool alarm 1/Tool skip 1 $1
YC89	TAL21	Tool alarm 2 $1
YC8A	TCEF1	Usage data count valid $1
YC8B	TLF11	Tool life management input $1
YC8C	TCRT1	Tool change reset $1
YC8D		Tool escape and return transit point designation $1
YC8E		Manual tool length measurement interlock temporarily canceled $1 ▲
YC90	ZSL11	Reference position selection code 1 $1
YC91	ZSL21	Reference position selection code 2 $1
YC92		Tool length compensation along the tool axis compensation amount change mode $1

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YC97	M1	Reference position selection method $1
YC9D		Manual speed command valid $1
YC9E		Manual speed command sign reversed $1
YC9F		Manual speed command reverse run valid $1
YCA0	CX111	Manual arbitrary feed 1st axis selection code 1 $1
YCA1	CX121	Manual arbitrary feed 1st axis selection code 2 $1
YCA2	CX141	Manual arbitrary feed 1st axis selection code 4 $1
YCA3	CX181	Manual arbitrary feed 1st axis selection code 8 $1
YCA4	CX1161	Manual arbitrary feed 1st axis selection code 16 $1
YCA7	CX1S1	Manual arbitrary feed 1st axis valid $1
YCA8	CX211	Manual arbitrary feed 2nd axis selection code 1 $1
YCA9	CX221	Manual arbitrary feed 2nd axis selection code 2 $1
YCAA	CX241	Manual arbitrary feed 2nd axis selection code 4 $1
YCAB	CX281	Manual arbitrary feed 2nd axis selection code 8 $1
YCAC	CX2161	Manual arbitrary feed 2nd axis selection code 16 $1
YCAF	CX2S1	Manual arbitrary feed 2nd axis valid $1
YCB0	CX311	Manual arbitrary feed 3rd axis selection code 1 $1
YCB1	CX321	Manual arbitrary feed 3rd axis selection code 2 $1
YCB2	CX341	Manual arbitrary feed 3rd axis selection code 4 $1
YCB3	CX381	Manual arbitrary feed 3rd axis selection code 8 $1
YCB4	CX3161	Manual arbitrary feed 3rd axis selection code 16 $1
YCB7	CX3S1	Manual arbitrary feed 3rd axis valid $1
YCB8	CXS11	Manual arbitrary feed smoothing off $1
YCB9	CXS21	Manual arbitrary feed axis independent $1
YCBA	CXS31	Manual arbitrary feed EX.F/MODAL.F $1
YCBB	CXS41	Manual arbitrary feed G0/G1 $1
YCBC	CXS51	Manual arbitrary feed MC/WK $1
YCBD	CXS61	Manual arbitrary feed ABS/INC $1
YCBE	*CXS71	Manual arbitrary feed stop $1
YCBF	CXS81	Manual arbitrary feed strobe $1
YCC0	ILM11	Current limit mode 1 $1
YCC1	ILM21	Current limit mode 2 $1
YCC3	LDWT1	Load monitor execution $1 ▲
YCC4		Load monitor teaching mode $1 ▲
YCC5		Load monitor monitor mode $1 ▲
YCC6		Load monitor alarm reset $1 ▲
YCC7		Load monitor warning reset $1 ▲
YCC8	*ZRIT1	2nd reference position return interlock $1
YCC9		Adaptive control execution $1 ▲
YCCA		Small diameter deep hole drilling cycle $1
YCCB		Chuck barrier on $1
YCCC		High-speed retract function valid $1 ▲
YCCF		Tool retract start $1 ▲
YCD0		Waiting ignore $1
YCD1		Spindle-spindle polygon cancel $1
YCD2		Synchronous tapping command polarity reversal $1
YCD3		Spindle off mode $1
YCD4		Longitudinal hole drilling axis selection $1
YCD5		Optimum acceleration/deceleration parameter switching request [axis] $1 ▲
YCD6	TRVEC	Tap retract possible state cancel $1
YCD7	CHPRCR1	Chopping compensation update prevention request $1
YCD8		Barrier valid (left) $1
YCD9		Barrier valid (right) $1
YCDA		Tool presetter sub-side valid $1 ▲
YCE1	DOOR21	Door open II $1
YCE2		Door open signal input(spindle speed monitor) $1
YCE3		Door interlock spindle speed clamp $1 ▲
YCE8		Door open II (2 channels per 1 part system) $1
YCE9		Door open II (3 channels per 1 part system) Spare $1
YCEF		Cutting torque estimation in progress $1 ▲
YCF4	BCHK1	Barrier check invalid $1
YCFA	DRNC1	Dry run invalid $1
YCFE		Appropriate machining diagnosis in progress $1 ▲
YCFF		Appropriate machining diagnosis error reset $1 ▲
YD08	RVSP	Reverse run from block start $1
YD09	RVIT	Macro interrupt priority $1
YD0A	RVMD	Reverse run control mode $1
YD18	MJCT1	Manual feed for 5-axis machining (JOG, INC) in tool axis coordinate system $1
YD19	MJCB1	Manual feed for 5-axis machining (JOG, INC) in table coordinate system $1
YD1A	MJCF1	Manual feed for 5-axis machining (JOG, INC) in feature coordinate system $1

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YD1B	MH1CT1	Manual feed for 5-axis machining (1st handle) in tool axis coordinate system $1
YD1C	MH1CB1	Manual feed for 5-axis machining (1st handle) in table coordinate system $1
YD1D	MH1CF1	Manual feed for 5-axis machining (1st handle) in feature coordinate system $1
YD1E	MH2CT1	Manual feed for 5-axis machining (2nd handle) in tool axis coordinate system $1
YD1F	MH2CB1	Manual feed for 5-axis machining (2nd handle) in table coordinate system $1
YD20	MH2CF1	Manual feed for 5-axis machining (2nd handle) in feature coordinate system $1
YD21	MH3CT1	Manual feed for 5-axis machining (3rd handle) in tool axis coordinate system $1
YD22	MH3CB1	Manual feed for 5-axis machining (3rd handle) in table coordinate system $1
YD23	MH3CF1	Manual feed for 5-axis machining (3rd handle) in feature coordinate system $1
YD27	TCPRC1	Tool center point rotation $1
YD40	J2	Jog mode $2
YD41	H2	Handle mode $2
YD42	S2	Incremental mode $2
YD43	PTP2	Manual arbitrary feed mode $2
YD44	ZRN2	Reference position return mode $2
YD45	AST2	Automatic initialization mode $2
YD48	MEM2	Memory mode $2
YD49	T2	Tape mode $2
YD4A		Online operation mode (Computer link B) $2
YD4B	D2	MDI mode $2
YD50	ST2	Automatic operation "start" command (Cycle start) $2
YD51	*SP2	Automatic operation "pause" command (Feed hold) $2
YD52	SBK2	Single block $2
YD53	*BSL2	Block start interlock $2
YD54	*CSL2	Cutting block start interlock $2
YD55	DRN2	Dry run $2
YD57	ERD2	Error detection $2
YD58	NRST12	NC reset 1 $2
YD59	NRST22	NC reset 2 $2
YD5A	RRW2	Reset & rewind $2
YD5B	*CDZ2	Chamfering $2
YD5C	ARST2	Automatic restart $2
YD5D	EXTSS2	External search strobe $2
YD5E	FIN12	M function finish 1 $2
YD5F	FIN22	M function finish 2 $2
YD60	TLM2	Tool length measurement 1 $2
YD61	TLMS2	Tool length measurement 2 $2
YD62	SYCM2	Synchronization correction mode $2
YD63	PRST2	Program restart $2
YD64	PB2	Playback $2
YD65	UIT2	Macro interrupt $2
YD66	RT2	Rapid traverse $2
YD67		Reverse run $2
YD68	ABS2	Manual absolute $2
YD69	DLK2	Display lock $2
YD6A	F1D2	F1-digit speed change valid $2
YD6B	CRQ2	Recalculation request $2
YD6C	QEMG2	PLC emergency stop $2
YD6D	RTN2	Reference position retract $2
YD6E	PIT2	PLC interrupt $2
YD70	CHPS2	Chopping $2
YD71	RSST2	Search & start $2
YD72		Magazine index check valid (ATC high-speed) $2
YD74		Chopping parameter valid $2
YD75		Inclined axis control valid $2
YD76		Inclined axis control:no z axis compensation $2
YD77	BDT12	Optional block skip 1 $2
YD78	BDT22	Optional block skip 2 $2
YD79	BDT32	Optional block skip 3 $2
YD7A	BDT42	Optional block skip 4 $2
YD7B	BDT52	Optional block skip 5 $2
YD7C	BDT62	Optional block skip 6 $2
YD7D	BDT72	Optional block skip 7 $2
YD7E	BDT82	Optional block skip 8 $2
YD7F	BDT92	Optional block skip 9 $2
YD80	HS112	1st handle axis selection code 1 $2
YD81	HS122	1st handle axis selection code 2 $2

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YD82	HS142	1st handle axis selection code 4 $2
YD83	HS182	1st handle axis selection code 8 $2
YD84	HS1162	1st handle axis selection code 16 $2
YD87	HS1S2	1st handle valid $2
YD88	HS212	2nd handle axis selection code 1 $2
YD89	HS222	2nd handle axis selection code 2 $2
YD8A	HS242	2nd handle axis selection code 4 $2
YD8B	HS282	2nd handle axis selection code 8 $2
YD8C	HS2162	2nd handle axis selection code 16 $2
YD8F	HS2S2	2nd handle valid $2
YD90	HS312	3rd handle axis selection code 1 $2
YD91	HS322	3rd handle axis selection code 2 $2
YD92	HS342	3rd handle axis selection code 4 $2
YD93	HS382	3rd handle axis selection code 8 $2
YD94	HS3162	3rd handle axis selection code 16 $2
YD97	HS3S2	3rd handle valid $2
YD98	OVC2	Override cancel $2
YD99	OVSL2	Manual override method selection $2
YD9A	AFL2	Miscellaneous function lock $2
YD9C	TRV2	Tap retract $2
YD9E		Tool handle feed mode $2
YDA0	*FV112	Cutting feedrate override code 1 $2
YDA1	*FV122	Cutting feedrate override code 2 $2
YDA2	*FV142	Cutting feedrate override code 4 $2
YDA3	*FV182	Cutting feedrate override code 8 $2
YDA4	*FV1162	Cutting feedrate override code 16 $2
YDA6	FV2E2	2nd cutting feedrate override valid $2
YDA7	FVS2	Cutting feedrade override method selection $2
YDA8	ROV12	Rapid traverse override code 1 $2
YDA9	ROV22	Rapid traverse override code 2 $2
YDAF	ROVS2	Rapid traverse override method selection $2
YDB0	*JV12	Manual feedrate code 1 $2
YDB1	*JV22	Manual feedrate code 2 $2
YDB2	*JV42	Manual feedrate code 4 $2
YDB3	*JV82	Manual feedrate code 8 $2
YDB4	*JV162	Manual feedrate code 16 $2
YDB7	JVS2	Manual feedrate method selection $2
YDB8	PCF12	Feedrate least increment code 1 $2
YDB9	PCF22	Feedrate least increment code 2 $2
YDBA	JSYN2	Jog synchronous feed valid $2
YDBB	JHAN2	Jog•handle synchronous $2
YDBC		Each axis manual feedrate B valid $2
YDBD		Manual feedrate B surface speed control valid $2
YDBE		Circular feed in manual mode valid $2
YDC0	MP12	Handle/incremental feed multiplication code 1 $2
YDC1	MP22	Handle/incremental feed multiplication code 2 $2
YDC2	MP42	Handle/incremental feed multiplication code 4 $2
YDC6	MPP2	Magnification valid for each handle $2
YDC7	MPS2	Handle/incremental feed magnification method selection $2
YDC8	TAL12	Tool alarm 1/Tool skip 1 $2
YDC9	TAL22	Tool alarm 2 $2
YDCA	TCEF2	Usage data count valid $2
YDCB	TLF12	Tool life management input $2
YDCC	TCRT2	Tool change reset $2
YDCD		Tool escape and return transit point designation $2
YDCE		Manual tool length measurement interlock temporarily canceled $2 ▲
YDD0	ZSL12	Reference position selection code 1 $2
YDD1	ZSL22	Reference position selection code 2 $2
YDD2		Tool length compensation along the tool axis compensation amount change mode $2
YDD7	M2	Reference position selection method $2
YDDD		Manual speed command valid $2
YDDE		Manual speed command sign reversed $2
YDDF		Manual speed command reverse run valid $2
YDE0	CX112	Manual arbitrary feed 1st axis selection code 1 $2
YDE1	CX122	Manual arbitrary feed 1st axis selection code 2 $2
YDE2	CX142	Manual arbitrary feed 1st axis selection code 4 $2
YDE3	CX182	Manual arbitrary feed 1st axis selection code 8 $2
YDE4	CX1162	Manual arbitrary feed 1st axis selection code 16 $2
YDE7	CX1S2	Manual arbitrary feed 1st axis valid $2
YDE8	CX212	Manual arbitrary feed 2nd axis selection code 1 $2
YDE9	CX222	Manual arbitrary feed 2nd axis selection code 2 $2
YDEA	CX242	Manual arbitrary feed 2nd axis selection code 4 $2
YDEB	CX282	Manual arbitrary feed 2nd axis selection code 8 $2

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YDEC	CX2162	Manual arbitrary feed 2nd axis selection code 16 $2
YDEF	CX2S2	Manual arbitrary feed 2nd axis valid $2
YDF0	CX312	Manual arbitrary feed 3rd axis selection code 1 $2
YDF1	CX322	Manual arbitrary feed 3rd axis selection code 2 $2
YDF2	CX342	Manual arbitrary feed 3rd axis selection code 4 $2
YDF3	CX382	Manual arbitrary feed 3rd axis selection code 8 $2
YDF4	CX3162	Manual arbitrary feed 3rd axis selection code 16 $2
YDF7	CX3S2	Manual arbitrary feed 3rd axis valid $2
YDF8	CXS12	Manual arbitrary feed smoothing off $2
YDF9	CXS22	Manual arbitrary feed axis independent $2
YDFA	CXS32	Manual arbitrary feed EX.F/MODAL.F $2
YDFB	CXS42	Manual arbitrary feed G0/G1 $2
YDFC	CXS52	Manual arbitrary feed MC/WK $2
YDFD	CXS62	Manual arbitrary feed ABS/INC $2
YDFE	*CXS72	Manual arbitrary feed stop $2
YDFF	CXS82	Manual arbitrary feed strobe $2
YE00	ILM12	Current limit mode 1 $2
YE01	ILM22	Current limit mode 2 $2
YE03	LDWT2	Load monitor execution $2 ▲
YE04		Load monitor teaching mode $2 ▲
YE05		Load monitor monitor mode $2 ▲
YE06		Load monitor alarm reset $2 ▲
YE07		Load monitor warning reset $2 ▲
YE08	*ZRIT2	2nd reference position return interlock $2
YE09		Adaptive control execution $2 ▲
YE0A		Small diameter deep hole drilling cycle $2
YE0B		Chuck barrier on $2
YE0C		High-speed retract function valid $2 ▲
YE0F		Tool retract start $2 ▲
YE10		Waiting ignore $2
YE11		Spindle-spindle polygon cancel $2
YE12		Synchronous tapping command polarity reversal $2
YE13		Spindle off mode $2
YE14		Longitudinal hole drilling axis selection $2
YE15		Optimum acceleration/deceleration parameter switching request [axis] $2 ▲
YE16	TRVEC	Tap retract possible state cancel $2
YE17	CHPRCR2	Chopping compensation update prevention request $2
YE18		Barrier valid (left) $2
YE19		Barrier valid (right) $2
YE1A		Tool presetter sub-side valid $2 ▲
YE21	DOOR22	Door open II $2
YE22		Door open signal input(spindle speed monitor) $2
YE23		Door interlock spindle speed clamp $2 ▲
YE28		Door open II (2 channels per 1 part system) $2
YE29		Door open II (3 channels per 1 part system) Spare $2
YE2F		Cutting torque estimation in progress $2 ▲
YE34	BCHK2	Barrier check invalid $2
YE3A	DRNC2	Dry run invalid $2
YE3E		Appropriate machining diagnosis in progress $2 ▲
YE3F		Appropriate machining diagnosis error reset $2 ▲
YE48	RVSP	Reverse run from block start $2
YE49	RVIT	Macro interrupt priority $2
YE4A	RVMD	Reverse run control mode $2
YE58	MJCT2	Manual feed for 5-axis machining (JOG, INC) in tool axis coordinate system $2
YE59	MJCB2	Manual feed for 5-axis machining (JOG, INC) in table coordinate system $2
YE5A	MJCF2	Manual feed for 5-axis machining (JOG, INC) in feature coordinate system $2
YE5B	MH1CT2	Manual feed for 5-axis machining (1st handle) in tool axis coordinate system $2
YE5C	MH1CB2	Manual feed for 5-axis machining (1st handle) in table coordinate system $2
YE5D	MH1CF2	Manual feed for 5-axis machining (1st handle) in feature coordinate system $2
YE5E	MH2CT2	Manual feed for 5-axis machining (2nd handle) in tool axis coordinate system $2
YE5F	MH2CB2	Manual feed for 5-axis machining (2nd handle) in table coordinate system $2
YE60	MH2CF2	Manual feed for 5-axis machining (2nd handle) in feature coordinate system $2
YE61	MH3CT2	Manual feed for 5-axis machining (3rd handle) in tool axis coordinate system $2
YE62	MH3CB2	Manual feed for 5-axis machining (3rd handle) in table coordinate system $2

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YE63	MH3CF2	Manual feed for 5-axis machining (3rd handle) in feature coordinate system $2
YE67	TCPRC2	In tool center point rotation $2
YE80	J3	Jog mode $3
YE81	H3	Handle mode $3
YE82	S3	Incremental mode $3
YE83	PTP3	Manual arbitrary feed mode $3
YE84	ZRN3	Reference position return mode $3
YE85	AST3	Automatic initialization mode $3
YE88	MEM3	Memory mode $3
YE89	T3	Tape mode $3
YE8A		Online operation mode (Computer link B) $3
YE8B	D3	MDI mode $3
YE90	ST3	Automatic operation "start" command (Cycle start) $3
YE91	*SP3	Automatic operation "pause" command (Feed hold) $3
YE92	SBK3	Single block $3
YE93	*BSL3	Block start interlock $3
YE94	*CSL3	Cutting block start interlock $3
YE95	DRN3	Dry run $3
YE97	ERD3	Error detection $3
YE98	NRST13	NC reset 1 $3
YE99	NRST23	NC reset 2 $3
YE9A	RRW3	Reset & rewind $3
YE9B	*CDZ3	Chamfering $3
YE9C	ARST3	Automatic restart $3
YE9D	EXTSS3	External search strobe $3
YE9E	FIN13	M function finish 1 $3
YE9F	FIN23	M function finish 2 $3
YEA0	TLM3	Tool length measurement 1 $3
YEA1	TLMS3	Tool length measurement 2 $3
YEA2	SYCM3	Synchronization correction mode $3
YEA3	PRST3	Program restart $3
YEA4	PB3	Playback $3
YEA5	UIT3	Macro interrupt $3
YEA6	RT3	Rapid traverse $3
YEA7		Reverse run $3
YEA8	ABS3	Manual absolute $3
YEA9	DLK3	Display lock $3
YEAA	F1D3	F1-digit speed change valid $3
YEAB	CRQ3	Recalculation request $3
YEAC	QEMG3	PLC emergency stop $3
YEAD	RTN3	Reference position retract $3
YEAE	PIT3	PLC interrupt $3
YEB0	CHPS3	Chopping $3
YEB1	RSST3	Search & start $3
YEB2		Magazine index check valid (ATC high-speed) $3
YEB4		Chopping parameter valid $3
YEB5		Inclined axis control valid $3
YEB6		Inclined axis control:no z axis compensation $3
YEB7	BDT13	Optional block skip 1 $3
YEB8	BDT23	Optional block skip 2 $3
YEB9	BDT33	Optional block skip 3 $3
YEBA	BDT43	Optional block skip 4 $3
YEBB	BDT53	Optional block skip 5 $3
YEBC	BDT63	Optional block skip 6 $3
YEBD	BDT73	Optional block skip 7 $3
YEBE	BDT83	Optional block skip 8 $3
YEBF	BDT93	Optional block skip 9 $3
YEC0	HS113	1st handle axis selection code 1 $3
YEC1	HS123	1st handle axis selection code 2 $3
YEC2	HS143	1st handle axis selection code 4 $3
YEC3	HS183	1st handle axis selection code 8 $3
YEC4	HS1163	1st handle axis selection code 16 $3
YEC7	HS1S3	1st handle valid $3
YEC8	HS213	2nd handle axis selection code 1 $3
YEC9	HS223	2nd handle axis selection code 2 $3
YECA	HS243	2nd handle axis selection code 4 $3
YECB	HS283	2nd handle axis selection code 8 $3
YECC	HS2163	2nd handle axis selection code 16 $3
YECF	HS2S3	2nd handle valid $3
YED0	HS313	3rd handle axis selection code 1 $3
YED1	HS323	3rd handle axis selection code 2 $3
YED2	HS343	3rd handle axis selection code 4 $3
YED3	HS383	3rd handle axis selection code 8 $3
YED4	HS3163	3rd handle axis selection code 16 $3

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YED7	HS3S3	3rd handle valid $3
YED8	OVC3	Override cancel $3
YED9	OVSL3	Manual override method selection $3
YEDA	AFL3	Miscellaneous function lock $3
YEDC	TRV3	Tap retract $3
YEDE		Tool handle feed mode $3
YEE0	*FV113	Cutting feedrate override code 1 $3
YEE1	*FV123	Cutting feedrate override code 2 $3
YEE2	*FV143	Cutting feedrate override code 4 $3
YEE3	*FV183	Cutting feedrate override code 8 $3
YEE4	*FV1163	Cutting feedrate override code 16 $3
YEE6	FV2E3	2nd cutting feedrate override valid $3
YEE7	FVS3	Cutting feedrade override method selection $3
YEE8	ROV13	Rapid traverse override code 1 $3
YEE9	ROV23	Rapid traverse override code 2 $3
YEEF	ROVS3	Rapid traverse override method selection $3
YEF0	*JV13	Manual feedrate code 1 $3
YEF1	*JV23	Manual feedrate code 2 $3
YEF2	*JV43	Manual feedrate code 4 $3
YEF3	*JV83	Manual feedrate code 8 $3
YEF4	*JV163	Manual feedrate code 16 $3
YEF7	JVS3	Manual feedrate method selection $3
YEF8	PCF13	Feedrate least increment code 1 $3
YEF9	PCF23	Feedrate least increment code 2 $3
YEFA	JSYN3	Jog synchronous feed valid $3
YEFB	JHAN3	Jog•handle synchronous $3
YEFC		Each axis manual feedrate B valid $3
YEFD		Manual feedrate B surface speed control valid $3
YEFE		Circular feed in manual mode valid $3
YF00	MP13	Handle/incremental feed multiplication code 1 $3
YF01	MP23	Handle/incremental feed multiplication code 2 $3
YF02	MP43	Handle/incremental feed multiplication code 4 $3
YF06	MPP3	Magnification valid for each handle $3
YF07	MPS3	Handle/incremental feed magnification method selection $3
YF08	TAL13	Tool alarm 1/Tool skip 1 $3
YF09	TAL23	Tool alarm 2 $3
YF0A	TCEF3	Usage data count valid $3
YF0B	TLF13	Tool life management input $3
YF0C	TCRT3	Tool change reset $3
YF0D		Tool escape and return transit point designation $3
YF0E		Manual tool length measurement interlock temporarily canceled $3 ▲
YF10	ZSL13	Reference position selection code 1 $3
YF11	ZSL23	Reference position selection code 2 $3
YF12		Tool length compensation along the tool axis compensation amount change mode $3
YF17	M3	Reference position selection method $3
YF1D		Manual speed command valid $3
YF1E		Manual speed command sign reversed $3
YF1F		Manual speed command reverse run valid $3
YF20	CX113	Manual arbitrary feed 1st axis selection code 1 $3
YF21	CX123	Manual arbitrary feed 1st axis selection code 2 $3
YF22	CX143	Manual arbitrary feed 1st axis selection code 4 $3
YF23	CX183	Manual arbitrary feed 1st axis selection code 8 $3
YF24	CX1163	Manual arbitrary feed 1st axis selection code 16 $3
YF27	CX1S3	Manual arbitrary feed 1st axis valid $3
YF28	CX213	Manual arbitrary feed 2nd axis selection code 1 $3
YF29	CX223	Manual arbitrary feed 2nd axis selection code 2 $3
YF2A	CX243	Manual arbitrary feed 2nd axis selection code 4 $3
YF2B	CX283	Manual arbitrary feed 2nd axis selection code 8 $3
YF2C	CX2163	Manual arbitrary feed 2nd axis selection code 16 $3
YF2F	CX2S3	Manual arbitrary feed 2nd axis valid $3
YF30	CX313	Manual arbitrary feed 3rd axis selection code 1 $3
YF31	CX323	Manual arbitrary feed 3rd axis selection code 2 $3
YF32	CX343	Manual arbitrary feed 3rd axis selection code 4 $3
YF33	CX383	Manual arbitrary feed 3rd axis selection code 8 $3
YF34	CX3163	Manual arbitrary feed 3rd axis selection code 16 $3
YF37	CX3S3	Manual arbitrary feed 3rd axis valid $3
YF38	CXS13	Manual arbitrary feed smoothing off $3
YF39	CXS23	Manual arbitrary feed axis independent $3
YF3A	CXS33	Manual arbitrary feed EX.F/MODAL.F $3
YF3B	CXS43	Manual arbitrary feed G0/G1 $3
YF3C	CXS53	Manual arbitrary feed MC/WK $3
YF3D	CXS63	Manual arbitrary feed ABS/INC $3
YF3E	*CXS73	Manual arbitrary feed stop $3

Device	Abbrev.	Signal name
YF3F	CXS83	Manual arbitrary feed strobe $3
YF40	ILM13	Current limit mode 1 $3
YF41	ILM23	Current limit mode 2 $3
YF43	LDWT3	Load monitor execution $3 ▲
YF44		Load monitor teaching mode $3 ▲
YF45		Load monitor monitor mode $3 ▲
YF46		Load monitor alarm reset $3 ▲
YF47		Load monitor warning reset $3 ▲
YF48	*ZRIT3	2nd reference position return interlock $3
YF49		Adaptive control execution $3 ▲
YF4A		Small diameter deep hole drilling cycle $3
YF4B		Chuck barrier on $3
YF4C		High-speed retract function valid $3 ▲
YF4F		Tool retract start $3 ▲
YF50		Waiting ignore $3
YF51		Spindle-spindle polygon cancel $3
YF52		Synchronous tapping command polarity reversal $3
YF53		Spindle off mode $3
YF54		Longitudinal hole drilling axis selection $3
YF55		Optimum acceleration/deceleration parameter switching request [axis] $3 ▲
YF56	TRVEC	Tap retract possible state cancel $3
YF57	CHPRCR3	Chopping compensation update prevention request $3
YF58		Barrier valid (left) $3
YF59		Barrier valid (right) $3
YF5A		Tool presetter sub-side valid $3 ▲
YF61	DOOR23	Door open II $3
YF62		Door open signal input(spindle speed monitor) $3
YF63		Door interlock spindle speed clamp $3 ▲
YF68		Door open II (2 channels per 1 part system) $3
YF69		Door open II (3 channels per 1 part system) Spare $3
YF6F		Cutting torque estimation in progress $3 ▲
YF74	BCHK3	Barrier check invalid $3
YF7A	DRNC3	Dry run invalid $3
YF7E		Appropriate machining diagnosis in progress $3 ▲
YF7F		Appropriate machining diagnosis error reset $3 ▲
YF88	RVSP	Reverse run from block start $3
YF89	RVIT	Macro interrupt priority $3
YF8A	RVMD	Reverse run control mode $3
YF98	MJCT3	Manual feed for 5-axis machining (JOG, INC) in tool axis coordinate system $3
YF99	MJCB3	Manual feed for 5-axis machining (JOG, INC) in table coordinate system $3
YF9A	MJCF3	Manual feed for 5-axis machining (JOG, INC) in feature coordinate system $3
YF9B	MH1CT3	Manual feed for 5-axis machining (1st handle) in tool axis coordinate system $3
YF9C	MH1CB3	Manual feed for 5-axis machining (1st handle) in table coordinate system $3
YF9D	MH1CF3	Manual feed for 5-axis machining (1st handle) in feature coordinate system $3
YF9E	MH2CT3	Manual feed for 5-axis machining (2nd handle) in tool axis coordinate system $3
YF9F	MH2CB3	Manual feed for 5-axis machining (2nd handle) in table coordinate system $3
YFA0	MH2CF3	Manual feed for 5-axis machining (2nd handle) in feature coordinate system $3
YFA1	MH3CT3	Manual feed for 5-axis machining (3rd handle) in tool axis coordinate system $3
YFA2	MH3CB3	Manual feed for 5-axis machining (3rd handle) in table coordinate system $3
YFA3	MH3CF3	Manual feed for 5-axis machining (3rd handle) in feature coordinate system $3
YFA7	TCPRC3	In tool center point rotation $3
YFC0	J4	Jog mode $4
YFC1	H4	Handle mode $4
YFC2	S4	Incremental mode $4
YFC3	PTP4	Manual arbitrary feed mode $4
YFC4	ZRN4	Reference position return mode $4
YFC5	AST4	Automatic initialization mode $4
YFC8	MEM4	Memory mode $4
YFC9	T4	Tape mode $4
YFCA		Online operation mode (Computer link B) $4
YFCB	D4	MDI mode $4
YFD0	ST4	Automatic operation "start" command (Cycle start) $4
YFD1	*SP4	Automatic operation "pause" command (Feed hold) $4

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
YFD2	SBK4	Single block $4
YFD3	*BSL4	Block start interlock $4
YFD4	*CSL4	Cutting block start interlock $4
YFD5	DRN4	Dry run $4
YFD7	ERD4	Error detection $4
YFD8	NRST14	NC reset 1 $4
YFD9	NRST24	NC reset 2 $4
YFDA	RRW4	Reset & rewind $4
YFDB	*CDZ4	Chamfering $4
YFDC	ARST4	Automatic restart $4
YFDD	EXTSS4	External search strobe $4
YFDE	FIN14	M function finish 1 $4
YFDF	FIN24	M function finish 2 $4
YFE0	TLM4	Tool length measurement 1 $4
YFE1	TLMS4	Tool length measurement 2 $4
YFE2	SYCM4	Synchronization correction mode $4
YFE3	PRST4	Program restart $4
YFE4	PB4	Playback $4
YFE5	UIT4	Macro interrupt $4
YFE6	RT4	Rapid traverse $4
YFE7		Reverse run $4
YFE8	ABS4	Manual absolute $4
YFE9	DLK4	Display lock $4
YFEA	F1D4	F1-digit speed change valid $4
YFEB	CRQ4	Recalculation request $4
YFEC	QEMG4	PLC emergency stop $4
YFED	RTN4	Reference position retract $4
YFEE	PIT4	PLC interrupt $4
YFF0	CHPS4	Chopping $4
YFF1	RSST4	Search & start $4
YFF2		Magazine index check valid (ATC high-speed) $3
YFF4		Chopping parameter valid $4
YFF5		Inclined axis control valid $4
YFF6		Inclined axis control:no z axis compensation $4
YFF7	BDT14	Optional block skip 1 $4
YFF8	BDT24	Optional block skip 2 $4
YFF9	BDT34	Optional block skip 3 $4
YFFA	BDT44	Optional block skip 4 $4
YFFB	BDT54	Optional block skip 5 $4
YFFC	BDT64	Optional block skip 6 $4
YFFD	BDT74	Optional block skip 7 $4
YFFE	BDT84	Optional block skip 8 $4
YFFF	BDT94	Optional block skip 9 $4
Y1000	HS114	1st handle axis selection code 1 $4
Y1001	HS124	1st handle axis selection code 2 $4
Y1002	HS144	1st handle axis selection code 4 $4
Y1003	HS184	1st handle axis selection code 8 $4
Y1004	HS1164	1st handle axis selection code 16 $4
Y1007	HS1S4	1st handle valid $4
Y1008	HS214	2nd handle axis selection code 1 $4
Y1009	HS224	2nd handle axis selection code 2 $4
Y100A	HS244	2nd handle axis selection code 4 $4
Y100B	HS284	2nd handle axis selection code 8 $4
Y100C	HS2164	2nd handle axis selection code 16 $4
Y100F	HS2S4	2nd handle valid $4
Y1010	HS314	3rd handle axis selection code 1 $4
Y1011	HS324	3rd handle axis selection code 2 $4
Y1012	HS344	3rd handle axis selection code 4 $4
Y1013	HS384	3rd handle axis selection code 8 $4
Y1014	HS3164	3rd handle axis selection code 16 $4
Y1017	HS3S4	3rd handle valid $4
Y1018	OVC4	Override cancel $4
Y1019	OVSL4	Manual override method selection $4
Y101A	AFL4	Miscellaneous function lock $4
Y101C	TRV4	Tap retract $4
Y101E		Tool handle feed mode $4
Y1020	*FV114	Cutting feedrate override code 1 $4
Y1021	*FV124	Cutting feedrate override code 2 $4
Y1022	*FV144	Cutting feedrate override code 4 $4
Y1023	*FV184	Cutting feedrate override code 8 $4
Y1024	*FV1164	Cutting feedrate override code 16 $4
Y1026	FV2E4	2nd cutting feedrate override valid $4
Y1027	FVS4	Cutting feedrade override method selection $4
Y1028	ROV14	Rapid traverse override code 1 $4

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y1029	ROV24	Rapid traverse override code 2 $4
Y102F	ROVS4	Rapid traverse override method selection $4
Y1030	*JV14	Manual feedrate code 1 $4
Y1031	*JV24	Manual feedrate code 2 $4
Y1032	*JV44	Manual feedrate code 4 $4
Y1033	*JV84	Manual feedrate code 8 $4
Y1034	*JV164	Manual feedrate code 16 $4
Y1037	JVS4	Manual feedrate method selection $4
Y1038	PCF14	Feedrate least increment code 1 $4
Y1039	PCF24	Feedrate least increment code 2 $4
Y103A	JSYN4	Jog synchronous feed valid $4
Y103B	JHAN4	Jog•handle synchronous $4
Y103C		Each axis manual feedrate B valid $4
Y103D		Manual feedrate B surface speed control valid $4
Y103E		Circular feed in manual mode valid $4
Y1040	MP14	Handle/incremental feed multiplication code 1 $4
Y1041	MP24	Handle/incremental feed multiplication code 2 $4
Y1042	MP44	Handle/incremental feed multiplication code 4 $4
Y1046	MPP4	Magnification valid for each handle $4
Y1047	MPS4	Handle/incremental feed magnification method selection $4
Y1048	TAL14	Tool alarm 1/Tool skip 1 $4
Y1049	TAL24	Tool alarm 2 $4
Y104A	TCEF4	Usage data count valid $4
Y104B	TLF14	Tool life management input $4
Y104C	TCRT4	Tool change reset $4
Y104D		Tool escape and return transit point designation $4
Y104E		Manual tool length measurement interlock temporarily canceled $4 ▲
Y1050	ZSL14	Reference position selection code 1 $4
Y1051	ZSL24	Reference position selection code 2 $4
Y1052		Tool length compensation along the tool axis compensation amount change mode $4
Y1057	M4	Reference position selection method $4
Y105D		Manual speed command valid $4
Y105E		Manual speed command sign reversed $4
Y105F		Manual speed command reverse run valid $4
Y1060	CX114	Manual arbitrary feed 1st axis selection code 1 $4
Y1061	CX124	Manual arbitrary feed 1st axis selection code 2 $4
Y1062	CX144	Manual arbitrary feed 1st axis selection code 4 $4
Y1063	CX184	Manual arbitrary feed 1st axis selection code 8 $4
Y1064	CX1164	Manual arbitrary feed 1st axis selection code 16 $4
Y1067	CX1S4	Manual arbitrary feed 1st axis valid $4
Y1068	CX214	Manual arbitrary feed 2nd axis selection code 1 $4
Y1069	CX224	Manual arbitrary feed 2nd axis selection code 2 $4
Y106A	CX244	Manual arbitrary feed 2nd axis selection code 4 $4
Y106B	CX284	Manual arbitrary feed 2nd axis selection code 8 $4
Y106C	CX2164	Manual arbitrary feed 2nd axis selection code 16 $4
Y106F	CX2S4	Manual arbitrary feed 2nd axis valid $4
Y1070	CX314	Manual arbitrary feed 3rd axis selection code 1 $4
Y1071	CX324	Manual arbitrary feed 3rd axis selection code 2 $4
Y1072	CX344	Manual arbitrary feed 3rd axis selection code 4 $4
Y1073	CX384	Manual arbitrary feed 3rd axis selection code 8 $4
Y1074	CX3164	Manual arbitrary feed 3rd axis selection code 16 $4
Y1077	CX3S4	Manual arbitrary feed 3rd axis valid $4
Y1078	CXS14	Manual arbitrary feed smoothing off $4
Y1079	CXS24	Manual arbitrary feed axis independent $4
Y107A	CXS34	Manual arbitrary feed EX.F/MODAL.F $4
Y107B	CXS44	Manual arbitrary feed G0/G1 $4
Y107C	CXS54	Manual arbitrary feed MC/WK $4
Y107D	CXS64	Manual arbitrary feed ABS/INC $4
Y107E	*CXS74	Manual arbitrary feed stop $4
Y107F	CXS84	Manual arbitrary feed strobe $4
Y1080	ILM14	Current limit mode 1 $4
Y1081	ILM24	Current limit mode 2 $4
Y1083	LDWT4	Load monitor execution $4 ▲
Y1084		Load monitor teaching mode $4 ▲
Y1085		Load monitor monitor mode $4 ▲
Y1086		Load monitor alarm reset $4 ▲
Y1087		Load monitor warning reset $4 ▲
Y1088	*ZRIT4	2nd reference position return interlock $4
Y1089		Adaptive control execution $4 ▲
Y108A		Small diameter deep hole drilling cycle $4
Y108B		Chuck barrier on $4
Y108C		High-speed retract function valid $4 ▲
Y108F		Tool retract start $4 ▲

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y1090		Waiting ignore $4
Y1091		Spindle-spindle polygon cancel $4
Y1092		Synchronous tapping command polarity reversal $4
Y1093		Spindle off mode $4
Y1094		Longitudinal hole drilling axis selection $4
Y1095		Optimum acceleration/deceleration parameter switching request [axis] $4 ▲
Y1096	TRVEC	Tap retract possible state cancel $4
Y1097	CHPRCR4	Chopping compensation update prevention request $4
Y1098		Barrier valid (left) $4
Y1099		Barrier valid (right) $4
Y109A		Tool presetter sub-side valid $4 ▲
Y10A1	DOOR24	Door open II $4
Y10A2		Door open signal input(spindle speed monitor) $4
Y10A3		Door interlock spindle speed clamp $4 ▲
Y10A8		Door open II (2 channels per 1 part system) $4
Y10A9		Door open II (3 channels per 1 part system) Spare $4
Y10AF		Cutting torque estimation in progress $4 ▲
Y10B4	BCHK4	Barrier check invalid $4
Y10BA	DRNC4	Dry run invalid $4
Y10BE		Appropriate machining diagnosis in progress $4 ▲
Y10BF		Appropriate machining diagnosis error reset $4 ▲
Y10C8	RVSP	Reverse run from block start $4
Y10C9	RVIT	Macro interrupt priority $4
Y10CA	RVMD	Reverse run control mode $4
Y10D8	MJCT4	Manual feed for 5-axis machining (JOG, INC) in tool axis coordinate system $4
Y10D9	MJCB4	Manual feed for 5-axis machining (JOG, INC) in table coordinate system $4
Y10DA	MJCF4	Manual feed for 5-axis machining (JOG, INC) in feature coordinate system $4
Y10DB	MH1CT4	Manual feed for 5-axis machining (1st handle) in tool axis coordinate system $4
Y10DC	MH1CB4	Manual feed for 5-axis machining (1st handle) in table coordinate system $4
Y10DD	MH1CF4	Manual feed for 5-axis machining (1st handle) in feature coordinate system $4
Y10DE	MH2CT4	Manual feed for 5-axis machining (2nd handle) in tool axis coordinate system $4
Y10DF	MH2CB4	Manual feed for 5-axis machining (2nd handle) in table coordinate system $4
Y10E0	MH2CF4	Manual feed for 5-axis machining (2nd handle) in feature coordinate system $4
Y10E1	MH3CT4	Manual feed for 5-axis machining (3rd handle) in tool axis coordinate system $4
Y10E2	MH3CB4	Manual feed for 5-axis machining (3rd handle) in table coordinate system $4
Y10E3	MH3CF4	Manual feed for 5-axis machining (3rd handle) in feature coordinate system $4
Y10E7	TCPRC4	In tool center point rotation $4
Y1878		Edit/Search
Y1885	GFIN1	Gear shift completion 1st-Spindle
Y1888	SP11	Spindle override code 1 1st-Spindle
Y1889	SP21	Spindle override code 2 1st-Spindle
Y188A	SP41	Spindle override code 4 1st-Spindle
Y188F	SPS1	Spindle override method selection 1st-Spindle
Y1890	GI11	Spindle gear selection code 1 1st-Spindle
Y1891	GI21	Spindle gear selection code 2 1st-Spindle
Y1893	EXOBS	Spindle holding force up 1st-spindle
Y1894	SSTP1	Spindle stop 1st-Spindle
Y1895	SSFT1	Spindle gear shift 1st-Spindle
Y1896	SORC1	Spindle orientation 1st-Spindle
Y1897		Spindle command invalid 1st-Spindle
Y1898	SRN1	Spindle forward run start 1st-Spindle
Y1899	SRI1	Spindle reverse run start 1st-Spindle
Y189A	TL11	Spindle torque limit 1 1st-Spindle
Y189B	TL21	Torque limit 2 1st-Spindle
Y189C	WRN1	Spindle forward run index 1st-Spindle
Y189D	WRI1	Spindle reverse run index 1st-Spindle
Y189E	ORC1	Spindle orientation command 1st-Spindle
Y189F	LRSL1	L coil selection 1st-Spindle
Y18A2		Spindle position control (C axis)cutting gain L 1st-Spindle
Y18A3		Spindle position control (C axis)cutting gain H 1st-Spindle
Y18A6	LRSM1	In M coil selection 1st-Spindle
Y18A8	SWS1	Spindle selection 1st-Spindle
X18AC	SPCMP1	Chuck close confirmation 1st-spindle

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y18AF	MPCSL1	PLC coil changeover 1st-Spindle
Y18AF	SPSYC1	Spindle synchronization/superimposition cancel 1st-Spindle
Y18B0	SPSY1	Spindle synchronization 1st-Spindle
Y18B1	SPPHS1	Spindle phase synchronization 1st-Spindle
Y18B2	SPSDR1	Spindle synchronous rotation direction 1st-Spindle
Y18B3	SSPHM1	Phase shift calculation request 1st-Spindle
Y18B4	SSPHF1	Phase offset request 1st-Spindle
Y18B5	SPDRPO1	Error temporary cancel 1st-Spindle
Y18B8	SPSYC1	Spindle synchronization/superimposition cancel 1st-Spindle
Y18B9	SPCMPC1	Chuck close 1st-Spindle
Y18E5	GFIN2	Gear shift completion 2nd-Spindle
Y18E8	SP12	Spindle override code 1 2nd-Spindle
Y18E9	SP22	Spindle override code 2 2nd-Spindle
Y18EA	SP42	Spindle override code 4 2nd-Spindle
Y18EF	SPS2	Spindle override method selection 2nd-Spindle
Y18F0	GI12	Spindle gear selection code 1 2nd-Spindle
Y18F1	GI22	Spindle gear selection code 2 2nd-Spindle
Y18F3	EXOBS	Spindle holding force up 2nd-spindle
Y18F4	SSTP2	Spindle stop 2nd-Spindle
Y18F5	SSFT2	Spindle gear shift 2nd-Spindle
Y18F6	SORC2	Spindle orientation 2nd-Spindle
Y18F7		Spindle command invalid 2nd-Spindle
Y18F8	SRN2	Spindle forward run start 2nd-Spindle
Y18F9	SRI2	Spindle reverse run start 2nd-Spindle
Y18FA	TL12	Spindle torque limit 1 2nd-Spindle
Y18FB	TL22	Torque limit 2 2nd-Spindle
Y18FC	WRN2	Spindle forward run index 2nd-Spindle
Y18FD	WRI2	Spindle reverse run index 2nd-Spindle
Y18FE	ORC2	Spindle orientation command 2nd-Spindle
Y18FF	LRSL2	L coil selection 2nd-Spindle
Y1902		Spindle position control (C axis)cutting gain L 2nd-Spindle
Y1903		Spindle position control (C axis)cutting gain H 2nd-Spindle
Y1906	LRSM2	In M coil selection 2nd-Spindle
Y1908	SWS2	Spindle selection 2nd-Spindle
X190C	SPCMP2	Chuck close confirmation 2nd-spindle
Y190F	MPCSL2	PLC coil changeover 2nd-Spindle
Y190F	SPSYC2	Spindle synchronization/superimposition cancel 2nd-Spindle
Y1910	SPSY2	Spindle synchronization 2nd-Spindle
Y1911	SPPHS2	Spindle phase synchronization 2nd-Spindle
Y1912	SPSDR2	Spindle synchronous rotation direction 2nd-Spindle
Y1913	SSPHM2	Phase shift calculation request 2nd-Spindle
Y1914	SSPHF2	Phase offset request 2nd-Spindle
Y1915	SPDRPO2	Error temporary cancel 2nd-Spindle
Y1918	SPSYC2	Spindle synchronization/superimposition cancel 2nd-Spindle
Y1919	SPCMPC2	Chuck close 2nd-Spindle
Y1945	GFIN3	Gear shift completion 3rd-Spindle
Y1948	SP13	Spindle override code 1 3rd-Spindle
Y1949	SP23	Spindle override code 2 3rd-Spindle
Y194A	SP43	Spindle override code 4 3rd-Spindle
Y194F	SPS3	Spindle override method selection 3rd-Spindle
Y1950	GI13	Spindle gear selection code 1 3rd-Spindle
Y1951	GI23	Spindle gear selection code 2 3rd-Spindle
Y1953	EXOBS	Spindle holding force up 3rd-spindle
Y1954	SSTP3	Spindle stop 3rd-Spindle
Y1955	SSFT3	Spindle gear shift 3rd-Spindle
Y1956	SORC3	Spindle orientation 3rd-Spindle
Y1957		Spindle command invalid 3rd-Spindle
Y1958	SRN3	Spindle forward run start 3rd-Spindle
Y1959	SRI3	Spindle reverse run start 3rd-Spindle
Y195A	TL13	Spindle torque limit 1 3rd-Spindle
Y195B	TL23	Torque limit 2 3rd-Spindle
Y195C	WRN3	Spindle forward run index 3rd-Spindle
Y195D	WRI3	Spindle reverse run index 3rd-Spindle
Y195E	ORC3	Spindle orientation command 3rd-Spindle
Y195F	LRSL3	L coil selection 3rd-Spindle
Y1962		Spindle position control (C axis)cutting gain L 3rd-spindle
Y1963		Spindle position control (C axis)cutting gain H 3rd-spindle
Y1966	LRSM3	In M coil selection 3rd-spindle
Y1968	SWS3	Spindle selection 3rd-spindle
X196C	SPCMP3	Chuck close confirmation 3rd-spindle
Y196F	MPCSL3	PLC coil changeover 3rd-spindle
Y196F	SPSYC3	Spindle synchronization/superimposition cancel 3rd-spindle
Y1970	SPSY3	Spindle synchronization 3rd-Spindle
Y1971	SPPHS3	Spindle phase synchronization 3rd-Spindle

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y1972	SPSDR3	Spindle synchronous rotation direction 3rd-Spindle
Y1973	SSPHM3	Phase shift calculation request 3rd-Spindle
Y1974	SSPHF3	Phase offset request 3rd-Spindle
Y1975	SPDRPO3	Error temporary cancel 3rd-Spindle
Y1978	SPSYC3	Spindle synchronization/superimposition cancel 3rd-Spindle
Y1979	SPCMPC3	Chuck close 3rd-Spindle
Y19A5	GFIN4	Gear shift completion 4th-Spindle
Y19A8	SP14	Spindle override code 1 4th-Spindle
Y19A9	SP24	Spindle override code 2 4th-Spindle
Y19AA	SP44	Spindle override code 4 4th-Spindle
Y19AF	SPS4	Spindle override method selection 4th-Spindle
Y19B0	GI14	Spindle gear selection code 1 4th-Spindle
Y19B1	GI24	Spindle gear selection code 2 4th-Spindle
Y19B3	EXOBS	Spindle holding force up 4th-spindle
Y19B4	SSTP4	Spindle stop 4th-Spindle
Y19B5	SSFT4	Spindle gear shift 4th-Spindle
Y19B6	SORC4	Spindle orientation 4th-Spindle
Y19B7		Spindle command invalid 4th-Spindle
Y19B8	SRN4	Spindle forward run start 4th-Spindle
Y19B9	SRI4	Spindle reverse run start 4th-Spindle
Y19BA	TL14	Spindle torque limit 1 4th-Spindle
Y19BB	TL24	Torque limit 2 4th-Spindle
Y19BC	WRN4	Spindle forward run index 4th-Spindle
Y19BD	WRI4	Spindle reverse run index 4th-Spindle
Y19BE	ORC4	Spindle orientation command 4th-Spindle
Y19BF	LRSL4	L coil selection 4th-Spindle
Y19C2		Spindle position control (C axis)cutting gain L 4th-Spindle
Y19C3		Spindle position control (C axis)cutting gain H 4th-Spindle
Y19C6	LRSM4	In M coil selection 4th-Spindle
Y19C8	SWS4	Spindle selection 4th-Spindle
X19CC	SPCMP4	Chuck close confirmation 4th-spindle
Y19CF	MPCSL4	PLC coil changeover 4th-Spindle
Y19CF	SPSYC4	Spindle synchronization/superimposition cancel 4th-Spindle
Y19D0	SPSY4	Spindle synchronization 4th-Spindle
Y19D1	SPPHS4	Spindle phase synchronization 4th-Spindle
Y19D2	SPSDR3	Spindle synchronous rotation direction 4th-Spindle
Y19D3	SSPHM4	Phase shift calculation request 4th-Spindle
Y19D4	SSPHF4	Phase offset request 4th-Spindle
Y19D5	SPDRPO4	Error temporary cancel 4th-Spindle
Y19D8	SPSYC4	Spindle synchronization/superimposition cancel 4th-Spindle
Y19D9	SPCMPC4	Chuck close 4th-Spindle
Y1A05	GFIN1	Gear shift completion 5th-Spindle
Y1A08	SP15	Spindle override code 1 5th-Spindle
Y1A09	SP25	Spindle override code 2 5th-Spindle
Y1A0A	SP45	Spindle override code 4 5th-Spindle
Y1A10	GI15	Spindle gear selection code 1 5th-Spindle
Y1A11	GI25	Spindle gear selection code 2 5th-Spindle
Y1A13	EXOBS	Spindle holding force up 5th-spindle
Y1A14	SSTP5	Spindle stop 5th-Spindle
Y1A15	SSFT5	Spindle gear shift 5th-Spindle
Y1A17		Spindle command invalid 5th-Spindle
Y1A18	SRN5	Spindle forward run start 5th-Spindle
Y1A19	SRI5	Spindle reverse run start 5th-Spindle
Y1A1A	TL15	Spindle torque limit 1 5th-Spindle
Y1A1B	TL25	Torque limit 2 5th-Spindle
Y1A1C	WRN5	Spindle forward run index 5th-Spindle
Y1A1D	WRI5	Spindle reverse run index 5th-Spindle
Y1A1E	ORC5	Spindle orientation command 5th-Spindle
Y1A1F		L coil selection 5th-Spindle
Y1A22		Spindle position control (C axis)cutting gain L 5th-Spindle
Y1A23		Spindle position control (C axis)cutting gain H 5th-Spindle
Y1A26		In M coil selection 5th-Spindle
Y1A28		Spindle selection 5th-Spindle
Y1A2F		PLC coil changeover 5th-Spindle
Y1A30		Spindle synchronization 5th-Spindle
Y1A31		Spindle phase synchronization 5th-Spindle
Y1A32		Spindle synchronous rotation direction 5th-Spindle
Y1A33		Phase shift calculation request 5th-Spindle
Y1A34		Phase offset request 5th-Spindle
Y1A35		Error temporary cancel 5th-Spindle
Y1A38		Spindle synchronization/superimposition cancel 5th-Spindle
Y1A39		Chuck close 5th-Spindle
Y1A65	GFIN1	Gear shift completion 6th-Spindle
Y1A68	SP16	Spindle override code 1 6th-Spindle

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y1A69	SP26	Spindle override code 2 6th-Spindle
Y1A6A	SP46	Spindle override code 4 6th-Spindle
Y1A70	GI16	Spindle gear selection code 1 6th-Spindle
Y1A71	GI26	Spindle gear selection code 2 6th-Spindle
Y1A73	EXOBS	Spindle holding force up 6th-spindle
Y1A74	SSTP6	Spindle stop 6th-Spindle
Y1A75	SSFT6	Spindle gear shift 6th-Spindle
Y1A77		Spindle command invalid 6th-Spindle
Y1A78	SRN6	Spindle forward run start 6th-Spindle
Y1A79	SRI6	Spindle reverse run start 6th-Spindle
Y1A7A	TL16	Spindle torque limit 1 6th-Spindle
Y1A7B	TL26	Torque limit 2 6th-Spindle
Y1A7C	WRN6	Spindle forward run index 6th-Spindle
Y1A7D	WRI6	Spindle reverse run index 6th-Spindle
Y1A7E	ORC6	Spindle orientation command 6th-Spindle
Y1A7F		L coil selection 6th-Spindle
Y1A82		Spindle position control (C axis)cutting gain L 6th-Spindle
Y1A83		Spindle position control (C axis)cutting gain H 6th-Spindle
Y1A86		In M coil selection 6th-Spindle
Y1A88		Spindle selection 6th-Spindle
Y1A8F		PLC coil changeover 6th-Spindle
Y1A90		Spindle synchronization 6th-Spindle
Y1A91		Spindle phase synchronization 6th-Spindle
Y1A92		Spindle synchronous rotation direction 6th-Spindle
Y1A93		Phase shift calculation request 6th-Spindle
Y1A94		Phase offset request 6th-Spindle
Y1A95		Error temporary cancel 6th-Spindle
Y1A98		Spindle synchronization/superimposition cancel 6th-Spindle
Y1A99		Chuck close 6th-Spindle
Y1D00		Position switch 1 interlock $1
Y1D01		Position switch 2 interlock $1
Y1D02		Position switch 3 interlock $1
Y1D03		Position switch 4 interlock $1
Y1D04		Position switch 5 interlock $1
Y1D05		Position switch 6 interlock $1
Y1D06		Position switch 7 interlock $1
Y1D07		Position switch 8 interlock $1
Y1D08		Position switch 9 interlock $1
Y1D09		Position switch 10 interlock $1
Y1D0A		Position switch 11 interlock $1
Y1D0B		Position switch 12 interlock $1
Y1D0C		Position switch 13 interlock $1
Y1D0D		Position switch 14 interlock $1
Y1D0E		Position switch 15 interlock $1
Y1D0F		Position switch 16 interlock $1
Y1D10		Position switch 17 interlock $1
Y1D11		Position switch 18 interlock $1
Y1D12		Position switch 19 interlock $1
Y1D13		Position switch 20 interlock $1
Y1D14		Position switch 21 interlock $1
Y1D15		Position switch 22 interlock $1
Y1D16		Position switch 23 interlock $1
Y1D17		Position switch 24 interlock $1
Y1D20		Position switch 1 interlock $2
Y1D21		Position switch 2 interlock $2
Y1D22		Position switch 3 interlock $2
Y1D23		Position switch 4 interlock $2
Y1D24		Position switch 5 interlock $2
Y1D25		Position switch 6 interlock $2
Y1D26		Position switch 7 interlock $2
Y1D27		Position switch 8 interlock $2
Y1D28		Position switch 9 interlock $2
Y1D29		Position switch 10 interlock $2
Y1D2A		Position switch 11 interlock $2
Y1D2B		Position switch 12 interlock $2
Y1D2C		Position switch 13 interlock $2
Y1D2D		Position switch 14 interlock $2
Y1D2E		Position switch 15 interlock $2
Y1D2F		Position switch 16 interlock $2
Y1D30		Position switch 17 interlock $2
Y1D31		Position switch 18 interlock $2
Y1D32		Position switch 19 interlock $2
Y1D33		Position switch 20 interlock $2
Y1D34		Position switch 21 interlock $2

Bit Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
Y1D35		Position switch 22 interlock $2
Y1D36		Position switch 23 interlock $2
Y1D37		Position switch 24 interlock $2
Y1D40		Position switch 1 interlock $3
Y1D41		Position switch 2 interlock $3
Y1D42		Position switch 3 interlock $3
Y1D43		Position switch 4 interlock $3
Y1D44		Position switch 5 interlock $3
Y1D45		Position switch 6 interlock $3
Y1D46		Position switch 7 interlock $3
Y1D47		Position switch 8 interlock $3
Y1D48		Position switch 9 interlock $3
Y1D49		Position switch 10 interlock $3
Y1D4A		Position switch 11 interlock $3
Y1D4B		Position switch 12 interlock $3
Y1D4C		Position switch 13 interlock $3
Y1D4D		Position switch 14 interlock $3
Y1D4E		Position switch 15 interlock $3
Y1D4F		Position switch 16 interlock $3
Y1D50		Position switch 17 interlock $3
Y1D51		Position switch 18 interlock $3
Y1D52		Position switch 19 interlock $3
Y1D53		Position switch 20 interlock $3
Y1D54		Position switch 21 interlock $3
Y1D55		Position switch 22 interlock $3
Y1D56		Position switch 23 interlock $3
Y1D57		Position switch 24 interlock $3
Y1D60		Position switch 1 interlock $4
Y1D61		Position switch 2 interlock $4
Y1D62		Position switch 3 interlock $4
Y1D63		Position switch 4 interlock $4
Y1D64		Position switch 5 interlock $4
Y1D65		Position switch 6 interlock $4
Y1D66		Position switch 7 interlock $4
Y1D67		Position switch 8 interlock $4
Y1D68		Position switch 9 interlock $4
Y1D69		Position switch 10 interlock $4
Y1D6A		Position switch 11 interlock $4
Y1D6B		Position switch 12 interlock $4
Y1D6C		Position switch 13 interlock $4
Y1D6D		Position switch 14 interlock $4
Y1D6E		Position switch 15 interlock $4
Y1D6F		Position switch 16 interlock $4
Y1D70		Position switch 17 interlock $4
Y1D71		Position switch 18 interlock $4
Y1D72		Position switch 19 interlock $4
Y1D73		Position switch 20 interlock $4
Y1D74		Position switch 21 interlock $4
Y1D75		Position switch 22 interlock $4
Y1D76		Position switch 23 interlock $4
Y1D77		Position switch 24 interlock $4

4. Data Type Output Signals (PLC->CNC)

(Note) Signals marked with "▲" are prepared for a specific machine tool builder.

Device	Abbrev.	Signal name
R200	AO1	Analog output 1
R201	AO2	Analog output 2
R202	AO3	Analog output 3
R203	AO4	Analog output 4
R204	AO5	Analog output 5
R205	AO6	Analog output 6
R206	AO7	Analog output 7
R207	AO8	Analog output 8
R212		KEY OUT 1
R215		Power OFF indication device No.
R224		User sequence program version code A
R225		User sequence program version code B
R226		User sequence program version code C
R227		User sequence program version code D
R232		User sequence program version code 2 A
R233		User sequence program version code 2 B
R234		User sequence program version code 2 C
R235		User sequence program version code 2 D
R236		User sequence program version code 2 E
R237		User sequence program version code 2 F
R238		User sequence program version code 2 G
R239		User sequence program version code 2 H
R240		APLC version D
R241		APLC version C
R242		APLC version B
R243		APLC version A
R248		OT ignored (Axis 1 to 8 for part system 1,2)
R249		OT ignored (Axis 1 to 8 for part system 3,4)
R255		PLC axis OT ignored
R272		Near-point dog ignored(Axis 1 to 8 for part system 1,2)
R273		Near-point dog ignored(Axis 1 to 8 for part system 3,4)
R279		PLC axis near-point dog ignored
R296	SMOD	Speed monitor mode
R297		Handy terminal Data area top address
R298		Handy terminal Data valid number of registers
R299		Handy terminal Cause of communication error
R336		Tool I/D R/W pot No. designation ▲
R337		Large diameter tool information ▲
R338		Tool weight (spindle tool) ▲
R339		Tool weight (standby tool) ▲
R340		Unset tool information ▲
R342		Specified shape interference Shape No. designation
R343		Specified shape interference Shape No. designation (Spare)
R347		Skip retract valid
R348		Skip retract amount
R349		Skip retract amount
R350		Skip retract speed
R351		Skip retract speed
R352		Remote program input No. ▲
R353		Remote program input No. ▲
R354		Machine manufacturer macro password No.
R355		Machine manufacturer macro password No.
R356		Direct screen selection
R357		Direct screen selection
R358		Direct screen selection
R359		Direct screen selection
R364		Machine parameter lock I/F
R365		Measures against tool setter chattering movement amount
R377		Load meter comment designation
R391		Optimum acceleration/deceleration parameter switching axis (spindle and bit selection) ▲
R396		User PLC program format info
R400		Ball screw thermal displacement compensation Offset amount 1st axis
R401		Ball screw thermal displacement compensation Max. compensation amount 1st axis
R402		Ball screw thermal displacement compensation Part-system, axis No. 1st axis
R403		Ball screw thermal displacement compensation Offset amount 2nd axis

Device	Abbrev.	Signal name
R404		Ball screw thermal displacement compensation Max. compensation amount 2nd axis
R405		Ball screw thermal displacement compensation Part-system, axis No. 2nd axis
R406		Ball screw thermal displacement compensation Offset amount 3rd axis
R407		Ball screw thermal displacement compensation Max. compensation amount 3rd axis
R408		Ball screw thermal displacement compensation Part-system, axis No. 3rd axis
R409		Ball screw thermal displacement compensation Offset amount 4th axis
R410		Ball screw thermal displacement compensation Max. compensation amount 4th axis
R411		Ball screw thermal displacement compensation Part-system, axis No. 4th axis
R424		PLC window Reading start R register 1
R425		PLC window Number of read windows 1
R426		PLC window Writing start R register 1
R427		PLC window Number of write windows 1
R428		PLC window Reading start R register 2
R429		PLC window Number of read windows 2
R430		PLC window Writing start R register 2
R431		PLC window Number of write windows 2
R432		PLC window Reading start R register 3
R433		PLC window Number of read windows 3
R434		PLC window Writing start R register 3
R435		PLC window Number of write windows 3
R440		PLC axis control information address 1st axis
R441		PLC axis control information address 2nd axis
R442		PLC axis control information address 3rd axis
R443		PLC axis control information address 4th axis
R444		PLC axis control information address 5th axis
R445		PLC axis control information address 6th axis
R446		PLC axis control information address 7th axis
R447		PLC axis control information address 8th axis
R448		PLC axis control buffering mode information address
R456		Encoder 1 arbitrary pulse 1
R457		Encoder 1 arbitrary pulse 2
R458		Encoder 2 arbitrary pulse 1
R459		Encoder 2 arbitrary pulse 2
R470		Modbus block 1 transfer position ▲
R471		Modbus block 1 number of transfer ▲
R472		Modbus block 2 transfer position ▲
R473		Modbus block 2 number of transfers ▲
R474		Modbus block 3 transfer position ▲
R475		Modbus block 3 number of transfers ▲
R476		Modbus block 4 transfer position ▲
R477		Modbus block 4 number of transfers ▲
R478		Modbus transfer cycle ▲
R479		Modbus time-out period ▲
R608		No. of work machining (maximum value) $1
R609		No. of work machining (maximum value) $1
R808		No. of work machining (maximum value) $2
R809		No. of work machining (maximum value) $2
R1008		No. of work machining (maximum value) $3
R1009		No. of work machining (maximum value) $3
R1208		No. of work machining (maximum value) $4
R1209		No. of work machining (maximum value) $4
R2500		1st cutting feedrate override $1
R2501		2nd cutting feedrate override $1
R2502		Rapid traverse override $1
R2503	CHPOV1	Chopping override $1
R2504		Manual feedrate $1
R2505		Manual feedrate $1
R2506		Manual feedrate B $1
R2507		Manual feedrate B $1 (H)
R2508		1st Handle/incremental feed magnification $1
R2509		1st Handle/incremental feed magnification $1
R2510		2nd handle feed magnification $1
R2511		2nd handle feed magnification $1
R2512		3rd handle feed magnification $1
R2513		3rd handle feed magnification $1
R2517		Machine status animated warning display type $1
R2518		PLC interrupt program number $1 (L)

Device	Abbrev.	Signal name
R2519		PLC interrupt program number $1 (H)
R2520		Load meter display interface 1 $1 (L)
R2521		Load meter display interface 1 $1 (H)
R2522		Load meter display interface 2 $1 (L)
R2523		Load meter display interface 2 $1 (H)
R2524		Manual feedrate B override $1
R2525		External search device No. $1
R2526		External search program No. $1
R2527		External search program No. $1
R2528		External search sequence No. $1
R2529		External search sequence No. $1
R2530		External search block No. $1
R2531		External search block No. $1
R2544		Manual arbitrary feed 1st axis travel amount $1
R2545		Manual arbitrary feed 1st axis travel amount $1
R2546		Manual arbitrary feed 1st axis travel amount $1
R2547		Manual arbitrary feed 1st axis travel amount $1
R2548		Manual arbitrary feed 2st axis travel amount $1
R2549		Manual arbitrary feed 2st axis travel amount $1
R2550		Manual arbitrary feed 2st axis travel amount $1
R2551		Manual arbitrary feed 2st axis travel amount $1
R2552		Manual arbitrary feed 3st axis travel amount $1
R2553		Manual arbitrary feed 3st axis travel amount $1
R2554		Manual arbitrary feed 3st axis travel amount $1
R2555		Manual arbitrary feed 3st axis travel amount $1
R2556		Alarm message I/F 1 $1
R2557		Alarm message I/F 2 $1
R2558		Alarm message I/F 3 $1
R2559		Alarm message I/F 4 $1
R2560		Operator message I/F $1
R2562		Search & start program No. $1
R2563		Search & start program No. $1
R2564		Manual skip I/F 1 (manual skip control) $1 ▲
R2565		Manual skip I/F 2 (manual skip axis stop/read request) $1 ▲
R2566		Manual skip I/F 3 (Manual skip axis stop mode) $1 ▲
R2567		Encoder selection $1
R2568		C axis selection $1
R2580		Load monitor teaching axis selection $1 ▲
R2581		Load monitor load change rate detection axis $1 ▲
R2582		Load monitor teaching data sub-no. $1 ▲
R2583		Adaptive control basic axis selection $1 ▲
R2584		Each axis reference position selection
R2587		Chopping control data address $1
R2588		Tool life management data sort $1
R2589		Synchronization control operation method $1
R2590		Tool group No. designation $1
R2591		Tool group No. designation $1
R2593		Current limit changeover $1
R2594		Wear compensation no. (tool presetter) $1
R2595		(Spare) $1
R2596		Turret interference object tool no. designation $1
R2597		Turret interference object tool no. designation (spare) $1
R2599		Workpiece coordinate selection $1 ▲
R2600		Workpiece coordinate offset measurement compensation No. $1
R2601		Workpiece coordinate offset measurement compensation No. $1
R2602		Selected tool No. $1
R2603		Selected tool No. $1
R2604		Selected tool compensation No.(sub) $1 (L)
R2605		Selected tool compensation No.(sub) $1 (H)
R2606		Selected tool wear No. (sub) $1 (L)
R2607		Selected tool wear No. (sub) $1 (H)
R2608		Tool mounting information 1-16 $1
R2609		Tool mounting information 17-32 $1
R2610		Tool mounting information 33-48 $1
R2611		Tool mounting information 49-64 $1
R2612		Tool mounting information 65-80 $1
R2617		Optimum acceleration/deceleration parameter switching axis (axis and bit selection) $1 ▲
R2618		Tool length measurement 2 Tool No. $1 (L)
R2619		Tool length measurement 2 Tool No. $1 (H)
R2625		Servo ready completion output designation $1
R2628		Mechanical axis specifications 1st rotary axis angle $1 (L)
R2629		Mechanical axis specifications 1st rotary axis angle $1 (H)
R2630		Mechanical axis specifications 2nd rotary axis angle $1 (L)
R2631		Mechanical axis specifications 2nd rotary axis angle $1 (H)

Data Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
R2636		Circular feed in manual mode Operation mode data $1 (L)
R2637		Circular feed in manual mode Operation mode data $1 (H)
R2638		Circular feed in manual mode Part system designation $1
R2640		Circular feed in manual mode Horizontal axis designation $1
R2641		Circular feed in manual mode Vertical axis designation $1
R2644		Circular feed in manual mode Basic point X data $1 (L)
R2645		Circular feed in manual mode Basic point X data $1 (H)
R2648		Circular feed in manual mode Basic point Y data $1 (L)
R2649		Circular feed in manual mode Basic point Y data $1 (H)
R2652		Circular feed in manual mode Travel range X+ data $1 (L)
R2653		Circular feed in manual mode Travel range X+ data $1 (H)
R2656		Circular feed in manual mode Travel range X- data $1 (L)
R2657		Circular feed in manual mode Travel range X- data $1 (H)
R2660		Circular feed in manual mode Travel range Y+ data $1 (L)
R2661		Circular feed in manual mode Travel range Y+ data $1 (H)
R2664		Circular feed in manual mode Travel range Y- data $1 (L)
R2665		Circular feed in manual mode Travel range Y- data $1 (H)
R2668		Circular feed in manual mode Gradient/arc center X data $1 (L)
R2669		Circular feed in manual mode Gradient/arc center X data $1 (H)
R2672		Circular feed in manual mode Gradient/arc center Y data $1 (L)
R2673		Circular feed in manual mode Gradient/arc center Y data $1 (H)
R2684		For specific users NC control signal 1 $1 ▲
R2688		Specific users Manual skip motion direction (-) $1 ▲
R2689		Specific users Manual skip motion direction (+) $1 ▲
R2700		1st cutting feedrate override $2
R2701		2nd cutting feedrate override $2
R2702		Rapid traverse override $2
R2703	CHPOV2	Chopping override $2
R2704		Manual feedrate $2
R2705		Manual feedrate $2
R2706		Manual feedrate B $2
R2707		Manual feedrate B $2 (H)
R2708		1st handle/incremental feed magnification $2
R2709		1st handle/incremental feed magnification $2
R2710		2nd handle feed magnification $2
R2711		2nd handle feed magnification $2
R2712		3rd handle feed magnification $2
R2713		3rd handle feed magnification $2
R2717		Machine status animated warning display type $2
R2718		PLC interrupt program number $2 (L)
R2719		PLC interrupt program number $2 (H)
R2720		Load meter display interface 1 $2 (L)
R2721		Load meter display interface 1 $2 (H)
R2722		Load meter display interface 2 $2 (L)
R2723		Load meter display interface 2 $2 (H)
R2724		Manual feedrate B override $2
R2725		External search device No. $2
R2726		External search program No. $2
R2727		External search program No. $2
R2728		External search sequence No. $2
R2729		External search sequence No. $2
R2730		External search block No. $2
R2731		External search block No. $2
R2744		Manual arbitrary feed 1st axis travel amount $2
R2745		Manual arbitrary feed 1st axis travel amount $2
R2746		Manual arbitrary feed 1st axis travel amount $2
R2747		Manual arbitrary feed 1st axis travel amount $2
R2748		Manual arbitrary feed 2st axis travel amount $2
R2749		Manual arbitrary feed 2st axis travel amount $2
R2750		Manual arbitrary feed 2st axis travel amount $2
R2751		Manual arbitrary feed 2st axis travel amount $2
R2752		Manual arbitrary feed 3st axis travel amount $2
R2753		Manual arbitrary feed 3st axis travel amount $2
R2754		Manual arbitrary feed 3st axis travel amount $2
R2755		Manual arbitrary feed 3st axis travel amount $2
R2756		Alarm message I/F 1 $2
R2757		Alarm message I/F 2 $2
R2758		Alarm message I/F 3 $2
R2759		Alarm message I/F 4 $2
R2760		Operator message I/F $2
R2762		Search & start program No. $2
R2763		Search & start program No. $2
R2764		Manual skip I/F 1 (manual skip control) $2 ▲
R2765		Manual skip I/F 2 (manual skip axis stop/read request) $2 ▲
R2766		Manual skip I/F 3 (Manual skip axis stop mode) $2 ▲
R2767		Encoder selection $2

Device	Abbrev.	Signal name
R2768		C axis selection $2
R2780		Load monitor teaching axis selection $2 ▲
R2781		Load monitor load change rate detection axis $2 ▲
R2782		Load monitor teaching data sub-no. $2 ▲
R2783		Adaptive control basic axis selection $2 ▲
R2784		Each axis reference position selection $1
R2784		Each axis reference position selection $2
R2787		Chopping control data address $2
R2788		Tool life management data sort $2
R2789		Synchronization control operation method $2
R2790		Tool group No. designation $2
R2791		Tool group No. designation $2
R2793		Current limit changeover $2
R2794		Wear compensation no. (tool presetter) $2
R2795		(Spare) $2
R2796		Turret interference object tool no. designation $2
R2797		Turret interference object tool no. designation (spare) $2
R2799		Workpiece coordinate selection $2 ▲
R2800		Workpiece coordinate offset measurement compensation No. $2
R2801		Workpiece coordinate offset measurement compensation No. $2
R2802		Selected tool No. $2
R2803		Selected tool No. $2
R2804		Selected tool compensation No.(sub) $2 (L)
R2805		Selected tool compensation No.(sub) $2 (H)
R2806		Selected tool wear No. (sub) $2 (L)
R2807		Selected tool wear No. (sub) $2 (H)
R2808		Tool mounting information 1-16 $2
R2809		Tool mounting information 17-32 $2
R2810		Tool mounting information 33-48 $2
R2811		Tool mounting information 49-64 $2
R2812		Tool mounting information 65-80 $2
R2817		Optimum acceleration/deceleration parameter switching axis (axis and bit selection) $2 ▲
R2818		Tool length measurement 2 Tool No. $2 (L)
R2819		Tool length measurement 2 Tool No. $2 (H)
R2825		Servo ready completion output designation $2
R2828		Mechanical axis specifications 1st rotary axis angle $2 (L)
R2829		Mechanical axis specifications 1st rotary axis angle $2 (H)
R2830		Mechanical axis specifications 2nd rotary axis angle $2 (L)
R2831		Mechanical axis specifications 2nd rotary axis angle $2 (H)
R2836		Circular feed in manual mode Operation mode data $2 (L)
R2837		Circular feed in manual mode Operation mode data $2 (H)
R2838		Circular feed in manual mode Part system designation $2
R2840		Circular feed in manual mode Horizontal axis designation $2
R2841		Circular feed in manual mode Vertical axis designation $2
R2844		Circular feed in manual mode Basic point X data $2 (L)
R2845		Circular feed in manual mode Basic point X data $2 (H)
R2848		Circular feed in manual mode Basic point Y data $2 (L)
R2849		Circular feed in manual mode Basic point Y data $2 (H)
R2852		Circular feed in manual mode Travel range X+ data $2 (L)
R2853		Circular feed in manual mode Travel range X+ data $2 (H)
R2856		Circular feed in manual mode Travel range X- data $2 (L)
R2857		Circular feed in manual mode Travel range X- data $2 (H)
R2860		Circular feed in manual mode Travel range Y+ data $2 (L)
R2861		Circular feed in manual mode Travel range Y+ data $2 (H)
R2864		Circular feed in manual mode Travel range Y- data $2 (L)
R2865		Circular feed in manual mode Travel range Y- data $2 (H)
R2868		Circular feed in manual mode Gradient/arc center X data $2 (L)
R2869		Circular feed in manual mode Gradient/arc center X data $2 (H)
R2872		Circular feed in manual mode Gradient/arc center Y data $2 (L)
R2873		Circular feed in manual mode Gradient/arc center Y data $2 (H)
R2884		For specific users NC control signal 1 $2 ▲
R2888		Specific users Manual skip motion direction (-) $2 ▲
R2889		Specific users Manual skip motion direction (+) $2 ▲
R2900		1st cutting feedrate override $3
R2901		2nd cutting feedrate override $3
R2902		Rapid traverse override $3
R2903	CHPOV3	Chopping override $3
R2904		Manual feedrate $3
R2905		Manual feedrate $3
R2906		Manual feedrate B $3
R2907		Manual feedrate B $3 (H)
R2908		1st handle/incremental feed magnification $3
R2909		1st handle/incremental feed magnification $3
R2910		2nd handle feed magnification $3
R2911		2nd handle feed magnification $3

Data Type Output Signals (PLC->CNC)

Device	Abbrev.	Signal name
R2912		3rd handle feed magnification $3
R2913		3rd handle feed magnification $3
R2917		Machine status animated warning display type $3
R2918		PLC interrupt program number $3 (L)
R2919		PLC interrupt program number $3 (H)
R2920		Load meter display interface 1 $3 (L)
R2921		Load meter display interface 1 $3 (H)
R2922		Load meter display interface 2 $3 (L)
R2923		Load meter display interface 2 $3 (H)
R2924		Manual feedrate B override $3
R2925		External search device No. $3
R2926		External search program No. $3
R2927		External search program No. $3
R2928		External search sequence No. $3
R2929		External search sequence No. $3
R2930		External search block No. $3
R2931		External search block No. $3
R2944		Manual arbitrary feed 1st axis travel amount $3
R2945		Manual arbitrary feed 1st axis travel amount $3
R2946		Manual arbitrary feed 1st axis travel amount $3
R2947		Manual arbitrary feed 1st axis travel amount $3
R2948		Manual arbitrary feed 2st axis travel amount $3
R2949		Manual arbitrary feed 2st axis travel amount $3
R2950		Manual arbitrary feed 2st axis travel amount $3
R2951		Manual arbitrary feed 2st axis travel amount $3
R2952		Manual arbitrary feed 3st axis travel amount $3
R2953		Manual arbitrary feed 3st axis travel amount $3
R2954		Manual arbitrary feed 3st axis travel amount $3
R2955		Manual arbitrary feed 3st axis travel amount $3
R2956		Alarm message I/F 1 $3
R2957		Alarm message I/F 2 $3
R2958		Alarm message I/F 3 $3
R2959		Alarm message I/F 4 $3
R2960		Operator message I/F $3
R2962		Search & start program No. $3
R2963		Search & start program No. $3
R2964		Manual skip I/F 1 (manual skip control) $3 ▲
R2965		Manual skip I/F 2 (manual skip axis stop/read request) $3 ▲
R2966		Manual skip I/F 3 (Manual skip axis stop mode) $3 ▲
R2967		Encoder selection $3
R2968		C axis selection $3
R2980		Load monitor teaching axis selection $3 ▲
R2981		Load monitor load change rate detection axis $3 ▲
R2982		Load monitor teaching data sub-no. $3 ▲
R2983		Adaptive control basic axis selection $3 ▲
R2984		Each axis reference position selection $3
R2987		Chopping control data address $3
R2988		Tool life management data sort $3
R2989		Synchronization control operation method $3
R2990		Tool group No. designation $3
R2991		Tool group No. designation $3
R2993		Current limit changeover $3
R2994		Wear compensation no. (tool presetter) $3
R2995		(Spare) $3
R2996		Turret interference object tool no. designation $3
R2997		Turret interference object tool no. designation (spare) $3
R2999		Workpiece coordinate selection $3 ▲
R3000		Workpiece coordinate offset measurement compensation No. $3
R3001		Workpiece coordinate offset measurement compensation No. $3
R3002		Selected tool No. $3
R3003		Selected tool No. $3
R3004		Selected tool compensation No.(sub) $3 (L)
R3005		Selected tool compensation No.(sub) $3 (H)
R3006		Selected tool wear No. (sub) $3 (L)
R3007		Selected tool wear No. (sub) $3 (H)
R3008		Tool mounting information 1-16 $3
R3009		Tool mounting information 17-32 $3
R3010		Tool mounting information 33-48 $3
R3011		Tool mounting information 49-64 $3
R3012		Tool mounting information 65-80 $3
R3017		Optimum acceleration/deceleration parameter switching axis (axis and bit selection) $3 ▲
R3018		Tool length measurement 2 Tool No. $3 (L)
R3019		Tool length measurement 2 Tool No. $3 (H)
R3025		Servo ready completion output designation $3

Device	Abbrev.	Signal name
R3028		Mechanical axis specifications 1st rotary axis angle $3 (L)
R3029		Mechanical axis specifications 1st rotary axis angle $3 (H)
R3030		Mechanical axis specifications 2nd rotary axis angle $3 (L)
R3031		Mechanical axis specifications 2nd rotary axis angle $3 (H)
R3036		Circular feed in manual mode Operation mode data $3 (L)
R3037		Circular feed in manual mode Operation mode data $3 (H)
R3038		Circular feed in manual mode Part system designation $3
R3040		Circular feed in manual mode Horizontal axis designation $3
R3041		Circular feed in manual mode Vertical axis designation $3
R3044		Circular feed in manual mode Basic point X data $3 (L)
R3045		Circular feed in manual mode Basic point X data $3 (H)
R3048		Circular feed in manual mode Basic point Y data $3 (L)
R3049		Circular feed in manual mode Basic point Y data $3 (H)
R3052		Circular feed in manual mode Travel range X+ data $3 (L)
R3053		Circular feed in manual mode Travel range X+ data $3 (H)
R3056		Circular feed in manual mode Travel range X- data $3 (L)
R3057		Circular feed in manual mode Travel range X- data $3 (H)
R3060		Circular feed in manual mode Travel range Y+ data $3 (L)
R3061		Circular feed in manual mode Travel range Y+ data $3 (H)
R3064		Circular feed in manual mode Travel range Y- data $3 (L)
R3065		Circular feed in manual mode Travel range Y- data $3 (H)
R3068		Circular feed in manual mode Gradient/arc center X data $3 (L)
R3069		Circular feed in manual mode Gradient/arc center X data $3 (H)
R3072		Circular feed in manual mode Gradient/arc center Y data $3 (L)
R3073		Circular feed in manual mode Gradient/arc center Y data $3 (H)
R3084		For specific users NC control signal 1 $3 ▲
R3088		Specific users Manual skip motion direction (-) $3 ▲
R3089		Specific users Manual skip motion direction (+) $3 ▲
R3100		1st cutting feedrate override $4
R3101		2nd cutting feedrate override $4
R3102		Rapid traverse override $4
R3103	CHPOV4	Chopping override $4
R3104		Manual feedrate $4
R3105		Manual feedrate $4
R3106		Manual feedrate B $4
R3107		Manual feedrate B $4 (H)
R3108		1st handle/incremental feed magnification $4
R3109		1st handle/incremental feed magnification $4
R3110		2nd handle feed magnification $4
R3111		2nd handle feed magnification $4
R3112		3rd handle feed magnification $4
R3113		3rd handle feed magnification $4
R3117		Machine status animated warning display type $4
R3118		PLC interrupt program number $4 (L)
R3119		PLC interrupt program number $4 (H)
R3120		Load meter display interface 1 $4 (L)
R3121		Load meter display interface 1 $4 (H)
R3122		Load meter display interface 2 $4 (L)
R3123		Load meter display interface 2 $4 (H)
R3124		Manual feedrate B override $4
R3125		External search device No. $4
R3126		External search program No. $4
R3127		External search program No. $4
R3128		External search sequence No. $4
R3129		External search sequence No. $4
R3130		External search block No. $4
R3131		External search block No. $4
R3144		Manual arbitrary feed 1st axis travel amount $4
R3145		Manual arbitrary feed 1st axis travel amount $4
R3146		Manual arbitrary feed 1st axis travel amount $4
R3147		Manual arbitrary feed 1st axis travel amount $4
R3148		Manual arbitrary feed 2st axis travel amount $4
R3149		Manual arbitrary feed 2st axis travel amount $4
R3150		Manual arbitrary feed 2st axis travel amount $4
R3151		Manual arbitrary feed 2st axis travel amount $4
R3152		Manual arbitrary feed 3st axis travel amount $4
R3153		Manual arbitrary feed 3st axis travel amount $4
R3154		Manual arbitrary feed 3st axis travel amount $4
R3155		Manual arbitrary feed 3st axis travel amount $4
R3156		Alarm message I/F 1 $4
R3157		Alarm message I/F 2 $4
R3158		Alarm message I/F 3 $4
R3159		Alarm message I/F 4 $4
R3160		Operator message I/F $4
R3162		Search & start program No. $4
R3163		Search & start program No. $4

Device	Abbrev.	Signal name
R3164		Manual skip I/F 1 (manual skip control) $4 ▲
R3165		Manual skip I/F 2 (manual skip axis stop/read request) $4 ▲
R3166		Manual skip I/F 3 (Manual skip axis stop mode) $4 ▲
R3167		Encoder selection $4
R3168		C axis selection $4
R3180		Load monitor teaching axis selection $4 ▲
R3181		Load monitor load change rate detection axis $4 ▲
R3182		Load monitor teaching data sub-no. $4 ▲
R3183		Adaptive control basic axis selection $4 ▲
R3184		Each axis reference position selection $4
R3187		Chopping control data address $4
R3188		Tool life management data sort $4
R3189		Synchronization control operation method $4
R3190		Tool group No. designation $4
R3191		Tool group No. designation $4
R3193		Current limit changeover $4
R3194		Wear compensation no. (tool presetter) $4
R3195		(Spare) $4
R3196		Turret interference object tool no. designation $4
R3197		Turret interference object tool no. designation (spare) $4
R3199		Workpiece coordinate selection $4 ▲
R3200		Workpiece coordinate offset measurement compensation No. $4
R3201		Workpiece coordinate offset measurement compensation No. $4
R3202		Selected tool No. $4
R3203		Selected tool No. $4
R3204		Selected tool compensation No.(sub) $4 (L)
R3205		Selected tool compensation No.(sub) $4 (H)
R3206		Selected tool wear No. (sub) $4 (L)
R3207		Selected tool wear No. (sub) $4 (H)
R3208		Tool mounting information 1-16 $4
R3209		Tool mounting information 17-32 $4
R3210		Tool mounting information 33-48 $4
R3211		Tool mounting information 49-64 $4
R3212		Tool mounting information 65-80 $4
R3217		Optimum acceleration/deceleration parameter switching axis (axis and bit selection) $4 ▲
R3218		Tool length measurement 2 Tool No. $4 (L)
R3219		Tool length measurement 2 Tool No. $4 (H)
R3225		Servo ready completion output designation $4
R3228		Mechanical axis specifications 1st rotary axis angle $4 (L)
R3229		Mechanical axis specifications 1st rotary axis angle $4 (H)
R3230		Mechanical axis specifications 2nd rotary axis angle $4 (L)
R3231		Mechanical axis specifications 2nd rotary axis angle $4 (H)
R3236		Circular feed in manual mode Operation mode data $4 (L)
R3237		Circular feed in manual mode Operation mode data $4 (H)
R3238		Circular feed in manual mode Part system designation $4
R3240		Circular feed in manual mode Horizontal axis designation $4
R3241		Circular feed in manual mode Vertical axis designation $4
R3244		Circular feed in manual mode Basic point X data $4 (L)
R3245		Circular feed in manual mode Basic point X data $4 (H)
R3248		Circular feed in manual mode Basic point Y data $4 (L)
R3249		Circular feed in manual mode Basic point Y data $4 (H)
R3252		Circular feed in manual mode Travel range X+ data $4 (L)
R3253		Circular feed in manual mode Travel range X+ data $4 (H)
R3256		Circular feed in manual mode Travel range X- data $4 (L)
R3257		Circular feed in manual mode Travel range X- data $4 (H)
R3260		Circular feed in manual mode Travel range Y+ data $4 (L)
R3261		Circular feed in manual mode Travel range Y+ data $4 (H)
R3264		Circular feed in manual mode Travel range Y- data $4 (L)
R3265		Circular feed in manual mode Travel range Y- data $4 (H)
R3268		Circular feed in manual mode Gradient/arc center X data $4 (L)
R3269		Circular feed in manual mode Gradient/arc center X data $4 (H)
R3272		Circular feed in manual mode Gradient/arc center Y data $4 (L)
R3273		Circular feed in manual mode Gradient/arc center Y data $4 (H)
R3284		For specific users NC control signal 1 $4 ▲
R3288		Specific users Manual skip motion direction (-) $4 ▲
R3289		Specific users Manual skip motion direction (+) $4 ▲
R4100		Pallet program registration Pallet information in machine
R4101		Pallet program registration Miscellaneous function presence
R4102		Pallet program registration Pallet index plane in machine
R4103		Pallet program registration Machining ON/OFF screen setting
R5700		External machine coordinate system offset data 1st-axis $1
R5701		External machine coordinate system offset data 1st-axis $1
R5702		External machine coordinate system offset data 2nd-axis $1
R5703		External machine coordinate system offset data 2nd-axis $1
R5704		External machine coordinate system offset data 3nd-axis $1

Device	Abbrev.	Signal name
R5705		External machine coordinate system offset data 3nd-axis $1
R5706		External machine coordinate system offset data 4th-axis $1
R5707		External machine coordinate system offset data 4th-axis $1
R5708		External machine coordinate system offset data 5th-axis $1
R5709		External machine coordinate system offset data 5th-axis $1
R5710		External machine coordinate system offset data 6th-axis $1
R5711		External machine coordinate system offset data 6th-axis $1
R5712		External machine coordinate system offset data 7th-axis $1
R5713		External machine coordinate system offset data 7th-axis $1
R5714		External machine coordinate system offset data 8th-axis $1
R5715		External machine coordinate system offset data 8th-axis $1
R5716		External machine coordinate system offset data 1st-axis $2
R5717		External machine coordinate system offset data 1st-axis $2
R5718		External machine coordinate system offset data 2nd-axis $2
R5719		External machine coordinate system offset data 2nd-axis $2
R5720		External machine coordinate system offset data 3nd-axis $2
R5721		External machine coordinate system offset data 3nd-axis $2
R5722		External machine coordinate system offset data 4th-axis $2
R5723		External machine coordinate system offset data 4th-axis $2
R5724		External machine coordinate system offset data 5th-axis $2
R5725		External machine coordinate system offset data 5th-axis $2
R5726		External machine coordinate system offset data 6th-axis $2
R5727		External machine coordinate system offset data 6th-axis $2
R5728		External machine coordinate system offset data 7th-axis $2
R5729		External machine coordinate system offset data 7th-axis $2
R5730		External machine coordinate system offset data 8th-axis $2
R5731		External machine coordinate system offset data 8th-axis $2
R5732		External machine coordinate system offset data 1st-axis $3
R5733		External machine coordinate system offset data 1st-axis $3
R5734		External machine coordinate system offset data 2nd-axis $3
R5735		External machine coordinate system offset data 2nd-axis $3
R5736		External machine coordinate system offset data 3nd-axis $3
R5737		External machine coordinate system offset data 3nd-axis $3
R5738		External machine coordinate system offset data 4th-axis $3
R5739		External machine coordinate system offset data 4th-axis $3
R5740		External machine coordinate system offset data 5th-axis $3
R5741		External machine coordinate system offset data 5th-axis $3
R5742		External machine coordinate system offset data 6th-axis $3
R5743		External machine coordinate system offset data 6th-axis $3
R5744		External machine coordinate system offset data 7th-axis $3
R5745		External machine coordinate system offset data 7th-axis $3
R5746		External machine coordinate system offset data 8th-axis $3
R5747		External machine coordinate system offset data 8th-axis $3
R5748		External machine coordinate system offset data 1st-axis $4
R5749		External machine coordinate system offset data 1st-axis $4
R5750		External machine coordinate system offset data 2nd-axis $4
R5751		External machine coordinate system offset data 2nd-axis $4
R5752		External machine coordinate system offset data 3nd-axis $4
R5753		External machine coordinate system offset data 3nd-axis $4
R5754		External machine coordinate system offset data 4th-axis $4
R5755		External machine coordinate system offset data 4th-axis $4
R5756		External machine coordinate system offset data 5th-axis $4
R5757		External machine coordinate system offset data 5th-axis $4
R5758		External machine coordinate system offset data 6th-axis $4
R5759		External machine coordinate system offset data 6th-axis $4
R5760		External machine coordinate system offset data 7th-axis $4
R5761		External machine coordinate system offset data 7th-axis $4
R5762		External machine coordinate system offset data 8th-axis $4
R5763		External machine coordinate system offset data 8th-axis $4
R5764		Each axis manual feedrate B 1st axis $1 (L)
R5765		Each axis manual feedrate B 1st axis $1 (H)
R5766		Each axis manual feedrate B 2nd axis $1 (L)
R5767		Each axis manual feedrate B 2nd axis $1 (H)
R5768		Each axis manual feedrate B 3rd axis $1 (L)
R5769		Each axis manual feedrate B 3rd axis $1 (H)
R5770		Each axis manual feedrate B 4th axis $1 (L)
R5771		Each axis manual feedrate B 4th axis $1 (H)
R5772		Each axis manual feedrate B 5th axis $1 (L)
R5773		Each axis manual feedrate B 5th axis $1 (H)
R5774		Each axis manual feedrate B 6th axis $1 (L)
R5775		Each axis manual feedrate B 6th axis $1 (H)
R5776		Each axis manual feedrate B 7th axis $1 (L)
R5777		Each axis manual feedrate B 7th axis $1 (H)
R5778		Each axis manual feedrate B 8th axis $1 (L)

Device	Abbrev.	Signal name
R5779		Each axis manual feedrate B 8th axis $1 (H)
R5780		Each axis manual feedrate B 1st axis $2 (L)
R5781		Each axis manual feedrate B 1st axis $2 (H)
R5782		Each axis manual feedrate B 2nd axis $2 (L)
R5783		Each axis manual feedrate B 2nd axis $2 (H)
R5784		Each axis manual feedrate B 3rd axis $2 (L)
R5785		Each axis manual feedrate B 3rd axis $2 (H)
R5786		Each axis manual feedrate B 4th axis $2 (L)
R5787		Each axis manual feedrate B 4th axis $2 (H)
R5788		Each axis manual feedrate B 5th axis $2 (L)
R5789		Each axis manual feedrate B 5th axis $2 (H)
R5790		Each axis manual feedrate B 6th axis $2 (L)
R5791		Each axis manual feedrate B 6th axis $2 (H)
R5792		Each axis manual feedrate B 7th axis $2 (L)
R5793		Each axis manual feedrate B 7th axis $2 (H)
R5794		Each axis manual feedrate B 8th axis $2 (L)
R5795		Each axis manual feedrate B 8th axis $2 (H)
R5796		Each axis manual feedrate B 1st axis $3 (L)
R5797		Each axis manual feedrate B 1st axis $3 (H)
R5798		Each axis manual feedrate B 2nd axis $3 (L)
R5799		Each axis manual feedrate B 2nd axis $3 (H)
R5800		Each axis manual feedrate B 3rd axis $3 (L)
R5801		Each axis manual feedrate B 3rd axis $3 (H)
R5802		Each axis manual feedrate B 4th axis $3 (L)
R5803		Each axis manual feedrate B 4th axis $3 (H)
R5804		Each axis manual feedrate B 5th axis $3 (L)
R5805		Each axis manual feedrate B 5th axis $3 (H)
R5806		Each axis manual feedrate B 6th axis $3 (L)
R5807		Each axis manual feedrate B 6th axis $3 (H)
R5808		Each axis manual feedrate B 7th axis $3 (L)
R5809		Each axis manual feedrate B 7th axis $3 (H)
R5810		Each axis manual feedrate B 8th axis $3 (L)
R5811		Each axis manual feedrate B 8th axis $3 (H)
R5812		Each axis manual feedrate B 1st axis $4 (L)
R5813		Each axis manual feedrate B 1st axis $4 (H)
R5814		Each axis manual feedrate B 2nd axis $4 (L)
R5815		Each axis manual feedrate B 2nd axis $4 (H)
R5816		Each axis manual feedrate B 3rd axis $4 (L)
R5817		Each axis manual feedrate B 3rd axis $4 (H)
R5818		Each axis manual feedrate B 4th axis $4 (L)
R5819		Each axis manual feedrate B 4th axis $4 (H)
R5820		Each axis manual feedrate B 5th axis $4 (L)
R5821		Each axis manual feedrate B 5th axis $4 (H)
R5822		Each axis manual feedrate B 6th axis $4 (L)
R5823		Each axis manual feedrate B 6th axis $4 (H)
R5824		Each axis manual feedrate B 7th axis $4 (L)
R5825		Each axis manual feedrate B 7th axis $4 (H)
R5826		Each axis manual feedrate B 8th axis $4 (L)
R5827		Each axis manual feedrate B 8th axis $4 (H)
R6052		External deceleration speed selection 1st axis $1 ▲
R6053		External deceleration speed selection 2nd axis $1 ▲
R6054		External deceleration speed selection 3rd axis $1 ▲
R6055		External deceleration speed selection 4th axis $1 ▲
R6056		External deceleration speed selection 5th axis $1 ▲
R6057		External deceleration speed selection 6th axis $1 ▲
R6058		External deceleration speed selection 7th axis $1 ▲
R6059		External deceleration speed selection 8th axis $1 ▲
R6060		External deceleration speed selection 1st axis $2 ▲
R6061		External deceleration speed selection 2nd axis $2 ▲
R6062		External deceleration speed selection 3rd axis $2 ▲
R6063		External deceleration speed selection 4th axis $2 ▲
R6064		External deceleration speed selection 5th axis $2 ▲
R6065		External deceleration speed selection 6th axis $2 ▲
R6066		External deceleration speed selection 7th axis $2 ▲
R6067		External deceleration speed selection 8th axis $2 ▲
R6068		External deceleration speed selection 1st axis $3 ▲
R6069		External deceleration speed selection 2nd axis $3 ▲
R6070		External deceleration speed selection 3rd axis $3 ▲
R6071		External deceleration speed selection 4th axis $3 ▲
R6072		External deceleration speed selection 5th axis $3 ▲
R6073		External deceleration speed selection 6th axis $3 ▲
R6074		External deceleration speed selection 7th axis $3 ▲
R6075		External deceleration speed selection 8th axis $3 ▲
R6076		External deceleration speed selection 1st axis $4 ▲

Device	Abbrev.	Signal name
R6077		External deceleration speed selection 2nd axis $4 ▲
R6078		External deceleration speed selection 3rd axis $4 ▲
R6079		External deceleration speed selection 4th axis $4 ▲
R6080		External deceleration speed selection 5th axis $4 ▲
R6081		External deceleration speed selection 6th axis $4 ▲
R6082		External deceleration speed selection 7th axis $4 ▲
R6083		External deceleration speed selection 8th axis $4 ▲
R6084		Optimum acceleratin/deceleration parameter group selection 1st axis $1 ▲
R6085		Optimum acceleratin/deceleration parameter group selection 2nd axis $1 ▲
R6086		Optimum acceleratin/deceleration parameter group selection 3rd axis $1 ▲
R6087		Optimum acceleratin/deceleration parameter group selection 4th axis $1 ▲
R6088		Optimum acceleratin/deceleration parameter group selection 5th axis $1 ▲
R6089		Optimum acceleratin/deceleration parameter group selection 6th axis $1 ▲
R6090		Optimum acceleratin/deceleration parameter group selection 7th axis $1 ▲
R6091		Optimum acceleratin/deceleration parameter group selection 8th axis $1 ▲
R6092		Optimum acceleratin/deceleration parameter group selection 1st axis $2 ▲
R6093		Optimum acceleratin/deceleration parameter group selection 2nd axis $2 ▲
R6094		Optimum acceleratin/deceleration parameter group selection 3rd axis $2 ▲
R6095		Optimum acceleratin/deceleration parameter group selection 4th axis $2 ▲
R6096		Optimum acceleratin/deceleration parameter group selection 5th axis $2 ▲
R6097		Optimum acceleratin/deceleration parameter group selection 6th axis $2 ▲
R6098		Optimum acceleratin/deceleration parameter group selection 7th axis $2 ▲
R6099		Optimum acceleratin/deceleration parameter group selection 8th axis $2 ▲
R6100		Optimum acceleratin/deceleration parameter group selection 1st axis $3 ▲
R6101		Optimum acceleratin/deceleration parameter group selection 2nd axis $3 ▲
R6102		Optimum acceleratin/deceleration parameter group selection 3rd axis $3 ▲
R6103		Optimum acceleratin/deceleration parameter group selection 4th axis $3 ▲
R6104		Optimum acceleratin/deceleration parameter group selection 5th axis $3 ▲
R6105		Optimum acceleratin/deceleration parameter group selection 6th axis $3 ▲
R6106		Optimum acceleratin/deceleration parameter group selection 7th axis $3 ▲
R6107		Optimum acceleratin/deceleration parameter group selection 8th axis $3 ▲
R6108		Optimum acceleratin/deceleration parameter group selection 1st axis $4 ▲
R6109		Optimum acceleratin/deceleration parameter group selection 2nd axis $4 ▲
R6110		Optimum acceleratin/deceleration parameter group selection 3rd axis $4 ▲
R6111		Optimum acceleratin/deceleration parameter group selection 4th axis $4 ▲
R6112		Optimum acceleratin/deceleration parameter group selection 5th axis $4 ▲
R6113		Optimum acceleratin/deceleration parameter group selection 6th axis $4 ▲
R6114		Optimum acceleratin/deceleration parameter group selection 7th axis $4 ▲
R6115		Optimum acceleratin/deceleration parameter group selection 8th axis $4 ▲
R6116		Target machining time 1st axis $1 ▲
R6117		Target machining time 2nd axis $1 ▲
R6118		Target machining time 3rd axis $1 ▲
R6119		Target machining time 4th axis $1 ▲
R6120		Target machining time 5th axis $1 ▲
R6121		Target machining time 6th axis $1 ▲
R6122		Target machining time 7th axis $1 ▲
R6123		Target machining time 8th axis $1 ▲

Device	Abbrev.	Signal name
R6124		Target machining time 1st axis $2 ▲
R6125		Target machining time 2nd axis $2 ▲
R6126		Target machining time 3rd axis $2 ▲
R6127		Target machining time 4th axis $2 ▲
R6128		Target machining time 5th axis $2 ▲
R6129		Target machining time 6th axis $2 ▲
R6130		Target machining time 7th axis $2 ▲
R6131		Target machining time 8th axis $2 ▲
R6132		Target machining time 1st axis $3 ▲
R6133		Target machining time 2nd axis $3 ▲
R6134		Target machining time 3rd axis $3 ▲
R6135		Target machining time 4th axis $3 ▲
R6136		Target machining time 5th axis $3 ▲
R6137		Target machining time 6th axis $3 ▲
R6138		Target machining time 7th axis $3 ▲
R6139		Target machining time 8th axis $3 ▲
R6140		Target machining time 1st axis $4 ▲
R6141		Target machining time 2nd axis $4 ▲
R6142		Target machining time 3rd axis $4 ▲
R6143		Target machining time 4th axis $4 ▲
R6144		Target machining time 5th axis $4 ▲
R6145		Target machining time 6th axis $4 ▲
R6146		Target machining time 7th axis $4 ▲
R6147		Target machining time 8th axis $4 ▲
R6436		User macro input #1032(PLC -> NC) $1
R6437		User macro input #1032(PLC -> NC) $1
R6438		User macro input #1033(PLC -> NC) $1
R6439		User macro input #1033(PLC -> NC) $1
R6440		User macro input #1034(PLC -> NC) $1
R6441		User macro input #1034(PLC -> NC) $1
R6442		User macro input #1035(PLC -> NC) $1
R6443		User macro input #1035(PLC -> NC) $1
R6444		User macro input #1032(PLC -> NC) $2
R6445		User macro input #1032(PLC -> NC) $2
R6446		User macro input #1033(PLC -> NC) $2
R6447		User macro input #1033(PLC -> NC) $2
R6448		User macro input #1034(PLC -> NC) $2
R6449		User macro input #1034(PLC -> NC) $2
R6450		User macro input #1035(PLC -> NC) $2
R6451		User macro input #1035(PLC -> NC) $2
R6452		User macro input #1032(PLC -> NC) $3
R6453		User macro input #1032(PLC -> NC) $3
R6454		User macro input #1033(PLC -> NC) $3
R6455		User macro input #1033(PLC -> NC) $3
R6456		User macro input #1034(PLC -> NC) $3
R6457		User macro input #1034(PLC -> NC) $3
R6458		User macro input #1035(PLC -> NC) $3
R6459		User macro input #1035(PLC -> NC) $3
R6460		User macro input #1032(PLC -> NC) $4
R6461		User macro input #1032(PLC -> NC) $4
R6462		User macro input #1033(PLC -> NC) $4
R6463		User macro input #1033(PLC -> NC) $4
R6464		User macro input #1034(PLC -> NC) $4
R6465		User macro input #1034(PLC -> NC) $4
R6466		User macro input #1035(PLC -> NC) $4
R6467		User macro input #1035(PLC -> NC) $4
R7000		Spindle command rotation speed output 1st-Spindle
R7001		Spindle command rotation speed output 1st-Spindle
R7002	SLSP1	Spindle command selection 1st-Spindle
R7003		Optimum acceleration/deceleration parameter group selection [spindle] 1st-Spindle ▲
R7004		Spindle target machining time 1st-Spindle ▲
R7008		S command override 1st-Spindle
R7009		Multi-point orientation position data 1st-Spindle
R7016		Spindle synchronization Basic spindle selection 1st-Spindle
R7017		Spindle synchronization Synchronous spindle selection 1st-Spindle
R7018		Spindle synchronization Phase shift amount 1st-Spindle
R7050		Spindle command rotation speed output 2nd-Spindle
R7051		Spindle command rotation speed output 2nd-Spindle
R7052	SLSP2	Spindle command selection 2nd-Spindle
R7053		Optimum acceleration/deceleration parameter group selection [spindle] 2nd-Spindle ▲
R7054		Spindle target machining time 2nd-Spindle ▲
R7058		S command override 2nd-Spindle

Device	Abbrev.	Signal name
R7059		Multi-point orientation position data 2nd-Spindle
R7066		Spindle synchronization Basic spindle selection 2nd-Spindle
R7067		Spindle synchronization Synchronous spindle selection 2nd-Spindle
R7068		Spindle synchronization Phase shift amount 2nd-Spindle
R7100		Spindle command rotation speed output 3rd-Spindle
R7101		Spindle command rotation speed output 3rd-Spindle
R7102	SLSP3	Spindle command selection 3rd-Spindle
R7103		Optimum acceleration/deceleration parameter group selection [spindle] 3rd-Spindle ▲
R7104		Spindle target machining time 3rd-Spindle ▲
R7108		S command override 3rd-Spindle
R7109		Multi-point orientation position data 3rd-Spindle
R7116		Spindle synchronization Basic spindle selection 3rd-Spindle
R7117		Spindle synchronization Synchronous spindle selection 3rd-Spindle
R7118		Spindle synchronization Phase shift amount 3rd-Spindle
R7150		Spindle command rotation speed output 4th-Spindle
R7151		Spindle command rotation speed output 4th-Spindle
R7152	SLSP4	Spindle command selection 4th-Spindle
R7153		Optimum acceleration/deceleration parameter group selection [spindle] 4th-Spindle ▲
R7154		Spindle target machining time 4th-Spindle ▲
R7158		S command override 4th-Spindle
R7159		Multi-point orientation position data 4th-Spindle
R7166		Spindle synchronization Basic spindle selection 4th-Spindle
R7167		Spindle synchronization Synchronous spindle selection 4th-Spindle
R7168		Spindle synchronization Phase shift amount 4th-Spindle
R7200		Spindle command rotation speed output 5th-Spindle
R7201		Spindle command rotation speed output 5th-Spindle
R7202		Spindle command selection 5th-Spindle
R7203		Optimum acceleration/deceleration parameter group selection [spindle] 5th-Spindle ▲
R7204		Spindle target machining time 5th-Spindle ▲
R7208		S command override 5th-Spindle
R7209		Multi-point orientation position data 5th-Spindle
R7216		Spindle synchronization Basic spindle selection 5th-Spindle
R7217		Spindle synchronization Synchronous spindle selection 5th-Spindle
R7218		Spindle synchronization Phase shift amount 5th-Spindle
R7250		Spindle command rotation speed output 6th-Spindle
R7251		Spindle command rotation speed output 6th-Spindle
R7252		Spindle command selection 6th-Spindle
R7253		Optimum acceleration/deceleration parameter group selection [spindle] 6th-Spindle ▲
R7254		Spindle target machining time 6th-Spindle ▲
R7258		S command override 6th-Spindle
R7259		Multi-point orientation position data 6th-Spindle
R7266		Spindle synchronization Basic spindle selection 6th-Spindle
R7267		Spindle synchronization Synchronous spindle selection 6th-Spindle
R7268		Spindle synchronization Phase shift amount 6th-Spindle
R9950		J2CT control command 4 $1
R9951		J2CT control command 3 $1
R9952		J2CT control command 2 $1
R9953		J2CT control command 1 $1
R9954		J2CT control command position (L) 1st axis
R9955		J2CT control command position (H) 1st axis
R9956		J2CT control command 4 $2
R9957		J2CT control command 3 $2
R9958		J2CT control command 2 $2
R9959		J2CT control command 1 $2
R9960		J2CT control command position (L) 2nd axis
R9961		J2CT control command position (H) 2nd axis
R9962		J2CT control command 4 $3
R9963		J2CT control command 3 $3
R9964		J2CT control command 2 $3
R9965		J2CT control command 1 $3
R9966		J2CT control command position (L) 3rd axis
R9967		J2CT control command position (H) 3rd axis
R9968		J2CT control command 4 $4
R9969		J2CT control command 3 $4
R9970		J2CT control command 2 $4
R9971		J2CT control command 1 $4
R9972		J2CT control command position (L) 4th axis
R9973		J2CT control command position (H) 4th axis
R9974		J2CT control command 4 5th-phase
R9975		J2CT control command 3 5th-phase
R9976		J2CT control command 2 5th-phase

Device	Abbrev.	Signal name
R9977		J2CT control command 1 5th-phase
R9978		J2CT control command position (L) 5th axis
R9979		J2CT control command position (H) 5th axis
R9980		J2CT control command 4 6th-phase
R9981		J2CT control command 3 6th-phase
R9982		J2CT control command 2 6th-phase
R9983		J2CT control command 1 6th-phase
R9984		J2CT control command position (L) 6th axis
R9985		J2CT control command position (H) 6th axis
R9998		J2CT operation adjustment mode valid
R10603		Display tool selection parameter
R12200		Spindle tool No. $1 (L)
R12201		Spindle tool No. $1 (H)
R12210		Spindle tool No. $2 (L)
R12211		Spindle tool No. $2 (H)
R12220		Spindle tool No. $3 (L)
R12221		Spindle tool No. $3 (H)
R12230		Spindle tool No. $4 (L)
R12231		Spindle tool No. $4 (H)
R20200		Skip coordinate (PLC axis 1st axis) ▲
R20204		Skip coordinate (PLC axis 2nd axis) ▲
R20208		Skip coordinate (PLC axis 3rd axis) ▲
R20212		Skip coordinate (PLC axis 4th axis) ▲
R20216		Skip coordinate (PLC axis 5th axis) ▲
R20220		Skip coordinate (PLC axis 6th axis) ▲
R20224		Skip coordinate (PLC axis 7th axis) ▲
R20228		Skip coordinate (PLC axis 8th axis) ▲
R22692		Cutting torque estimation target axis $1 ▲
R22892		Cutting torque estimation target axis $2 ▲
R23092		Cutting torque estimation target axis $3 ▲
R23292		Cutting torque estimation target axis $4 ▲

5. Each Application : Pallet Program Registration

Device	Abbrev.	Signal name
R2100		Pallet program registration Search valid/invalid state
R2101		Pallet program registration continuous start valid/invalid state
R2102		Pallet program registration Pallet registration specification
R2103		Pallet program registration Number of valid pallets
R2110		Pallet 1 0° Machining program device No.
R2111		Pallet 1 0° Machining valid/invalid state
R2112		Pallet 1 0° Machining program No. (L)
R2113		Pallet 1 0° Machining program No. (H)
R2114		Pallet 1 0° Auxiliary data
R2116		Pallet 1 90° Machining program device No.
R2117		Pallet 1 90° Machining valid/invalid state
R2118		Pallet 1 90° Machining program No. (L)
R2119		Pallet 1 90° Machining program No. (H)
R2120		Pallet 1 90° Auxiliary data
R2122		Pallet 1 180° Machining program device No.
R2123		Pallet 1 180° Machining valid/invalid state
R2124		Pallet 1 180° Machining program No. (L)
R2125		Pallet 1 180° Machining program No. (H)
R2126		Pallet 1 180° Auxiliary data
R2128		Pallet 1 270° Machining program device No.
R2129		Pallet 1 270° Machining valid/invalid state
R2130		Pallet 1 270° Machining program No. (L)
R2131		Pallet 1 270° Machining program No. (H)
R2132		Pallet 1 270° Auxiliary data
R2135		Pallet 2 0° Machining valid/invalid state
R2136		Pallet 2 0° Machining program No. (L)
R2137		Pallet 2 0° Machining program No. (H)
R2138		Pallet 2 0° Auxiliary data
R2140		Pallet 2 90° Machining program device No.
R2141		Pallet 2 90° Machining valid/invalid state
R2142		Pallet 2 90° Machining program No. (L)
R2143		Pallet 2 90° Machining program No. (H)
R2144		Pallet 2 90° Auxiliary data
R2146		Pallet 2 180° Machining program device No.
R2147		Pallet 2 180° Machining valid/invalid state
R2148		Pallet 2 180° Machining program No. (L)
R2149		Pallet 2 180° Machining program No. (H)
R2150		Pallet 2 180° Auxiliary data
R2152		Pallet 2 270° Machining program device No.
R2153		Pallet 2 270° Machining valid/invalid state
R2154		Pallet 2 270° Machining program No. (L)
R2155		Pallet 2 270° Machining program No. (H)
R2156		Pallet 2 270° Auxiliary data
R2134		Pallet 2 0° Machining program device No.

6. Each Application : PLC Axis Indexing

Device	Abbrev.	Signal name
R8000		PLC axis indexing control status 4 1st axis
R8001		PLC axis indexing control status 3 1st axis
R8002		PLC axis indexing control status 2 1st axis
R8003		PLC axis indexing control status 1 1st axis
R8004		PLC axis indexing control machine position (L) 1st axis
R8005		PLC axis indexing control machine position (H) 1st axis
R8006		PLC axis indexing control status 4 2nd axis
R8007		PLC axis indexing control status 3 2nd axis
R8008		PLC axis indexing control status 2 2nd axis
R8009		PLC axis indexing control status 1 2nd axis
R8010		PLC axis indexing control machine position (L) 2nd axis
R8011		PLC axis indexing control machine position (H) 2nd axis
R8012		PLC axis indexing control status 4 3rd axis
R8013		PLC axis indexing control status 3 3rd axis
R8014		PLC axis indexing control status 2 3rd axis
R8015		PLC axis indexing control status 1 3rd axis
R8016		PLC axis indexing control machine position (L) 3rd axis
R8017		PLC axis indexing control machine position (H) 3rd axis
R8018		PLC axis indexing control status 4 4th axis
R8019		PLC axis indexing control status 3 4th axis
R8020		PLC axis indexing control status 2 4th axis
R8021		PLC axis indexing control status 1 4th axis
R8022		PLC axis indexing control machine position (L) 4th axis
R8023		PLC axis indexing control machine position (H) 4th axis
R8024		PLC axis indexing control status 4 5th axis
R8025		PLC axis indexing control status 3 5th axis
R8026		PLC axis indexing control status 2 5th axis
R8027		PLC axis indexing control status 1 5th axis
R8028		PLC axis indexing control machine position (L) 5th axis
R8029		PLC axis indexing control machine position (H) 5th axis
R8030		PLC axis indexing control status 4 6th axis
R8031		PLC axis indexing control status 3 6th axis
R8032		PLC axis indexing control status 2 6th axis
R8033		PLC axis indexing control status 1 6th axis
R8034		PLC axis indexing control machine position (L) 6th axis
R8035		PLC axis indexing control machine position (H) 6th axis
R8048		PLC indexing axis in operation adjustment mode
R8050		PLC axis indexing control command 4 1st axis
R8051		PLC axis indexing control command 3 1st axis
R8052		PLC axis indexing control command 2 1st axis
R8053		PLC axis indexing control command 1 1st axis
R8054		PLC axis indexing control command position (L) 1st axis
R8055		PLC axis indexing control command position (H) 1st axis
R8056		PLC axis indexing control command 4 2nd axis
R8057		PLC axis indexing control command 3 2nd axis
R8058		PLC axis indexing control command 2 2nd axis
R8059		PLC axis indexing control command 1 2nd axis
R8060		PLC axis indexing control command position (L) 2nd axis
R8061		PLC axis indexing control command position (H) 2nd axis
R8062		PLC axis indexing control command 4 3rd axis
R8063		PLC axis indexing control command 3 3rd axis
R8064		PLC axis indexing control command 2 3rd axis
R8065		PLC axis indexing control command 1 3rd axis
R8066		PLC axis indexing control command position (L) 3rd axis
R8067		PLC axis indexing control command position (H) 3rd axis
R8068		PLC axis indexing control command 4 4th axis
R8069		PLC axis indexing control command 3 4th axis
R8070		PLC axis indexing control command 2 4th axis
R8071		PLC axis indexing control command 1 4th axis
R8072		PLC axis indexing control command position (L) 4th axis
R8073		PLC axis indexing control command position (H) 4th axis
R8074		PLC axis indexing control command 4 5th axis
R8075		PLC axis indexing control command 3 5th axis
R8076		PLC axis indexing control command 2 5th axis
R8077		PLC axis indexing control command 1 5th axis
R8078		PLC axis indexing control command position (L) 5th axis
R8079		PLC axis indexing control command position (H) 5th axis
R8080		PLC axis indexing control command 4 6th axis
R8081		PLC axis indexing control command 3 6th axis
R8082		PLC axis indexing control command 2 6th axis
R8083		PLC axis indexing control command 1 6th axis

Device	Abbrev.	Signal name
R8084		PLC axis indexing control command position (L) 6th axis
R8085		PLC axis indexing control command position (H) 6th axis
R8098		PLC indexing axis operation adjustment mode valid

7. Each Application : Tool Life Management Interface

Device	Abbrev.	Signal name
R10604		AUX data
R10605		No.1 magazine No.
R10606		No.2 magazine No.
R10607		No.3 magazine No.
R10608		No.4 magazine No.
R10609		No.5 magazine No.
R10610		Number of tools for No.1 magazine
R10611		Number of tools for No.2 magazine
R10612		Number of tools for No.3 magazine
R10613		Number of tools for No.4 magazine
R10614		Number of tools for No.5 magazine
R10615		No.1 magazine pointer
R10616		No.2 magazine pointer
R10617		No.3 magazine pointer
R10618		No.4 magazine pointer
R10619		No.5 magazine pointer
R10620		No.1 magazine T8-digit Spindle tool (L)
R10621		No.1 magazine T8-digit Spindle tool (H)
R10622		No.1 magazine T8-digit Standby 1 tool (L)
R10623		No.1 magazine T8-digit Standby 1 tool (H)
R10624		No.1 magazine T8-digit Standby 2 tool (L)
R10625		No.1 magazine T8-digit Standby 2 tool (H)
R10626		No.1 magazine T8-digit Standby 3 tool (L)
R10627		No.1 magazine T8-digit Standby 3 tool (H)
R10628		No.1 magazine T8-digit Standby 4 tool (L)
R10629		No.1 magazine T8-digit Standby 4 tool (H)
R10630		No.2 magazine T8-digit Spindle tool (L)
R10631		No.2 magazine T8-digit Spindle tool (H)
R10632		No.2 magazine T8-digit Standby 1 tool (L)
R10633		No.2 magazine T8-digit Standby 1 tool (H)
R10634		No.2 magazine T8-digit Standby 2 tool (L)
R10635		No.2 magazine T8-digit Standby 2 tool (H)
R10636		No.2 magazine T8-digit Standby 3 tool (L)
R10637		No.2 magazine T8-digit Standby 3 tool (H)
R10638		No.2 magazine T8-digit Standby 4 tool (L)
R10639		No.2 magazine T8-digit Standby 4 tool (H)
R10640		No.3 magazine T8-digit Spindle tool (L)
R10641		No.3 magazine T8-digit Spindle tool (H)
R10642		No.3 magazine T8-digit Standby 1 tool (L)
R10643		No.3 magazine T8-digit Standby 1 tool (H)
R10644		No.3 magazine T8-digit Standby 2 tool (L)
R10645		No.3 magazine T8-digit Standby 2 tool (H)
R10646		No.3 magazine T8-digit Standby 3 tool (L)
R10647		No.3 magazine T8-digit Standby 3 tool (H)
R10648		No.3 magazine T8-digit Standby 4 tool (L)
R10649		No.3 magazine T8-digit Standby 4 tool (H)
R10650		No.4 magazine T8-digit Spindle tool (L)
R10651		No.4 magazine T8-digit Spindle tool (H)
R10652		No.4 magazine T8-digit Standby 1 tool (L)
R10653		No.4 magazine T8-digit Standby 1 tool (H)
R10654		No.4 magazine T8-digit Standby 2 tool (L)
R10655		No.4 magazine T8-digit Standby 2 tool (H)
R10656		No.4 magazine T8-digit Standby 3 tool (L)
R10657		No.4 magazine T8-digit Standby 3 tool (H)
R10658		No.4 magazine T8-digit Standby 4 tool (L)
R10659		No.4 magazine T8-digit Standby 4 tool (H)
R10660		No.5 magazine T8-digit Spindle tool (L)
R10661		No.5 magazine T8-digit Spindle tool (H)
R10662		No.5 magazine T8-digit Standby 1 tool (L)
R10663		No.5 magazine T8-digit Standby 1 tool (H)
R10664		No.5 magazine T8-digit Standby 2 tool (L)
R10665		No.5 magazine T8-digit Standby 2 tool (H)
R10666		No.5 magazine T8-digit Standby 3 tool (L)
R10667		No.5 magazine T8-digit Standby 3 tool (H)
R10668		No.5 magazine T8-digit Standby 4 tool (L)
R10669		No.5 magazine T8-digit Standby 4 tool (H)
R10670		No.1 magazine Spindle tool D
R10671		No.1 magazine Standby 1 tool D
R10672		No.1 magazine Standby 2 tool D
R10673		No.1 magazine Standby 3 tool D
R10674		No.1 magazine Standby 4 tool D

Device	Abbrev.	Signal name
R10675		No.2 magazine Spindle tool D
R10676		No.2 magazine Standby 1 tool D
R10677		No.2 magazine Standby 2 tool D
R10678		No.2 magazine Standby 3 tool D
R10679		No.2 magazine Standby 4 tool D
R10680		No.3 magazine Spindle tool D
R10681		No.3 magazine Standby 1 tool D
R10682		No.3 magazine Standby 2 tool D
R10683		No.3 magazine Standby 3 tool D
R10684		No.3 magazine Standby 4 tool D
R10685		No.4 magazine Spindle tool D
R10686		No.4 magazine Standby 1 tool D
R10687		No.4 magazine Standby 2 tool D
R10688		No.4 magazine Standby 3 tool D
R10689		No.4 magazine Standby 4 tool D
R10690		No.5 magazine Spindle tool D
R10691		No.5 magazine Standby 1 tool D
R10692		No.5 magazine Standby 2 tool D
R10693		No.5 magazine Standby 3 tool D
R10694		No.5 magazine Standby 4 tool D
R10695		Head No. of No.1 magazine
R10696		Head No. of No.2 magazine
R10697		Head No. of No.3 magazine
R10698		Head No. of No.4 magazine
R10699		Head No. of No.5 magazine
R10700		No.1 magazine tool data
R11060		No.2 magazine tool data
R11420		No.3 magazine tool data
R11800		Standby tool: Group No. $1
R11801		Standby tool: Group No. $1
R11802		Standby tool: Tool No. $1
R11803		Standby tool: Tool No. $1
R11804		Standby tool: Tool data flag/status $1
R11805		Standby tool: Auxiliary data $1
R11816		Standby tool: Length compensation amount $1
R11817		Standby tool: Length compensation amount $1
R11818		Standby tool: Radius compensation amount $1
R11819		Standby tool: Radius compensation amount $1
R11824		Active tool: Group No. $1
R11825		Active tool: Group No. $1
R11826		Active tool: Tool No. $1
R11826		Spindle tool No. $1
R11827		Active tool: Tool No. $1
R11827		Spindle tool No. $1
R11828		Active tool: Tool data flag/status $1
R11829		Active tool: Auxiliary data $1
R11840		Active tool: Length compensation amount $1
R11841		Active tool: Length compensation amount $1
R11842		Active tool: Radius compensation amount $1
R11843		Active tool: Radius compensation amount $1
R11850		Standby tool: Group No. $2
R11851		Standby tool: Group No. $2
R11852		Standby tool: Tool No. $2
R11853		Standby tool: Tool No. $2
R11854		Standby tool: Tool data flag/status $2
R11855		Standby tool: Auxiliary data $2
R11866		Standby tool: Length compensation amount $2
R11867		Standby tool: Length compensation amount $2
R11868		Standby tool: Radius compensation amount $2
R11869		Standby tool: Radius compensation amount $2
R11874		Active tool: Group No. $2
R11875		Active tool: Group No. $2
R11876		Active tool: Tool No. $2
R11876		Spindle tool No. $2
R11877		Active tool: Tool No. $2
R11877		Spindle tool No. $2
R11878		Active tool: Tool data flag/status $2
R11879		Active tool: Auxiliary data $2
R11890		Active tool: Length compensation amount $2
R11891		Active tool: Length compensation amount $2
R11892		Active tool: Radius compensation amount $2
R11893		Active tool: Radius compensation amount $2
R11900		Standby tool: Group No. $3
R11901		Standby tool: Group No. $3

Device	Abbrev.	Signal name
R11902		Standby tool: Tool No. $3
R11903		Standby tool: Tool No. $3
R11904		Standby tool: Tool data flag/status $3
R11905		Standby tool: Auxiliary data $3
R11916		Standby tool: Length compensation amount $3
R11917		Standby tool: Length compensation amount $3
R11918		Standby tool: Radius compensation amount $3
R11919		Standby tool: Radius compensation amount $3
R11924		Active tool: Group No. $3
R11925		Active tool: Group No. $3
R11926		Active tool: Tool No. $3
R11926		Spindle tool No. $3
R11927		Active tool: Tool No. $3
R11927		Spindle tool No. $3
R11928		Active tool: Tool data flag/status $3
R11929		Active tool: Auxiliary data $3
R11940		Active tool: Length compensation amount $3
R11941		Active tool: Length compensation amount $3
R11942		Active tool: Radius compensation amount $3
R11943		Active tool: Radius compensation amount $3
R11950		Standby tool: Group No. $4
R11951		Standby tool: Group No. $4
R11952		Standby tool: Tool No. $4
R11953		Standby tool: Tool No. $4
R11954		Standby tool: Tool data flag/status $4
R11955		Standby tool: Auxiliary data $4
R11966		Standby tool: Length compensation amount $4
R11967		Standby tool: Length compensation amount $4
R11968		Standby tool: Radius compensation amount $4
R11969		Standby tool: Radius compensation amount $4
R11974		Active tool: Group No. $4
R11975		Active tool: Group No. $4
R11976		Active tool: Tool No. $4
R11976		Spindle tool No. $4
R11977		Active tool: Tool No. $4
R11977		Spindle tool No. $4
R11978		Active tool: Tool data flag/status $4
R11979		Active tool: Auxiliary data $4
R11990		Active tool: Length compensation amount $4
R11991		Active tool: Length compensation amount $4
R11992		Active tool: Radius compensation amount $4
R11993		Active tool: Radius compensation amount $4
R12202		Standby tool No. $1
R12203		Standby tool No. $1
R12212		Standby tool No. $2
R12213		Standby tool No. $2
R12222		Standby tool No. $3
R12223		Standby tool No. $3
R12232		Standby tool No. $4
R12233		Standby tool No. $4

8. Special Relay/Register

Device	Abbrev.	Signal name
SM16	THER	Temperature rise
SB0000		Data link restart
SB0001		Refresh instruction at standby master switching
SB0002		Data link stop
SB0004		Temporary error cancel request
SB0005		Temporary error cancel canceling request
SB0008		Line test request
SB0009		Parameter setting test request
SB000C		Forced master switching
SB0040		Data link restart acceptance
SB0041		Data link restart complete
SB0042		Refresh instruction acknowledgment status at standby master switching
SB0043		Refresh instruction complete status at standby master switching
SB0044		Data link stop acceptance
SB0045		Data link stop complete
SB0046		Forced master switching executable status
SB0048		Temporary error cancel acceptance status
SB0049		Temporary error cancel complete status
SB004A		Temporary error cancel acceptance status
SB004B		Temporary error cancel acceptance status
SB004C		Line test acceptance status
SB004D		Line test complete status
SB004E		Parameter setting test acknowledgment status
SB004F		Parameter setting test completion status
SB0050		Offline test status
SB0054		Shipping test acceptance
SB0055		Shipping test complete status
SB005A		Master switching request acknowledgment
SB005B		Master switching request complete
SB005C		Forced master switching request acknowledgment
SB005D		Forced master switching request complete
SB0060		Host mode
SB0061		Host type
SB0062		Host standby master station setting status
SB0065		Host station operation status
SB0066		Number of host occupied stations
SB0067		
SB006A		Switch setting status
SB006B		Host station operation status
SB006C		Link status
SB006D		Parameter setting status
SB006E		Host station operation status
SB0070		Master station information
SB0071		Standby master station information
SB0073		Operation specification when driver has an error
SB0074		Reserved station specified status
SB0075		Error cancel station specified status
SB0076		Temporary error cancel station setting information
SB0077		Parameter receive status
SB0078		Host station switch change detection
SB0079		Master station return specification information
SB007B		Host master/standby master operation status
SB0080		Other station data link status
SB0081		Other station watchdog timer error status
SB0082		Other station fuse blown status
SB0083		Other station switch change status
SB0090		Host line status
SB0094		Transient transmission status
SB0095		Master station transient transmission status
SB00B4		Standby master station test result
SW0003		Multiple temporary error cancel station specification
SW0004		Temporary error cancel station specification
SW0008		Line test station setting
SW0009		Monitoring time setting
SW000A		Driver monitoring time setting
SW0041		Data link restart result
SW0043		Refresh instruction at standby master switching result
SW0045		Data link stop result
SW0049		Temporary error cancel station result
SW004B		Temporary error cancel station specification cancel result
SW004D		Line test result
SW004F		Parameter setting test result
SW0058		Interface board status
SW0059		Transmission speed setting
SW005A		Add-on board switch setting status
SW005D		Forced master switching instruction result
SW0060		Mode setting status

Device	Abbrev.	Signal name
SW0061		Host station number
SW0062		Operation setting status
SW0064		No. of retries information
SW0065		No. of automatic return stations
SW0066		Delay timer
SW0068		Host parameter status
SW0069		Installation status
SW006A		Switch setting status
SW006B		Host station operation status
SW006C		Host data link status
SW006D		Max. link scan time
SW006E		Current link scan time
SW006F		Min. link scan time
SW0070		Total number of stations
SW0071		Max. communication station number
SW0072		Number of connected modules
SW0073		Standby master station number
SW0074		Reserved station specified status
SW0075		
SW0076		
SW0077		
SW0078		Error cancel station specified status
SW0079		
SW007A		
SW007B		
SW007C		Temporary error cancel status
SW007D		
SW007E		
SW007F		
SW0080		Other station data link status
SW0081		
SW0082		
SW0083		
SW0084		Other station watchdog timer error occurrence status
SW0085		
SW0086		
SW0087		
SW0088		Other station fuse blown status
SW0089		
SW008A		
SW008B		
SW008C		Other station switch change status
SW008D		
SW008E		
SW008F		
SW0090		Line status
SW0094		Transient transmission status
SW0095		
SW0096		
SW0097		
SW0098		Station number overlap status
SW0099		
SW009A		
SW009B		
SW009C		Installation/Parameter matching status
SW009D		
SW009E		
SW009F		
SW00B4		Line test 1 result
SW00B5		
SW00B6		
SW00B7		
SW00B8		Line test 2 result
SW00C0		No. of retries
SW00C1		TIME error
SW00C2		CRC error
SW00C3		Abort error
SW00C4		H/W error
SW00C5		Line error
SW00C6		S/W error
SW00C7		Illegal XCD
SW00C8		Overflow
SW0140		Station type (3)
SW0141		
SW0142		
SW0143		
SW0144		Installation/Parameter matching status (2)
SW0145		
SW0146		
SW0147		

Device	Abbrev.	Signal name
SW0148		Parameter mode
SW0149		Host parameter mode

Revision History

Date of revision	Manual No.	Revision details
Oct. 2008	IB(NA)1500928-A	First edition created.
Jan. 2009	IB(NA)1500928-B	Mistakes were corrected.
Jul. 2010	IB(NA)1500928-C	Corrections are made corresponding to S/W version G1.
Nov. 2011	IB(NA)1500928-D	Corrections are made corresponding to S/W version H0.

MITSUBISHI CNC

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MODEL	M700V/M70V Series
MODEL CODE	100—214
Manual No.	IB-1500928

IB (NA)1500928 (ENG) -D (1111) MEE
Made in JAPAN