MITSUBISHI

QnA SERIES

QnACPU

Programming Manual (Special Function Module)

QnA
MELSEC
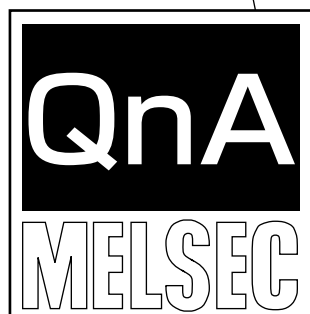
Mitsubishi Programmable Logic Controller

● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual.

Also pay careful attention to safety and handle the module properly. These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the PC system safety precautions.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

REVISIONS

INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-A Series of General Purpose Programmable Controllers. Please read this manual carefully so that the equipment is used to its optimum. A copy of this manual should be forwarded to the end User.

CONTENTS

1. GENERAL DESCRIPTION

This manual describes instructions that are useful when using a special function module with a QnACPU.

Section 2.3 lists the instructions described in this manual:
see Section 2.3 for details of the instructions which can be used.

The instructions for special function modules are used to read/write data to/from the special function modules listed below.

1) AD61 (S1) high-speed counter module
2) AD59 (S1) memory card/Centronics interface module
3) AJ71PT32-S3 MELSECNET/MINI-S3 master module

- Key input entry from AJ35PT-OPB-M1/AJ35T-OPB-P1 operation box
- Data transmission to an AJ35PTF-M2 RS-232C interface module
- Data reception from an AJ35PTF-R2 RS-232C interface module
- Data read/write to/from a remote terminal module that complies with MINI standard protocol

4) AJ71C21 (S1) terminal interface module
5) AJ71C24 (S3, S6, S8) computer link modules (no-protocol mode)
6) AJ71UC24 computer link module (no-protocol mode)
7) AJ71QC24 (R2/R4) serial communication module
8) AJ71ID1 (2) - R4 ID system interface module
9) A1SJ61QBT11/AJ61QBT11 CC-Link system master and local modules
10) A1SD75P1-S3/P2-S3/P3-S3 and AD75P1-S3/P2-S3/P3-S3 positioning modules
11) A1SJ71QE71-B2 (B5) and AJ71QE71 (B5) Ethernet interface modules
12) AD57 (S1)/AD58 CRT/LCD control module
(See QnACPU programming manual (AD57 instructions edition).)

By using the special function module instructions, controlling the above listed special function modules can be performed using a simple program.

Instructions used in the special function module help create a program without giving any regards to handshake signal control during program read/write, as well as for any buffer memory address(es).

POINTS

(1) Do not execute the FROM/TO instructions of the same contents while executing a dedicated instruction.

(2) The instructions for AJ71PT-S3 can only be executed to the AJ71PT32-S3 model set to the extension mode (in which a mode-switch setting pin is set at 48 degrees). Executing instructions to models AJ71PT32-S3 and AJ71PT32 that are not set to the extension mode generates errors, and the instructions will not be processed.

A list of instructions explained in the special function module edition is shown in Section 2.3.
See Section 2.3 for the instructions used.

1.1 Precautions when Using Instructions for Special Function Modules

(1) About module type

    (a) When communicating to a special function module via special function module instructions, it is recommended to register the module type using parameter setting.

        Registering the module types helps increase error-checking capability when using individual instruction.

    (b) The following table shows the settings for registering a module type of the special function module.

Special function module type	Module-type registration settings*
AD61	AD61
AD61-S1	AD61-S1
AD59	AD59
AD59-S1	AD59-S1
AJ71C24	AJ71C24
AJ71C24-S3	AJ71C24-S3
AJ71C24-S6	AJ71C24-S6
AJ71C24-S8	AJ71C24-S8
AJ71UC24	AJ71UC24
AJ71C21	AJ71C21
AJ71C21-S1	AJ71C21-S1
AJ71PT32-S3	AJ71PT32-S3
AD57	AD57
AD57-S1	AD57-S1
AD58	AD58
AJ71QC24	AJ71QC24
AJ71QC24-R2	
AJ71QC24-R4	
AJ71ID1-R4	AJ71ID1-R4
AJ71ID2-R4	AJ71ID2-R4
AD75P1, AD75P1-S3	AD75P1, AD75P1-S3
AD75P2, AD75P2-S3	AD75P2, AD75P2-S3
AD75P3, AD75P3-S3	AD75P3, AD75P3-S3

* : Include a hyphen "-" in registration for QnACPU.

(c) In a case when module type is not registered, the QnACPU cannot verify which one of the module types is installed within the following group of modules. Therefore, the QnACPU treats the modules as ones listed below and proceeds processing.

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7
AD57-S1￼ AD57￼ AD58	AJ71C24-S8￼ AJ71C24-S6￼ AJ71C24-S3￼ AJ71C24￼ AJ71UC24	AD59(S1)	AD71C21-S1￼ AJ71C21￼ AD61(s1)	AJ71QC24￼ AJ71QC24-R2￼ AJ71QC24-R4	AJ71ID1-R4￼ AJ71ID2-R4	AD75P1(-S3)￼ AD75P2(-S3)￼ AD75P3(-S3)
⬇	⬇	⬇	⬇	⬇	⬇	⬇
Process as AD57.	Process as AJ71C24.	Process as AD59.	Process as AD61 or AJ71C21-S1.	Process as AJ71QC24.	Process as AJ71ID2-R4.	Process as AD75P3.

1) Even if an instruction is executed to another module within the same group by mistake, the instruction will be executed, instead of leading to an error.

2) Do not give an instruction to a wrong module, as it may cause malfunction of that particular module.
   If an instruction is executed to a special function module of another group by mistake, it will cause an error and processing will not be completed.

(d) When no module type is registered, the following restrictions apply for communication with AJ71C24-S3, S6, S8 and AJ71UC24.

● No-protocol word/byte specification
.. Allowed for word only.

● No-protocol transmission buffer memory area
... Allowed 0 to 7Hh only.

● No-protocol reception buffer memory area
... Allowed 80 to FFh only.

● Receiving data length ... Up to CR, LF code, or 127 words.

(e) See the operating manual for applicable peripheral device for details on model registration, as well as whether or not a specific model type can be executed.

(2) Restriction on number of modules permitted for each special function module

(a) Take note that the following special function modules have restrictions on the number of modules allowed to use.

- AD59(S1)
- AD57(S1)/AD58
- AJ71PT32(S3)
- AJ71C21(S1)
- AJ71C24(S3, S6, S8)
- AJ71UC24
- AJ71QC24(R2, R4)
- AJ71ID1(2)-R4

(b) The following table shows the number of modules permitted for each of the special function module listed above.

Special function module type	Number of modules permitted	Restriction on number of modules used	
AD59(S1)	No restriction	5 × No. of modules used	The total must be less than 1344.
AD57(S1)/AD58		8 × No. of modules used	
AJ71PT32(S3)/AJ71T32-S3	8	125 × No. of modules used	
AJ71C21(S1)	Total 6	29 × No. of modules used	
AJ71C24(S3, S6, S8)		10 × No. of modules used	
AJ71UC24		10 × No. of modules used	
AJ71QC24(R2, R4)	No restriction	29 × No. of modules used	
AJ71ID1(2)-R4		18 × No. of modules used	
AD75(P1/P2/P3)-S3		12 × No. of modules used	

Example)

For AD59 .... 2 modules ⎫
    AD57 .... 4 modules ⎪
    AJ71QC24 .... 3 modules ⎬
    AJ71PT32-S3 .... 5 modules ⎭

The formula, $5 \times 2 + 8 \times 4 + 29 \times 3 + 125 \times 5 = 754$, indicates that the total sum of all modules is less than 1344; thus all can be used.

(3) A completed flag specified for each instruction in the special function module turns on only for one scanning cycle when communication processing has been completed.
Execute the ON/OFF processing of the completed flag in the END processing after all programs have been completed.

```
------[ GP.PR   U5    D50   MO ]--|
                              ↑
                              |
                     Device number for
                     a completed device.
```
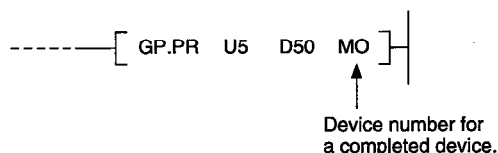
(a) When executing a special function module instruction with a scan execution program, turning on/off of the completed flag is performed in the END processing of the scan execution type program. (The completed flag turns on for one scanning cycle during the scan execution type program.)

(b) When executing a special function module instruction with a low speed execution type program, turning on/off of the completed flag is performed in the END processing of the low speed execution type program. (The completed flag turns on for one scanning cycle during the low speed execution type program.)
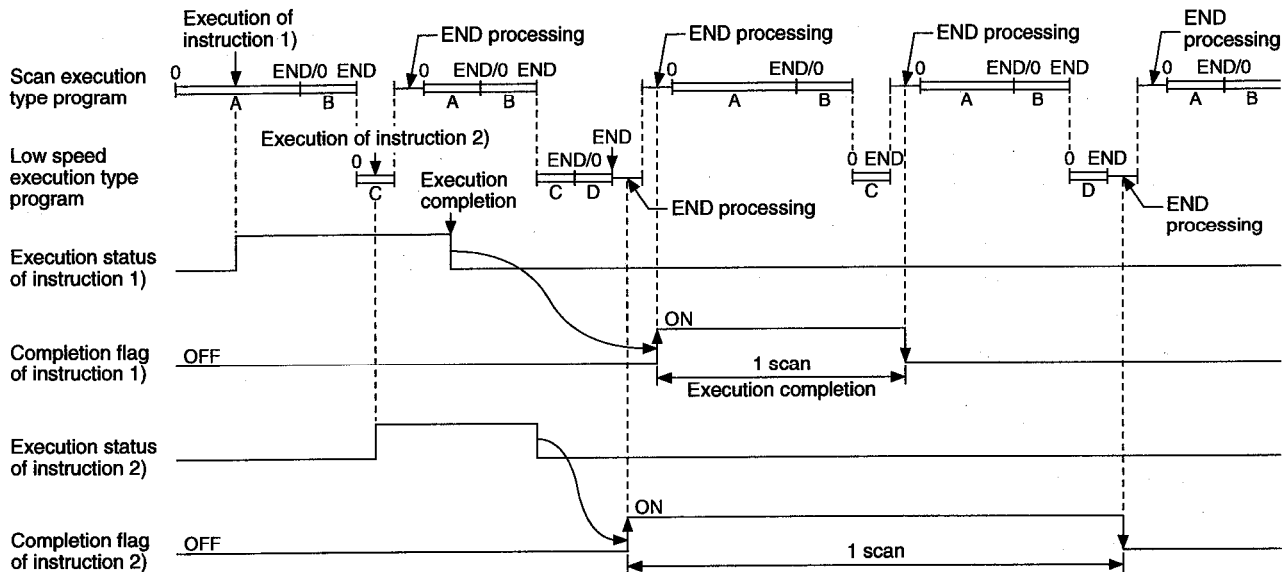
(c) The initial execution type program executes processing as a scan execution type program.

(d) The completed flag for the special function module instruction created by a standby type program differs depending on the type of instruction given.

1) If an instruction for the special function module is executed within a standby type program while a scan execution type program is running, the completed flag undergoes the same process as the scan execution type program.

2) If an instruction for the special function module is executed within a standby type program while a low-speed execution type program is running, the completed flag undergoes the same process as the low-speed execution type program.

(e) The next special instruction can be executed even if the completion device is turned on.

(4) Neither "local device" nor "program-based file register" can be used for the device specified by the special function module instructions other than for AD61.

A normal data instruction cannot be executed when either a local device or program-based file register is used for the special function module instruction, except for AD61.

The processing for special function module instructions other than for AD61 is not performed at the time of execution, but instead executed during the END processing.

Also, data of the device that is specified uses the values at the END processing.

With local device and program-based file register, data changes to the corresponding one having the same file name as the program, as the program switches.

Therefore, data for the special function module instruction will be different from that during the END processing when the local device and program-based file register are used.

Example

The following diagram shows the operation when a local device is used with the program that uses a local device.

- Condition: Execute three programs with files names, A, B, and C (Order of execution is A → B → C).
  Execute a special function module instruction using the program with file name B.
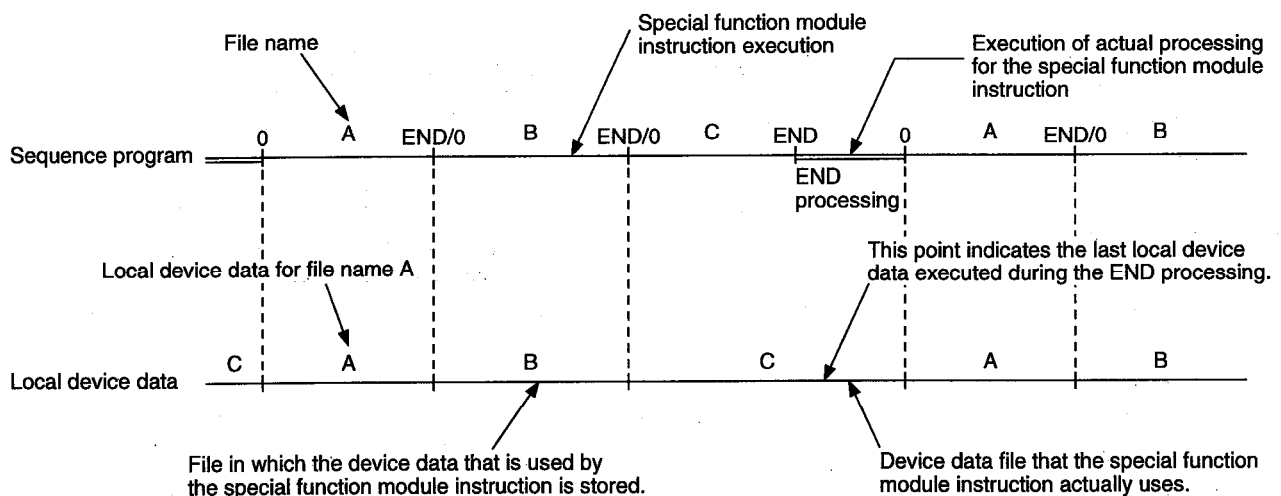
- With the above diagram, the special function module instruction executes processing with the data (local device data that is used by the program with file name C) at the END processing.

(5) Execute the instruction for the special function module and stop the CPU module before the completion device is turned on, then run again. The completion device is turned on after a single scan.

1.2 Related Programming Manuals

- QCPU (Q Mode)/QnACPU Programming Manual (Fundamentals)
- QCPU (Q Mode)/QnACPU Programming Manual (Common Instructions)
- QCPU (Q Mode)/QnACPU Programming Manual (PID Control Instructions)
- QnACPU Programming Manual (AD57 Instructions)
- QCPU (Q Mode)/QnACPU Programming Manual (SFC)
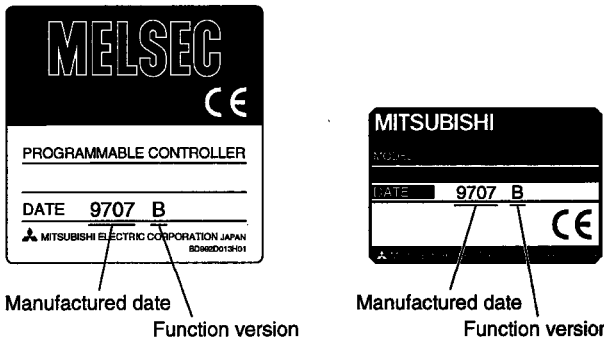
Before reading this manual, it is advisable to review the QnACPU Programming Manual (Fundamentals) to confirm what programs can be used with QnACPU, input/output processing, and basic information on devices.

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                    ┌──────────────┐
                    │ QnACPU       │    Contains information on the programs that can
                    │ Programming  │    be used with QnACPU, I/O processing, and
                    │ Manual       │    device names.
                    │ (Fundamentals)│
                    └──────────────┘
```

This manual

QnACPU Programming Manual (Common Instructions)	QnACPU Programming Manual (Special-function Module)	QnACPU Programming Manual (AD57 Instructions)	QnACPU Programming Manual (PID Control Instructions)	QnACPU Programming Manual (SFC)
Contains information on instructions not included in the manuals noted to the right.	Contains information on instructions for special function modules such as the AJ71QC24 and AJ71PT32-S3.	Contains information on AD57 instructions used for controlling AD57/AD58.	Contains information on instructions used for PID controls.	Contains information on SFC.

1.3 About the QnACPU Function Version

The instructions described in this manual (Sections 10 to 14 in Chapter 11, Chapter 12, Chapter 13, and Chapter 14) can only be used for QnACPU and Q2AS(H)CPU with the function version "B" recorded in the DATE column of rated plate, as indicated in the table below.

The instructions cannot be used for any other CPU.

CPU type	Function version		
Q2ACPU			
Q2ACPU-S1			
Q3ACPU			
Q4ACPU			
Q2ASCPU			
Q2ASCPU-S1			
Q2ASHCPU			
Q2ASHCPU-S1			

REMARKS

• QnACPU and Q2AS(H)CPU are generically labeled as QnACPU in this manual.
   QnACPU and Q2AS(H)CPU are distinguished in description for the portions when QnACPU and Q2AS(H)CPU differ.

• Q4ARCPU does not support the function version "B."

1.4 Combination of Versions/Function Versions for QnACPU, Q2AS(H)CPU and Special Function Modules

When using the instructions described in this manual (Sections 10 to 15 in Chapter 11, Chapter 12, Chapter 13, and Chapter 14), function version/version of the applicable special function module need to be matched.

Table 1.1 shows the combination of QnACPU, Q2AS(H)CPU and versions/function versions of applicable special function modules.

Table 1.1   List of combination of QnACPU, Q2AS(H)CPU and version/function version of special function modules

Module/ pckage name	Large type	QnACPU	SW01VD-GPPQ	SW2IVD-GPPQ	AJ71QE71 (B5)	AD75P-S3	AJ71ID□-R4	AJ61 QBT11	AJ71 QC24N
	Small type	Q2AS(H) CPU	SW1IVD-GPPQ		A1SJ71QE 71B2 (B5)	A1SD75P -S3	A1SJ71 ID□ -R4	A1SJ61 QBT11	—
Conditions	Function version	9707B or later	—	—	9707B or later	—	—	9707B or later	—
	Version	—	No restrictions	No restrictions	—	No restrictions	BC or later	—	No restrictions
Local device monitor test		O	×	O	—	—	—	—	—
Subroutine/interrupr program local device switch		O	—		—	—	—	—	—
CC-Link auto refresh setting		O	×	O	—	—	—	O	—
CC-Link instructions		O	O		—	—	—	O	—
Network relay from internet		O	×	△	O	—	—	—	—
Ethernet instructions		O	O		O	—	—	—	—
AD75 instructions		O	×	—	—	O	—	—	—
ID interface module instructions		O	O		—	—	O	—	—
Correspondence to AJ71QC24N commands		O	×		—	—	—	—	O

REMARKS

1) The symbols in Tables 1.1 have the following meaning:

    O : Required when using the functions and instructions.

    — : Not related to the functions and instructions.

    △ : Required when accessing the QnACPU of another station from a peripheral device via Ethernet

    × : The function cannot be used by a peripheral device.

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

This chapter lists the instructions for special function modules.

2.1 Classification of Instructions

The instructions for special function modules can be broadly divided into the following.

Classification of Instructions	Processing Details	Description
AD61(S1) control instructions	Read count values and write set value data and preset data.	Chapter 5
AD59(S1) control instructions	Send data to the printer, read/write data from/to the memory card.	Chapter 6
AJ71PT32-S3 control instructions	Conduct data communications with the MELSECNET/MINI-S3 data link system remote terminal modules.	Chapter 7
AJ71C21(S1) control instructions	Communicate with external devices in the no-protocol mode and read/write data from/to RAM memory.	Chapter 8
Computer link module instructions	Communicate with external devices in no-protocol mode.	Chapter 9
AJ71QC24 control instructions	Conduct data communication with external devices connected to AJ71QC24, or between AJ71QC24s.	Chapter 10
ID interface module instructions	Read/write ID data through an ID controller to an ID data carrier.	Section 11.1 to 11.9
	Performs data verification after data read/write. Verifies read/write function of the ID reader/writer within its communication range.	Section 11.10 to 11.15
CC-Link control instructions	Performs automatic refresh setting for the CPU and master module/local module, and perform data communication with the remote stations connected to CC-Link.	Chapter 12
AD75 control instructions	Performs parameter setting, positioning data setting, etc., for AD75.	Chapter 13
Ethernet instructions	Performs parameter setting for Ethernet modules and word device read/write.	Chapter 14

REMARKS

The instructions in the shaded area can only be used for the CPU with function version B. See Section 1.3 for explanation about the function version B. Note that these instructions cannot be used for Q4ARCPU.

2.2 How to Read Instruction Tables

The instruction tables in Section 2.3 have the following format.

Table 2.1 How to Read Instruction Tables

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Key input from operation box	INPUT	─[G.INPUT | Un | n1 | D1 | D2 | n2]─ ─[GP.INPUT | Un | n1 | D1 | D2 | n2]─	Reads the key input data from the operation box connected to AJ71P32-S3 designated in Un, and stores to word devices starting from the one whose number is designated by (D1). On completion of the processing, the bit device designated in (D2) is turned ON.	⌐⌐ / ⌐	10		7-3
	PRN	─[G.PRN | Un | n1 | S | D | n2]─ ─[GP.PRN | Un | n1 | S | D | n2]─	Outputs the number of points designated in (n1) of the data stored in word devices starting from the one whose number is designated in (S) to the AJ35PTF-R2 designated by (n2) and connected to the AJ71P32-S3 designated by Un. On completion of the processing, the bit device designated in (D) is turned ON	⌐⌐ / ⌐	9		7-7

(1)　(2)　(3)　(4)　(5)　(6)　(7)　(8)

Description

(1) .... Classifies the instructions according to their purpose

(2) .... Indicates the code used to enter the instruction in a program

(3) .... Shows symbol displayed in the ladder

(4) .... Indicates the type of processing that is performed by individual instructions

(5) .... The detailed conditions for the execution of individual instructions are as follows:

Symbol	Execution Condition
⌐_Π_	Executed during ON; instruction is executed only while the precondition is ON. If the precondition is OFF, the instruction is not executed, and no processing is conducted.
_↑‾	Executed once at ON; instruction executed only at leading edge when precondition goes from OFF to ON. Following execution, instruction will not be executed and no processing conducted even if condition remains ON.
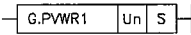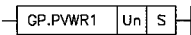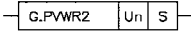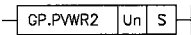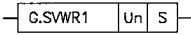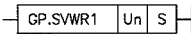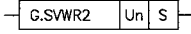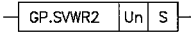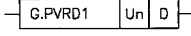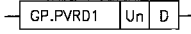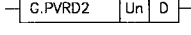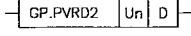
(6) .... Indicates the basic number of steps for individual instructions. See Section 3.3 for a discussion of the number of steps.

(7) .... The ● mark indicates instructions for which subset processing is possible.
See the QnACPU Programming Manual (Common Instructions) for details of the subset processing.

(8) .... Indicates the page numbers where the individual instructions are discussed.

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

{MELSEC-QnA}

2.3 List of Special Function Module Instructions
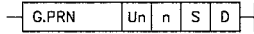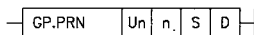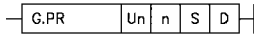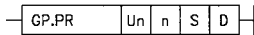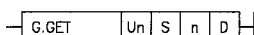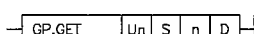
(1) AD61(S1) control instructions

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Preset value data setting	PVWR1	—[G.PVWR1 | Un | S]— —[GP.PVWR1 | Un | S]—	Writes preset data designated in (S) to CH.1 of AD61(S1) designated in Un.	⎍ ⬆	7		5-2
	PVWR2	—[G.PVWR2 | Un | S]— —[GP.PVWR2 | Un | S]—	Writes preset data designated in (S) to CH.2 of AD61(S1) designated in Un.	⎍ ⬆	7		5-2
Writing set value data for "higher", "lower", or "coincident" judgments	SVWR1	—[G.SVWR1 | Un | S]— —[GP.SVWR1 | Un | S]—	Writes set value data designated in (S) to CH.1 of AD61(S1) designated in Un.	⎍ ⬆	7		5-4
	SVWR2	—[G.SVWR2 | Un | S]— —[GP.SVWR2 | Un | S]—	Writes set value data designated in (S) to CH.2 of AD61(S2) designated in Un.	⎍ ⬆	7		5-4
Reading present value	PVRD1	—[G.PVRD1 | Un | D]— —[GP.PVRD1 | Un | D]—	Reads present value data from CH.1 of AD61(S1) designated in Un, and stores data in the word device number designated in (D).	⎍ ⬆	7		5-6
	PVRD2	—[G.PVRD2 | Un | D]— —[GP.PVRD2 | Un | D]—	Reads present value data from CH.2 of AD61(S2) designated in Un, and stores data in the word device number designated in (D).	⎍ ⬆	7		5-6

_{2-4}_
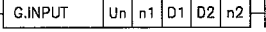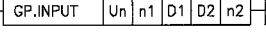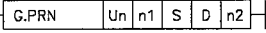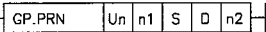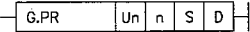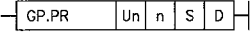
(2) AD59(S1) control instructions

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Outputting to printer	PRN	—[G.PRN | Un | n | S | D]— —[GP.PRN | Un | n. | S | D]—	Outputs the number of bytes designated by (n2) of the data stored in the word device number after the one designated in (S) to the printer connected to the AD59(S1) designated in Un. On completion of the output, the bit device designated in (D) is turned ON.	⌐⌐ ⌐	8		6-2
	PR	—[G.PR | Un | n | S | D]— —[GP.PR | Un | n | S | D]—	Outputs the data stored from the word device number after the one designated in (S) to the 00H code to the printer connected to the AD59(S1) designated by Un. On completion of the output, the bit device designated in (D) is turned ON.	⌐⌐ ⌐	8		6-6
Writing /reading data to/from memory card	GET	—[G.GET | Un | S | n | D]— —[GP.GET | Un | S | n | D]—	Reads the data stored in the number of points designated by (n) after the address designated in (S) from the memory card connected to the AD59(S1) designated in Un, and writes the data to word devices starting from the word device number designated by (D).	⌐⌐ ⌐	8		6-10
	PUT	—[G.PUT | Un | S1 | n | S2]— —[GP.PUT | Un | S1 | n | S2]—	Reads the data stored in the number of points designated in (n) starting from the word device number after the one designated in (S2) and writes it to addresses after that designated by (S1) in the memory card connected to the AD59(S1) designated by Un.	⌐⌐ ⌐	8		6-13
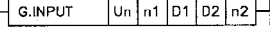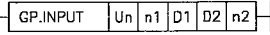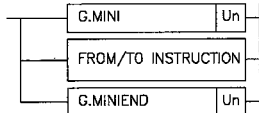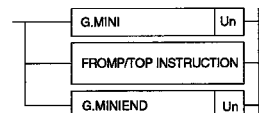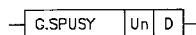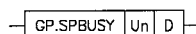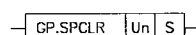
(3) AJ71PT32-S3 MELSECNET/MINIS-3 master module control instructions

| Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Key input from operation box	INPUT	─[G.INPUT | Un | n1 | D1 | D2 | n2]─ ─[GP.INPUT | Un | n1 | D1 | D2 | n2]─	Reads the key input data from the operation box connected to AJ71P32-S3 designated in Un, and stores to word devices starting from the one whose number is designated by (D1). On completion of the processing, the bit device designated in (D2) is turned ON.	⎍ ⌐⌐	10		7-3
Reading /writing data from/to memory card	PRN	─[G.PRN | Un | n1 | S | D | n2]─ ─[GP.PRN | Un | n1 | S | D | n2]─	Outputs the number of points designated in (n1) of the data stored in word devices starting from the one whose number is designated in (S) to the AJ35PTF-R2 designated by (n2) and connected to the AJ71P32-S3 designated by Un. On completion of the processing, the bit device designated in (D) is turned ON.	⎍ ⌐⌐	9		7-7
	PR	─[G.PR | Un | n | S | D]─ ─[GP.PR | Un | n | S | D]─	Outputs the data, up to the 00H code, stored from word device number after the one designated in (S) onward, to the AJ35PTF-R2 designated by (n1) and connected to the AJ71P32-S3 designated by Un. On completion of the processing, the bit device designated in (D) is turned ON.	⎍ ⌐⌐	7		7-11

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Sending /receiving the designated number of bytes of data to/from AJ35PTF -R2	INPUT	─[G.INPUT | Un | n1 | D1 | D2 | n2]─ / ─[GP.INPUT | Un | n1 | D1 | D2 | n2]─	Reads, from storage in the J35PT32-R2 designated by Un, data within the number of points designated by (n1) and from a J35PT32-R2, and stores it in word devices from the word device number designated by (D1). On completion of the processing, the bit device designated in (D2) is turned ON.		10		7-15
Reading /writing data in MINI default protocol	MINI	G.MINI | Un / FROM/TO INSTRUCTION / G.MINIEND | Un / G.MINI | Un / FROMP/TOP INSTRUCTION / G.MINIEND | Un	Communicates with a remote terminal module which conforms to MINI default protocol and is connected to AJ71PT32-S3 designated in Un.		*5/6		7-21
Resetting errors at remote terminal module	MINIERR	─[G.MINIERR | Un]─ / ─[GP.MINIERR | Un]─	Resets remote terminal errors occurring at the AJ71PT32-S3 designated by Un.		7		7-27
Reading communica- tion status	SPBUSY	─[G.SPUSY | Un | D]─ / ─[GP.SPBUSY | Un | D]─	Stores the processing status at the AJ71PT32-S3 designated by Un in the word device number designated by (D).		7		7-28
Forced stop of communi- cation processing	SPCLR	─[G.SPCLR | Un | S]─ / ─[GP.SPCLR | Un | S]─	Stops the communication processing between the remote terminal module designated by (S) and the AJ71PT32-S3 designated by Un.		7		7-30
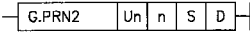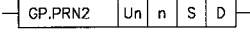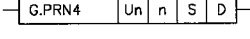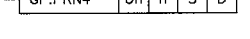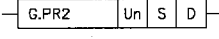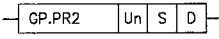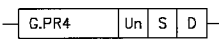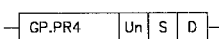
REMARK

1)*: The MINI instruction has 5 steps and the MINIEND instruction has six steps.
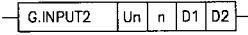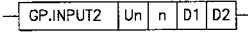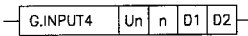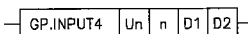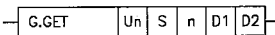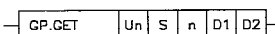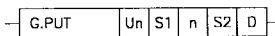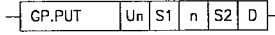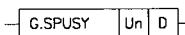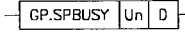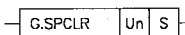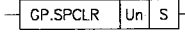
(4) AJ71C21(S1) control instructions

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Sending designated number of bytes of data	PRN2	─[G.PRN2 | Un | n | S | D]─ ─[GP.PRN2 | Un | n | S | D]─	Outputs data corresponding to the number of points designated by (n), stored from the word device whose number is designated by (S) onward, from the RS-232C interface of the AJ71C21(S1) designated by Un, in the no protocol mode. On completion of the processing, the bit device designated in (D) is turned ON.	⎍ / ⤒	8		8-2
	PRN4	─[G.PRN4 | Un | n | S | D]─ ─[GP.PRN4 | Un | n | S | D]─	Outputs data corresponding to the number of points designated by (n), stored from the word device whose number is designated by (S) onward, from the RS-422 interface of the AJ71C21(S1) designated by Un, in the no protocol mode. On completion of the processing, the bit device designated in (D) is turned ON.	⎍ / ⤒	8		8-2
Sending data up to 00H	PR2	─[G.PR2 | Un | S | D]─ ─[GP.PR2 | Un | S | D]─	Outputs data up to the 00H code, stored from the word device whose number is designated by (S), from the RS-232C interface of the AJ71C21(S1) designated by Un in the no protocol mode. On completion of the output, the bit device designated in (D) is turned ON.	⎍ / ⤒	7		8-6
	PR4	─[G.PR4 | Un | S | D]─ ─[GP.PR4 | Un | S | D]─	Outputs data up to the 00H code, stored from the word device whose number is designated by (S), from the RS-422 interface of the AJ71C21(S1) designated by Un, in the no protocol mode. On completion of the output, the bit device designated in (D) is turned ON.	⎍ / ⤒	7		8-6

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Receiving data	INPUT2	⊣ G.INPUT2 | Un | n | D1 | D2 ⊢ ⊣ GP.INPUT2 | Un | n | D1 | D2 ⊢	Stores data corresponding to the number of points designated by (n), sent to the RS-232C interface of the AJ71C21(S1) designated by Un in the no protocol mode, in word devices starting from the one whose number is designated by (D1). On completion of the processing, the bit device designated in (D2) is turned ON.	⎍ ⌐	9		8-10
	INPUT4	⊣ G.INPUT4 | Un | n | D1 | D2 ⊢ ⊣ GP.INPUT4 | Un | n | D1 | D2 ⊢	Stores data corresponding to the number of points designated by (n), sent to the RS-422 interface of the AJ71C21(S1) designated by Un in the no protocol mode, in word devices starting from the one designated in (D1). On completion of the processing, the bit device designated in (D2) is turned ON.	⎍ ⌐	9		8-10
Reading /writing from/to RAM memory	GET	⊣ G.GET | Un | S | n | D1 | D2 ⊢ ⊣ GP.GET | Un | S | n | D1 | D2 ⊢	Reads data corresponding to the number of points designated by (n), stored from the address designated by (S) of the RAM memory of the AJ71C21-S1 designated by Un, and stores this data in word devices from the one whose number is designated by (D1). On completion of the processing, the bit device designated in (D2) is turned ON.	⎍ ⌐	9		8-16
	PUT	⊣ G.PUT | Un | S1 | n | S2 | D ⊢ ⊣ GP.PUT | Un | S1 | n | S2 | D ⊢	Reads data corresponding to the number of points designated in (n), stored in word devices starting from the one whose number is designated by (S2), and writes this data to the RAM memory of the AJ71C21-S1 designated in Un, at the addresses from the one designated in (S1). On completion of the processing, the bit device designated in (D2) is turned ON.	⎍ ⌐	9		8-20
Reading communication status	SPBUSY	⊣ G.SPUSY | Un | D ⊢ ⊣ GP.SPBUSY | Un | D ⊢	Stores the processing status of the AJ71C21(S1) designated by Un to the word device number designated in (D).	⎍ ⌐	7		8-24
Forced stop of communication processing	SPCLR	⊣ G.SPCLR | Un | S ⊢ ⊣ GP.SPCLR | Un | S ⊢	Forcibly Stops the processing of the AJ71C21(S1) designated by Un.	⎍ ⌐	7		8-26

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

MELSEC-QnA

(5) Computer link module control instructions

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Sending data	PRN	─[G.PRN | Un | n | S | D]─ ─[GP.PRN | Un | n | S | D]─	Outputs the data corresponding to the number of points designated by (n), stored in word devices starting from the one whose number is designated by (S), from the RS-232C/RS-422 interface of the AJ71C24(S3, S6, S8)/AJ71UC24 designated by Un, in the no protocol mode. On completion of the output, the bit device designated in (D) is turned ON.		8		9-2
	PR	─[G.PR | Un | n | S | D]─ ─[GP.PR | Un | n | S | D]─	Outputs, up to the 00H code, data stored in word devices from the one designated by (S), from the RS-232C/RS-422 interface of the AJ71C24(S3, S6, S8)/AJ71UC24 designated by Un, in the no protocol mode. On completion of the output, the bit device designated in (D) is turned ON.		6		9-6
Receiving data	INPUT	─[G.INPUT | Un | n | D1 | D2]─ ─[GP.INPUT | Un | n | D1 | D2]─	Receives the data sent to the RS-232C/RS-422 interface of the AJ71C24(S3, S6, S8)/AJ71UC24 designated by Un, in the no protocol mode, and stores it in the number of points designated by (D2) of word devices starting from the one whose number is designated by (D1). On completion of the processing, the bit device designated in (D) is turned ON.		9		9-10
Reading communication status	SPBUSY	─[G.SPUSY | Un | D]─ ─[GP.SPBUSY | Un | D]─	Stores the send/receive processing status of the AJ71C24(S3, S6, S8)/AJ71UC24 designated by Un to the word device number designated in (D).		7		9-16
Forced stop	SPCLR	─[G.SPCLR | Un | S]─ ─[GP.SPCLR | Un | S]─	Forcibly stops send/receive processing of the AJ71C24(S3, S6, S8)/AJ71UC24 designated by Un.		7		9-18

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2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

(6) AJ71QC24 control instructions

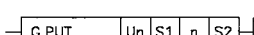| Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Writing user entry frame to the EPROM	PUTE	─┤ G.PUTE | Un | S1 | S2 | D ├─ ─┤ GP.PUTE | Un | S1 | S2 | D ├─	Registers the user entry frame to the EPROM. Or, erases the registered user entry frame.	⎍ / ↑	8		10-6
Reading user entry frame from the EPROM	GETE	─┤ G.GETE | Un | S1 | S2 | D ├─ ─┤ GP.GETE | Un | S1 | S2 | D ├─	Reads the user entry frame registered in the EPROM.	⎍ / ↑	8		10-10
Data transmission using the on-demand function of a dedicated protocol	ONDEMAND	─┤ G.ONDEMAND | Un | S1 | S2 | D ├─ ─┤ GP.ONDEMAND | Un | S1 | S2 | D ├─	Transmits data using the on-demand function using dedicated protocol.	⎍ / ↑	10		10-14
Data transmission of number of data specified using no-handshake protocol	OUTPUT	─┤ G.OUTPUT | Un | S1 | S2 | D ├─ ─┤ GP.OUTPUT | Un | S1 | S2 | D ├─	Transmits data for the specified number using no-handshake protocol.	⎍ / ↑	9		10-18
Data transmission using transmission schedule table via no-handshake protocol	PRR	─┤ G.PRR | Un | S | D ├─ ─┤ GP.PRR | Un | S | D ├─	Transmits data according to the transmission schedule table using no-handshake protocol.	⎍ / ↑	7		10-22
Data reception using no-handshake protocol	INPUT	─┤ G.INPUT | Un | S1 | S2 | D ├─ ─┤ GP.INPUT | Un | S1 | S2 | D ├─	Receives data using no-handshake protocol.	⎍ / ↑	9		10-26
Data transmission using bidirectional protocol	BIDOUT	─┤ G.BIDOUT | Un | S1 | S2 | D ├─ ─┤ GP.BIDOUT | Un | S1 | S2 | D ├─	Transmits data using bidirectional protocol.	⎍ / ↑	9		10-30
Data reception using bidirectional protocol	BIDIN	─┤ G.BIDIN | Un | S1 | S2 | D ├─ ─┤ GP.BIDIN | Un | S1 | S2 | D ├─	Receives data using bidirectional protocol.	⎍ / ↑	9		10-34

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS
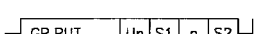
Category	Instruction Symbols	Symbol		Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Communication status read	SPBUSY	G.SPBUSY | Un | D	GP.SPBUSY | Un | D	Reads communication processing status for each instruction.	⎍ / ⤒	7		10-38
Device read of other stations	READ	G.READ | Un | S1 | S2 | D1 | D2	GP.READ | Un | S1 | S2 | D1 | D2	Reads the device data from other station's CPU that is connected using AJ71QC24 and MELSECNET/10.	⎍ / ⤒	9		10-40
Device write of other stations	SWRITE	G.SWRITE | Un | S1 | S2 | D1 | D2 | D3	GP.SWRITE | Un | S1 | S2 | D1 | D2 | D3	Writes the device data from other station's CPU that is connected using AJ71QC24 and MELSECNET/10.	⎍ / ⤒	10		10-44
Data transmission to other stations	SEND	G.SEND | Un | S1 | S2 | D	GP.SEND | Un | S1 | S2 | D	Transmits data to other station's CPU that is connected using AJ71QC24 and MELSECNET/10.	⎍ / ⤒	8		10-50
Data reception from other stations	RECV	G.RECV | Un | S1 | S2 | D	GP.RECV | Un | S1 | S2 | D	Receives data from other station's CPU that is connected using AJ71QC24 and MELSECNET/10.	⎍ / ⤒	8		10-54
Other station transient request	REQ	G.REQ | Un | S1 | S2 | D1 | D2	GP.REQ | Un | S1 | S2 | D1 | D2	Transmits a transient request to other station's CPU that is connected using AJ71QC24 and MELSECNET/10.	⎍ / ⤒	9		10-58

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

(7) ID interface module instructions

Category	Instruction Symbols	Symbol □indicates 1/2	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Initial setting of ID controller	IDINIT1 IDINIT2	GP.IDINIT□ [Lin] [S]	Writes the control data of channel 1 or channel 2 into the buffer memory of ID interface module.	⌐	9		11-3
Read from ID data carrier	IDRD1 IDRD2	G.IDRD□ [Un][n1][D1][n2][D2] GP.IDRD□ [Un][n1][D1][n2][D2]	Reads data from data carrier via channel 1 or channel 2.	⊓ ⌐	10		11-5
Write from ID data carrier	IDWD1 IDWD2	G.IDWD□ [Un][n1][D1][n2][D2] GP.IDWD□ [Un][n1][D1][n2][D2]	Writes data from data carrier via channel 1 or channel 2.	⊓ ⌐	10		11-7
Continuous read from ID data carrier	IDARD1 IDARD2	G.IDARD□ [Un][n1][D1][n2][D2] GP.IDARD□ [Un][n1][D1][n2][D2]	Waits until the ID data carrier enters the communication range for the ID reader/writer, then reads the data.	⊓ ⌐	10		11-9
Continuous write to ID data carrier	IDAWD1 IDAWD2	G.IDAWD□ [Un][n1][D1][n2][D2] GP.IDAWD□ [Un][n1][D1][n2][D2]	Waits until the ID data carrier enters the communication range for the ID reader/writer, then writes the data.	⊓ ⌐	10		11-11
Data comparison of ID data carrier	IDCMP1 IDCMP2	G.IDCMP□ [Un][n1][D1][n2][D2] GP.IDCMP□ [Un][n1][D1][n2][D2]	Compares device memory data and ID data carrier data.	⊓ ⌐	10		11-13
Same data batch write to ID data carrier	IDFILL1 IDFILL2	G.IDFILL□ [Un][n1][D1][n2][D2] GP.IDFILL□ [Un][n1][D1][n2][D2]	Writes the same data in batch into the area specified by ID data carrier.	⊓ ⌐	11		11-15
Copy among ID data carriers	IDCOPY1 IDCOPY2	G.IDCOPY□ [Un][n1][D1][n2][D2] GP.IDCOPY□ [Un][n1][D1][n2][D2]	Copies data among ID data carriers via channel 1 and channel 2.	⊓ ⌐	11		11-17
ID data carrier clear	IDCLR1 IDCLR2	G.IDCLR□ [Lin] [S] GP.IDCLR□ [Lin] [S]	Clears all data of ID data carrier to 0 via the ID interface module.	⊓ ⌐	7		11-17

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

(8) ID interface module instructions (Can be used for function version B only)

Category	Instruction Symbols	Symbol □indicates 1/2	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Comparison read from ID data carrier	IDCRD1 IDCRD2	┤G.IDCRD□│Un│n1│D1│n2│D2├ ┤GP.IDCRD□│Un│n1│D1│n2│D2├	Verifies data by re-reading the data after data read.	⎍ / ⌐	9		11-21
Comparison write to ID data carrier	IDCWD1 IDCWD2	┤G.IDCWD□│Un│n1│D1│n2│D2├ ┤GP.IDCWD□│Un│n1│D1│n2│D2├	Verifies data by reading the data that has been written after data write.	⎍ / ⌐	9		11-23
Continuous comparison read from ID data carrier	IDSRD1 IDSRD2	┤G.IDCRD□│Un│n1│D1│n2│D2├ ┤GP.IDCRD□│Un│n1│D1│n2│D2├	Verifies data by re-reading the data after waiting until the data enters the ID reader/writer communication range, and reading it.	⎍ / ⌐	10		11-25
Continuous comparison write to ID data carrier	IDSWD1 IDSWD2	┤G.IDSWD□│Un│n1│D1│n2│D2├ ┤GP.IDSWD□│Un│n1│D1│n2│D2├	Verifies data by re-reading the data after waiting until the data enters the ID reader/writer communication range, and writing it.	⎍ / ⌐	10		11-28
Continuous high speed read from ID data carrier	IDFRD1 IDFRD2	┤G.IDFRD□│Un│n1│D1│n2│D2├ ┤GP.IDFRD□│Un│n1│D1│n2│D2├	Reads the data at high speed after waiting until the data enters the ID reader/writer communication range.	⎍ / ⌐	10		11-31
Continuous high speed write to ID data carrier	IDFWD1 IDFWD2	┤G.IDFWD□│Un│n1│D1│n2│D2├ ┤GP.IDFWD□│Un│n1│D1│n2│D2├	Writes the data at high speed after waiting until the data enters the ID reader/writer communication range.	⎍ / ⌐	10		11-34

(9) CC-Link control instructions
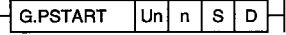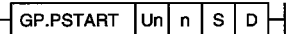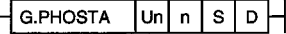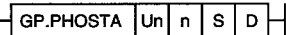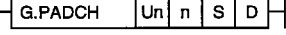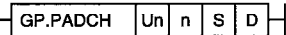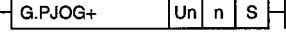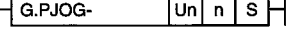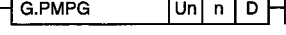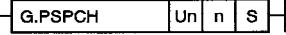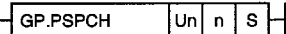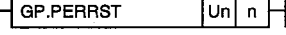
Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Read from buffer memory of intelligent device station	RIRD	G.RIRD | Un | S | D1 | D2 — GP.RIRD | Un | S | D1 | D2 —	Reads data for the number of points specified from the specified buffer memory of an intelligent device station.	⊓ ↑	8		12-3
Write to buffer memory of intelligent device station	RIWT	G.RIWT | Un | S1 | S2 | D — GP.RIWT | Un | S1 | S2 | D —	Writes data for the number of points specified from the specified buffer memory of an intelligent device station.	⊓ ↑	8		12-8
Read from buffer memory of intelligent device station (With hand-shake)	RIRCV	G.RIRCV | Un | S1 | D1 | S2 | D2 — GP.RIRCV | Un | S1 | D1 | S2 | D2 —	Reads data for the number of points specified from the specified buffer memory of an intelligent device station. (Executes handshake using a handshake signal.)	⊓ ↑	10		12-13
Write to buffer memory of intelligent device station (With hand-shake)	RISEND	G.RISEND | Un | S1 | S2 | S3 | D — GP.RISEND | Un | S1 | S2 | S3 | D —	Writes data for the number of points specified from the specified buffer memory of an intelligent device station. (Executes handshake using a handshake signal.)	⊓ ↑	10		12-17
Read from buffer memory for automatic update of master station	RIFR	G.RIFR | Un | n1 | n2 | D | n3 — GP.RIFR | Un | n1 | n2 | D | n3 —	Reads the data for the number of points specified by the buffer memory for automatic update of master station.	⊓ ↑	9		12-21
Write to buffer memory for automatic update of master station	RITO	G.RITO | Un | n1 | n2 | S | n3 — GP.RITO | Un | n1 | n2 | S | n3 —	Writes the data for the number of points specified by the buffer memory for automatic update of master station.	⊓ ↑	9		12-23
Communication with intelligent device station	CCL CCLEND	G.CCL | Un — FROM/TO instruction — G.CCLEND | Un — G.CCL | Un — FROMP/TOP instruction — G.CCLEND | Un —	Communicates with the buffer memory of an intelligent device station.	⊓ (5) ↑ (7)	5 7		12-25

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

Category	Instruction Symbols	Symbol		Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Read status of communication with intelligent device station	SPCBUSY	G.SPCBUSY	Un D	Reads the communications status with an intelligent device station.	⎍	8		12-31
		GP.SPCBUSY	Un D		⤒			
Interrupt communication processing with intelligent device station	SPCCLR	G.SPCCLR	Un S	Interrupts communication processing of the intelligent device station.	⎍	7		12-34
		GP.SPCCLR	Un S		⤒			

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

(10) AD75 control instructions

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Positioning start of an axis	PSTART	┤ G.PSTART | Un | n | S | D ├ ┤ GP.PSTART | Un | n | S | D ├	Starts positioning operation for each axis.	⎍ ⌁	9		13-3
Interpolation positioning start	PHOSTA	┤ G.PHOSTA | Un | n | S | D ├ ┤ GP.PHOSTA | Un | n | S | D ├	Starts positioning at interpolation of two axis.	⎍ ⌁	9		13-5
Zero return start	PZPR	┤ G.PZPR | Un | n1 | D ├ ┤ GP.PZPR | Un | n1 | D ├	Starts zero return.	⎍ ⌁	7		13-7
Present value change request	PADCH	┤ G.PADCH | Un | n | S | D ├ ┤ GP.PADCH | Un | n | S | D ├	Changes present value.	⎍ ⌁	9		13-9
Forward JOG start/stop	PJOG+	┤ G.PJOG+ | Un | n | S ├	Starts/stops forward JOG operation.	⎍	8		13-11
Reverse JOG start/stop	PJOG-	┤ G.PJOG- | Un | n | S ├	Starts/stops reverse JOG operation.	⎍	8		13-13
Manual pulse generator operation enable/disable	PMPG	┤ G.PMPG | Un | n | D ├	Enables/disables manual pulse generator operation.	⎍	7		13-15
Speed change request	PSPCH	┤ G.PSPCH | Un | n | S ├ ┤ GP.PSPCH | Un | n | S ├	Changes speed.	⎍ ⌁	8		13-17
Axis error reset	PERRST	┤ G.PERRST | Un | n ├ ┤ GP.PERRST | Un | n ├	Resets an axis error.	⎍ ⌁	7		13-19

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Basic parameter setting	PBPSET	⊣ G.PBPSET | Un | n | S1 | S2 ⊢ / ⊣ GP.PBPSET | Un | n | S1 | S2 ⊢	Sets the basic parameters 1 and 2.	⎍ / ⌐	9		13-21
Detailed parameter setting	PEPSET	⊣ G.PEPSET | Un | n | S1 | S2 ⊢ / ⊣ GP.PEPSET | Un | n | S1 | S2 ⊢	Sets the extended parameters 1 and 2.	⎍ / ⌐	9		13-23
Zero-return data setting	POPSET	⊣ G.IDWD☐ | Un | n1 | D1 | n2 | D2 ⊢ / ⊣ GP.POPSET | Un | n | S1 | S2 ⊢	Sets zero-return data.	⎍ / ⌐	9		13-27
Positioning data setting	PPOSET	⊣ G.PPOSET | Un | n1 | S | n2 | n3 ⊢ / ⊣ GP.PPOSET | Un | n1 | S | n2 | n3 ⊢	Sets positioning data.	⎍ / ⌐	9		13-30
Positioning start data setting	PSDSET	⊣ G.PSDSET | Un | n1 | S | n2 ⊢ / ⊣ GP.PSDSET | Un | n1 | S | n2 ⊢	Sets positioning start data.	⎍ / ⌐	9		13-32
Positioning special start data setting	PSPSET	⊣ G.PSPSET | Un | n1 | S | n2 ⊢ / ⊣ GP.PSPSET | Un | n1 | S | n2 ⊢	Sets positioning special start data setting.	⎍ / ⌐	9		13-34
Condition data setting	PCTSET	⊣ G.PCTSET | Un | n1 | S | n2 ⊢ / ⊣ GP.PCTSET | Un | n1 | S | n2 ⊢	Sets condition data.	⎍ / ⌐	9		13-36
Error/warning number read	PEWRD	⊣ G.PEWRD | Un | n | D ⊢ / ⊣ G.PERRST | Un | n ⊢	Stores an axis error/axis warning number in the specified device.	⎍ / ⌐	8		13-38

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2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Monitor data read	PMDRD	─[G.PMDRD | Un | n | D]─ ─[GP.PMDRD | Un | n | D]─	Stores the present feed value, feed speed, and M-code in the specified device.	⎍ ⤒	10		13-40
Positioning data I/F setting	PIFSET	─[G.PIFSET | Un | n1 | S1 | S2]─ ─[GP.PIFSET | Un | n1 | S1 | S2]─	Sets positioning data I/F.	⎍ ⤒	10		13-42

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

(11) Ethernet instructions

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Parameter setting	EPRSET	┤├─┤ G.EPRSET Un n1 n2 n3 n4 ├ / IRET ┤├─┤ GP.EPRSET Un n1 n2 n3 n4 ├ / IRET	Sets the I/O no., network no., station number, group no., and IP address of an Ethernet module into the QnACPU.	⎍ / ⌐	14		14-2
Read other station device that corresponds to QnA	READ	J.READ Jn (S1)(S2)(D1)(D2) G.READ Un (S1)(S2)(D1)(D2) JP.READ Jn (S1)(S2)(D1)(D2) GP.READ Un (S1)(S2)(D1)(D2)	Reads word device data from other stations to the host.	⎍ / ⌐	9		14-4
	SREAD	J.SREAD Jn (S1)(S2)(D1)(D2)(D3) G.SREAD Un (S1)(S2)(D1)(D2)(D3) JP.SREAD Jn (S1)(S2)(D1)(D2)(D3) GP.SREAD Un (S1)(S2)(D1)(D2)(D3)		⎍ / ⌐	10		14-10
Write other station device that corresponds to QnA	WRITE	J.WRITE Jn (S1)(S2)(D1)(D2) G.WRITE Un (S1)(S2)(D1)(D2) JP.WRITE Jn (S1)(S2)(D1)(D2) GP.WRITE Un (S1)(S2)(D1)(D2)	Writes host data to other stations' word device.	⎍ / ⌐	10		14-16
	SWRITE	J.SWRITE Jn (S1)(S2)(D1)(D2)(D3) G.SWRITE Un (S1)(S2)(D1)(D2)(D3) JP.SWRITE Jn (S1)(S2)(D1)(D2)(D3) GP.SWRITE Un (S1)(S2)(D1)(D2)(D3)		⎍ / ⌐	11		14-22
QnA-compatible data transmission	SEND	J.SEND Jn (S1)(S2)(D1) G.SEND Un (S1)(S2)(D1) JP.SEND Jn (S1)(S2)(D1) GP.SEND Un (S1)(S2)(D1)	Transmits data (message) to other stations.	⎍ / ⌐	8		14-28
QnA-compatible data reception	RECV	J.RECV Jn (S1)(S2)(D1) G.RECV Un (S1)(S2)(D1) JP.RECV Jn (S1)(S2)(D1) GP.RECV Un (S1)(S2)(D1)	Reads data (messages) sent to the host.	⎍ / ⌐	8		14-34
Transient request for other station that corresponds to QnA	REQ	J.REQ Jn (S1)(S2)(D1)(D2) G.REQ Un (S1)(S2)(D1)(D2) JP.REQ Jn (S1)(S2)(D1)(D2) GP.REQ Un (S1)(S2)(D1)(D2)	Transmits a transient request to other station, and executes it.	⎍ / ⌐	9		14-40

2. LIST OF SPECIAL FUNCTION MODULE INSTRUCTIONS

Category	Instruction Symbols	Symbol	Processing Details	Execution Condition	Basic Number of Steps	Sub Set	Page
Read A-compatible communication instruction of other station device	ZNRD	J.ZNRD | Jn | n1 |(D1)|(S)| n2 |(D2)| JP.ZNRD | Jn | n1 |(D1)|(S)| n2 |(D2)|	Reads the word device data of other stations to the host.	_⌐⌐_ ⌐↑	32		14-48
Write A-compatible communication instruction to other station device	ZNWR	J.ZNWR | Jn | n1 |(D1)|(S)| n2 |(D2)| JP.ZNWR | Jn | n1 |(D1)|(S)| n2 |(D2)|	Writes the host data to other stations' word device.	_⌐⌐_ ⌐↑	32		14-52

3. CONFIGURATION OF INSTRUCTIONS

This chapter describes the following points of difference between the special function module instructions and the QnACPU common instructions:
- Instruction configuration
- Instruction execution conditions
- Number of Steps

For information on items other than those described here, refer to the QnACPU Programming Manual (Common Instructions)

3.1 Instruction Configuration

Special function module instructions for QnACPU can be divided into a "G. instruction name" part and a device part.
The applications of the instruction part and device part are as follows.
- G.instruction part...... Indicates the function of the instruction.
- Device part.............. Indicates the data used for the instruction.

The device part is divided into I/O No., source data, and destination data.

(1) I/O No. (Un)

    (a) The I/O No. indicates the location where the special function module is installed.

    (b) The upper three digits of the head I/O number of the special function module when expressed as a four-digit hexadecimal number are set for "Un".
For example, if the special function module is allocated to X/Y0120 - X/Y15F, "012" is set for Un.

(2) Source (S)

    (a) The "source" is the data used for the operation.

    (b) It takes the following forms depending on the devices designated with each instruction.

        • Constant........................ Designates the numerical values used for the operation.
Since constants are set when the program is created, they cannot be changed during execution of the program.
If a constant is used with variable data, use index qualification.

        • Bit device, word device....Designate the devices in which the data used for the operation is stored.
The data must be stored in the designated device before the operation is executed.
By changing the data stored in a designated device during program execution, the data used with the instruction can be changed.

(3) Destination (D)

    (a) The destination stores the data that results from the operation.

    (b) It is essential to set a device to store data as the destination.

3.2 Instruction Execution Conditions

There are two types of execution conditions for the special function module instructions for QnACPU.

- Executed while ON............. Instruction executed while the input condition is ON.
  Example : G.INPUT instruction, G.PVWR1 instruction
- Executed at leading edge.... Instruction executed only at the leading edge (OFF → ON) of the input condition.
  Example : GP.INPUT instruction, GP.PVWR1 instruction

Special function module instructions are available as both "executed while ON" and "executed at leading edge" types.
- Executed while ON instruction   G. [Instruction name]
- Executed at leading edge   GP. [Instruction name]

In the case of the CMODE instruction, the "executed while ON" and "executed at leading edge" types are designated as follows.

```
    ┤ ├───────[ G.PVWR1    U0    D0    ]├            ─── Executed while ON


    ┤ ├───────[ GP.PVWR1    U0    D0    ]├            ─── Executed at leading edge
```
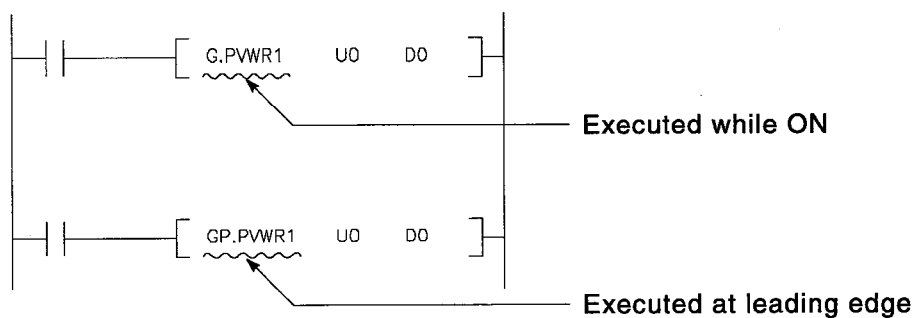
3.3 Number of Steps

The number of steps taken up by special function module instructions for QnACPU depends on the devices used and whether or not indirect designation is used.

The basic numbers of steps for special function module instructions are indicated in the instruction lists in Section 2.3.

(1) Conditions under which the number of steps is increased
The number of steps exceeds the basic number of steps if indirect device designation is used or if devices which increase the number of steps are used.

(a) Indirect designation of devices
If indirect designation is carried out with @ [⃞], the number of steps is increased by 1 with respect to the basic number of steps.

(b) Device that increases the number of steps

Device that Increases the Number of Steps	Step Increase
Buffer register	
Link register	
Consecutive number access file register	1
32-bit constant	
Real number constant	
Character string constant	When even : characters numbers/2 When odd : (characters numbers + 1)/2 - 1

(c) If both conditions (a) and (b) above exist, both steps increase.

MEMO

4. HOW TO READ EXPLANATIONS FOR INSTRUCTIONS

This section describes how to read the detailed explanation of instructions given in Section 5 and later sections.

(1) —— PVWR1, PVWR2 ———————————————— MELSEC-QnA

(2) —— 5,1 ting Preset Value Data

(3)

Set data	Usable devices							
	Internal device (system, user)		File register	MELSECNET/10 direct J[ ]\[ ]		Special function module U[ ]\G[ ]	Index register Zn	Constant K,H	Other
	Bit	Word		Bit	Word				
(S)	O								—

(4)

[Instruction symbol] [Execution condition]   □ represents PVWR1 or PVWR2.

PVWR1, PVWR2   ⎍   ┤ command ├————— C.[   ] Un (S) —

PVWR1, PVWR2   ⎍   ┤ command ├————— GP.[   ] Un (S) —

Set data

(5)

Set data	Description	Data type
Un	AD61(S1) head I/O number	16-bit binary
(S)	Head device number of devices storing the preset value to be written	32-bit binary

(6) —— Function

(1) Writes to AD61(S1) the preset value which is stored in the devicedesignated at (S).
The preset value writes data directly to the AD61(S1) buffer memory.
The channel and buffer memory address for writing the preset value differ according to the instructions used.

Instruction	Write channel	Write buffer memory address
PVWR1	1	1, 2
PVWR2	2	33,34

(2) In the writing of preset values by PVWR1 and PVWR2 instructions, the ON/OFF control of the AD61(S1) preset commands (Y(n+11), Y(n+19)) is conducted automatically by internal processing. The user does not need to conduct the ON/OFF control of the preset command.

(3) The preset value designated at (S) and (S)+1 is within the range 0 to 16777215.

5 - 2

(1) Instruction symbol
(2) Section number and general description of the instruction
(3) " O " indicates the devices that can be used with the instruction. The classes of use into which the devices that can be used are divided are as follows.

Device Classi-fication	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant *1	Other *1
	Bit	Word		Bit	Word				
Usable devices	X, Y, M, L, SM, F, V, B, SB, FX, FY *2	T, ST, C, D, W, SD, SW, FD	R, ZR	J□\X J□\Y J□\B J□\SB	J□\W J□\SW	U□\G□	Z	Decimal constant Hexadecimal constant Real number constant Character string constant	P, I, J, U, DX, DY, N, BL, TR, BL\S

*1 : The devices that can be set are indicated in the "Constant" and "Other" columns.
*2 : FX and FY can only be used with bit data, and FD can only be used with word data.

PVWR1, PVWR2 ————————————————————————————————— **MELSEC-QnA** ——————(7)

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
* When the module attempting access is not a special function module.   (Error code: 2110)
* When dedicated instructions cannot be used for the designated module.   (Error code: 2112)
* When the designated instruction name is illegal.   (Error code: 4300)
* When the number of AD61(S1) control instruction devices is illegal.   (Error code: 4301)
* When a non-designatable device is designated.   (Error code: 4302)

Program Example ——(8)

(1) The following is an example program which, when X0 is ON, writes the preset data of D0 and D1 to the buffer memory for channel 1 of the AD61 installed at I/O numbers X/Y020 to X/Y03F.

[Ladder mode]   [List mode]

                                 Step   Instruction   Device

```
                    D1      D0                 AD61 buffer memory
                  | 12366H |  ====>  1 |  23  |  66H  |
                                     2 |  00H |  01H  |
```

5 - 3

(4) Indicates the expressions and instruction execution conditions in the ladder mode.

Execution Condition	Executed while ON	Executed Once at OFF to ON
Symbol used on the explanation page	⎍	⌐↑

(5) Explains the set data for each instruction and indicates the data type.

Data Type	Description
Bit	Indicates that bit data or the first number of bit data can be used.
16-bit binary	Indicates that binary 16-bit data or the first number of word devices can be used.
32-bit binary	Indicates that binary 32-bit data or the first number of double-word devices can be used.
Character string	Indicates that character string data can be used.
Device name	Indicates that device names can be used.

(6) Indicates the function of the instruction.

(7) Indicates the conditions that will cause errors and the error numbers.

(8) A simple program example in both ladder and list formats is given here. The contents of each device when the program is executed are also indicated.

5. AD61(S1) CONTROL INSTRUCTIONS

AD61(S1) control instructions are instructions for writing and reading data to an AD61(S1).

The following table shows AD61(S1) control instructions.

Category	Instruction Name	Description	Refer to
Writing preset data	PVWR1	Writes channel 1 preset data to buffer memory addresses 1 and 2.	Section 5.1
	PVWR2	Writes channel 2 preset data to buffer memory addresses 33 and 34.	
Writing set value data	SVWR1	Writes channel 1 set value data to buffer memory addresses 6 and 7.	Section 5.2
	SVWR2	Writes channel 2 set value data to buffer memory addresses 38 and 39.	
Reading present value	PVRD1	Reads channel 1 present value (count input value) to buffer memory addresses 4 and 5.	Section 5.3
	PVRD2	Reads channel 2 present value (count input value) to buffer memory addresses 36 and 37.	

POINT
When the module model name is not registered in the parameter settings, no error occurs even if AD61(S1) control instructions are executed with respect to an AJ71C21(S1). However, note that when AD61(S1) control instructions are executed with respect to an AJ71C21(S1), the AJ71C21(S1) may not operate normally.

5.1 Setting Preset Value Data

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K,H	Other
	Bit	Word		Bit	Word				
(S)	O								—

[Instruction symbol]	[Execution condition]				□ represents PVWR1 or PVWR2.

PVWR1, PVWR2   ⎍   command ──┤├──── G.[ ] | Un | (S) |

PVWR1, PVWR2   ⌐   command ──┤├──── GP.[ ] | Un | (S) |

Set Data

Set Data	Description	Data Type
Un	AD61(S1) head I/O number	16-bit binary
(S)	Head number of devices storing the preset value to be written or preset value	32-bit binary

Function

(1) Writes to AD61(S1) the preset value which is stored in the device designated at (S).
The preset value writes data directly to the AD61(S1) buffer memory.
The channel and buffer memory address for writing the preset value differ according to the instructions used.

Instruction	Write Channel	Write Buffer Memory Address
PVWR1	1	1, 2
PVWR2	2	33,34
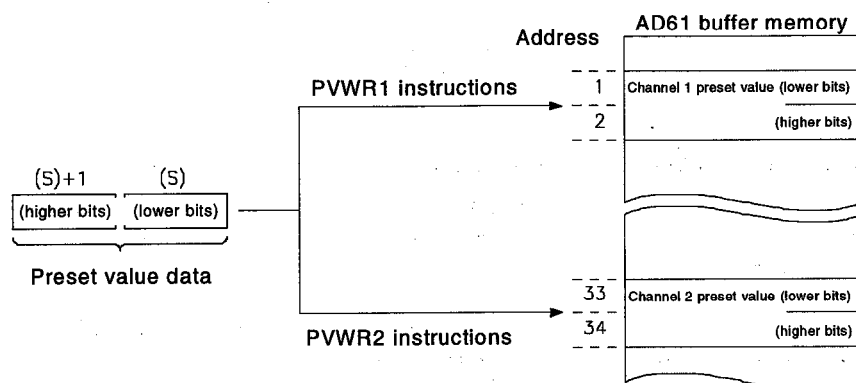
(2) In the writing of preset values by PVWR1 and PVWR2 instructions, the ON/OFF control of the AD61(S1) preset commands (Y(n+11), Y(n+18)) is conducted automatically by internal processing.
The user does not need to conduct the ON/OFF control of the preset command.

(3) The preset value designated at (S) and (S)+1 is within the range 0 to 16777215.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the module attempting access is not a special function module.
(Error code: 2110)
- When dedicated instructions cannot be used for the designated module.
(Error code: 2112)
- When the designated instruction name is illegal.　　(Error code: 4300)
- When the number of AD61(S1) control instruction devices is illegal.
(Error code: 4301)
- When a non-designatable device is designated.　　(Error code: 4302)

Program Example

(1) The following is an example program which, when X0 is ON, writes the preset data of D0 and D1 to the buffer memory for channel 1 of the AD61 installed at I/O numbers X/Y020 to X/Y03F.

[Ladder mode]　　　　　　　　　　　　　[List mode]

```
   X0
0 ─┤├──────────[ G.SVWR1   U2   D0 ]─┤

8 ─────────────────────────[ END ]─┤
```

Step	Instruction	Device
0	LD	X0
1	G.SVWR1	U2
		D0
8	END	

AD61 buffer memory

```
   D1      D0
 ┌─────┬─────┐             ┌──────┬──────┐
 │  1236 6H  │    ═══>    1│  23  │  66H │
 └─────┴─────┘             ├──────┼──────┤
                          2│  00H │  01H │
                           └──────┴──────┘
```

5.2   Setting Set Value Data for Greater/Smaller/Equal Judgments

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J⬜\⬜		Special Function Module U⬜\G⬜	Index Register Zn	Constant K,H	Other
	Bit	Word		Bit	Word				
(S)	O								—

[Instruction symbol]   [Execution condition]   ⬜ represents SVWR1 or SVWR2.

		command			
SVWR1, SVWR2	⊓	─┤├─	G. ⬜	Un	(S)

		command			
SVWR1, SVWR2	↑	─┤├─	GP. ⬜	Un	(S)

Set Data

Set Data	Description	Data Type
Un	AD61(S1) head I/O number	16-bit binary
(S)	Head device number of devices storing the preset value to be written	32-bit binary

Function

(1) Writes to AD61(S1) the set value which is stored in the device designated at (S).
This set value is a standard value against which the present count is compared to judge whether it is greater, smaller, or equal to it.
The set value writes data directly to the AD61(S1) buffer memory.
The channel and buffer memory address for writing the set value differ according to the instructions used.

Instruction	Write Channel	Write Buffer Memory Address
SVWR1	1	6, 7
SVWR2	2	38, 39
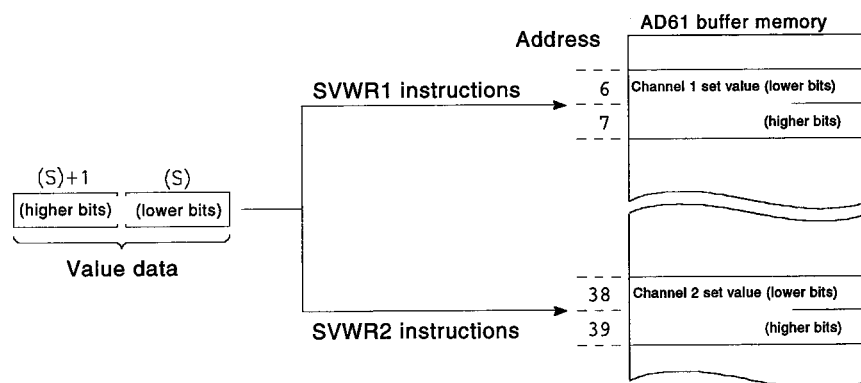
(2) In the writing of set values by SVWR1 and SVWR2 instructions, the ON/OFF control of the AD61(S1) match signal reset commands (Y(n+10), Y(n+17)) and match signal output enable (Y(n+12, Y(n+19)) are conducted automatically by internal processing.
The user does not need to conduct the ON/OFF control of the match signal reset command and enable signal output enable.

(3) The preset value designated at (S) and (S)+1 is within the range 0 to 16777215.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the module attempting access is not a special function module. (Error code: 2110)
- When AD61(S1) control instructions cannot be used for the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AD61(S1) control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) The following is an example program which, when X0 is turned ON, writes D0 and D1 set data to the buffer memory for channel 1 of the AD61 installed at I/O numbers X/Y020 to X/Y03F.

[Ladder mode]

```
    X0
0 ──┤├──────────[ G.SVWR1    U2    D0    ]─

8 ────────────────────────────[ END  ]─
```

[List mode]

Step	Instruction	Device
0	LD	X0
1	G.SVWR1	U2
		D0
8	END	

```
        D1        D0
     ┌──────────────────┐           AD61 buffer memory
     │     12345H       │   ⟹   6 │ 23H │ 45H │
     └──────────────────┘        7 │ 00H │ 01H │
```

5.3   Reading Present Value

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(D)	O								—

[Instruction symbol]   [Execution condition]   ☐ represents PVRD1 or PVRD2.

Set Data

Set Data	Description	Data Type
Un	AD61(S1) head I/O number	16-bit binary
(D)	Head device number of devices to store the read present value	32-bit binary

Function

(1) Reads present value from AD61(S1), and stores in the device designated at (D).

In present value reading, data is read directly from the AD61(S1) buffer memory.

The channel and buffer memory address for reading the present value differ according to the instructions used.

Instruction	Read Channel	Read Buffer Memory Address
PVRD1	1	4, 5
PVRD2	2	36, 37
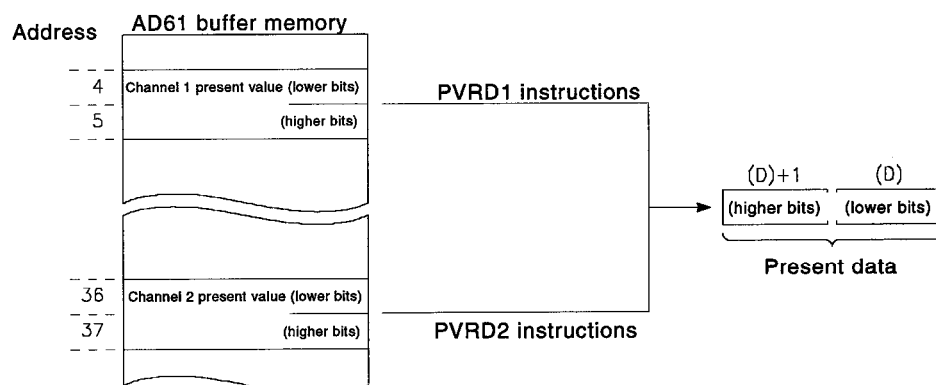
(2) In the reading of present values by PVRD1 and PVRD2 instructions, the ON/OFF control of the AD61(S1) present value read requests (Y(n+15), Y(n+1c)) is conducted automatically by internal processing. The user does not need to conduct the ON/OFF control of the present value read request.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.

- When the module attempting access is not a special function module.
  (Error code: 2110)
- When AD61(S1) control instructions cannot be used for the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AD61(S1) control instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) The following is an example program which, when X0 is turned ON, reads present values for channel 1 of the AD61 installed at I/O numbers X/Y020 to X/Y03F to D0 and D1.

[Ladder mode]

```
     X0
0 ───┤├──────────[ G.PVRD1    U2    D0    ]─

8 ──────────────────────────────[ END ]─
```
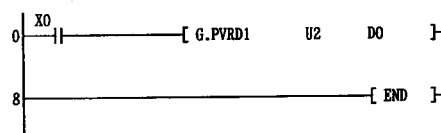
[List mode]

Step	Instruction	Device
0	LD	X0
1	G.PVRD1	U2
		D0
8	END	

AD61 buffer memory

4	00H	I	00H
5	00H	I	01H

	b15 ~ b8		b7 ~ b0
D0	00H	I	00H
D1	00H	I	01H
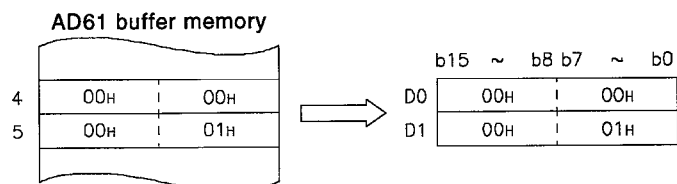
6. AD59(S1) CONTROL INSTRUCTIONS

AD59(S1) control instructions are instructions for reading and writing data to memory cards installed in an AD59(S1), and for sending data to connected printers.

The following table shows the AD59(S1) control instructions.

Category	Instruction Name	Description	Refer to
Send character data to printer	PRN	Sends designated number of character data to connected printer.	Section 6.1
	PR	Sends character data up to 00H code to connected printer.	Section 6.2
Reading /writing to memory card	GET	Reads data from installed memory card.	Section 6.3
	PUT	Writes data to installed memory card.	Section 6.4

POINTS

(1) When sending character data to the printer for the AD59(S1), the initial setting does not need to be made in the user program because the initial setting for the AD59(S1) is automatically conducted when the PC CPU is set to RUN.

(2) In the initial setting for the AD59(S1), set output to the printer in byte units.

Do not change this setting to word units in the user program.

If the user changes the printer output unit from byte to word units, it may not be possible to output normal data to the printer when executing PRN and PR instructions.

6.1 Sending to the Printer Any Number of Character Data

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant		Other
	Bit	Word		Bit	Word			K, H	$	
n	O	O		O				O	—	—
(S)	—	O		—				O	O	—
(D)	O	O		—				—	—	—

[Instruction symbol] [Execution condition]

PRN   ⌐⌐   Command ─┤ ├──[G.PRN | Un | n | (S) | (D)]─

PRN   ⌐   Command ─┤ ├──[GP.PRN | Un | n | (S) | (D)]─

Set Data

Set Data	Description	Data Type
Un	AD59(S1) head I/O number	16-bit binary
n	Number of characters to be output (no. of bytes)	
(S)	First number of device storing characters to be output	Character string
(D)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Sends to the printer connected to AD59(S1) n number of characters (no. of bytes) stored from the device number designated at (S) onwards. When output processing is completed, the bit device designated at (D) automatically turns ON after only 1 scan.
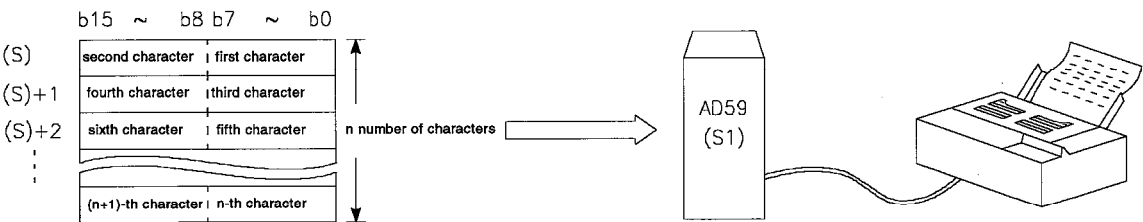
The situation when the characters "ABCDE" stored in D200 to D202 are sent to the printer is shown below.
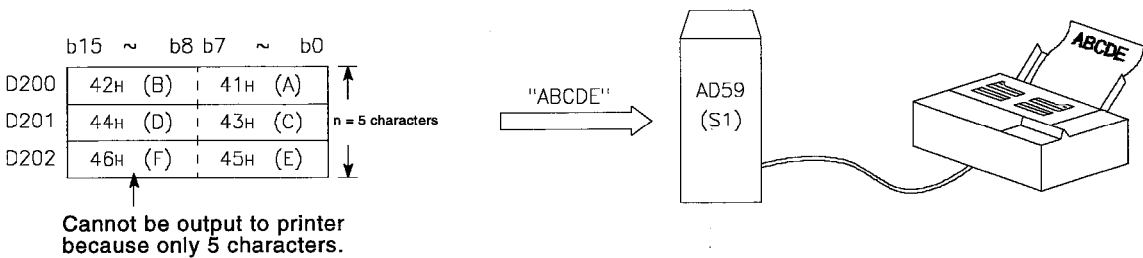
(2) AD59(S1) initial setting takes place automatically during CPU RUN.

(3) The number of characters (no. of bytes) that can be designated at n is 1 to 1024.

(4) Character data stored from the device number designated at (S) and onwards is set using ASCII codes 00H to FFH.

(5) The bit device designated at (D) automatically turns ON on execution of the END instruction of the scan completing the character output processing, and turns OFF at the END instruction of the next scan. Processed as a PRN instruction execution completed flag.

(6) Processing of output to the printer by PRN instructions is conducted in byte units.
Character data stored from the device number designated at (S) onwards is automatically rearranged so that it can be processed in byte units.

(7) PRN instructions can only be executed when AD59(S1) X(n+4) (FIFO memory empty) is ON.
If PRN instructions are run when X(n+4) is OFF, no processing is performed.
(The bit device designated at (D) will also not turn ON).

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
  • When the number of characters (no. of bytes) designated at n is outside the range 1 to 1024.   (Error code: 4100)
  • When from the device number designated at (S) onwards, the range of the number of characters designated at n exceeds the last device number of the applicable device.   (Error code: 4101)
  • When the character data stored from the device number designated at (S) onwards is less than n-characters.   (Error code: 4100)
  • When the module attempting access is not a special function module.   (Error code: 2110)
  • When AD59(S1) control instructions cannot be used for the designated module.   (Error code: 2112)
  • When the designated instruction name is illegal.   (Error code: 4300)
  • When the number of AD59(S1) control instruction devices is illegal.   (Error code: 4301)
  • When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) The following is an example program which, when X0 turns ON, outputs decimal values stored in D10 as characters to a printer connected to AD59 installed at I/O numbers X/Y080 to X/Y09F.
M1 turns ON on completion of execution of the instructions.

[Ladder mode]

```
     X0
0 ─┤├───────────────[ MOV   K6    D0  ]─    Designation of total number of digits in
   │                                         character string conversion.
   │
   │               ──[ MOV   K0    D1  ]─    Designation of total number of digits in the
   │                                         fraction part in character string conversion.
   │
   │         ──[ STR   D0   D10   D20 ]─    Converts the D10 BIN data to character string, and
   │                                         stores it from D20 onwards.
   │
   └─[ G.PRN   U8   K5   D20   M1 ]─
   │
18 ├────────────────────────────[ END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X0
1	MOV	K6
		D0
3	MOV	K0
		D1
5	STR	D0
		D10
		D20
9	G.PRN	U8
		K5
		D20
		M1
18	END	

```
                                              b15  ~  b8 b7  ~  b0
D10 │   -12345   │                      D20 │ 31H (1) │ 2DH (-) │
                                        D21 │ 33H (3) │ 32H (2) │
                  Total number             D22 │ 35H (5) │ 34H (4) │
DO  │     5     │  of digits    ──▷       D23 │      00H       │
D1  │     0     │  Number of digits in fraction part
```

Not output because only 5 characters.

"-1234"

AD59 (S1)
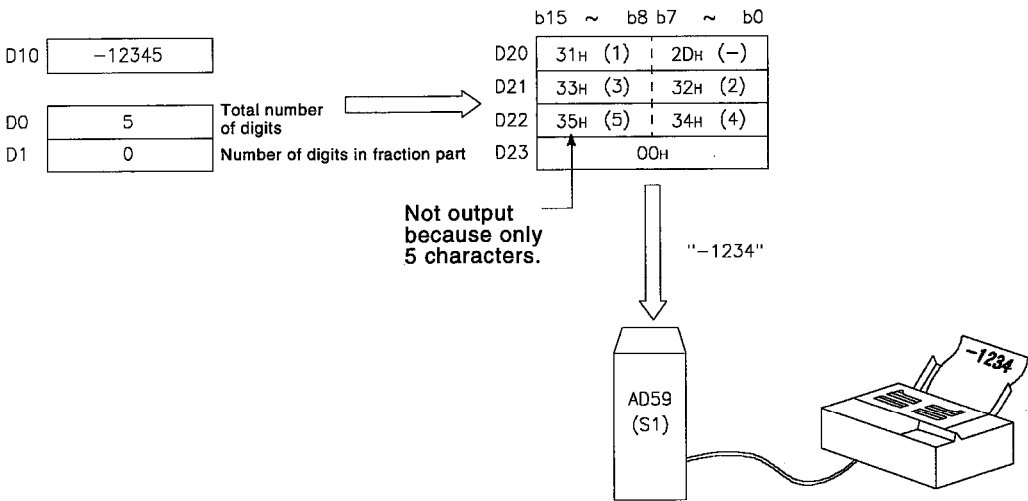
6.2 Sending to the Printer Characters Up to "00H" Code

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant $	Other
	Bit	Word		Bit	Word				
(S)	O	O		—				O	—
(D)	—	O		—				—	—

[Instruction symbol]   [Execution condition]

		Command					
PR	⊓	┤ ├		G.PR	Un	(S)	(D)

		Command					
PR	⌐	┤ ┆├		GP.PR	Un	(S)	(D)

Set Data

Set Data	Description	Data Type
Un	AD59(S1) head I/O number	16-bit binary
(S)	First number of device storing characters to be output	Character string
(D)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Sends to the printer connected to AD59(S1) characters from the device number designated in (S) to the number of the device storing "00H". When output processing is completed, the bit device designated at (D) automatically turns ON after only 1 scan.

b15 ~ b8 b7 ~ b0

(S)	second character ┆ first character
(S)+1	fourth character ┆ third character
(S)+2	sixth character ┆ fifth character
	00H ┆ n-th character

Shows the end of the character string.

AD59 (S1)

The situation when the characters "ABCDE" stored in D200 to D202 are sent to the printer is shown below.

b15 ~ b8 b7 ~ b0

(S)	42H (B) ┆ 41H (A)
(S)+1	44H (D) ┆ 43H (C)
(S)+2	00H ┆ 45H (E)

Shows the end of the character
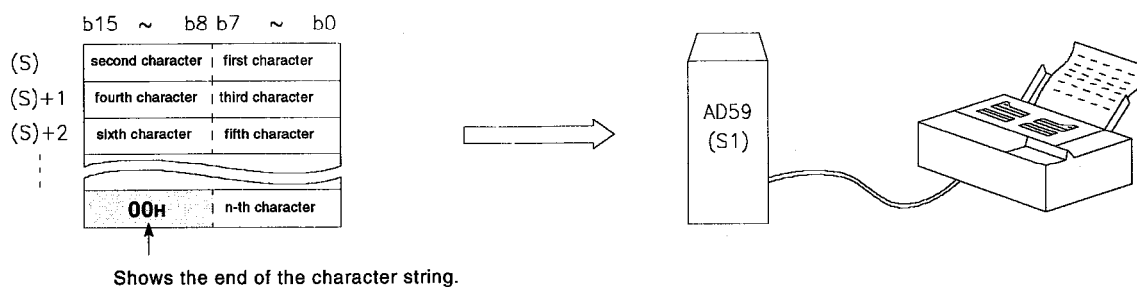
"ABCDE"
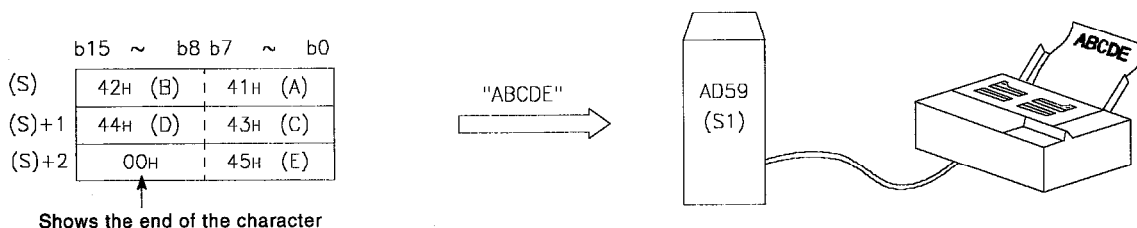
AD59 (S1)

(2) AD59(S1) initial setting takes place automatically during CPU RUN.

(3) Character data stored from the device number designated at (S) and onwards is set using ASCII codes 00H to FFH.

(4) The maximum number of characters that can be output at one time is 1024 characters.

(5) The bit device designated at (D) automatically turns ON on execution of the END instruction of the scan completing the character output processing, and turns OFF at the END instruction of the next scan.
It is processed as a PR instruction execution completion flag.

(6) Processing of output to the printer by PR instructions is conducted in byte units.
Character data stored from the device number designated at (S) onwards is automatically rearranged so that it can be processed in byte units.

(7) PR instructions can only be executed when AD59(S1) X(n+4) (FIFO memory empty) is ON.
If PR instructions are executed when X(n+4) is OFF, there is no operation. (The bit device designated at (D) will also not turn ON).

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
  • When the output number of characters exceeds 1024, or when there are 0 characters.   (Error code: 4100)
  • When "00H" is not stored between the first and last number of the device designated at (S).   (Error code: 4100)
  • When the module attempting access is not a special function module.
                                                          (Error code: 2110)
  • When AD59(S1) control instructions cannot be used for the designated module.   (Error code: 2112)
  • When the designated instruction name is illegal.   (Error code: 4300)
  • When the number of AD59(S1) control instruction devices is illegal.
                                                          (Error code: 4301)
  • When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) The following is an example program which, when X0 turns ON, outputs decimal values stored in D10 as characters to a printer connected to AD59 installed at I/O numbers X/Y080 to X/Y09F.
M1 turns ON on completion of execution of the instructions.

[Ladder mode]

```
  X0
0 ┤├─┬──────────────[ MOV  K6    D0  ]┤   Designation of total number of digits in
    │                                      character string conversion.
    ├──────────────[ MOV  K0    D1  ]┤   Designation of total number of digits in the fraction
    │                                      part in character string conversion.
    ├─────────[ STR  D0   D10   D20 ]┤   Converts the D10 BIN data to character string,
    │                                      and stores it from D20 onwards.
    └─────────[ G.PR U8   D20   M1  ]┤

15├───────────────────────────[ END ]┤
```

[List mode]

Step	Instruction	Device
0	LD	X0
1	MOV	K6
		D0
3	MOV	K0
		D1
5	STR	D0
		D10
		D20
9	G.PR	U8
		D20
		M1
15	END	

```
                                          b15  ~  b8 b7  ~  b0
D10 [    12345    ]                  D20 │ 31H (1) ¦ 20H (Space) │
                                     D21 │ 33  (3) ¦ 32  (2)     │
                          ⇒          D22 │ 35  (5) ¦ 34  (4)     │
D0  [     6     ]  Total number      D23 │      00H              │
                   of digits
D1  [     0     ]  Number of digits in fraction part

                                              "⌴12345"

                                           ⇓

                                      ┌────────┐
                                      │ AD59   │        [printer]
                                      │ (S1)   │
                                      └────────┘
```

6-7

6.3 Reading Data from Memory Card

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J⬜\⬜		Special Function Module U⬜\G⬜	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word			K, H	
(S)	—	O		—					—
(n)	O	O		O					—
(D)	—	O		—					—

[Instruction symbol]   [Execution condition]

Command

GET   ⎍   ┤├ | G.GET | Un | (S) | (n) | (D) |

Command

GET   ⌐   ┤├ | GP.GET | Un | (S) | (n) | (D) |

Set Data

Set Data	Description	Data Type
Un	AD59(S1) head I/O number	
(S)	First address number of the memory card storing the data to be read	16-bit binary
(n)	Number of words of data to be read	
(D)	First number of device storing data to be read	Device name

Function

(1) Reads (n) words of data from the address number designated at (S) of the memory card installed in AD59(S1), and stores it from the device number designated at (D) onwards.

AD59 memory card address

Designated area	Designated address	
0	0H ⸢ FFFH	0H ⸢ FFFH
1	0H ⸢ FFFH	1000H ⸢ 1FFFH
2	0H ⸢ FFFH	2000H ⸢ 2FFFH
3	0H ⸢ FFFH	3000H ⸢ 3FFFH

(S)   First address
(S)+1   Area number

Designated area, first address

+0	
+1	
+2	
⋮	n words
+n	

→

(D)	
(D)+1	
(D)+2	
⋮	
(D)+n	

(S) | 125H (first address) |
(S)+1 | 3 (area number) |

Area number 3

Memory card address

125H	432FH
126H	1234H
127H	8321H
128H	F000H
129H	1035H

When n=5 words →

(D)	432FH
(D)+1	1234H
(D)+2	8321H
(D)+3	F000H
(D)+4	1035H

(2) In reading the memory card data by GET instructions, area switching by the AD59(S1) I/O signal Y(n+10), Y(n+11) ON/OFF control is conducted automatically by internal processing, and so the user does not need to conduct area switching.

(3) The first address number designated at (S) is within the range "0 to FFFH".

(4) The area number designated at (S)+1 is within the range "0 to 3".

(5) The number of words designated at (n) is within the range "1 to 4096". However, reading from multiple areas is not possible.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the first address number designated at (S) exceeds the range "0 to FFFH".   (Error code: 4100)
- When the area number used at (S)+1 exceeds the range "0 to 3".   (Error code: 4100)
- When the number of words designated at (S) exceeds the range "1 to 4096".   (Error code: 4100)
- When the range of number of words designated at (n) from first address number designated at (S) exceeds the FFFH address.   (Error code: 4100)
- When the range of number of words designated at (n) from the device number designated at (D) exceeds the last device number of the applicable device.   (Error code: 4101)
- When the module attempting access is not a special function module.   (Error code: 2110)
- When AD59(S1) control instructions cannot be used for the designated module.   (Error code: 2112)
- When the designated instruction name is illegal.   (Error code: 4300)
- When the number of AD59(S1) control instruction devices is illegal.   (Error code: 4301)
- When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) The following is an example program which, when X0 turns ON, stores data from addresses 0H to D4H of memory card area number 1 of the AD59 installed at I/O numbers X/Y020 to X/Y03F, to D0 to D4.

[Ladder mode]

```
    X0
0 ──┤├──┬────────────────────[ MOV    K0      D10 ]─   Designates first address

         ├────────────────────[ MOV    K1      D11 ]─   Designates area number

         └─[ G.GET    U2    D10    D11    D0 ]─

13 ──────────────────────────────────[ END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X0
1	MOV	K6
		D0
3	MOV	K0
		D1
5	STR	D0
		D10
		D20
9	G.PR	U8
		D20
		M1
15	END	

D10	0	(first address)
D11	1	(area number)

```
┌── Memory card area 1 ──┐
│ 0H │   1534H   │                              D0 │   1534H   │
│ 1H │   4ABCH   │                              D1 │   4ABCH   │
│ 2H │   3021H   │           ⟹                 D2 │   3021H   │
│ 3H │   3BEFH   │                              D3 │   3BEFH   │
│ 4H │   FFBEH   │                              D4 │   FFBEH   │
└────────────────────────┘
```
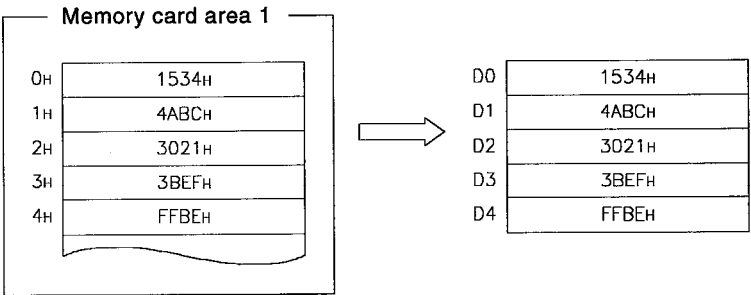
6.4 Writing Data to a Memory Card

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word			K, H	
(S1)	O	O				O			—
n	O	O				O			—
(S2)	—	O				—			—

[Instruction symbol] [Execution condition]

PUT ⎍ Command ─| |─ [G.PUT | Un | (S1) | n | (S2)]

PUT ⎍ Command ─| |─ [GP.PUT | Un | (S1) | n | (S2)]

Set Data

Set Data	Description	Data Type
Un	AD59(S1) head I/O number	16-bit binary
(S1)	First address number of the memory card to store the written data	
n	Number of words of data written	
(S2)	First device number of devices storing the written data	Device name

Function

(1) Writes n words of data stored from the device number designated by (S2) onward to address numbers starting with that designated by (S1) of the memory card installed in the AD59(S1).
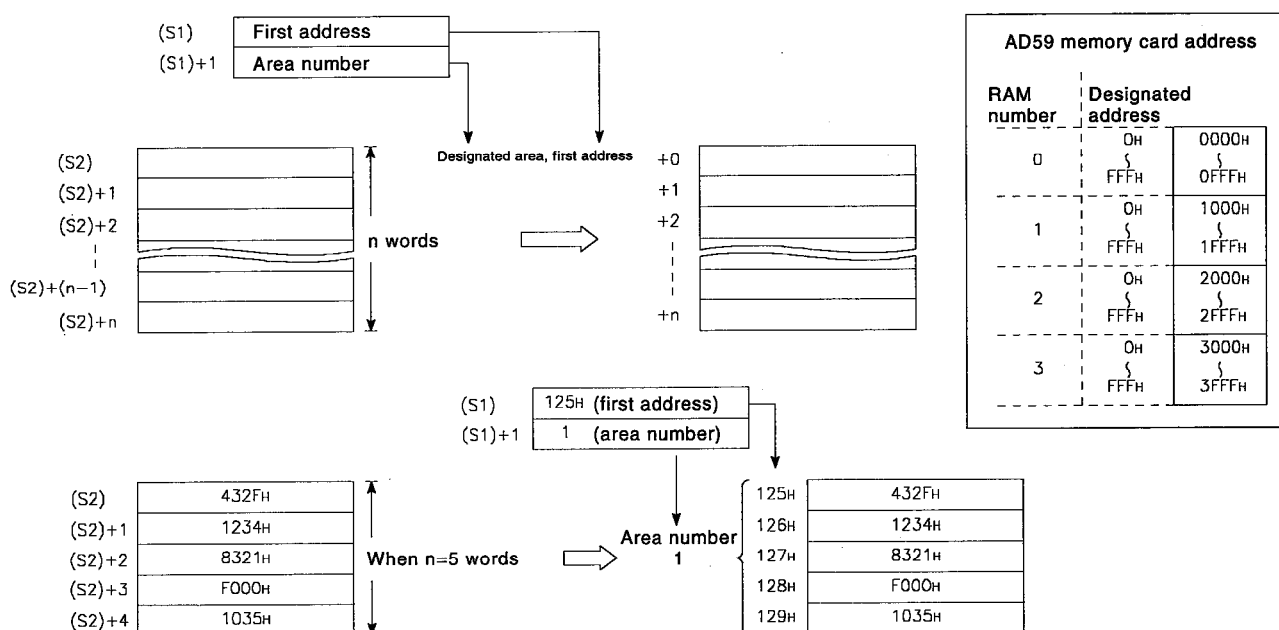
(2) Since, when data is written to a memory card using the PUT instruction, area switching is performed automatically in internal processing in accordance with the ON/OFF control of AD59(S1) I/O signals Y(n+10), Y(n+11), the user does not have to perform area switching.

(3) The first address number designated at (S) is within the range "0 to FFFH".

(4) The area number designated at (S)+1 is within the range "0 to 3".

(5) The number of words designated at n is within the range "1 to 4096". Note that it is not possible to write data to a destination that overlaps two or different area more areas.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- The address number designated by (S1) exceeds the range 0 to FFFH.
  (Error code: 4100)
- The area number designated by (S1) + 1 exceeds the range 0 to 3.
  (Error code: 4100)
- When the number of words designated at n exceeds the range 1 to 4096
  (Error code: 4100)
- When the range of number of words designated at (n) from first address number designated at (s) exceeds the FFFH address.
  (Error code: 4100)
- The range of the number of words designated by n, from the first device number designated by (S2), exceeds the final device number of the relevant device. (Error code: 4101)
- When the module attempting access is not a special function module.
  (Error code: 2110)
- When AD59(S1) control instructions cannot be used for the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AD59(S1) control instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, writes the data of D0 to D4 to addresses 0H to 4H of area number 1 of the AD59 memory card is shown here.

[Ladder mode]

```
    X0
 0 ─┤├─┬──────────────[ MOV   K0      D10 ]─  Designates first address

       ├──────────────[ MOV   K1      D11 ]─  Designates area number

       └─[ G.PUT    U2    D10    K5    D0  ]─

14 ─────────────────────────────[ END ]─
```
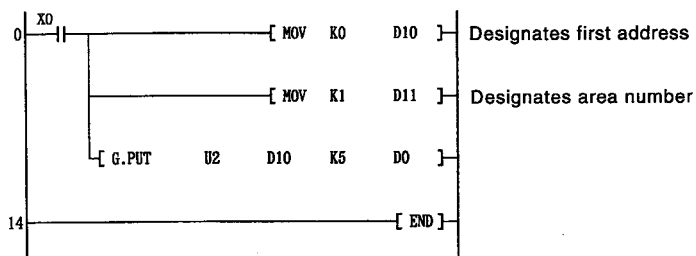
[List mode]

Step	Instruction	Device
0	LD	X0
1	MOV	K0
		D10
3	MOV	K1
		D11
5	G.PUT	U2
		D10
		K5
		D0
14	END	

D10	0	(first address)
D11	1	(area number)

					Memory card area 1	
D0	1534H			0H	1534H	
D1	4ABCH		⟹	1H	4ABCH	
D2	3021H			2H	3021H	
D3	3BEFH			3H	3BEFH	
D4	FFBEH			4H	FFBEH	
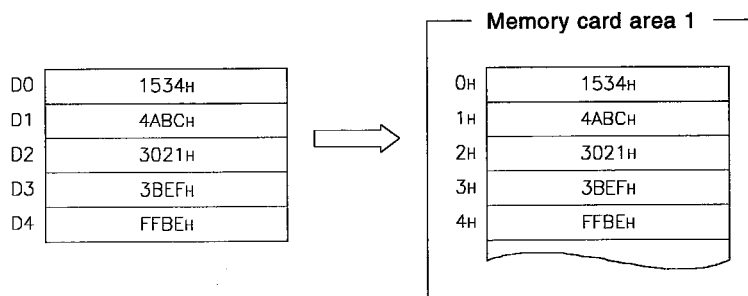
7. AJ71PT32-S3 CONTROL INSTRUCTIONS

AJ71PT32-S3 control instructions are instructions for conducting data communications with remote terminal modules connected to a MELSEC-NET/MINI-S3 data link system.
The following table shows the AJ71PT32-S3 control instructions.

Category	Instruction Name	Description	Refer to
Key input from operation box	INPUT	Reads keyed-in data from AJ35PT-OPB-M1/AJ35T-OPB-P1 operation boxes.	Section 7.1
Data send to AJ35PTF-R2	PRN	Transmits designated number of data to external device connected to AJ35PTF-R2 RS-232C interface module.	Section 7.2
	PR	Transmits all data up to 00H code to external device connected to AJ35PTF-R2 RS-232C interface module.	Section 7.3
Data receive from AJ35PTF-R2	INPUT	Reads data received from external device connected to AJ35PTF-R2 RS-232C interface module.	Section 7.4
Communication with devices conforming to MINI standard protocol	MINI	Conducts data communications with remote terminal module conforming to MINI standard protocol.	Section 7.5
Error reset	MINIERR	Resets error-detected status for remote terminal modules of the AJ71PT32-S3 master module.	Section 7.6
Reading communication processing status	SPBUSY	Reads status of communication processing with the remote terminal module by instructions.	Section 7.7
Forced stop of communication processing	SPCLR	Forcibly stops communication processing with remote terminal modules.	Section 7.8

POINTS

(1) AJ71PT32-S3 control instructions can only be executed with respect to an AJ71PT32-S3 set in the extension mode.
If the instructions are executed with an AJ71PT32-S3, or AJ71PT32 set in the I/O dedicated mode, an error occurs and no processing takes place.

(2) An initial data ROM must be installed in an AJ71PT32-S3 used with AJ71PT32-S3 control instructions.
An AJ71PT32-S3 cannot be controlled if the initial data ROM is not installed.
Furthermore, a message ROM must also be installed if an AJ35PT-OPB-M1/AJ35-OPB-P1 operation box is used.
See the SW0SGP-MINIP Operating Manual for details about creating the initial ROM and message ROM.

(3) In communications between AJ71PT32-S3 and AJ71PT32 and batch refresh type remote I/O modules, a program can be created without worrying about the buffer memory address by setting automatic refresh in the parameter settings.
When automatic refresh setting is performed, the batch refresh communication data buffer memory is communicated automatically.
Accordingly, it is possible to communicate with a batch refresh type remote I/O module using a device allocated to the communication data storage device.
(See the QnACPU User's Manual for details.)

(4) When conducting communications between AJ71PT32-S3 and remote terminal modules with AJ71PT32-S3 control instructions, before executing the instructions the AJ71PT32-S3 communications start signal (Y(n+28)) must be turned ON by the sequence program.
If the instructions are executed while the communications start signal is OFF, the instructions enter the waiting-for-processing status, and processing of the instructions is not completed.
When communications start signal (Y(n+28)) turns ON in the waiting-for-processing status, the instruction processing is executed.
However, when automatic refresh setting is set, the communications start signal (Y(n+28)) is automatically turned ON when the CPU is switched from STOP to RUN.

(5) Up to 8 AJ71PT32-S3s can be automatically refreshed by the QnACPU.
To use 9 or more AJ71PT32-S3s, use the "FROM" and "TO" instructions to exercise control from the user program.

7.1   Key Input from Operation Box

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J⬜\⬜		Special Function Module U⬜\G⬜	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word			K, H	
n1	—	O		—					—
(D1)	—	O		—					—
(D2)	O	O		—					—
n2	O	O		O					—

[Instruction Symbol]   [Execution condition]

INPUT   ⎍   ─┤ ├─ Command ─| G.INPUT | Un | n1 | (D1) | (D2) | n2 |─

INPUT   ⌐   ─┤ ├─ Command ─| GP.INPUT | Un | n1 | (D1) | (D2) | n2 |─

Set Data

Set Data	Description	Data Type
Un	AJ71PT32-S3 head I/O number	16-bit binary
n1	Permissible number of received data, and number of received data (word units)	
(D1)	First number of device storing key operation status	Device name
(D2)	Number of the bit device turning ON on completion of processing	Bit
n2	Remote terminal number of applicable operation box	16-bit binary

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1)   Out of the operation boxes connected to AJ71PT32-S3, fetches the key operation status from the operation box corresponding to the remote terminal number designated at n2, and stores it from the device number designated at (D1) onwards.
When the fetching and processing of the key operation status is completed, the bit device designated at (D2) is automatically turned ON after only 1 scan.
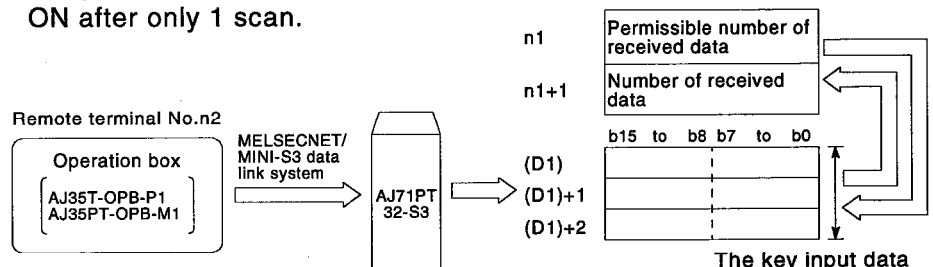
- Sets permissible number of received data to "3 and above".

- "3" stored for number of received data.

> **POINTS**
>
> (1) G(P).INPUT cannot be made into a pulse signal.
>
> (2) Execute G(P).INPUT when I/O signal read request is ON.

(2) In receive processing by INPUT instructions, the reading of data received in the AJ71PT32-S3 buffer memory, and I/O signal read request and read completed ON/OFF processing, is conducted automatically by internal processing, so the user does not need to conduct ON/OFF control of the I/O signals.

(3) As shown below, in the key-input data from the operation box, the status of each key in the operation box corresponds to a bit of the word data, and all the information is stored in 3 words.
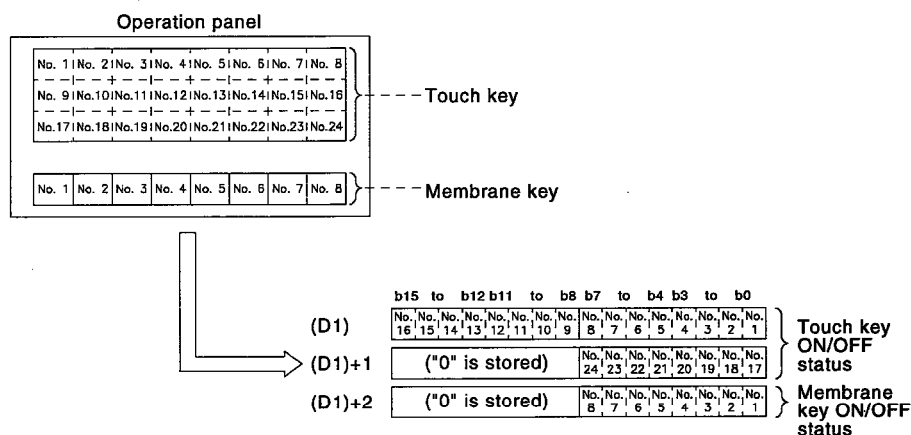
The status of bits in (D1) to (D1)+2 is as follows: "1" is stored in bits corresponding to ON keys, and "0" in bits corresponding to OFF keys.

(4) The permissible number of received data designated at n1 is the setting made to secure the range of devices for storing received data, and the data storage destination is the device numbers starting from the device number designated at (D1) and equivalent to the number of points designated at n1.
The number of data actually received is automatically stored in the n1+1 device number.
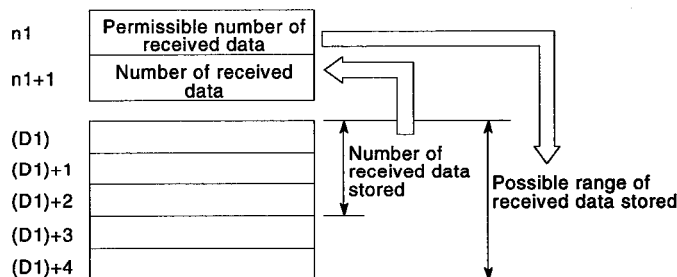
The number of data received due to key operation at the operation box is 3 words.
Accordingly, set the permissible number of data designated in n1 to "3 or more".
If "2 or less" is set, it is not possible to store the statuses for all key operations.
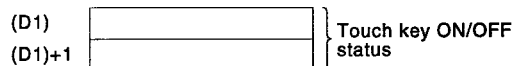
(ON/OFF status of membrane keys not stored)

(5) The bit device designated at (D2) automatically turns ON on execu-
tion of the END instruction of the scan completing receive processing,
and turns OFF at the END instruction of the next scan.
Used as an execution completion flag for INPUT instructions.

(6) The remote terminal number designated in n2 is the number
previously set in initial data ROM for the corresponding operation box.
The remote terminal number setting is conducted by the remote
terminal data setting in the SW0SGP-MINIP initial data setting.

(7) In reception of keyed-in data from the operation box, the ON/OFF
status of the key reads by the INPUT instruction is held until the
INPUT instruction is executed again.
If the ON/OFF statuses of multiple keys are changed between
executions of the INPUT instruction, only the ON/OFF status of the
first key changed is stored, and the ON/OFF status of keys changed
after that cannot be detected.

POINT

Communication with a remote terminal module connected to AJ71PT32-
S3 can only be conducted when the AJ71PT32-S3 communications
start signal (Y(n+28)) is ON.
If the instructions are executed when the communications start signal
(Y(n+28)) is OFF, no error occurs, but the bit device set for use as a
completion flag does not turn ON.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the range of the number of data designated at n2 from the device number designated at (D1) onwards exceeds the last device number of the corresponding device. (Error code: 4101)
- When INPUT instructions are executed in other than the operation panel or AJ35PTF-R2. (Error code: 4104)
- When the module attempting access is not a special function module. (Error code: 2110)
- When AJ35PTF-R2 control instructions cannot be used for the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ35PTF-R2 control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) The following is an example program which, when X0 turns ON, stores to D0-D2 the touch key and membrane key input status from an operation panel connected as remote terminal no.1 of the AJ71PT32-S3 installed at I/O numbers X/Y020 to X/Y04F.
M0 turns ON at instruction execution completion.

[Ladder mode]

```
     SM400  X40
  0  ─┤├───┤/├─────────────────────────( Y48 )─   Turns ON the AJ71PT32-S3 communication start.

     X0    X40  X41
  3  ─┤├───┤/├──┤├──────────────[MOV  K3  D0  ]─   Designates the number of input points

                          ─[G.INPUT  U2  D10  D0   M0  K1  ]─

 19  ─────────────────────────────────────[END ]─
```

[List mode]

Step	Instruction	Device
0	LD	SM400
1	ANI	X40
2	OUT	Y48
3	LD	X0
4	ANI	X40
5	AND	X41
6	MOV	K3
		D10
8	G.INPUT	U2
		D10
		D0
		M0
		K1
19	END	

Operation box

Remote terminal no. 1

DO	Touch key
D1	input status
D2	Membrane key input status

MELSECNET/MINI-S3 data link → AJ71PT 32-S3 →

7.2 No-Protocol Mode Data Send of Designated Number of Bytes

Set Data	Usable Devices									
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant		Other
	Bit	Word		Bit	Word			K, H	$	
n1	O	O			O			O	—	—
(S)	—	O			—			—	O	—
(D)	O	O			—			—	—	—
n2	O	O			O			O	—	—

[Instruction Symbol]   [Execution condition]

PRN   ⎍   Command
    ┤├── | G.PRN | Un | n1 | (S) | (D) | n2 |

PRN   ⌐   Command
    ┤├── | GP.PRN | Un | n1 | (S) | (D) | n2 |

Set Data

Set Data	Description	Data Type
Un	AJ71PT32-S3 head I/O number	16-bit binary
n1	Number of send data (words or bytes)	
(S)	Head number of device storing send data	Character string
(D)	Number of the bit device turning ON on completion of processing	Bit
n2	Remote terminal number of AJ35PTF-R2 sending data	16-bit binary

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Transmits data in no-protocol mode from AJ71PT32-S3 remote terminal No.n2 AJ35PTF-R2 to external device.
The transmitted data is set in n1 number of points from the device number designated at (S) onwards.
When send processing is completed, automatically turns ON the bit device designated at (D) after only 1 scan.
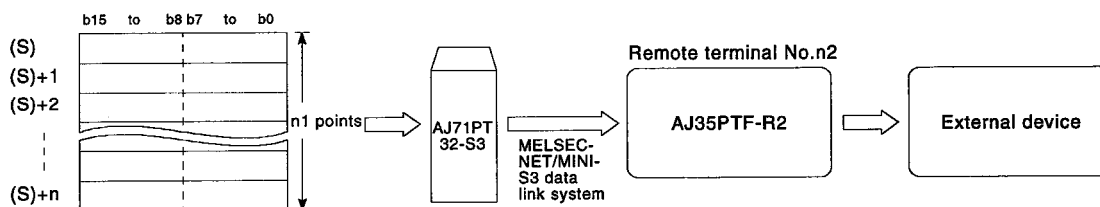
When n1=9bytes
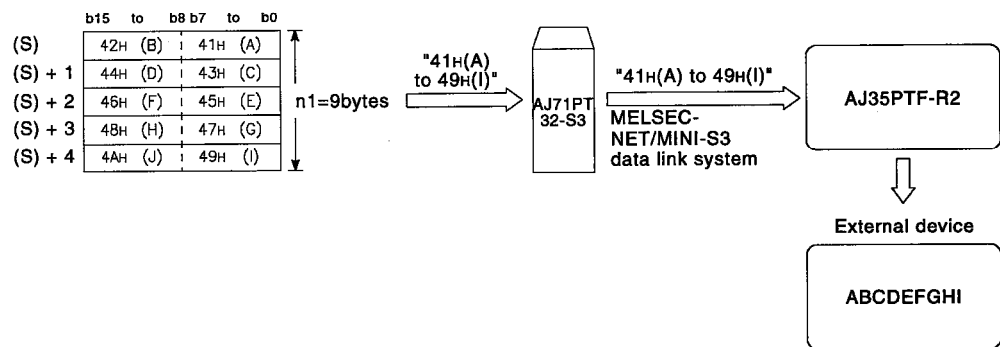
(2) In send processing by the PRN instruction, writing of transmission data to AJ71PT32-S3 buffer memory, and ON/OFF processing of I/O signal request to send/send completion are conducted automatically by internal processing, so do not need to be conducted by the user.

(3) The number of data designated at n1 can be set within the following ranges.

> Word unit.....1 to (TO area setting capacity - 1) words
> Byte unit......1 to (TO area setting capacity - 1) x 2 bytes

When using the AJ71PT32-S3, the data unit (word or byte), and the TO area must be set in advance in the AJ71PT32-S3.
- Data unit designation......... Set in the AJ71PT32-S3 buffer memory remote terminal parameter by TO instruction.
- TO area setting..................Set in the initial data ROM by remote terminal data setting in initial data setting using SW0SGP-MINIP.

(4) The unit of the number of data designated at n1, and the allowable setting range differ depending on the TO area setting in the AJ71PT32-S3 data unit designation (word/byte), and the initial data remote terminal setting.
Furthermore the send data set in (S) also differs depending on the word/byte unit.

● Word unit designation	● Byte unit designation

n1	5 (words)	

	b15 to b0
(S)	First word
(S) + 1	Second word
(S) + 2	Third word
(S) + 3	Fourth word
(S) + 4	Fifth word

n1	9 (bytes)	

	b15 to b8 b7 to b0
(S)	Second byte | First byte
(S) + 1	Fourth byte | Third byte
(S) + 2	Sixth byte | Fifth byte
(S) + 3	Eighth byte | Seventh byte
(S) + 4	| Ninth byte

(5) The remote terminal number designated in n2 is the number previously set in the initial data ROM for the corresponding AJ35PTF-R2. The remote terminal number setting is conducted by the remote terminal data setting in the SW0SGP-MINIP initial data setting.

(6) The bit device designated at (D) automatically turns ON on execution of the END instruction of the scan completing the transmission processing, and turns OFF at the END instruction of the next scan. Used as an execution completion flag for PRN instructions.

POINT
Communication with a remote terminal module connected to AJ71PT32-S3 can only be conducted when the AJ71PT32-S3 communications start signal (Y(n+28)) is ON.
If the instruction is executed when the communications start signal (Y28) is OFF, no error occurs, but the bit device set for use as a completion flag will not turn ON.
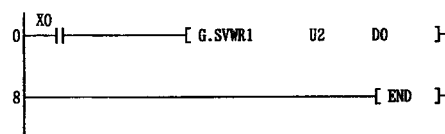
Operation Error

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
   • When the number of data designated at n1 exceeds the following range. (Error code: 4100)
      Word unit........... 1 to (TO area setting capacity - 1) words
      Byte unit........... 1 to (TO area setting capacity - 1) x 2 bytes
   • When the range of number of data designated at n1 from the device number designated at (S) onwards exceeds the last device number of the applicable device. (Error code: 4101)
   • When PRN instructions are executed for other than the AJ35PTF-R2. (Error code: 4104)
   • When the character string designated at (S) is smaller than the character string designated at n. (Error code: 4100)
   • When the module attempting access is not a special function module. (Error code: 2110)
   • When AJ71PT32-S3 control instructions cannot be used for the designated module. (Error code: 2112)

- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
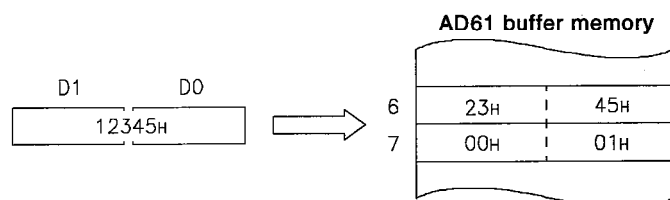- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, sends D0-D4 data in word units to an external device connected to a remote terminal no. 1 AJ35PTF-R2 of a AJ71PT32-S3 installed in I/O number X/Y020-X/Y04F is shown here. M0 turns ON at instruction execution completion.

[Ladder mode]

Sets once after CPU RUN in communication data word unit designation.

Turns ON the AJ71PT32-S3 communications start.
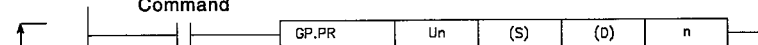
[List mode]

Step	Instruction	Device
0	LD	SM400
1	ANI	X40
2	TOP	H2
		K860
		K0
		K1
7	SET	Y48
8	LD	X0
9	ANI	X40
10	AND	X41
11	G.PRN	U2
		K5
		D0
		M0
		K1
22	END	

	b15 to b8 b7 to b0
D0	49H (I) ¦ 4DH (M)
D1	53H (S) ¦ 54H (T)
D2	42H (B) ¦ 55H (U)
D3	53H (S) ¦ 49H (I)
D4	49H (I) ¦ 48H (H)

5 words

"4DH(M) to 49H(I)"

AJ71PT 32-S3

MELSEC-NET/MINI-S3 data link system

"41H(M) to 49H(I)"

Remote terminal no. 1

AJ35PTF-R2

External device

MITSUBISHI

7.3 No-Protocol Mode Data Send Up until "00ʜ" Code

Set Data	Usable Devices									
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant		Other
	Bit	Word		Bit	Word			K, H	$	
(S)	—	O		—					O	—
(D)	O	O		—					—	—
n	O	O		O					—	—

[Instruction Symbol]   [Execution condition]

PR   ⎍⎍   Command ─| |─ ─[G.PR | Un | (S) | (D) | n]─

PR   _⎓_   Command ─| |─ ─[GP.PR | Un | (S) | (D) | n]─

Set Data

Set Data	Description	Data Type
Un	AJ71PT32-S3 head I/O number	16-bit binary
(S)	Head number of device storing send data	Character string
(D)	Number of the bit device turning ON on completion of processing	Bit
n	Remote terminal number of AJ35PTF-R2 sending data	Device name

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Sends data between the device number designated at (S) and the device number storing "00H", to an external device connected to the AJ35PTF-R2 whose remote terminal No. is "n", of the AJ71PT32-S3. When send processing is completed, automatically turns ON the bit device designated at (D) after only 1 scan.

Shows the end of data

	b15 to b8	b7 to b0
(S)	42H (B)	41H (A)
(S) + 1	44H (D)	43H (C)
(S) + 2	46H (F)	45H (E)
(S) + 3	48H (H)	47H (G)
(S) + 4	4AH (J)	00H

Shows the end of data

"41H(A) to 48H(I)"

AJ71PT32-S3

MELSEC-NET/MINI-S3 data link system

AJ35PTF-R2

External device

ABCDEFGHI
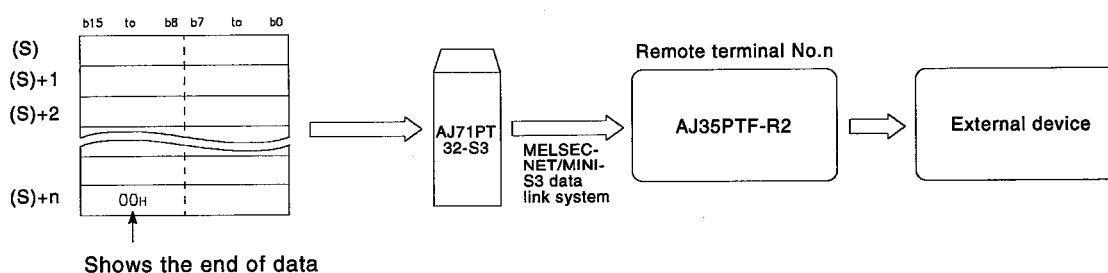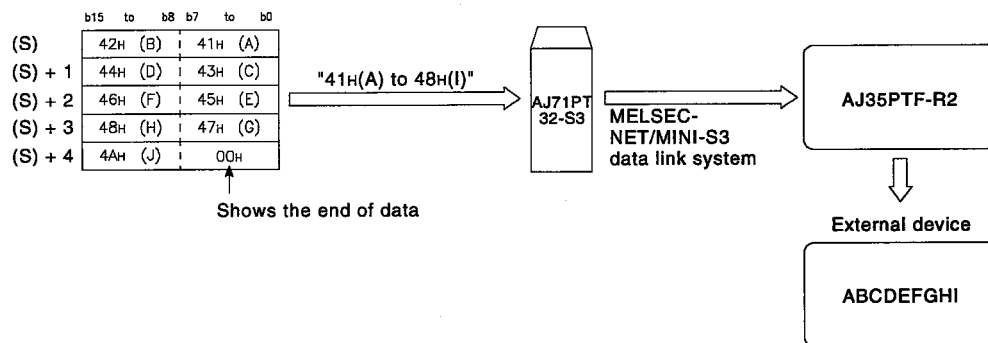
(2) In send processing by PRN instructions, writing of transmission data to AJ71PT32-S3 buffer memory, and ON/OFF processing of I/O signal request to send/send completion are conducted automatically by internal processing, so does not need to be conducted by the user.

(3) The number of data which can be sent at one time is shown below.

Word unit......... 1 to (TO area setting capacity-1) words
Byte unit.......... 1 to (TO area setting capacity-1) x 2 bytes

When using the AJ71PT32-S3, the data unit (word or byte), and the TO area must be set in advance in the AJ71PT32-S3.
- Data unit designation........ Set in the AJ71PT32-S3 buffer memory remote terminal parameter by TO instruction.
- TO area setting.................Set in the initial data ROM by remote terminal data setting in initial data setting using SW0SGP-MINIP.

(4) The send data set in (S) differs depending on the data unit designation (word/byte) set in AJ71PT32-S3.

● Word unit designation	● Byte unit designation
b15 to b0	b15 to b8 b7 to b0
(S) First word	(S) Second byte | First byte
(S) + 1 Second word	(S) + 1 Fourth byte | Third byte
(S) + 2 Third word	(S) + 2 Sixth byte | Fifth byte
(S) + 3 Fourth word	(S) + 3 Eighth byte | Seventh byte
(S) + 4 Fifth word	(S) + 4 Tenth byte | Ninth byte
(S) + 5 00H ← Data end designation	00H ← Data end designation
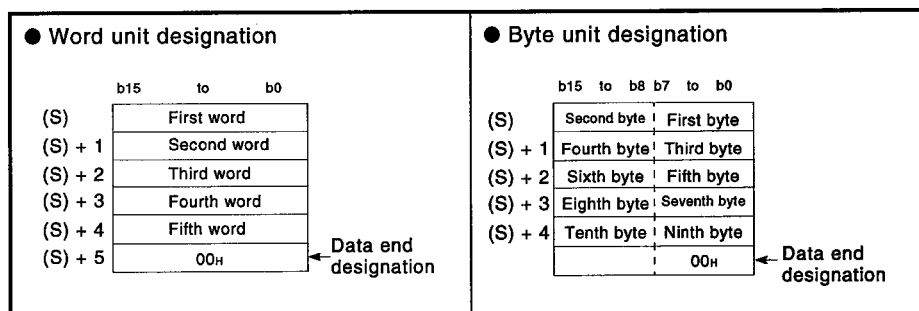
(5) The remote terminal number designated at n is the number previously set in the initial data ROM for the corresponding AJ35PTF-R2.
The remote terminal number setting is conducted by the remote terminal data setting in the SW0SGP-MINIP initial data setting.

(6) The bit device designated at (D) automatically turns ON on execution of the END instruction of the scan completing the transmission processing, and turns OFF at the END instruction of the next scan.
Used as an execution completion flag for PRN instructions.

POINT

Communication with a remote terminal module connected to AJ71PT32-S3 can only be conducted when the AJ71PT32-S3 communications start signal (Y(n+28)) is ON.
If the instructions are executed when the communications start signal (Y28) is OFF, no error occurs, however the bit device set for use as a completion flag will not turn ON.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- No "00H" code is stored between the device number designated at (S) and the final device number of the relevant device.
                                                                (Error code: 4100)
- When the number of send data is outside the following range.
                                                                (Error code: 4100)
    Word unit...... 1 to (TO area setting capacity-1) words
    Byte unit....... 1 to (TO area setting capacity-1) x 2 bytes

- When PR instructions are executed for other than the AJ35PTF-R2.
                                                                (Error code: 4104)
- When the module attempting access is not a special function module.
                                                                (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used in the designated module.   (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal.   (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, sends the data between D0 and 00H in word units to the external device connected to the AJ35PTF-R2 whose remote terminal No. is "1" of the AJ71PT32-S3 which is installed at I/O number X/Y020-X/Y04F is shown here.
M0 turns ON at instruction execution completion.

[Ladder mode]

```
       SM400  X40        P
    0  ─┤├───┤/├────[TO   H2   K860   K0     K1  ]─   Sets once after CPU RUN in the communication data
                │                                      word unit designation.
                │                              
                └──────────────────────[SET   Y48 ]─   Turns ON the AJ71PT32-S3 communications start.

       X0    X40   X41
    8  ─┤├───┤/├───┤├─[G.PR  U2   D0    M0     K1  ]─

   19  ──────────────────────────────────────[END ]─
```

[List mode]

Step		Instruction	Device
0		LD	SM400
1		ANI	X40
2		TOP	H2
			K860
			K0
			K1
7		SET	Y48
8		LD	X0
9		ANI	X40
10		AND	X41
11		G.PR	U2
			D0
			M0
			K1
19		END	

```
        b15   to   b8 b7   to   b0
   D0  │ 45H  (E)  │  4DH  (M) │
   D1  │ 53H  (S)  │  4CH  (L) │        "4DH(M) to 43H(C)"      AJ71PT    MELSECNET/MINI-        AJ35PTF-R2
   D2  │ 43H  (C)  │  45H  (E) │   ═══════════════════>         32-S2    S3 data link system
   D3  │       00H            │                                          "4DH(M) to 43H(C)"
```

Remote terminal No. 1

External device

MELSEC

7.4　No-Protocol Mode Data Receive

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	—	O		—					—
(D1)	—	O		—					—
(D2)	O	O		—					—
n2	O	O		O					—

[Instruction Symbol]　　[Execution condition]

INPUT　　⊓⊔　　┤├─　Command
G.INPUT | Un | n1 | (D1) | (D2) | n2

INPUT　　⌐　　┤├─　Command
GP.INPUT | Un | n1 | (D1) | (D2) | n2

Set Data

Set Data	Description	Data Type
Un	AJ71PT32-S3 head I/O number	16-bit binary
n1	Permissible number of received data, and number of received data	
(D1)	Head number of device storing received data	Device name
(D2)	Number of the bit device turning ON on completion of processing	Bit
n2	Remote terminal number of AJ35PTF-R2 receiving data	16-bit binary

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Receives data, within the permissible range designated at n1, from the external device connected to AJ71PT32-S3 remote terminal No.n2 AJ35PTF-R2, and stores data from device number designated at (D1) onwards.
When receive processing is completed, automatically turns ON bit device designated at (D2) after only 1 scan.

Stores "00H" in (D1)+(n+1) only when permissible number of received data ≥ number of received data.
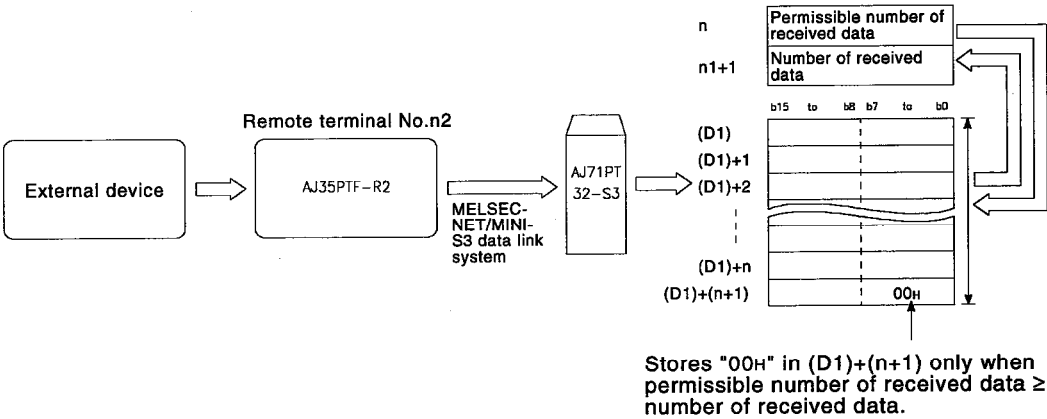
> **POINTS**
>
> (1) The G(P).INPUT command cannot be made into a pulse.
>
> (2) Execute G(P).INPUT when I/O signal read request is ON.
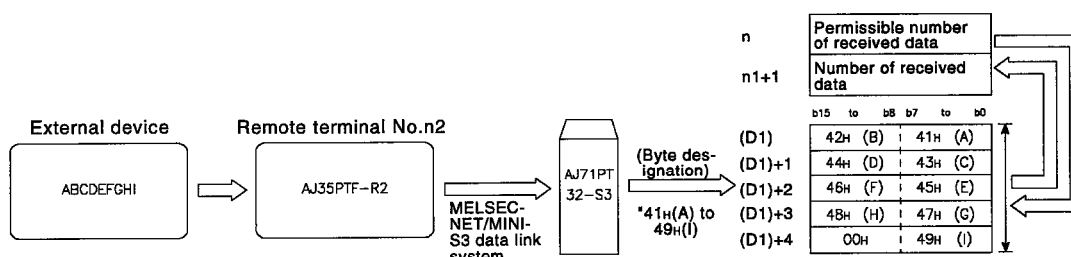
(2) In receive processing by INPUT instructions, reading of data received in the AJ71PT32-S3 buffer memory, and ON/OFF processing of request to read I/O signal and read completed are conducted automatically by internal processing, and so do not need to be conducted by the user.

(3) The number of data that can be received in one receive processing is shown below.

Word unit.............Max. (FROM area setting capacity - 1) words
Byte unit.............Min. (FROM area setting capacity - 1) x 2 bytes

When using the AJ71PT32-S3, the data unit (word or byte), and the FROM area must be set in advance in the AJ71PT32-S3.

- Data unit designation........... Set in the AJ71PT32-S3 buffer memory remote terminal parameter by TO instruction.
- FROM area setting............... Set in the initial data ROM by remote terminal data setting in initial data setting using SW0SGP-MINIP.

(4) The permissible number of received data designated at n1 is the setting made to secure the range of devices for storing received data, and the data storage destination is the device numbers starting from the device number designated at (D1) and equivalent to the number of points designated at n1.
The number of data actually received is automatically stored in n+1.
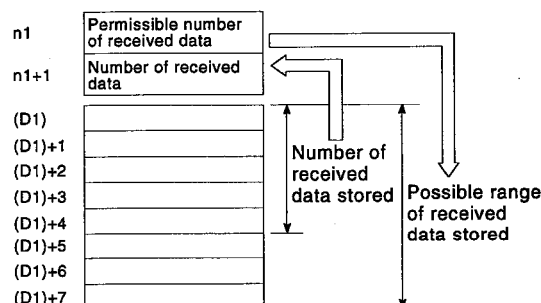
(5) When the number of data actually received is larger than the permissible number of received data designated at n1, only the permissible number of received data is stored, and the remaining received data is discarded.

(6) The n1 and n1+1 setting value and storage value units differ depending on the AJ71PT32-S3 data unit designation (word/byte).
The data stored in (D1) also differs depending whether the word or byte unit is designated.
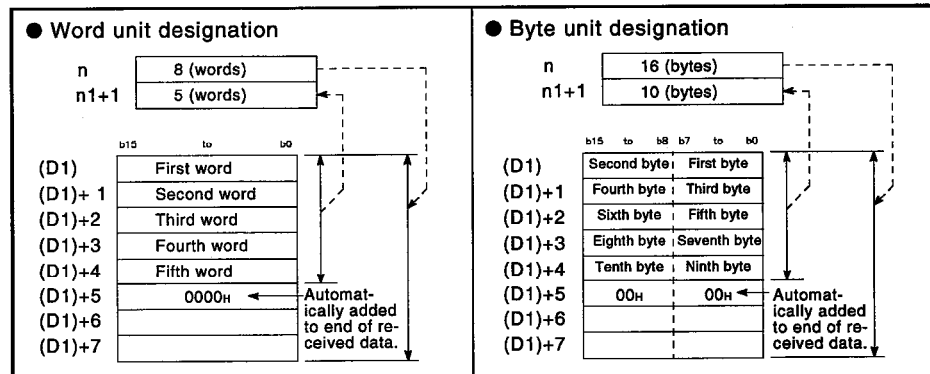
● Word unit designation		● Byte unit designation	
n	8 (words)	n	16 (bytes)
n1+1	5 (words)	n1+1	10 (bytes)

	b15 to b0			b15 to b8 b7 to b0
(D1)	First word		(D1)	Second byte | First byte
(D1)+ 1	Second word		(D1)+1	Fourth byte | Third byte
(D1)+2	Third word		(D1)+2	Sixth byte | Fifth byte
(D1)+3	Fourth word		(D1)+3	Eighth byte | Seventh byte
(D1)+4	Fifth word		(D1)+4	Tenth byte | Ninth byte
(D1)+5	0000H ← Automatically added to end of received data.		(D1)+5	00H | 00H ← Automatically added to end of received data.
(D1)+6			(D1)+6	
(D1)+7			(D1)+7	

(7) In byte unit designation, depending on whether the received data is odd or even numbered, the "00H" code added to the end of the received data is stored as below.

Received data is an odd number......... Stored in the higher bytes of the last device number storing received data.

Received data is an even number....... Stored in the device number subsequent to the last device number storing received data.
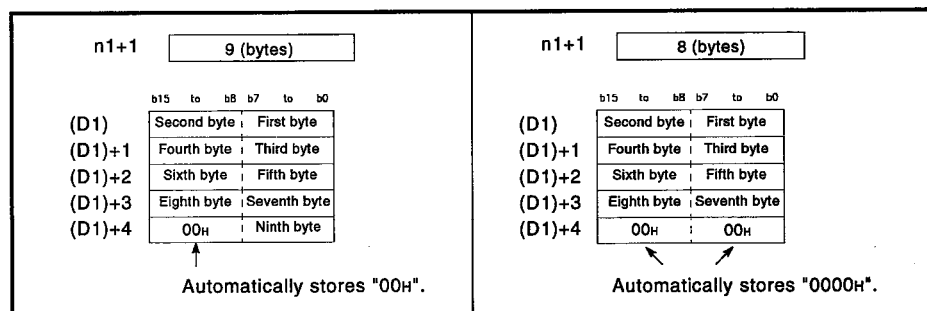
n1+1	9 (bytes)	n1+1	8 (bytes)

	b15 to b8 b7 to b0		b15 to b8 b7 to b0
(D1)	Second byte | First byte	(D1)	Second byte | First byte
(D1)+1	Fourth byte | Third byte	(D1)+1	Fourth byte | Third byte
(D1)+2	Sixth byte | Fifth byte	(D1)+2	Sixth byte | Fifth byte
(D1)+3	Eighth byte | Seventh byte	(D1)+3	Eighth byte | Seventh byte
(D1)+4	00H | Ninth byte	(D1)+4	00H | 00H

Automatically stores "00H".   Automatically stores "0000H".

(8) When the number of received data is higher than the permissible number of received data, the "00H" code which is added to the end of the received data is stored in the next device number to the device number of the permissible number of received data.

● Word unit designation

| n | 5 (words) |
| n1+1 | 7 (words) |

	b15 to b0
(D1)	First word
(D1)+1	Second word
(D1)+2	Third word
(D1)+3	Fourth word
(D1)+4	Fifth word
(D1)+5	0000H

● Byte unit designation

| n | 10 (bytes) |
| n1+1 | 15 (bytes) |

	b15 to b8	b7 to b0
(D1)	Second byte	First byte
(D1)+1	Fourth byte	Third byte
(D1)+2	Sixth byte	Fifth byte
(D1)+3	Eighth byte	Seventh byte
(D1)+4	Tenth byte	Ninth byte
(D1)+5	00H	00H
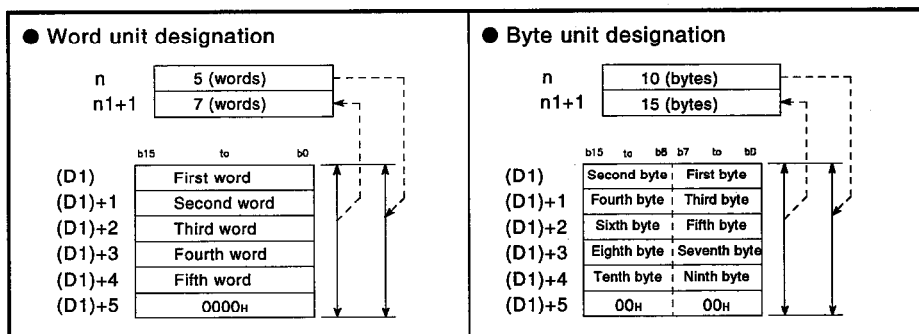
(9) The remote terminal number designated in n2 is the number previously set in the initial data ROM for the corresponding AJ35PTF-R2. The remote terminal number setting is conducted by the remote terminal data setting in the SW0SGP-MINIP initial data setting.

(10) The bit device designated at (D2) automatically turns ON on execution of the END instruction of the scan completing receive processing, and turns OFF at the END instruction of the next scan.
Used as an execution completion flag for INPUT instructions.

(11) In AJ35PTF-R2 data reception, received data is kept until receive processing is conducted due to an INPUT instruction.
Accordingly, external devices cannot transmit the next data to the same AJ35PTF-R2.

POINT

Communication with a remote terminal module connected to AJ71PT32-S3 can only be conducted when the AJ71PT32-S3 communications start signal (Y(n+28)) is ON.
If the instructions are executed when the communications start signal (Y(n+28)) is OFF, no error occurs, but the bit device set for use as a completion flag does not turn ON.
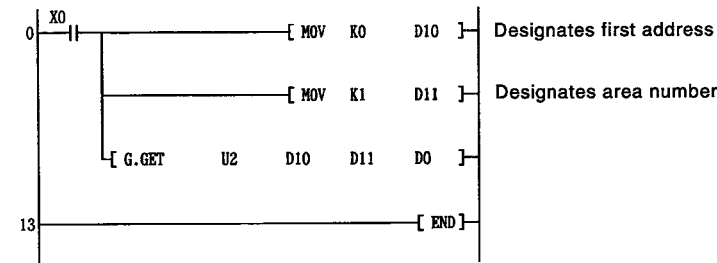

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the range of number designated at n1 from the device number designated from (D1) onwards exceeds the last device number of the applicable device. (Error code: 4101)
- When INPUT instructions are executed for other than AJ35PTF-R2 and operations box. (Error code: 4104)
- When the module attempting access is not a special function module. (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used in the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, receives 5-word data from the external device connected to remote terminal no.1 AJ35PTF-R2 of AJ71PT32-S3 installed in I/O number X/Y020-X/Y04F, and stores the data to D0-D4.

[Ladder mode]
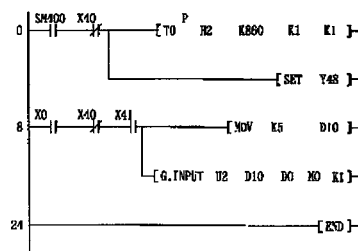
Sets once after CPU RUN in the communication data word unit designation.

Turns ON the AJ71PT32-S3 communications start.

Designates the number of receiving points.

[List mode]

Step	Instruction	Device
0	LD	SM400
1	ANI	X40
2	TOP	H2
		K860
		K1
		K1
7	SET	Y48
8	LD	X0
9	ANI	X40
10	AND	X41
11	MOV	K5
		D10
13	G.INPUT	U2
		D10
		D0
		M0
		K1
24	END	

		Permissible number of received data
D10		
D11		Number of received data

Stored automatically
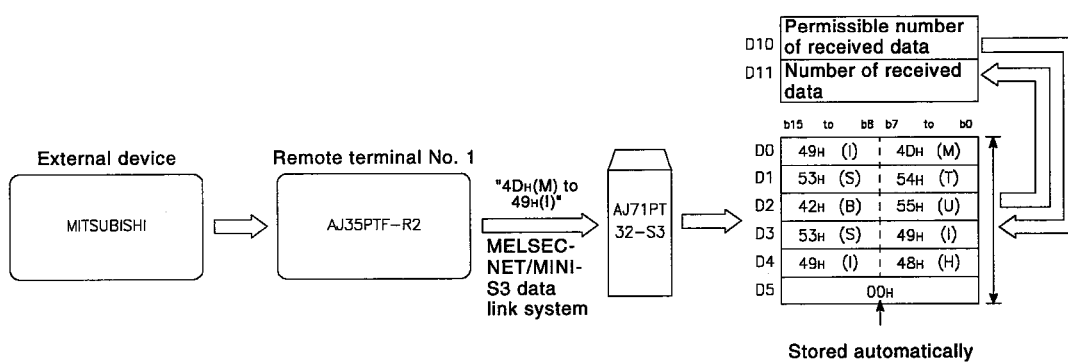
7.5 Remote Terminal Module Communication

Set Data	Usable Devices							
	Internal Device (System, User)		**File Register**	**MELSECNET/10 Direct J□\□**		**Special Function Module U□\G□**	**Index Register Zn**	**Constant K, H**	**Other**
	Bit	**Word**		**Bit**	**Word**				
n1	O	O				O			—
n2	O	O				O			—
(D1)	—	O				—			—
(S)	—	O				—			—
n3	O	O				O			—
(D2)	O(X, Y possible)	O				—			—
(D3)	O(Y only)	—				—			—

[Instruction Symbol]   [Execution condition]

MINI

Command

				G.MINI	Un
FROM	n1	n2	(D1)	n3	
		PRC	(D2)	(D3)	

TO	n1	n2	(S)	n3
		PRC	(D2)	(D3)
			G.MINIEND	Un

MINI

Command

				G.MINI	Un
FROMP	n1	n2	(D1)	n3	
		PRC	(D2)	(D3)	

TOP	n1	n2	(S)	n3
		PRC	(D2)	(D3)
			G.MINIEND	Un
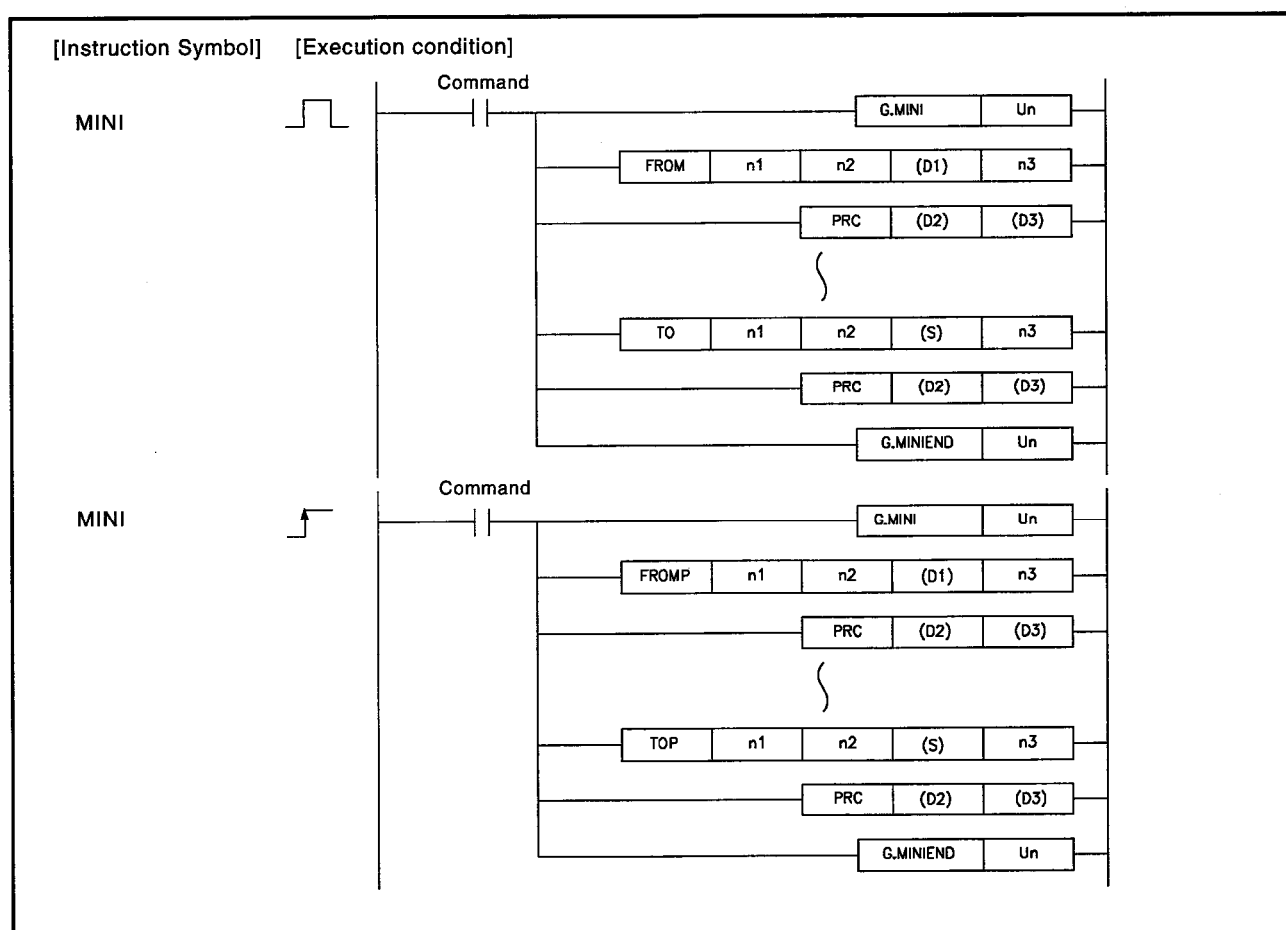
Set Data

Set Data	Description	Data Type
Un	AJ71PT32-S3 head I/O number	16-bit binary
n1	Module number of communicating remote terminal module	
n2	First address number of area (buffer memory) conducting remote terminal module communication	
(D1)	First number of device storing data to be read	Device name
(S)	First device number of devices in which data to be written is stored.	
n3	Number of points of data subject to reading/writing	16-bit binary
(D2)	Number of the bit device turning ON on completion of processing	Bit
(D3)	Any dummy output (Y) device number (no operation)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Out of the remote terminal modules connected to AJ71PT32-S3, conducts communications with remote terminal module designated at n1. MINI standard protocol conforming remote terminal modules can communicate by MINI instructions.

(2) In communications with remote terminal modules by MINI instructions, the AJ71PT32-S3 request to send/send completed signal, request to read/read completed signal, and buffer memory address are automatically controlled, and so do not need to be set by the user.

(3) MINI instructions are used in combination with FROM/TO instructions and PRC instructions, and the group of instructions must always be ended by a MINIEND instruction.
Between MINI-MINIEND instructions, a maximum of 32 FROM/TO instructions can be described.
PRC instructions are used as FROM/TO instructions.
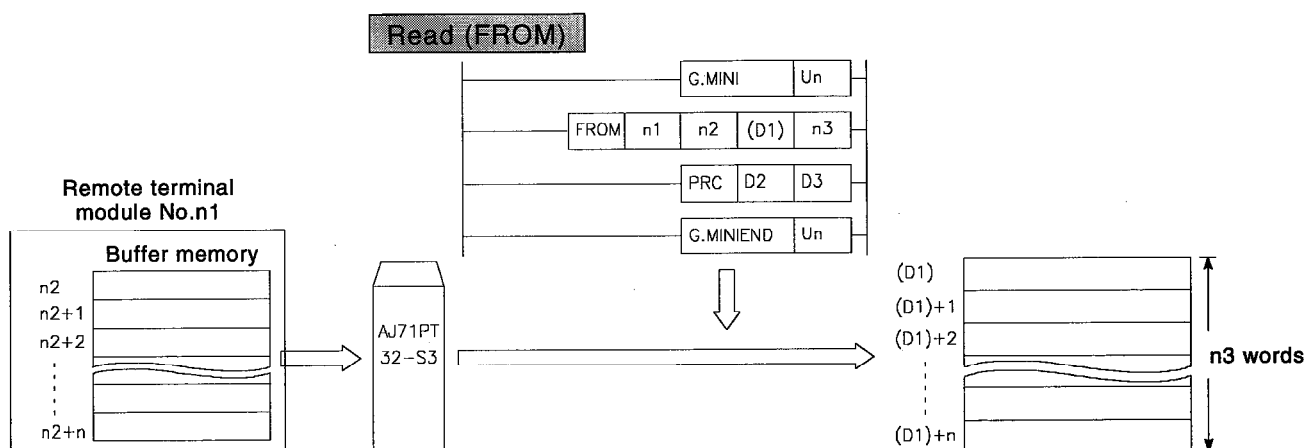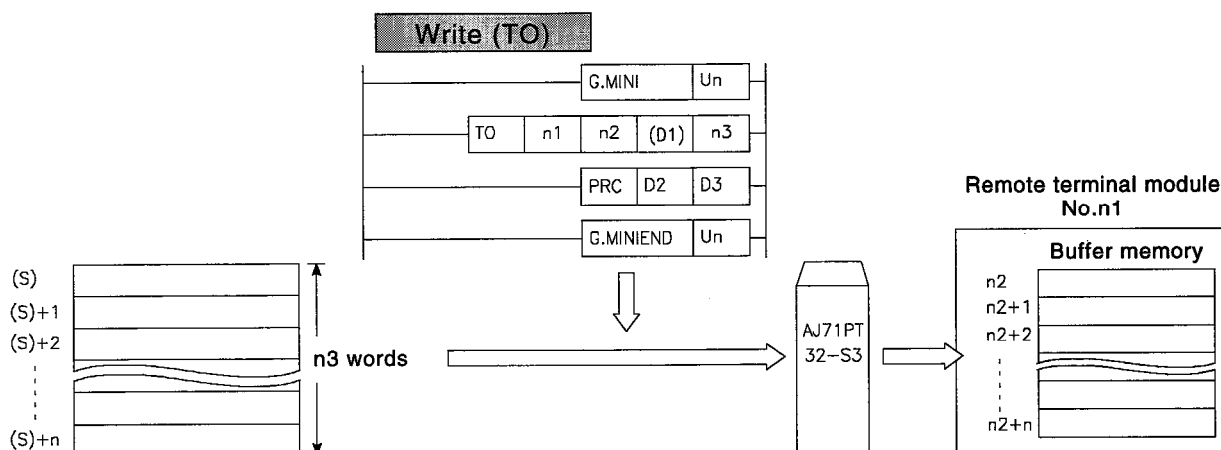
(4) The remote terminal module number designated at n1 sets allocated module numbers for remote terminal modules conducting communications.
The remote terminal module number is the allocated number in the AJ71PT32-S3 initial data ROM setting for each remote terminal module.

(5) The buffer memory designated in n2 designates the head number of the buffer memory address of the remote terminal module which conducts communications.
The communicating area is the range of the number of points designated at n3 from the address number designated at n2 onwards.
See the User's Manual for each remote terminal module for details on buffer memory addresses.

(6) The device number designated at (D1) designates the first number of the device storing the read data.
The read data is stored in the range of the number of points designated at n3 from the device number designated at (D1) onwards.

(7) The data or device number designated at (S) designates the data written to the remote terminal module, as well as the first number of the device storing data written to the remote terminal module.
If a constant is designated, the designated value is written to the designated address number of the remote terminal module onwards in the number of points designated in n3.
When a device number is designated, the data stored from the designated device number onwards, within the range of points designated at n3, is written to the designated address number and onwards of the remote terminal module.

(8) The number of points designated at n3 designates the number of points for which reading/writing is to be performed.

(9) The bit device designated at (D2) is used as a communications processing completion flag.
Automatically turns ON on execution of the END instruction for the scan completing the communication processing with the applicable remote terminal module, and automatically turns OFF at the END instruction of the next scan.
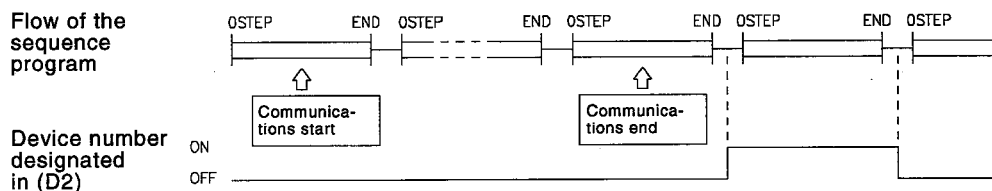
(10) Items designated at (D3) are meaningless (no operation) dummy information, so set any output device number.
Communication processing by MINI instructions with remote terminal modules can communicate simultaneously for all AJ71PT32-S3s with a maximum of 32 remote terminal modules.

(11) The method of communication, as shown below, is to conduct registration in the communication request registration area by executing FROM/TO instructions, and then conduct communication processing in accordance with the registered contents.
Execution of instructions is completed by conducting registration in the communication request registration area, and executing the following instructions.
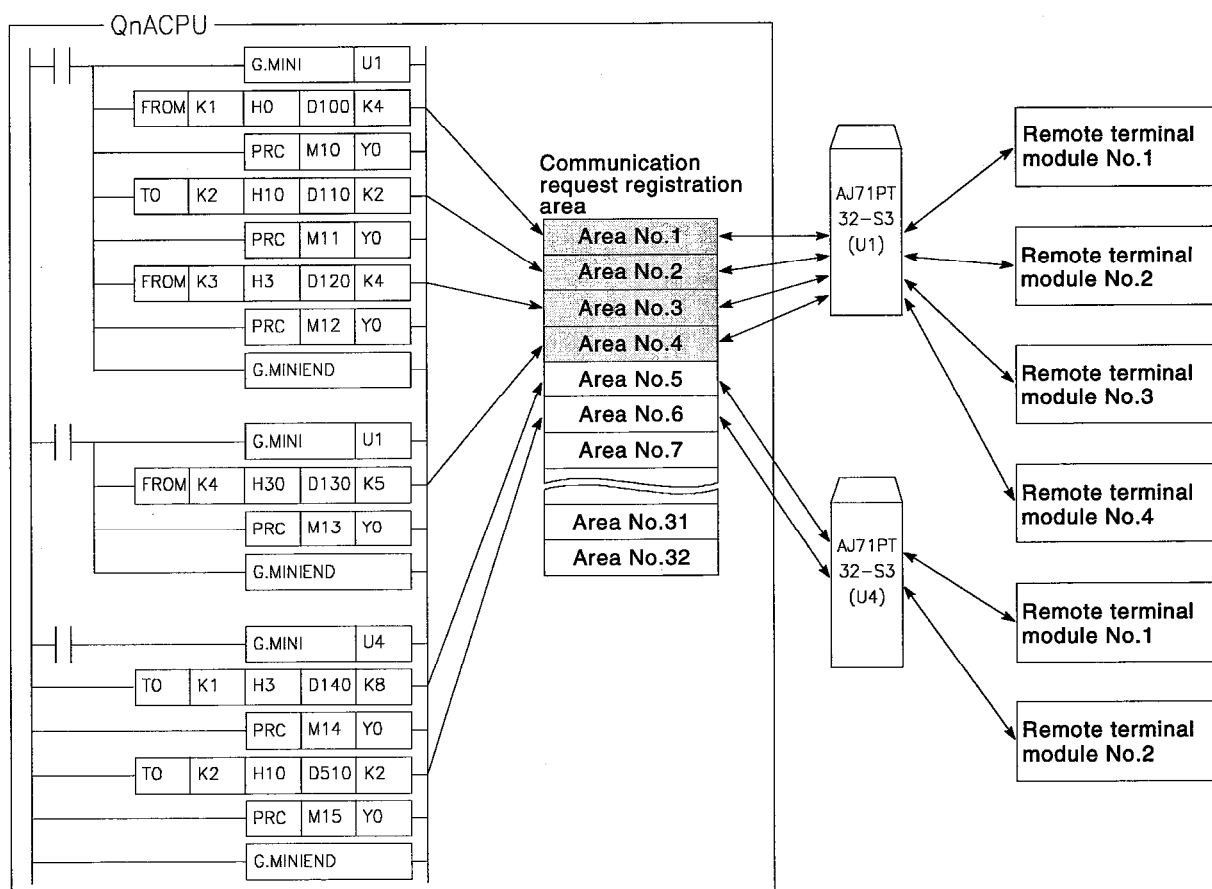
(12) During registration in the communication request registration area, the device number of the bit device designated at (D2) is checked, and the registration will not be processed if the same device number is already being used in processing.

(13) When processing in accordance with the registered contents is completed, the device designated at (D2) is turned ON, and the data is deleted from the communication request registration area.

(14) The communication request registration area can register a maximum of 32 communication requests.
If the number of registrations exceeds 32, an error occurs and no registering takes place.

(15) The status of registering to the communication request registration area can be confirmed by means of SM713 and SD713.
    SM713.................Turns ON when there is no registrable area in the communication request registration area, and automatically turns OFF when there is a vacancy in the area.
    SD713..................Stores the remaining number of registrations which can be made in the communication request registration area.
SM713 and SD713 can be used in handshake signals when executing instructions.

(16) When instructions are executed with respect to remote terminal modules during communication, processing is conducted for the same remote terminal module following completion of online processing.

(17) See the User's Manual for each remote terminal module conforming to MINI standard protocol for details about the method of use of MINI instructions, and about the programming method.

POINT
Communication with a remote terminal module connected to AJ71PT32-S3 can only be conducted when the AJ71PT32-S3 communications start signal (Y(n+28)) is ON. If the instructions are executed when the communications start signal is OFF, no error occurs, however the bit device set for use as a completion flag will not turn ON.

Operation Errors

(1) In the following cases an operation errors occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When MINI instructions are executed for modules apart from AJ71PT32-S3. (Error code: 4104)
- When the communicating node destination module is not a remote terminal module conforming to MINI standard protocol. (Error code: 4104)
- When, in the FROM/TO instructions, the range of numbers of points designated at n3 from the device number designated at (D1) and (S) onwards exceeds the last device number of the applicable device (Error code: 4101)
- When, for FROM instructions, the number of points designated at n3 is greater than each remote terminal module receive area set value in the AJ71PT32-S3 initial data settings minus 1. (Error code: 4100)
- When any of the remote terminal module receive area set values in the AJ71PT32-S3 initial data settings is less than 3 words. (Error code: 4100)
- When, for a TO instruction, the number of points designated at n3 is greater than each of the remote terminal module send area set values in the AJ71PT32-S3 initial data settings minus 3. (Error code: 4100)
- When the communication request registration area is full and cannot conduct registration when FROM/TO instructions are executed. (Error code: 4100)
- When the module attempting access is not a special function module. (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used in the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

7.6 Remote Terminal Module Error Reset

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
—	—								

[Instruction Symbol]　　[Execution condition]

```
                          Command
MINIERR      ┌─┐┌─      ├──┤├───────────────────[ G.MINIERR │ Un ]

                          Command
MINIERR      ──┐┌─      ├──┤├───────────────────[ GP.MINIERR │ Un ]
```

Function

(1) Resets the error-detected status for AJ71PT32-S3 remote terminal module.

(2) By the error-detected status reset, automatically turns ON the AJ71PT32-S3 I/O number remote terminal module error-detected reset signal (Y24).
When error-detected status reset is completed, automatically turns OFF the error-detected reset signal (Y24).

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
 • When the module attempting access is not a special function module. (Error code: 2110)
 • When AJ71PT32-S3 control instructions cannot be used in the designated module. (Error code: 2112)
 • When the designated instruction name is illegal. (Error code: 4300)
 • When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
 • When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which resets the remote terminal error detection of the AJ71PT32-S3 installed in I/O number X/Y020-X/Y04F is shown here.

[Ladder mode]

```
    SM400  X40   X41
0   ├─┤├──┤/├──┤├──────[ G.MINIERR  U2 ]

10  ├──────────────────────────[ END ]
```
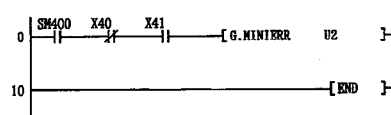
[List mode]

Step	Instruction	Device
0	LD	SM400
1	ANI	X40
2	AND	X41
3	G.MINIERR	U2
10	END	

7.7 Reading Communication Status

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(D)	O			—					

[Instruction Symbol]   [Execution condition]

SPBUSY	⎍	Command ⊣├	G.SPBUSY	Un	(D)

SPBUSY	⤒	Command ⊣├	GP.SPBUSY	Un	(D)

Set Data

Set Data	Description	Data Type
(D)	Device number storing read communication status	Device name

Function

(1) Reads the execution statuses of the following instructions with respect to the remote terminal module connected to AJ71PT32-S3, and stores them in the device designated at (D).
Key input from operation box...................... INPUT instructions
Data communications with AJ35PTF-R2.......PRN, PR, INPUT instructions
Communication of data with remote terminal modules conforming to MINI standard protocol..................................... MINI instructions

(2) The execution status stored in (D) is "1" at the start of data communication processing in remote terminal modules by instructions, and is "0" when the processing is completed.
The point when processing of the instruction is completed is when the instruction completion flag (designated bit device) turns from ON to OFF.

b15 to b11 b10 to b8 b7 to b4 b3 to b0

(D)

Stores the status of data transmission to the first remote terminal module.
Stores the status of data reception from the first remote terminal module.
Stores the status of data transmission to the second remote terminal module.
Stores the status of data reception from the second remote terminal module.

Stores the status of data transmission to the eighth remote terminal module.
Stores the status of data reception from the eighth remote terminal module.

b15 to b11 b10 to b8 b7 to b4 b3 to b0

(D)+1

Stores the status of data transmission to the ninth remote terminal module.
Stores the status of data reception from the ninth remote terminal module.
Stores the status of data transmission to the tenth remote terminal module.
Stores the status of data reception from the tenth remote terminal module.

Stores the status of data transmission to the fourteenth remote terminal module.
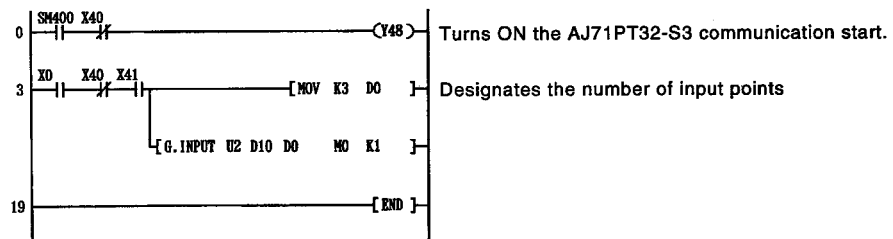Stores the status of data reception from the fourteenth remote terminal module.

Operation Error

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
   • When the module attempting access is not a special function module.
   (Error code: 2110)
   • When AJ71PT32-S3 control instructions cannot be used with the designated module. (Error code: 2112)
   • When the designated instruction name is illegal. (Error code: 4300)
   • When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
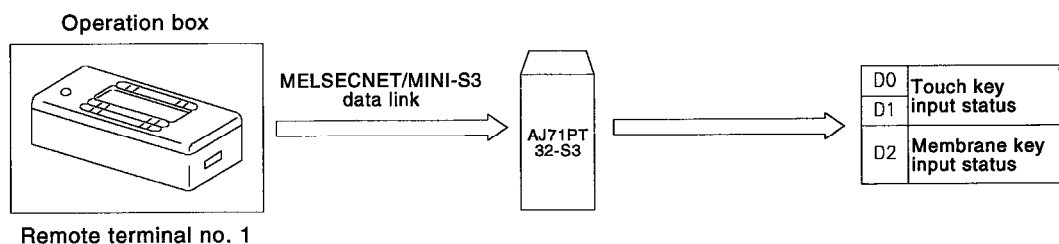   • When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which turns M10 ON when remote terminal no.1 of AJ71PT32-S3 installed in I/O number X/Y020-X/Y04F is sending data.

[Ladder mode]

```
      SM400 X40  X41
   0 ──┤├──┤/├──┤├──────────[G.SPBUSY   U2   D10 ]─

                            ─────────────[WAND  K1   D10 ]─   Extracts bit 0 only

                    └─[=   K1   D0 ]────────(M10 )─

  17 ─────────────────────────────────────[END ]─
```
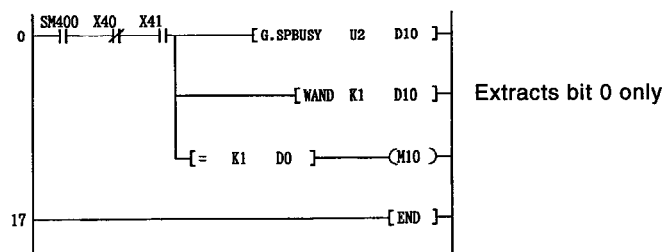
[List mode]

Step	Instruction	Device
0	LD	SM400
1	ANI	X40
2	AND	X41
3	G.SPBUSY	U2
		D10
10	WAND	K1
		D10
13	AND=	K1
		D0
16	OUT	M10
17	END	

7.8 Forced Stop of Communication Processing

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	O			—					

[Instruction Symbol]   [Execution condition]

SPCLR   ⊓⊐   Command ──┤├──────────────── | G.SPCLR | Un | (S) |

SPCLR   ⌐   Command ──┤├──────────────── | GP.SPCLR | Un | (S) |

Set Data

Set Data	Description	Data Type
Un	AJ71PT32-S3 head I/O number	16-bit binary
(S)	First number of the devices in which the stop designation data is stored.	Device name

Function

(1) Forcibly cancels communications processing by the following instructions with the remote terminal module connected to AJ71PT32-S3.
Key input from operation box....................... INPUT instructions
Data communications with AJ35PTF-R2....... PRN, PR, INPUT instructions

Communication of data with remote terminal modules conforming to MINI standard protocol..................................... MINI instructions

(2) The setting for cancel processing is made at (S).
The cancel setting is conducted by setting "1" in the applicable device for cancel processing.

b15 to b11 b10 to b8 b7 to b4 b3 to b0

(D)

Stores the status of data transmission to the first remote terminal module.
Stores the status of data reception from the first remote terminal module.
Stores the status of data transmission to the second remote terminal module.
Stores the status of data reception from the second remote terminal module.

Stores the status of data transmission to the eighth remote terminal module.
Stores the status of data reception from the eighth remote terminal module.

b15 to b11 b10 to b8 b7 to b4 b3 to b0

(D)+1

Stores the status of data transmission to the ninth remote terminal module.
Stores the status of data reception from the ninth remote terminal module.
Stores the status of data transmission to the tenth remote terminal module.
Stores the status of data reception from the tenth remote terminal module.

Stores the status of data transmission to the fourteenth remote terminal module.
Stores the status of data reception from the fourteenth remote terminal module.

Operation Errors
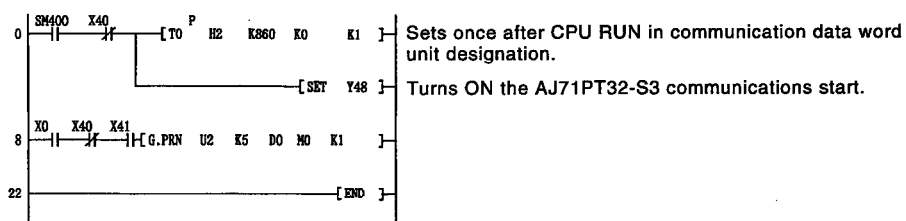
(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the module attempting access is not a special function module. (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used in the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which stops transmission to remote terminal module No.1 of AJ71PT32-S3 installed in I/O number X/Y020-X/Y04F.

[Ladder mode]

```
   | SM400  X40   X41
 0 |--| |--|/|--| |----------[MOV  K1    D0  ]-|      Stores "1" in bit corresponding to send
   |                                                   processing of remote terminal module No.1.
   |                   |------[MOV  K0    D11 ]-|
   |                   |
   |                   |--[G.SPCLR  U2    D10 ]-|
   |
14 |-------------------------------------[END ]-|
   |
```

[List mode]

Step	Instruction	Device
0	LD	SM400
1	ANI	X40
2	AND	X41
3	MOV	K1
		D0
5	MOV	K0
		D11
7	G.SPCLR	U2
		D10
14	END	

8.   AJ71C21(S1) CONTROL INSTRUCTIONS

AJ71C21(S1) control instructions conduct data communications in the no-protocol mode with external devices connected to AJ71C21(S1).
They are also instructions for reading/writing data to AJ71C21(S1) internal RAM memory.
The table below shows the AJ71C21(S1) control instructions.

Category	Instruction Name	Description	Refer to
Sending data	PRN2	Sends designated number of data to external device connected to RS-232C.	Section 8.1
	PRN4	Sends designated number of data to external device connected to RS-442.	
	PR2	Sends data up to 00H code to external device connected to RS-232C.	Section 8.2
	PR4	Sends data up to 00H code to external device connected to RS-442.	
Receiving data	INPUT2	Reads data received from external device connected to RS-232C.	Section 8.3
	INPUT4	Reads data received from external device connected to RS-442.	
Read RAM memory	GET	Reads data stored in AJ71C21-S1 RAM memory.	Section 8.4
Write to RAM memory	PUT	Writes data to AJ71C21-S1 RAM memory.	Section 8.5
Reading communication status	SPBUSY	Reads communications processing status, as well as execution status of RAM memory read/write processing by instructions.	Section 8.6
Forced stop of communication processing	SPCLR	Forcibly stops communication processing with external devices, as well as RAM memory read/write processing.	Section 8.7

POINTS

(1) Note that when the module model name is not registered in the parameter setting, no error will occur even if AJ71C21(S1) control instructions are executed with respect to an AD61(S1).
However, when these instructions are executed, the AD61(S1) may not operate normally.
(2) GET instructions and PUT instructions cannot be used for AJ71C21.
(Due to lack of RAM memory)
When the module model name is registered, an error occurs and there is no operation.
When the module model name is not registered, instructions are executed but have no effect on control.

8.1 Sending Designated Number of Bytes of Data

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J◻\◻		Special Function Module U◻\G◻	Index Register Zn	Constant		Other
	Bit	Word		Bit	Word			K, H	$	
n	O	O		O				O	—	—
(S)	—	O		—				—	O	—
(D)	O	O		—				—	—	—

[Instruction symbol]   [Execution condition]   ☐ represents PRN2 or PRN4

PRN2, PRN4   ⌐⌐   Command
                                  ─┤├─── [G. ☐] [Un] [n] [(S)] [(D)]

PRN2, PRN4   ⌐   Command
                                  ─┤├─── [GP. ☐] [Un] [n] [(S)] [(D)]

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AJ71C21(S1)	16-bit binary
n	Number of send data (words or bytes)	
(S)	First device number of devices storing send data	Character string
(D)	Number of the bit device turning ON on completion of processing	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Sends to the external device connected to AJ71C21(S1) n number of bytes/words of data stored from the device number designated at (S) onwards.
When send processing is completed, automatically turns ON the bit device designated at (D) after only 1 scan.
In the send processing the target interfaces differs according to the instructions used.
PRN2.......RS-232C interface
PRN4.......RS-422 interface
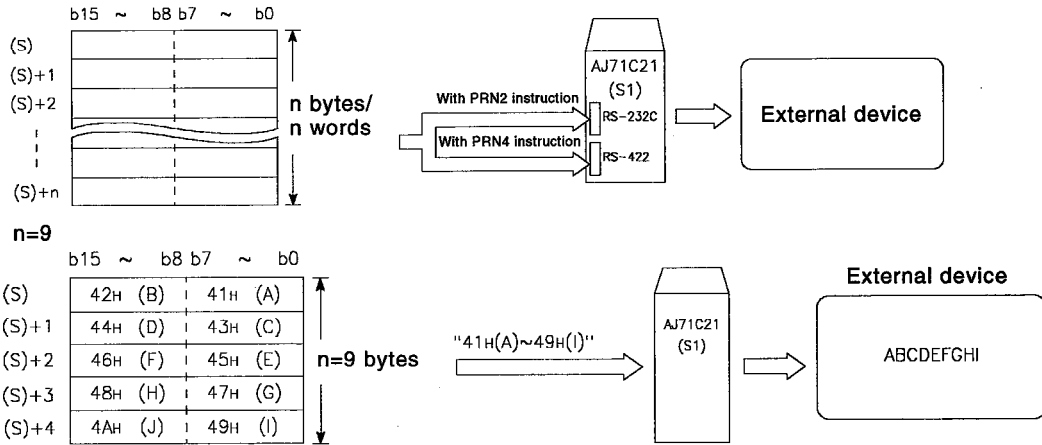
(2) PRN2 and PRN4 instructions conduct ON/OFF control of AJ71C21(S1)X(n+2), X(n+7)(send completed), Y(n+12), and Y(n+17) (request to send) automatically by internal processing, and so these controls do not need to be conducted by the user.

(3) The number of data designated at (n) can be set within the following ranges.

Word unit.....................1 to (no-protocol send buffer memory length set value - 1) words

Byte unit......................1 to (no-protocol send buffer memory length set value - 1) x 2 bytes

Set the following items when the AJ71C21(S1) data unit designation and buffer memory length are not used in the designations at power-on.
- No-protocol word/byte designation   (Power-on: words)
- No-protocol send buffer memory first address designation
        (Power-on: RS-232C...0H, RS-422...100H)
- No-protocol send buffer memory length setting   (Power-on: 80H)

(4) The number of data designated at n differs according to the AJ71C21(S1) data unit designation (word or byte). Furthermore the send data set in (S) also differs depending on the word/byte unit.

● Word unit designation	● Byte unit designation
n 5 (words)	n 9 (bytes)
b15 ~ b0	b15 ~ b8 b7 ~ b0
(S) First word	(S) Second byte | First byte
(S)+1 Second word	(S)+1 Fourth byte | Third byte
(S)+2 Third word	(S)+2 Sixth byte | Fifth byte
(S)+3 Fourth word	(S)+3 Eighth byte | Seventh byte
(S)+4 Fifth word	(S)+4 | Ninth byte

(5) The bit device designated at (D) automatically turns ON on execution of the END instruction of the scan completing the send processing, and turns OFF at the END instruction of the next scan.
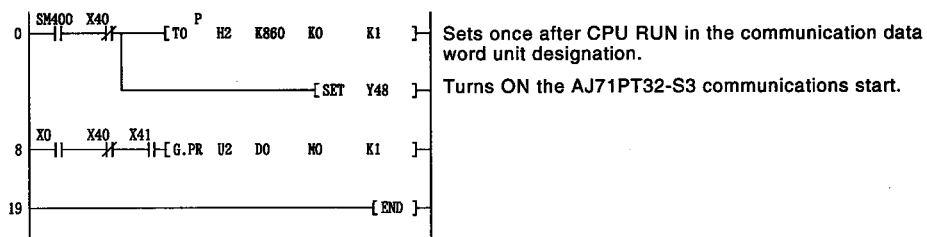Used as PR2, PR4 instruction execution completion flag.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the number of data designated at n exceeds the following range.
(Error code: 4100)

Word unit......................1 to (no-protocol send buffer memory length set value - 1) words

Byte unit......................1 to (no-protocol send buffer memory length set value - 1) x 2 bytes

- When the range of number of data designated at n from the device number designated at (S) onwards exceeds the last device number of the applicable device. (Error code: 4101)
- When the number of characters in the character string designated at (S) is less than the number of characters (number of bytes) designated at n. (Error code: 4100)
- When the module attempting access is not a special function module. (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used in the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
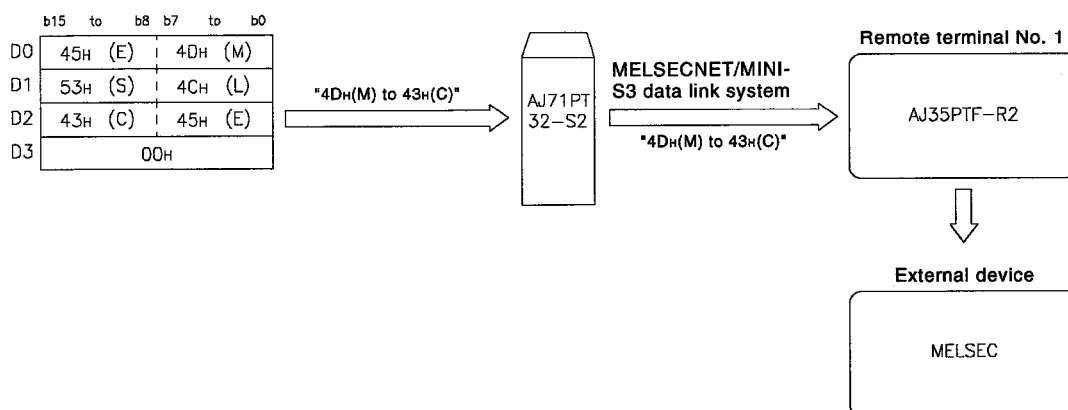- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, sends the data of D0 to D4 in word units to the external device connected to the RS-232C interface of the AJ71C21(S1) installed at I/O numbers X/Y020 to X/Y03F is shown here. M0 turns ON on completion of instruction execution.

[Ladder mode]

```
       X21  X20  M10           P
  0    ─┤├──┤/├──┤/├──┤TO   H2   H202   K0    K1 ├─   Sets once after CPU RUN in the communication
                        │                              data word unit designation.
                        └──────────────────────[SET  M10 ]─

       X0   X20  X21
  9    ─┤├──┤/├──┤├──[ G.PRN2   U2   K5   D0   M0 ]─

 21    ─────────────────────────────────[ END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X21
1	ANI	X20
2	ANI	M10
3	TOP	H2
		H202
		K0
		K1
8	SET	M10
9	LD	X0
10	ANI	X20
11	AND	X21
12	G.PRN2	U2
		K5
		D0
		M0
21	END	

```
      b15 ~ b8 b7 ~ b0
  D0 │ 49H  (I) │ 4DH  (M) │ ▲
  D1 │ 53H  (S) │ 54H  (T) │ │
  D2 │ 42H  (B) │ 55H  (U) │ │ 5 words    "4DH(M)~49H(I)"
  D3 │ 53H  (S) │ 49H  (I) │ │
  D4 │ 49H  (I) │ 48H  (H) │ ▼
```

AJ71C21 (S1)
RS-232C
RS-422

External device

MITSUBISHI

8.2 Data Send Up to "00H" Code

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant $	Other
	Bit	Word		Bit	Word				
(S)	—	O		O				O	—
(D)	O	O		—				—	—

[Instruction symbol]	[Execution condition]					represents PR2 or PR4

[Instruction symbol]　　[Execution condition]　　　　　　　　　　　□ represents PR2 or PR4

PR2, PR4　　　_⊓_　　Command　　G. [　　]　Un　(S)　(D)

PR2, PR4　　　_↑_　　Command　　GP. [　　]　Un　(S)　(D)

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AJ71C21(S1)	16-bit binary
(S)	First device number of devices storing send data	Character string
(D)	Number of the bit device turning ON on completion of processing	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Sends data from between the device number designated at (S) and the device number storing "00H", to the external device connected to the AJ71C21(S1).
When send processing is completed, automatically turns ON the bit device designated at (D) after only 1 scan.
In send processing, the target interfaces differ according to the instructions used.
PR2 ....RS-232C interface
PR4 ....RS-422 interface

b15 ~ b8 b7 ~ b0

(S)
(S)+1
(S)+2
⋮
(S)+n　00H

With PRN2 instruction → AJ71C21 (S1) RS-232C ⇒ External device
With PRN4 instruction → RS-422

↑ Indicates the end of the data

b15 ~ b8 b7 ~ b0

	b15 ~ b8	b7 ~ b0
(S)	42H (B)	41H (A)
(S)+1	44H (D)	43H (C)
(S)+2	46H (F)	45H (E)
(S)+3	48H (H)	47H (G)
(S)+4	4AH (J)	00H

"41H(A)~48H(H)" → AJ71C21 (S1) ⇒ External device ABCDEFGH

↑ Indicates the end of the data
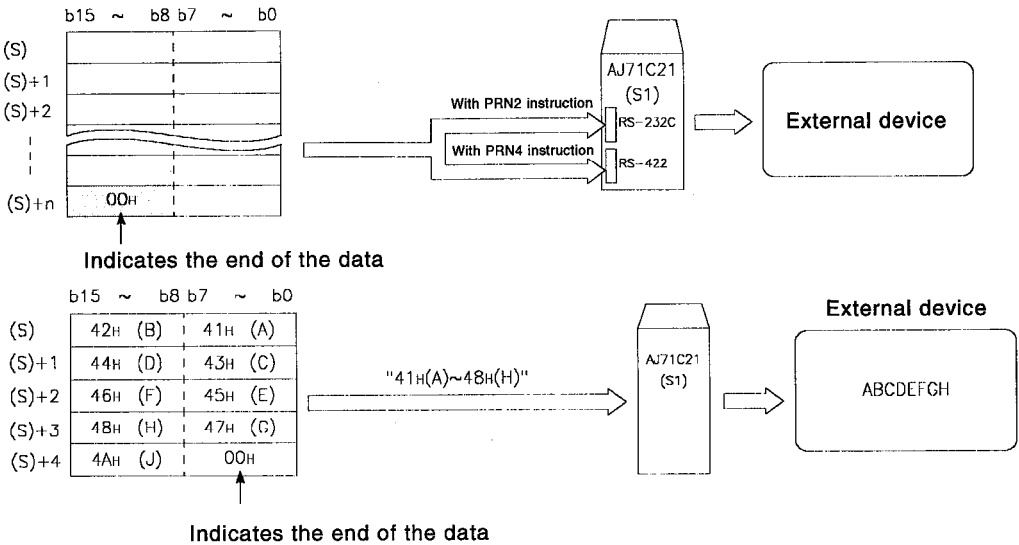
(2) PR instructions conduct ON/OFF control of AJ71C21(S1) X(n+2), X(n+7) (send completed), Y(n+2), Y(n+7)(receive completed) automatically in internal processing, and so the control does not have to be conducted by the user.

(3) "00H" cannot be set as data in the send data stored from the device designated at (S) onwards.
"00H" is the send data completed designation.

(4) The number of data which can be sent at one time is shown below.
Word unit.....................1 to (no-protocol send buffer memory length set value - 1) words
Byte unit.......................1 to (no-protocol send buffer memory length set value - 1) x 2 bytes

Set the following items when the AJ71C21(S1) data unit designation and buffer memory length are not used in the settings at power-on.
• No-protocol word/byte designation   (Power-on: words)
• No-protocol send buffer memory first address designation
                    (Power-on: RS-232C...0H, RS-422...100H)
• No-protocol send buffer memory length setting   (Power-on: 80H)

(5) The send data set in (S) differs depending on the AJ71C21(S1) data unit designation (word or byte).

● Word unit designation	● Byte unit designation
b15 ~ b0	b15 ~ b8 b7 ~ b0
(S) First word	(S) Second byte | First byte
(S)+1 Second word	(S)+1 Fourth byte | Third byte
(S)+2 Third word	(S)+2 Sixth byte | Fifth byte
(S)+3 Fourth word	(S)+3 Eighth byte | Seventh byte
(S)+4 Fifth word	(S)+4 Tenth byte | Ninth byte
(S)+5 00H ←Data end designation	(S)+5 00H ←Data end designation

(6) The bit device designated at (D) automatically turns ON on execution of the END instruction of the scan completing the transmission processing, and turns OFF at the END instruction of the next scan.
Used as PR2, PR4 instruction execution completion flag.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.

- When "00H" is not stored from between the device number designated at (S) onwards and the last device number of the applicable device.
  (Error code: 4100)
- When the number of send data is outside the following range.
  (Error code: 4100)

  Word unit.....................1 to (no-protocol send buffer memory length
  set value - 1) words
  Byte unit.....................1 to (no-protocol send buffer memory length
  set value - 1) x 2 bytes

- When the module attempting access is not a special function module.
  (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used in the designated module.
  (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, sends data in word units from the data stored in D0 to data up to 00H, to the external device connected to RS-232C interface of the AJ71C21(S1) installed at I/O numbers X/Y020 to X/Y03F is shown here.

MO turns ON on completion of instruction execution.

[Ladder mode]

```
   | X21  X20  M10      P
 0 |--||---|/|---|/|--[TO   H2   H202  K0    K1  ]-|   Sets once after CPU RUN, according to the
   |                  |                              communication data word unit designation.
   |                  |----------------------[SET  M10 ]-|
   |
   | X0   X20  X21
 9 |--||---|/|---||--[G.PR2   U2   DO   MO ]-|
   |
19 |------------------------------------[END ]-|
```
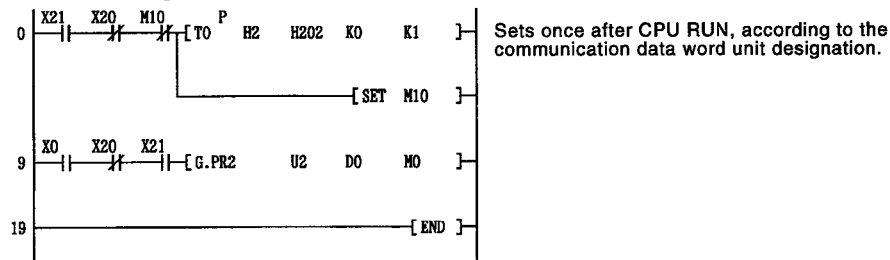
[List mode]

Step	Instruction	Device
0	LD	X21
1	ANI	X20
2	ANI	M10
3	TOP	H2
		H202
		K0
		K1
8	SET	M10
9	LD	X0
10	ANI	X20
11	AND	X21
12	G.PR2	U2
		DO
		MO
19	END	

	b15 ~ b8	b7 ~ b0
D0	45H (E)	4DH (M)
D1	53H (S)	4CH (L)
D2	43H (C)	45H (E)
D3	41H (A)	5FH (-)
D4	00H	

"4DH(M)~41H(A)"

AJ71C21 (S1)
RS-232C
RS-422

External device
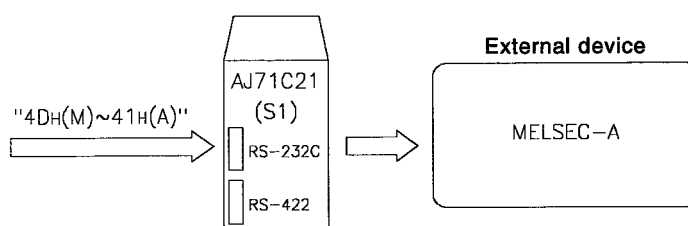
MELSEC-A

8.3 Receiving Data

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word			K, H	U
n	—	O		—				—	
(D1)	—	O		O				—	
(D2)	O	O		—				—	

[Instruction symbol] [Execution condition]   ☐ represents INPUT2 or INPUT4

INPUT2, INPUT4   ⌐⌐   ┤├─ Command   G.[☐] | Un | n | (D1) | (D2)

INPUT2, INPUT4   ⌐   ┤├─ Command   GP.[☐] | Un | n | (D1) | (D2)

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AJ71C21(S1)	16-bit binary
n	Permissible number of received data, and number of received data	
(D1)	Head number of device storing received data	Character string
(E2)	Number of the bit device turning ON on completion of processing	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Receives data from the external device connected to AJ71C21(S1) within the permissible range of data designated at n, and stores it from the device number designated at (D1) onwards.
When receive processing is completed, automatically turns ON bit device designated at (D2) after only 1 scan.

Only if permissible number of receive data ≥ number of receive data, "00H" is stored in (D1) + (n+1).

> **POINTS**
>
> (1)The G(P).INPUT command cannot be made into a pulse.
> (2)Execute G(P).INPUT when I/O signal read request is ON.

n	15 (permissible number of received data)
n+1	9 (number of received data)

	b15 ~ b8	b7 ~ b0
(D1)	42H (B)	41H (A)
(D1)+1	44H (D)	43H (C)
(D1)+2	46H (F)	45H (E)
(D1)+3	48H (H)	47H (G)
(D1)+4	00H	49H (I)

External device
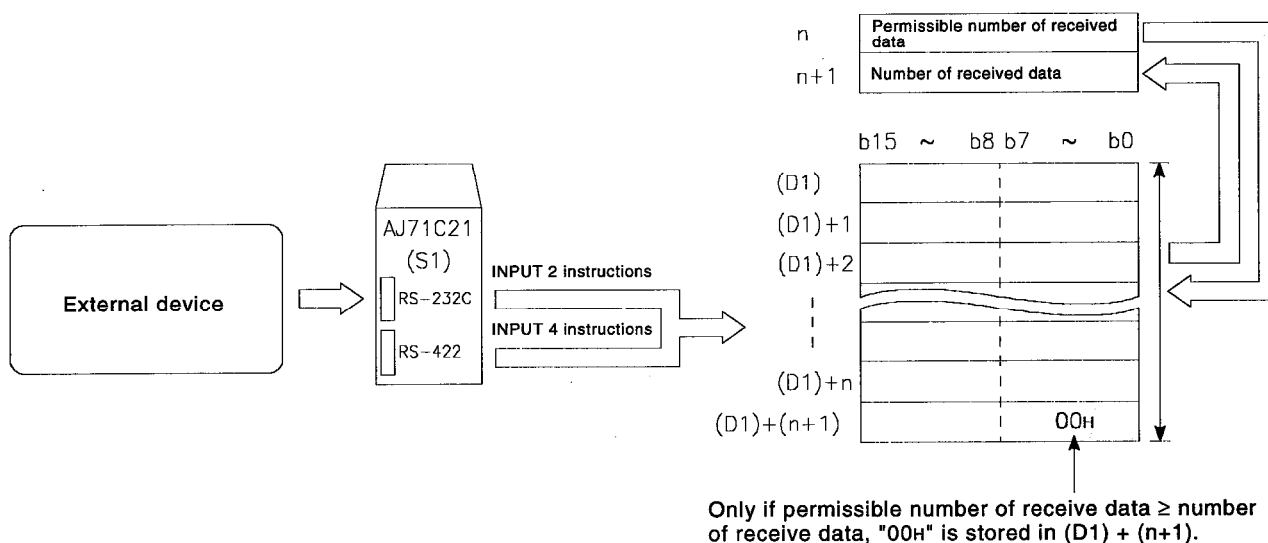
ABCDEFGHI → AJ71C21 (S1) (Byte designation) →
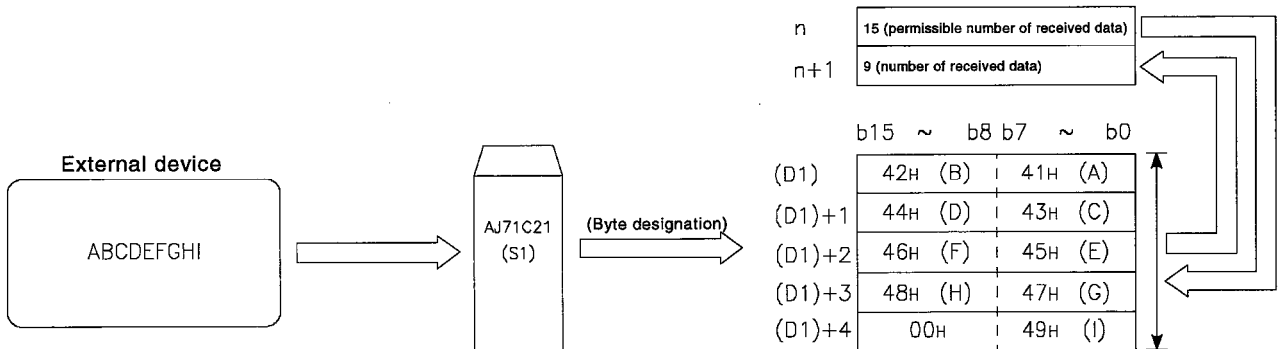
(2) INPUT 2 and INPUT 4 instructions automatically conduct ON/OFF control of AJ71C21(S1) X(n+3), X(n+8) (request to read received data), Y(n+3), Y(n+8) (received data read completed) by internal processing, and so the control does not need to be conducted by the user.

(3) The number of data that can be received by one receive processing is as shown below.

Word unit.....................1 to (no-protocol receive buffer memory length set value - 1) words

Byte unit.....................1 to (no-protocol receive buffer memory length set value - 1) x 2 bytes

Set the following items when the AJ71C21(S1) data unit designation and buffer memory length are not used in the settings at power-on.
- No-protocol word/byte designation   (Power-on: words)
- No-protocol receive buffer memory first address designation
                         (Power-on: RS-232C...0H, RS-422...100H)
- No-protocol receive buffer memory length designation
                         (Power-on: 80H)

(4) The permissible number of received data designated at n1 is a setting to secure the device range for storing received data, and the data storage destination is the number of points designated at n1 starting from the device number designated at (D1).
The actual number of received data is automatically stored in n+1.
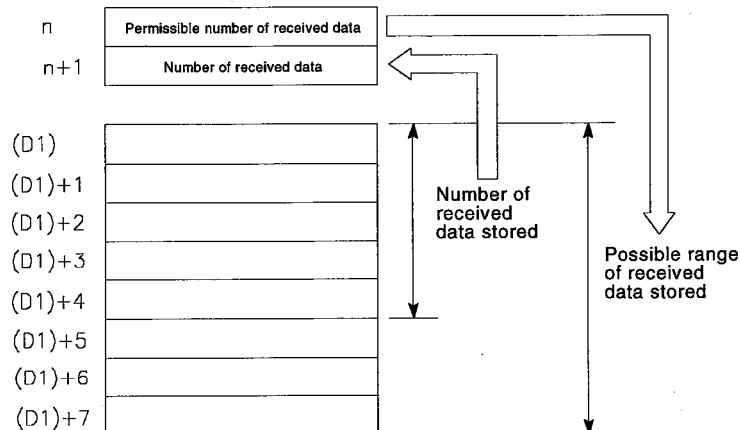
n	Permissible number of received data
n+1	Number of received data

(D1)	
(D1)+1	
(D1)+2	
(D1)+3	
(D1)+4	
(D1)+5	
(D1)+6	
(D1)+7	

Number of received data stored

Possible range of received data stored

(5) When the number of data actually received is larger than the permissible number of received data designated at n, only the permissible number of received data is stored, and the remaining received data is discarded.

(6) The n and n+1 set value and stored value unit differ according to the AJ71C21(S1) data unit designation (word or byte).
The data stored in (D1) also differs according to whether word or byte units are designated.

● Word unit designation

n	8 (words)
n+1	5 (words)

	b15 ~ b0
(D1)	First word
(D1)+1	Second word
(D1)+2	Third word
(D1)+3	Fourth word
(D1)+4	Fifth word
(D1)+5	0000H ← Automatically appended at end of received data.
(D1)+6	
(D1)+7	

● Byte unit designation

n	16 (bytes)
n+1	10 (bytes)

	b15 ~ b8	b7 ~ b0
(D1)	Second byte	First byte
(D1)+1	Fourth byte	Third byte
(D1)+2	Sixth byte	Fifth byte
(D1)+3	Eighth byte	Seventh byte
(D1)+4	Tenth byte	Ninth byte
(D1)+5	00H	00H ← Automatically appended at end of received data.
(D1)+6		
(D1)+7		

(7) In byte unit designation, depending on whether the received data is odd or even numbered, the "00H" code added to the end of the received data is stored as below.

Received data is an odd number..........Stored in the higher bytes of the last device number storing received data.

Received data is an even number........Stored in the device number immediately following the last device number storing received data.
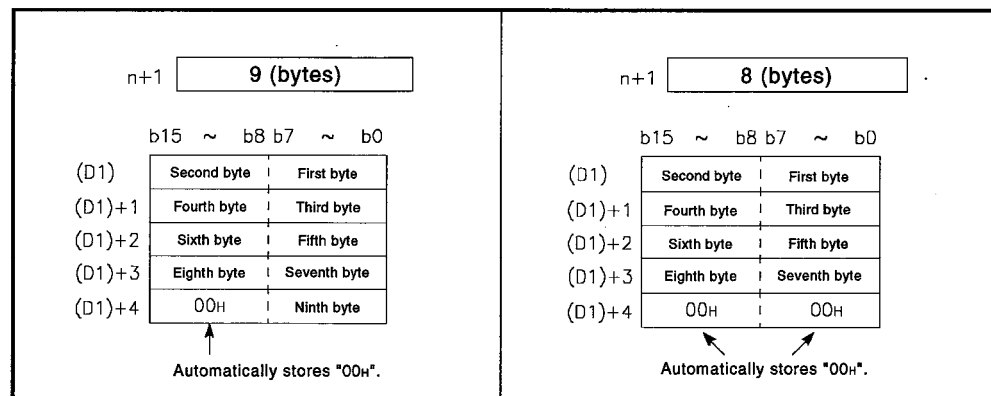
n+1	9 (bytes)

	b15 ~ b8	b7 ~ b0
(D1)	Second byte	First byte
(D1)+1	Fourth byte	Third byte
(D1)+2	Sixth byte	Fifth byte
(D1)+3	Eighth byte	Seventh byte
(D1)+4	00H	Ninth byte

Automatically stores "00H".

n+1	8 (bytes)

	b15 ~ b8	b7 ~ b0
(D1)	Second byte	First byte
(D1)+1	Fourth byte	Third byte
(D1)+2	Sixth byte	Fifth byte
(D1)+3	Eighth byte	Seventh byte
(D1)+4	00H	00H

Automatically stores "00H".

(8) When the number of received data is higher than the permissible number of received data, the "00H" code which is added to the end of the received data is stored in the device number immediately following the device numbers of the permissible number of received data.
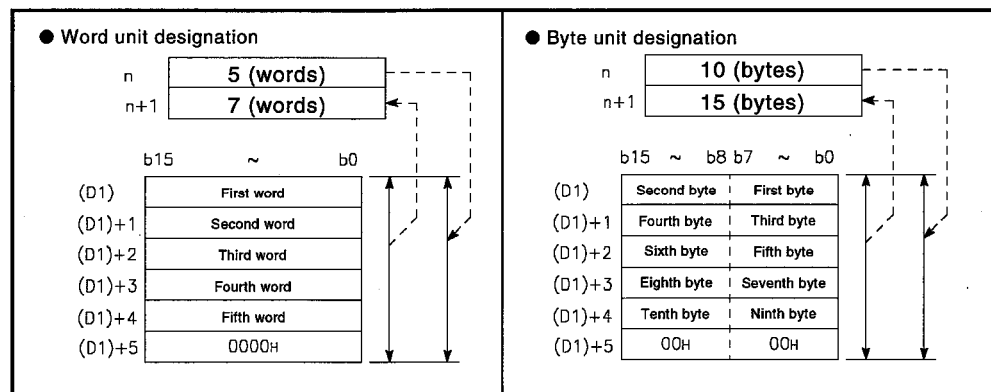
● Word unit designation				● Byte unit designation			
n	5 (words)			n	10 (bytes)		
n+1	7 (words)			n+1	15 (bytes)		
	b15 ~ b0				b15 ~ b8 b7 ~ b0		
(D1)	First word			(D1)	Second byte | First byte		
(D1)+1	Second word			(D1)+1	Fourth byte | Third byte		
(D1)+2	Third word			(D1)+2	Sixth byte | Fifth byte		
(D1)+3	Fourth word			(D1)+3	Eighth byte | Seventh byte		
(D1)+4	Fifth word			(D1)+4	Tenth byte | Ninth byte		
(D1)+5	0000H			(D1)+5	00H | 00H		

(9) The bit device designated at (D2) automatically turns ON on execution of the END instruction of the scan completing the receive processing, and turns OFF at the END instruction of the next scan.
Used as INPUT 2 and INPUT 4 execution completion flag.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the range of the number of data designated at n, starting from the device number designated at (D), exceeds the last device number of the applicable device.   (Error code: 4101)
- When the module attempting access is not a special function module.
                                                                                    (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used with the designated module.   (Error code: 2112)
- When the designated instruction name is illegal.   (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal.
                                                                                    (Error code: 4301)
- When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, receives 5 words of data from an external device connected to the RS-232C interface of the AJ71C21(S1) installed at I/O numbers X/Y020 to X/Y03F, and stores the data to D0 to D4, is shown here.
M0 turns ON on completion of instruction execution.
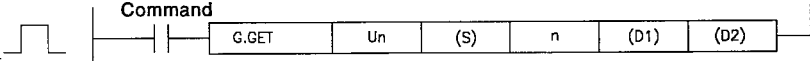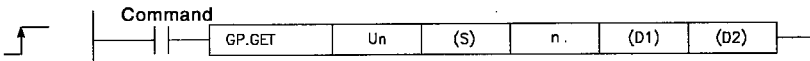
[Ladder mode]

```
       X21  X20  M10      P
   0 ──┤├───┤╱├──┤╱├──[TO   H2   H202  K0    K1 ]──   Sets once after CPU RUN in the communication
                                                      data word unit designation.
                             ───────────────[SET  M10 ]──   Designates number of received data.

       X0   X20  X21
   9 ──┤├───┤╱├──┤├────────────────[MOV  K5   D10]──

                   ─[G.INPUT2  U2   D10   D0   M0 ]──

  23 ────────────────────────────────────────[END ]──
```

[List mode]

Step	Instruction	Device
0	LD	X21
1	ANI	X20
2	ANI	M10
3	TOP	H2
		H202
		K0
		K1
8	SET	M10
9	LD	X0
10	ANI	X20
11	AND	X21
12	MOV	K5
		D10
14	G.INPUT2	U2
		D10
		D0
		M0
23	END	

External device

MITSUBISHI → AJ71C21 (S1) →

D10	5 (Permissible number of received data)	
D11	5 (Number of received data)	

b15 ~ b8 b7 ~ b0

	b15~b8	b7~b0
D0	49H (I)	4DH (M)
D1	53H (S)	54H (T)
D2	42H (B)	55H (U)
D3	53H (S)	49H (I)
D4	49H (I)	48H (H)
D5	00H	

Stored automatically
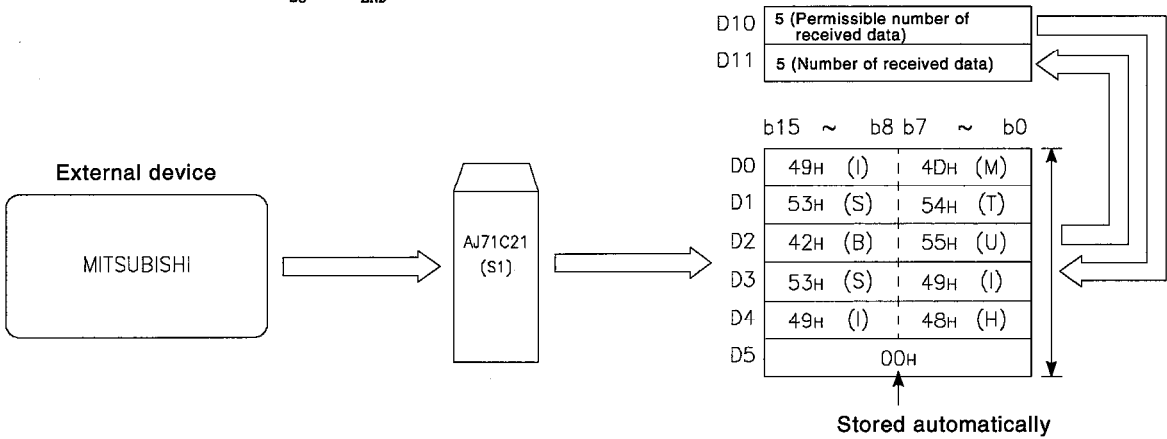
8.4 Read RAM Memory

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
(S)	—	O		—					—
n	O	O		O					—
(D1)	—	O		—					—
(D2)	O	O		—					—

[Instruction symbol]   [Execution condition]

GET   Command
| G.GET | Un | (S) | n | (D1) | (D2) |

GET   Command
| GP.GET | Un | (S) | n. | (D1) | (D2) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AJ71C21(S1)	16-bit binary
(S)	First address number of RAM memory storing read data	
n	Number of words of data to be read	
(D1)	First number of device storing data to be read	Device name
(D2)	Number of the bit device turning ON on completion of processing	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Reads n words of data from the AJ71C21(S1) RAM memory area address number designated at (S), and stores data from the device number designated at (D1) onwards.
When read processing is completed, automatically turns ON the bit device designated at (D2) after only one scan.

(2) When the RAM memory is read with a GET instruction, ON/OFF control of AJ71C21(S1) X(n+D)(request to read RAM), and Y(n+10)(RAM read completed) are automatically conducted by internal processing, and so do not need to be conducted by the user.

(3) The first address number designated at (S) is within the range "0 to 7FFH".

(4) The RAM number designated at (S)+1 is within the range "0 to 79".

(5) The number of words designated at n is within the range "1 to 2048". However, reading from multiple areas is not possible.

(6) The bit device designated at (D2) automatically turns ON on execution of the END instruction of the scan completing the read processing, and turns OFF at the END instruction of the next scan.
Used as a GET instructions execution completion flag.

Operation Error

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the designated module is AJ71C21. (Error code: 2112)
- When the address number designated at (S) exceeds the range 0 to 7FFH. (Error code: 4100)
- When the area number designated at (S+1) exceeds the range 0 to 79. (Error code: 4100)
  (For the AJ71C21-S2, when the area number exceeds the range 0 to 191.)
- When the number of words designated at n exceeds the range 1 to 2048. (Error code: 4100)
- When the range of the number of words designated at n, starting from the first device number designated at (D1), exceeds 7FFH. (Error code: 4100)
- When the range of the number of words designated at n, starting from the first device number designated at (D1), exceeds the last device number of the applicable device. (Error code: 4101)
- When the module attempting access is not a special function module. (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, stores data from addresses 0H to 4H of RAM number 1 of the AJ71C21(S1) installed at I/O numbers X/Y020 to X/Y03F, to D0 to D4, is shown here.
MO turns ON on completion of instruction execution.

[Ladder mode]

Designates first address of RAM memory
Designates the RAM number of the RAM
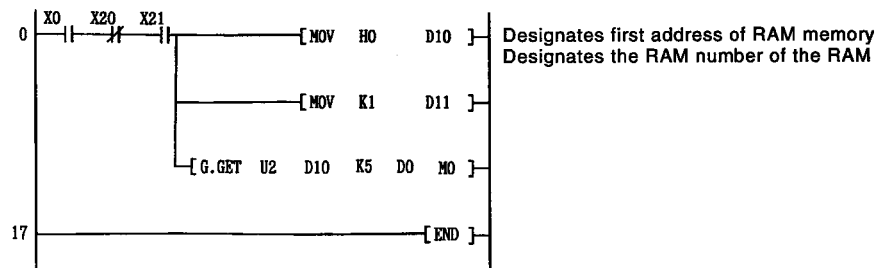
[List mode]

Step	Instruction	Device
0	LD	X0
1	ANI	X20
2	AND	X21
3	MOV	H0
		D10
5	MOV	K1
		D11
7	G.GET	U2
		D10
		K5
		D0
		MO
17	END	

AJ71C21−S1

RAM No.1	
0H	1534H
1H	4ABCH
2H	3021H
3H	3BEFH
4H	FFBEH

D0	1534H
D1	4ABCH
D2	3021H
D3	3BEFH
D4	FFBEH
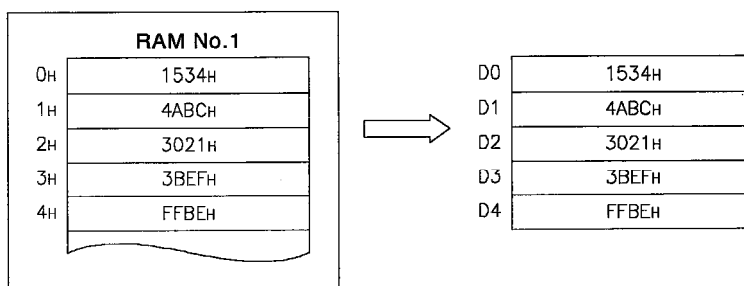
8.5 Write to RAM Memory

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J⬚\⬚		Special Function Module U⬚\G⬚	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O		—					—
n	O	O		O					—
(S2)	—	O		—					—
(D)	O	O		—					—

[Instruction symbol] [Execution condition]

| PUT | ⎍ | Command ┤├ | G.PUT | Un | (S1) | n | (S2) | (D) |

| PUT | ⌐ | Command ┤├ | GP.PUT | Un | (S1) | n | (S2) | (D) |

Set Data

Set Data	Description	Data Type
Un	First I/O number of AJ71C21(S1)	16-bit binary
(S1)	First address number of RAM memory storing write data	
n	Number of words of write data	
(S2)	First device number of the devices to store the written data	Device name
(D)	Number of the bit device turning ON on completion of processing	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Writes n-words of data, stored from the device number designated at (S2) onwards, to AJ71C21(S1) RAM memory addresses starting from the address number designated by (S1).

(S1) First address
(S1)+1 Area number

(S2)
(S2)+1
(S2)+2
|
|
(S2)+(n−1)

n words

Designated area, first address

+0
+1
+2
|
+(n−1)
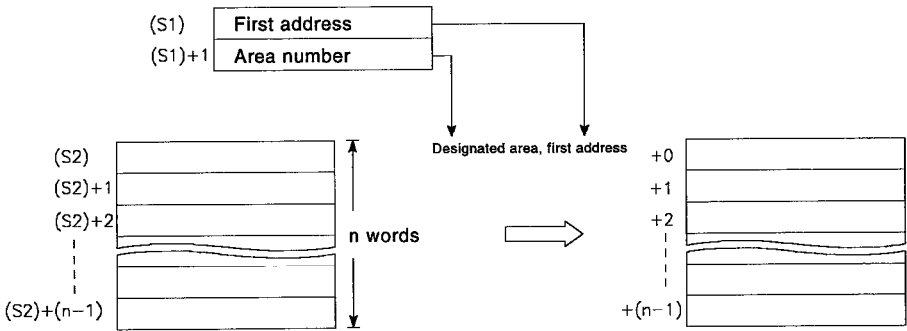
AJ71C21(S1) RAM area address

RAM number	Designated address	
0	0H ⑀ 7FFH	RAM0
1	0H ⑀ 7FFH	RAM1
2	0H ⑀ 7FFH	RAM2
⑀	⑀	⑀
79	0H ⑀ 7FFH	RAM79
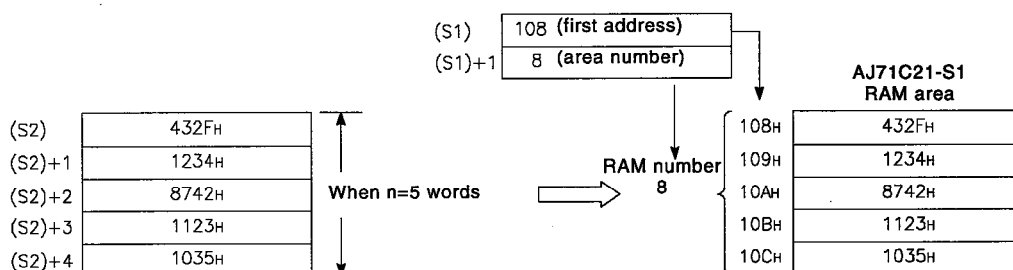
(2) When data is written to RAM memory by a PUT instruction, the ON/OFF control of AJ71C21(S1) X(n+C)(RAM write completed), Y(n+1C)(request to write to RAM) is automatically conducted by internal processing, and so does not need to be conducted by the user.

(3) The first address number designated at (S1) is within the range "0 to 7FFH".

(4) The area number designated at (S1)+1 is within the range "0 to 79".

(5) The number of words designated at n is within the range "1 to 2048". However, writing to multiple areas is not possible.

(6) The bit devices designated at (D) automatically turns ON on execution of the END instructions of the scan completing write processing, and turns OFF at the END instruction of the next scan.
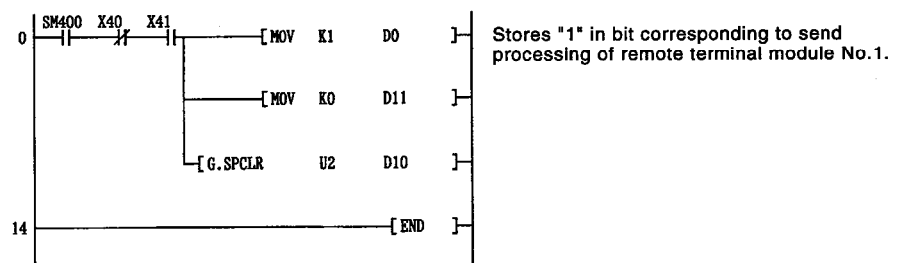Used as PUT instructions execution completion flag.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the designated module is AJ71C21. (Error code: 2112)
- When the address number designated at (S1) exceeds the range 0 to 7FFH. (Error code: 4100)
- When the area number designated at (S1)+1 exceeds the range 0 to 79. (Error code: 4100)
- When the number of words designated at n exceeds the range 1 to 2048. (Error code: 4100)
- When the number of words designated at n, starting from the first device number designated at (S1), exceeds 7FFH. (Error code: 4100)
- When the range of the number of words designated at n, starting from the first device number designated at (S2), exceeds the last device number of the applicable device. (Error code: 4000)
- When AJ71PT32-S3 control instructions cannot be used in the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, writes the data of D0 to D4 to addresses 0H to 4H of RAM number 1 of the AJ71C21(S1) installed at I/O numbers X/Y020 to X/Y03F is shown here.
MO turns ON on completion of instruction execution.

[Ladder mode]

```
      X0   X20  X21
 0  ├──┤├──┤/├──┤├─┬─────────────────[MOV  H0   D10 ]─┤   Designates first address of RAM memory
                  │
                  ├─────────────────[MOV  K1   D11 ]─┤   Designates the RAM number of the RAM memory
                  │
                  └[G.PUT  U2  D10  K5      D0   MO ]─┤

17 ├────────────────────────────────────────[END ]─┤
```
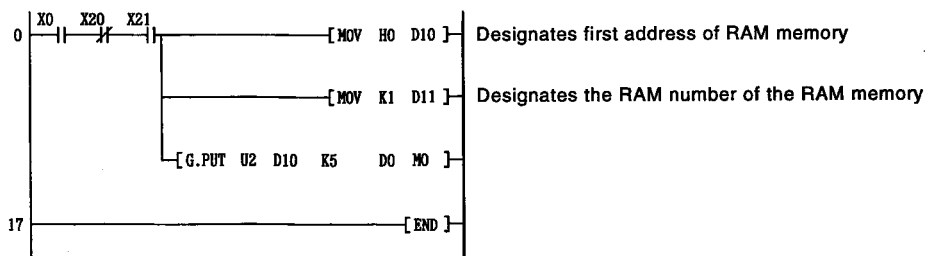
[List mode]

Step	Instruction	Device
0	LD	X0
1	ANI	X20
2	AND	X21
3	MOV	H0
		D10
5	MOV	K1
		D11
7	G.PUT	U2
		D10
		K5
		D0
		MO
17	END	

AJ71C21–S1

D0	1534H	
D1	4ABCH	
D2	3021H	
D3	3BEFH	
D4	FFBEH	

⟹

RAM number 1

0H	1534H
1H	4ABCH
2H	3021H
3H	3BEFH
4H	FFBEH

8.6 Reading Communication Status

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(D)	O							—	

[Instruction symbol]   [Execution condition]

SPBUSY   ⌐⌐   Command ―| |―――――――――――――[G.SPBUSY | Un | (D)]―

SPBUSY   ⌐   Command ―| |―――――――――――――[GP.SPBUSY | Un | (D)]―

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the AJ71C21(S1)	Device name
(D)	Device number storing read communication status	16-bit binary

Function

(1) Reads the execution status of the following instructions of AJ71C21(S1), and stores it to the device designated at (D).
 • PRN2, PRN4, PR2, PR4 instructions (data send instructions)
 • INPUT2, INPUT4 instructions (data receive instructions)
 • GET, PUT instructions (instructions for reading/writing RAM memory data)

(2) For the execution status stored in (D), "1" is stored in the corresponding bit when by any instruction is started, and "0" is stored when the processing is completed.
Processing completed of instruction is the point when the instruction completion flag (designated bit device) moves from ON to OFF.

```
         b15    ~    b5 b4 b3 b2 b1 b0
(D)  [      0      |  |  |  |  |  |  ]
              ↑        ↑  ↑  ↑  ↑  ↑
      Always stores "0".  |  |  |  |  └── Stores execution status of PRN2 and PR2 instructions.
                          |  |  |  └───── Stores execution status of INPUT2 instructions.
                          |  |  └──────── Stores execution status of PRN4, PR4 instructions.
                          |  └─────────── Stores execution status of INPUT4 instructions.
                          └────────────── Stores execution status of GET, PUT instructions.

         b15    ~    b0
(D)+1 [         0         ]   (Always stores "0".)
```
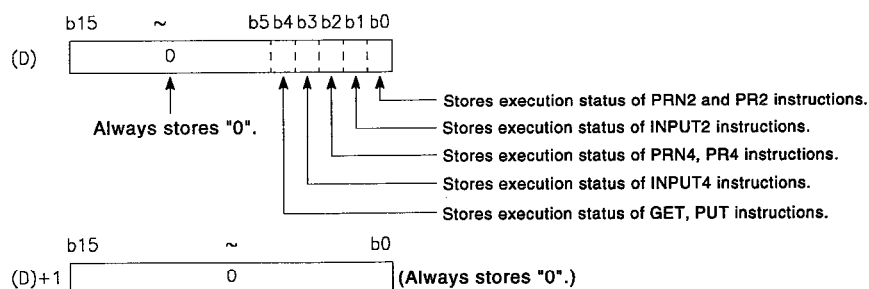
```
POINTS

(1) The G(P).SPBUSY command cannot be made into a pulse.
(2) Execute the G(P).SPBUSY when I/O signal read request is ON.
```

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the module attempting access is not a special function module.
  (Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used in the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which turns M10 ON when the PR2 instructions or PRN2 instruction is executed at the AJ71C21(S1) installed at I/O numbers X/Y020 to X/Y03F is shown here.

[Ladder mode]

```
     SM400  X20  X21
 0 ──┤├────┤/├───┤├────[ G.SPBUSY    U2    D10 ]─

                       ─────────[ WAND  K1    D10 ]─   Only extracts the 0 bit

                       └─[ =    K1    D10 ]────( M10 )─

17 ─────────────────────────────────────────[ END ]─
```

[List mode]

Step	Instruction	Device
0	LD	SM400
1	ANI	X20
2	AND	X21
3	G.SPBUSY	U2
		D10
10	WAND	K1
		D10
13	AND=	K1
		D10
16	OUT	M10
17	END	

8.7 Forced Stop of Communication Processing

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J▯\▯		Special Function Module U▯\G▯	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	O								—

[Instruction symbol]   [Execution condition]

SPBUSY   ⎍   Command ──┤├────────── | G.SPCLR | Un | (S) |

SPBUSY   ⌐   Command ──┤├────────── | GP.SPCLR | Un | (S) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the AJ71C21 (S1)	16-bit binary
(S)	First device number of the devices storing the data subject to the stop.	Device name

Function

(1) Forcibly cancels AJ71C21(S1) communication processing (i.e. processing by PR(N)2, PR(N)4 and INPUT instructions) or accessing RAM memory (processing by GET and PUT instructions).

(2) The cancel processing is set in (S).
The cancel setting is conducted by setting "1" in the applicable device for cancel processing.

```
        b15      ~        b5 b4 b3 b2 b1 b0
  (D)  [                  |  |  |  |  |  |  ]
        └──────┬───────┘  ↑  ↑  ↑  ↑  ↑  ↑
         ⎛Ignores 0/1⎞    │  │  │  │  │  └── Sending by PRN2, PR2 instructions
         ⎜status of  ⎟    │  │  │  │  └───── Receiving by INPUT2 instructions
         ⎝each bit   ⎠    │  │  │  └──────── Sending by PRN4 and PR4 instructions
                          │  │  └─────────── Receiving by INPUT4 instructions
                          │  └────────────── RAM memory accessing by GET and PUT instructions

        b15      ~        b0
 (D)+1 [                    ]  (Ignores 0/1 status of each bit)
```

(3) When processing is cancelled, the completion flag (designated bit device) for the instruction corresponding to the cancellation does not turn ON.
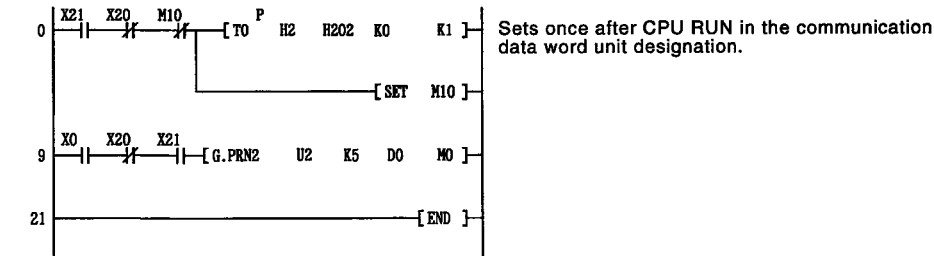
Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the module attempting access is not a special function module.
(Error code: 2110)
- When AJ71PT32-S3 control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71PT32-S3 control instruction devices is illegal.
(Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, stops PR2 instructions or PRN2 instructions which are being executed at the AJ71C21(S1) installed at I/O numbers X/Y020 to X/Y03F, is shown here.

[Ladder mode]
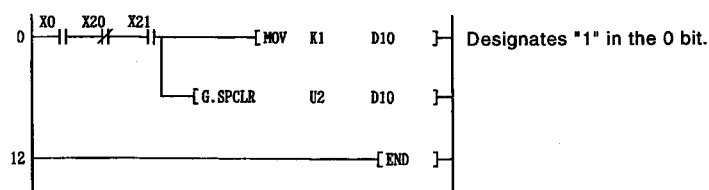
[List mode]

Step	Instruction	Device
0	LD	X0
1	ANI	X20
2	AND	X21
3	MOV	K1
		D10
5	G.SPCLR	U2
		D10
12	END	

9. COMPUTER LINK MODULE CONTROL INSTRUCTIONS

Computer link module control instructions are instructions for conducting data communications in no-protocol mode with external devices connected to AJ71C24(S3, S6, S8) and AJ71UC24.

> In this section AJ71C24(S3, S6, S8) and AJ71UC24 are collectively referred to as "computer link module".
> (However this excludes descriptions requiring the model name)

The following table shows computer link module control instructions.

Category	Instruction Name	Description	Refer to
Data send	PRN	Sends designated number of data to connected external device.	Section 9.1
	PR	Sends data up to 00H code to connected external device.	Section 9.2
Data receive	INPUT	Reads data received from external device.	Section 9.3
Read communi-cations status	SPBUSY	Reads communication processing status by instructions.	Section 9.4
Forced stop of communication processing	SPCLR	Forcibly stops communication processing with external device.	Section 9.5

POINT

If instructions are executed with respect to a computer link module without the model name being registered in parameter setting, the word/byte designation and communication buffer memory area setting are processed as if set with the following contents.
- No-protocol word/byte designation........... Only words allowable
- No-protocol send buffer memory area...... Only 0H-7FH allowable
- No-protocol receive buffer memory area...Only 80H-FFH allowable
- Received data length.............................Up to CR, LF code, or 127 words

Accordingly, when the following settings are made for the computer link module, the QnACPU writes and reads data ignoring the settings for the computer link module, and so malfunctioning may occur.
- No-protocol receive END code designation (address 100)
- No-protocol word/byte designation (address 103)
- No-protocol send buffer memory first address designation (address 104)
- No-protocol send buffer memory length designation (address 105)
- No-protocol receive buffer memory first address designation (address 106)
- No-protocol receive buffer memory length designation (address 107)
- No-protocol receive END number of data designation (address 108)
The above buffer memory set values are valid when model name registration has been performed.

9.1 No-Protocol Mode Data Send of Designated Number of Bytes

Set Data	Usable Devices									
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant		Other
	Bit	Word		Bit	Word			K, H	$	
(n)	O	O		O				O	—	—
(S)	—	O		—				—	O	—
(D)	O	O		—				—	—	—

[Instruction Symbol]　　[Execution condition]

PRN

Command

| G.PRN | Un | n | (S) | (D) |

PRN

Command

| GP.PRN | Un | n | (S) | (D) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of computer link module	16-bit binary
n	Number of send data (words or bytes)	
(S)	First device number of devices storing send data	Character string
(D)	Number of the bit device turning ON on completion of processing	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Sends n number of bytes/words data stored in the device number designated from (S) onwards to the external device connected to the computer link module.
When send processing is completed, the bit device designated at (D) automatically turns ON after only 1 scan.

b15　to　b8 b7　to　b0

(S)
(S)+1
(S)+2

(S)+n

n words/ bytes

Computer link module

External device

For n=9

(S)	42H (B)	41H (A)
(S)+1	44H (D)	43H (C)
(S)+2	46H (F)	45H (E)
(S)+3	48H (H)	47H (G)
(S)+4	4AH (J)	49H (I)
(S)+5	4CH (L)	4BH (K)

n=9 bytes

"41H(A) to 49H(I)"

Computer link module

External device

ABCDEFGHI
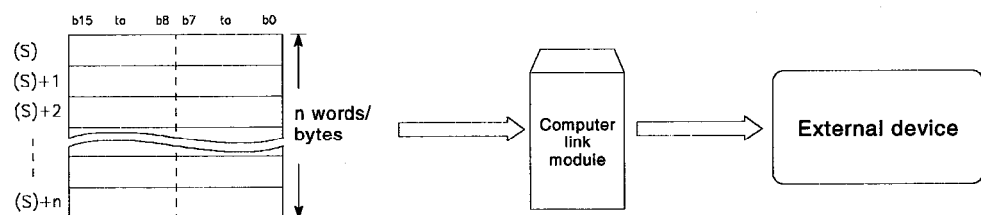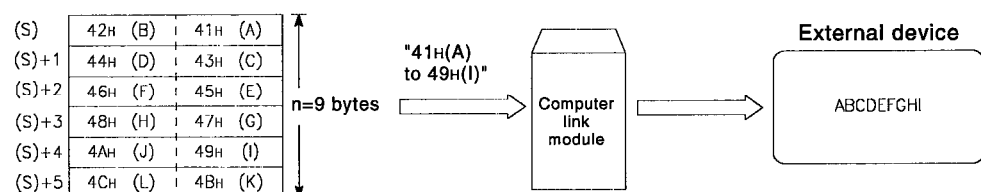
(2) PRN instructions automatically conduct the ON/OFF control of computer link module X(n+0)(send completed) and Y(n+10)(send request) by internal processing, and so control does not need to be conducted by the user.

(3) The number of data designated at n can be set within the following range.

AJ71C24... 1 to 127 words

AJ71C24-S3/S6/S8, AJ71UC24

Word units...... 1 to (no-protocol send buffer memory length set value - 1) words

Byte units....... 1 to (no-protocol send buffer memory length set value - 1) x 2 bytes

Set following items when the computer link module data unit designation and buffer memory length are not used in power-on setting.
- No-protocol word/byte designation (Power-on: word)
- No-protocol send buffer memory first address designation (Power-on: 0H)
- No-protocol send buffer memory length designation (Power-on: 80H)

(4) The unit of the number of data designated at n differs depending on the data unit designation (word or byte) of the computer link module. Send data set at (S) also differs depending whether the designated unit is words or bytes.

● Word unit designation	● Byte unit designation
n1 5 (words)	n1 9 (bytes)
b15 to b0	b15 to b8 b7 to b0
(S) First word	(S) Second byte | First byte
(S)+1 Second word	(S)+1 Fourth byte | Third byte
(S)+2 Third word	(S)+2 Sixth byte | Fifth byte
(S)+3 Fourth word	(S)+3 Eighth byte | Seventh byte
(S)+4 Fifth word	(S)+4 | Ninth byte
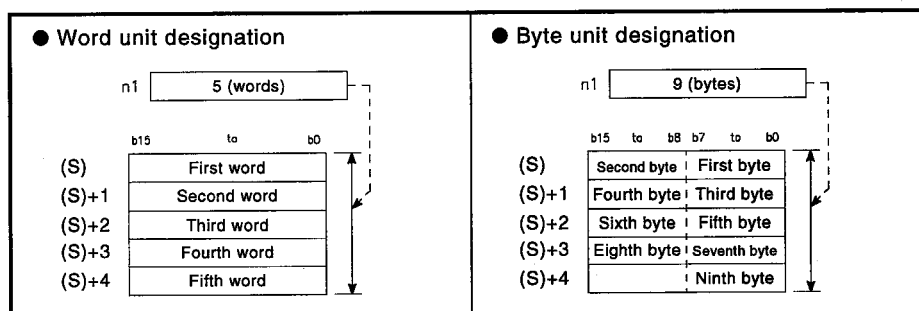
(5) The bit device designated at (D) automatically turns ON when the END instructions are run for the scan completing the send processing, and turns OFF at the END instruction of the next scan.
Used as PRN instructions execution completion flag.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
  • When the number of data designated at n exceeds the following range. (Error code: 4100)

AJ71C24.. 1 to 127 words

AJ71C24-S3/S6/S8,
AJ71UC24

⎧ Word units...... 1 to (no-protocol send buffer memory length set value - 1) words
⎨
⎩ Byte units....... 1 to (no-protocol send buffer memory length set value - 1) x 2 bytes

  • When the range of the number of data designated at n, starting from the device number designated at (S), exceeds the last device number of the applicable device. (Error code: 4101)
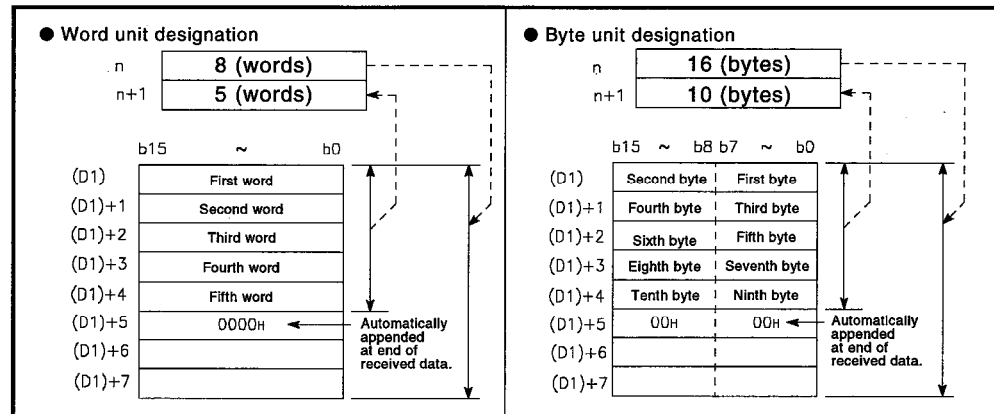 • When the number of characters in the character string designated at (S) is smaller than the number of characters (number of bytes) designated at n. (Error code: 4100)
  • When the module attempting access is not a special function module. (Error code: 2110)
  • When computer link module control instructions cannot be used in the designated module. (Error code: 2112)
  • When the designated instruction name is illegal. (Error code: 4300)
  • When the number of computer link module control instruction devices is illegal. (Error code: 4301)
  • When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, transmits the data of D0-D4 in word units to the external device connected to the AJ71C24-S3 installed at I/O numbers X/Y020-X/Y03F is shown here.
    MO turns ON on completion of instruction execution.

[Ladder mode]

Sets once after CPU RUN, in accordance with the communication data word unit designation.
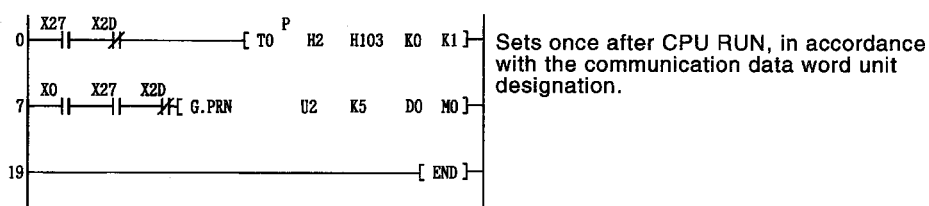
[List mode]

Step	Instruction	Device
0	LD	X27
1	ANI	X2D
2	TOP	H2
		H103
		K0
		K1
7	LD	X0
8	AND	X27
9	ANI	X2D
10	G.PRN	U2
		K5
		D0
		M0
19	END	

	b15 to b8	b7 to b0
D0	49H (I)	4DH (M)
D1	53H (S)	54H (T)
D2	42H (B)	55H (U)
D3	53H (S)	49H (I)
D4	49H (I)	48H (H)

5 words

"4DH(M)
to 49H(I)"

AJ71C
24–S8

External device

MITSUBISHI
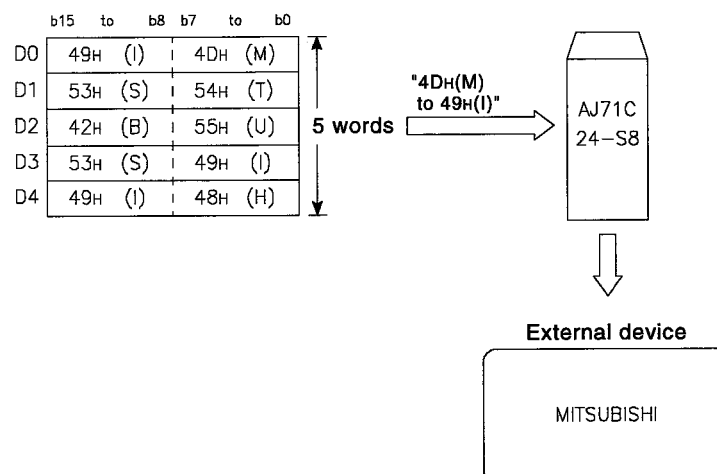
9.2 No-Protocol Mode Data Send Up until "00H" Code

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant $	Other
	Bit	Word		Bit	Word				
(S)	—	O		—				O	—
(D)	O	O		—				—	—

[Instruction Symbol]	[Execution condition]	

```
[Instruction Symbol]   [Execution condition]
                              Command
   PR         ⌐⌐        ─┤├─────────────[ G.PR  | (S) | (D) ]──

                              Command
   PR         ⌐          ─┤├─────────────[ GP.PR | (S) | (D) ]──
```

Set Data

SeT Data	Description	Data Type
Un	Head I/O number of computer link module	16-bit binary
(S)	First device number of devices storing send data	Character string
(D)	Bit device turning ON at processing completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Sends the data from between the device number designated at (S) to the device number storing "00H", to the external device connected to the computer link module.
When send processing is completed, the bit device designated at (D) automatically turns ON after only 1 scan.

Shows the end of data
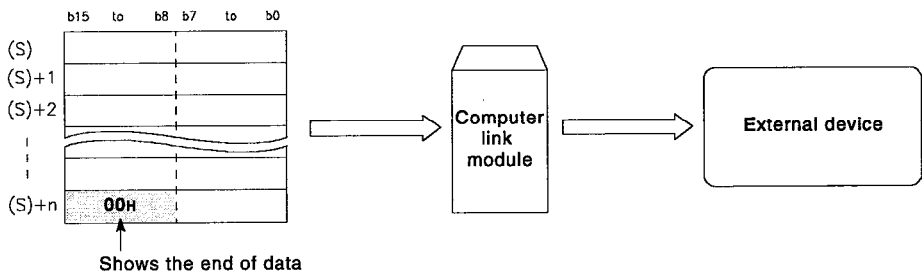
[Example:]
The following situation arises when "ABCDEFGH" is stored from the device designated at (S) onwards.

Indicates the end of the data
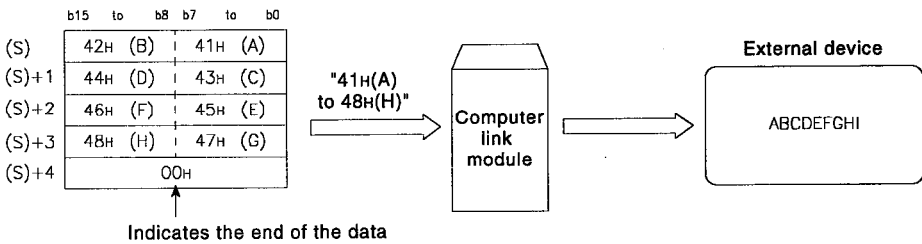
(2) PR instructions automatically conduct ON/OFF control of computer link module X(n+0)(send completed) and Y(n+10)(request to send) in internal processing, and so this control does not need to be conducted by user.

(3) "00H" cannot be set as data in the send data stored from the device number designated at (S) onwards.
"00H" is the send data END designation.

(4) The number of data that can be sent at one time is shown below.

AJ71C24.. 1 to 127 words

AJ71C24-S3/S6/S8, AJ71UC24
Word units...... 1 to (no-protocol send buffer memory length set value - 1) words
Byte units....... 1 to (no-protocol send buffer memory length set value - 1) x 2 bytes

Set the following items when the computer link module data unit designation and buffer memory length are not used in power-on setting.
• No-protocol word/byte designation (Power-on: word)
• No-protocol send buffer memory first address designation
(Power-on: 0H)
• No-protocol send buffer memory length designation (Power-on: 80H)

(5) The send data set in (S) differs according to the computer link module data unit designation (word or unit).
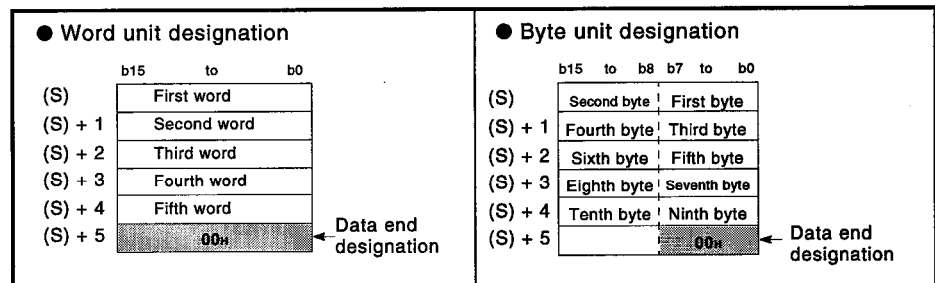
● Word unit designation		● Byte unit designation	
	b15 to b0		b15 to b8 b7 to b0
(S)	First word	(S)	Second byte | First byte
(S) + 1	Second word	(S) + 1	Fourth byte | Third byte
(S) + 2	Third word	(S) + 2	Sixth byte | Fifth byte
(S) + 3	Fourth word	(S) + 3	Eighth byte | Seventh byte
(S) + 4	Fifth word	(S) + 4	Tenth byte | Ninth byte
(S) + 5	00H ← Data end designation	(S) + 5	00H ← Data end designation

(6) The bit device designated at (D) automatically turns ON when the END instruction is executed in the scan completing the send processing, and turns OFF at the END instruction of the next scan. Used as PR instruction execution completion flag.
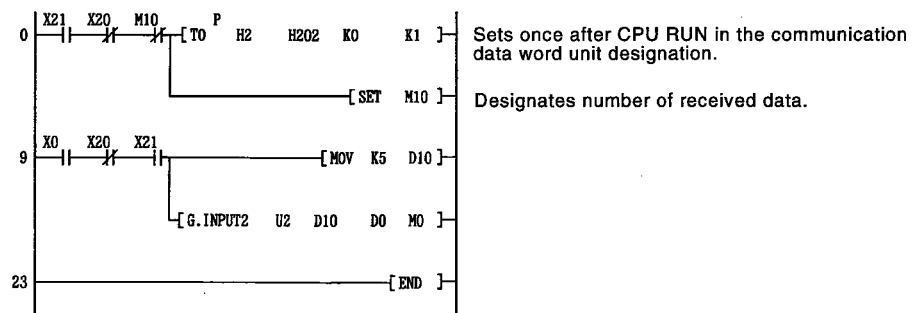
Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
   • When "00H" is not stored between the device number designated at (S) and the last device number of the applicable device.

   (Error code: 4100)

   • When the number of send data is outside the following range.

   (Error code: 4100)

   AJ71C24.. 1 to 127 words

   AJ71C24-S3/S6/S8, ⎡ Word units...... 1 to (no-protocol send buffer memory length set value - 1) words

   AJ71UC24 ⎣ Byte units....... 1 to (no-protocol send buffer memory length set value - 1) x 2 bytes

   • When the module attempting access is not a special function module.   (Error code: 2110)
   • When computer link module control instructions cannot be used with the designated module.   (Error code: 2112)
   • When the designated instruction name is illegal.   (Error code: 4300)
   • When the number of computer link module control instruction devices is illegal.   (Error code: 4301)
   • When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, sends data in word units from the data stored in D0 to 00H, to an external device connected to the AJ71C24-S3 installed at I/O numbers X/Y020-X/Y03F is shown here. M0 turns ON on completion of instruction execution.

[Ladder mode]

Sets once after CPU RUN, in accordance with the communication data word unit designation.

[List mode]

Step	Instruction	Device
0	LD	X27
1	ANI	X2D
2	TOP	H2
		H103
		K0
		K1
7	LD	X0
8	AND	X27
9	ANI	X2D
10	G.PR	U2
		D0
		M0
16	END	

	b15 to b8	b7 to b0
D0	45H (E)	4DH (M)
D1	53H (S)	4CH (L)
D2	43H (C)	45H (E)
D3	41H (A)	5F (−)
D4	00H	

"4DH(M) to 41H(A)" → AJ71 C24-S3 → External device MELSEC-A

9.3 No-Protocol Mode Data Receive

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
n	—	O		—			—	—	—
(D1)	—	O		—			—	—	—
(D2)	O	O		O			—	—	—

[Instruction Symbol]   [Execution condition]

		Command					
INPUT	⌐⌐	─┤ ├─	G.INPUT	Un	n	(D1)	(D2)

		Command					
INPUT	⌐	─┤ ├─	GP.INPUT	Un	n	(D1)	(D2)

Set Data

Set Data	Description	Data Type
Un	Head I/O number of computer link module	16-bit binary
n	Permissible number of received data, and number of received data	
(D1)	Head number of device storing received data	Device name
(D2)	Number of the bit device turning ON on completion of processing	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Receives data from the external device connected to the computer link module within the permissible range of data designated at n, and stores it from device number designated at (D1) onwards.
On completion of receive processing, the bit device designated at (D1) is automatically turned ON for one scan only.
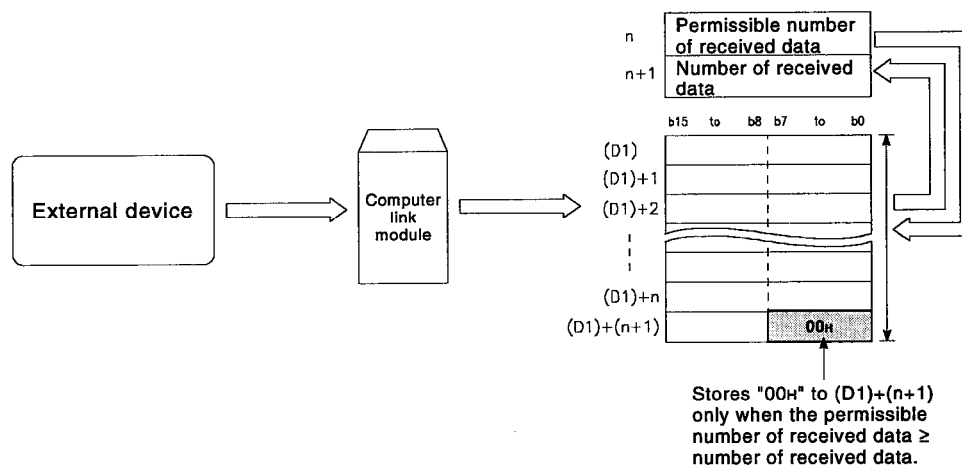
Stores "00H" to (D1)+(n+1) only when the permissible number of received data ≥ number of received data.

```
┌─────────────────────────────────────────────────────────┐
│ POINTS                                                   │
│                                                          │
│  (1) The G(P).INPUT command cannot be made into a pulse. │
│                                                          │
│  (2) Execute G(P).INPUT when I/O signal read request     │
│      is ON.                                              │
└─────────────────────────────────────────────────────────┘
```

(n) | 15 (permissible number of received data)
(n)+1 | 9 (number of received data)

	b15 to b8	b7 to b0
(D1)	42H (B)	41H (A)
(D1)+1	44H (D)	43H (C)
(D1)+2	46H (F)	45H (E)
(D1)+3	48H (H)	47H (G)
(D1)+4	00H	49H (I)

External device

ABCDEFGHI → Computer link module → (Byte designation) "41H(A) to 49H(I)"
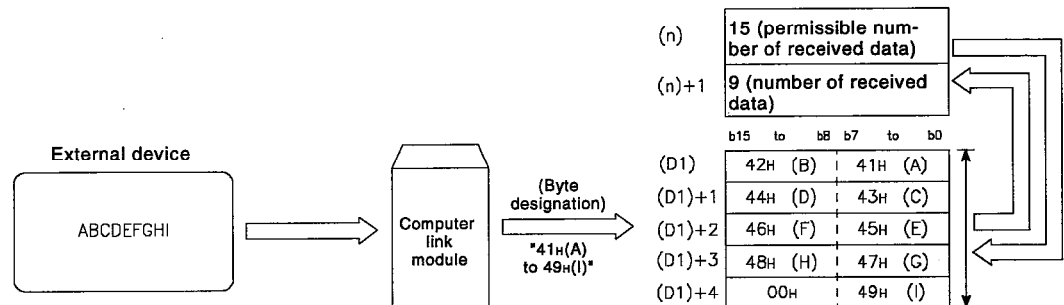
(2) INPUT instructions automatically conduct ON/OFF control of the computer link module X(n+1)(request to read received data) and Y(n+11)(read completion of received data) in internal processing, and so this control does not need to be conducted by the user.

(3) The number of data which can be received in one receive processing is as follows.

AJ71C24..Maximum 127 words

AJ71C24-S3/S6/S8, AJ71UC24

Word units...... Maximum (no-protocol receive buffer memory lengthset value - 1) words

Byte units....... Maximum (no-protocol receive buffer memory length set value - 1) x 2 bytes

Set the following items when the computer link module data unit designation and buffer memory length are not used in power-on setting.
• No-protocol word/byte designation (Power-on: word)
• No-protocol send buffer memory first address designation (Power-on: 0H)
• No-protocol send buffer memory length designation (Power-on: 80H)

(4) The permissible number of received data designated at n1 is a setting made to secure the range of devices for storing received data, and the data storage destination is the number of devices designated by n, starting from the device number designated at (D1).
The number of data actually received is automatically stored in n+1.

(n) | Permissible number of received data
(n)+1 | Number of received data

(D1)
(D1)+1
(D1)+2
(D1)+3
(D1)+4
(D1)+5
(D1)+6
(D1)+7

Number of received data stored

Possible range of received data stored
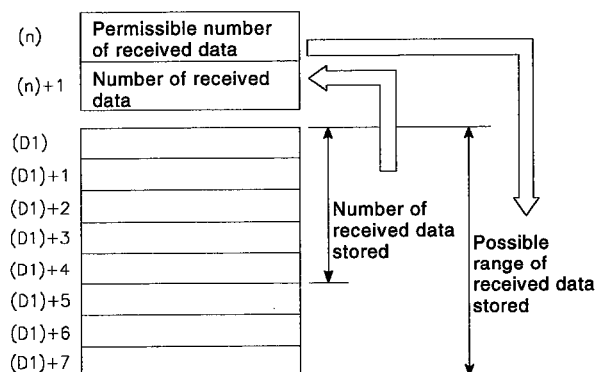
(5) When the number of data actually received is higher than the permissible number of received data designated at n, only the permissible number of received data is stored, and the remaining received data is discarded.

(6) n and n+1 set value and stored value units differ according to the computer link module data unit designation.
The data stored in (D1) also differs according to the unit (words or bytes).
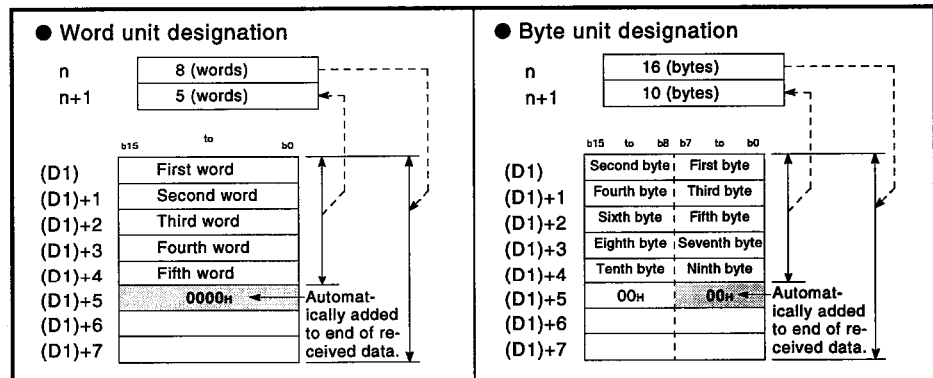
● Word unit designation		● Byte unit designation	
n	8 (words)	n	16 (bytes)
n+1	5 (words)	n+1	10 (bytes)
	b15 to b0		b15 to b8 b7 to b0
(D1)	First word	(D1)	Second byte | First byte
(D1)+1	Second word	(D1)+1	Fourth byte | Third byte
(D1)+2	Third word	(D1)+2	Sixth byte | Fifth byte
(D1)+3	Fourth word	(D1)+3	Eighth byte | Seventh byte
(D1)+4	Fifth word	(D1)+4	Tenth byte | Ninth byte
(D1)+5	0000H ← Automatically added to end of received data.	(D1)+5	00H | 00H ← Automatically added to end of received data.
(D1)+6		(D1)+6	
(D1)+7		(D1)+7	

(7) In byte unit designation, depending on whether the received data is odd or even numbered, the "00H" code added to the end of the received data is stored as below.

Received data is an odd number......... Stored in the higher bytes of the last device number storing received data.

Received data is an even number....... Stored in next device number of last device number storing received data.

● Word unit designation		● Byte unit designation	
n+1	9 (bytes)	n+1	8 (bytes)
	b15 to b8 b7 to b0		b15 to b8 b7 to b0
(D1)	Second byte | First byte	(D1)	Second byte | First byte
(D1)+1	Fourth byte | Third byte	(D1)+1	Fourth byte | Third byte
(D1)+2	Sixth byte | Fifth byte	(D1)+2	Sixth byte | Fifth byte
(D1)+3	Eighth byte | Seventh byte	(D1)+3	Eighth byte | Seventh byte
(D1)+4	00H | Ninth byte	(D1)+4	00H | 00H
	Automatically stores "00H".		Automatically stores "0000H".
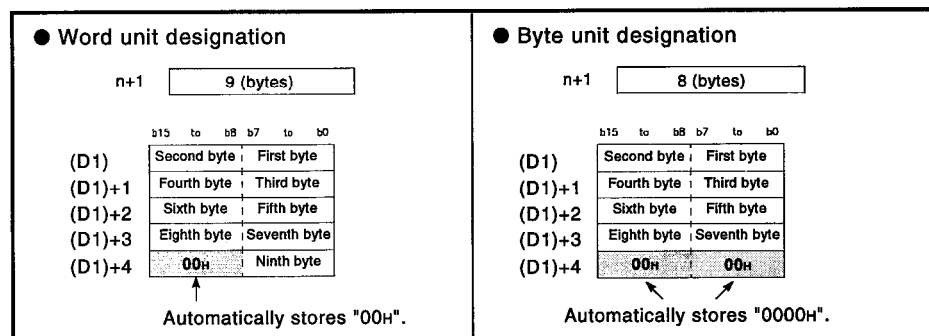
(8) When the number of received data is larger than the permissible number of received data, the "00H" code added to the end of the received data is stored in the device number immediately following the device number of the range of permissible number of received data.
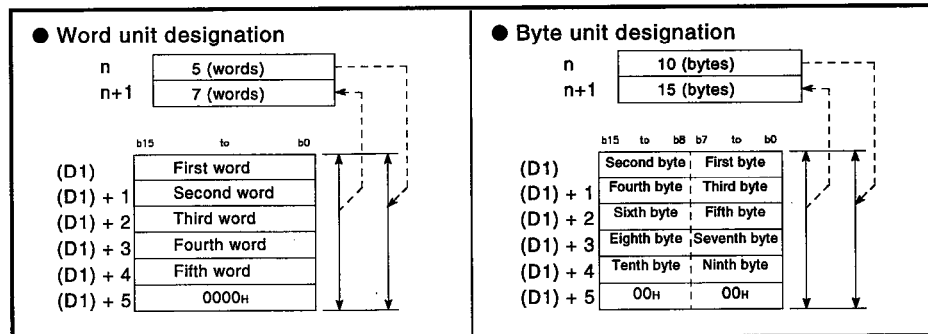
● Word unit designation		● Byte unit designation	
n	5 (words)	n	10 (bytes)
n+1	7 (words)	n+1	15 (bytes)

	b15 to b0		b15 to b8 b7 to b0
(D1)	First word	(D1)	Second byte ¦ First byte
(D1) + 1	Second word	(D1) + 1	Fourth byte ¦ Third byte
(D1) + 2	Third word	(D1) + 2	Sixth byte ¦ Fifth byte
(D1) + 3	Fourth word	(D1) + 3	Eighth byte ¦ Seventh byte
(D1) + 4	Fifth word	(D1) + 4	Tenth byte ¦ Ninth byte
(D1) + 5	0000H	(D1) + 5	00H ¦ 00H

(9) The bit device designated at (D2) automatically turns ON when the END instruction is executed in the scan completing the reception, and turns OFF at the END instructions of the next scan.
Used as an execution completion flag for INPUT instructions.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
  • When the range of the number of data designated at n, starting from the device number designated at (D), exceeds the last device number of the applicable device. (Error code: 4100)
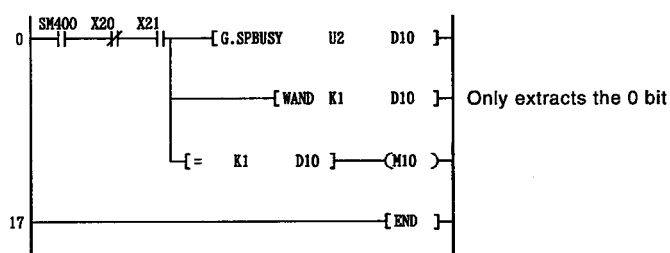 • When the module attempting access is not a special function module. (Error code: 2110)
  • When computer link module control instructions cannot be used in the designated module. (Error code: 2112)
  • When the designated instruction name is illegal. (Error code: 4300)
  • When the number of computer link module control instruction devices is illegal. (Error code: 4301)
  • When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 is ON, receives 5 words of data from the external device connected to the AJ71C24-S3 installed at I/O numbers X/Y020-X/Y03F, and stores the data to D0-D4, is shown here.
M0 turns ON on completion of instruction execution.
[Ladder mode]
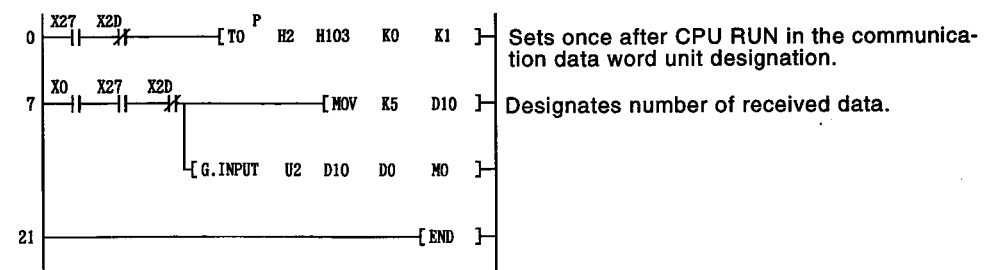
```
       X27  X2D              P
 0   ──┤├──┤╱├──────────[TO   H2   H103  K0   K1 ]─   Sets once after CPU RUN in the communica-
                                                       tion data word unit designation.
       X0   X27  X2D
 7   ──┤├──┤├──┤╱├─────────────[MOV  K5   D10 ]─   Designates number of received data.

                    └[G.INPUT  U2   D10   D0   M0 ]─

21   ────────────────────────────────[END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X27
1	ANI	X2D
2	TOP	H2
		H103
		K0
		K1
7	LD	X0
8	AND	X27
9	ANI	X2D
10	MOV	K5
		D10
12	G.INPUT	U2
		D10
		D0
		M0
21	END	

Stored automatically

9.4   Reading Communication Status

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(D)	O							—	

```
[Instruction Symbol]    [Execution condition]
                                    Command
    SPBUSY          _ГL    ────┤├──────────────────  G.SPBUSY    Un    (D) ├──

                                    Command
    SPBUSY          _ʃ     ────┤├──────────────────  GP.SPBUSY   Un    (D) ├──
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of computer link module	16-bit binary
(D)	Device number storing read communication status	32-bit binary

Function

(1) Reads the execution status of the following instructions of the computer link module, and stores the status to the device designated at (D).
• PRN, PR instructions (data send instructions)
• INPUT instructions (data receive instructions)

(2) For the execution status stored in (D), "1" is stored in the corresponding bit at the start of processing, and "0" is stored when processing is completed.
The completion of instruction processing instruction indicated by the instruction completion flag (designated bit device) turning from ON to OFF.
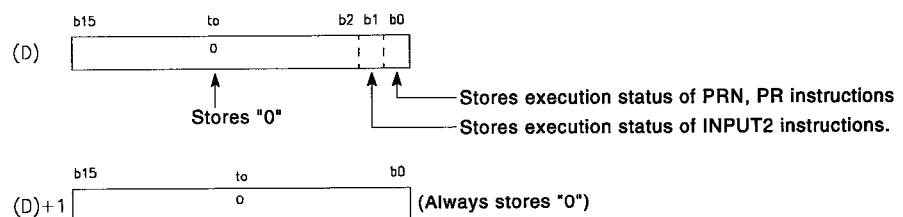
```
         b15            to          b2 b1 b0
    (D)  [              0              |  | ]
                        ↑             ↑ ↑────Stores execution status of PRN, PR instructions
                   Stores "0"         └──────Stores execution status of INPUT2 instructions.

         b15            to             b0
    (D)+1 [             0                ]  (Always stores "0")
```

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
• When the module attempting access is not a special function module.   (Error code: 2110)
• When computer link module control instructions cannot be used with the designated module.   (Error code: 2112)
• When the designated instruction name is illegal. (Error code: 4300)
• When the number of computer link module control instruction devices is illegal.   (Error code: 4301)
• When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) A program which turns M10 ON when PR instructions are executed in AJ71C24-S3 installed in I/O number X/Y020-X/Y03F.

[Ladder mode]

```
         SM400  X27   X2D
   0     ┤├────┤├───┤/├──────[G.SPBUSY    U2    D10 ]─┤
                          │
                          ├────────────[WAND  K1    D10 ]─┤
                          │
                          └─[=     K1    D10 ]───(M10  )─┤   Turns M10 ON/OFF by 0 bit I/O

  17    ────────────────────────────────────────[END  ]─┤
```

[List mode]

Step	Instruction	Device
0	LD	SM400
1	AND	X27
2	ANI	X2D
3	G.SPBUSY	U2
		D10
10	WAND	K1
		D10
13	AND=	K1
		D10
16	OUT	M10
17	END	

9.5 Forced Cancellation of Communications Processing

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	O							—	

[Instruction Symbol]   [Execution condition]

SPCLR   ⎍   Command ──┤├──────────── G.SPCLR | Un | (S)

SPCLR   �   Command ──┤├──────────── GP.SPCLR | Un | (S)

Set Data

Set Data	Description	Data Type
Un	Head I/O number of computer link module	16-bit binary
(S)	First device number of the devices storing the data designated for the stop	32-bit binary

Function

(1) Forcibly cancels communication processing (processing by PRN, PR, INPUT instructions) of computer link module.

(2) Setting of the cancel processing is conducted at (S).
The cancel setting is made by setting "1" in the applicable device for cancel processing.

```
        b15          to      b2 b1 b0
(S)  ┌──────────────────────┬─┬─┬──┐
     └──────────────────────┴─┴─┴──┘
          └────┬────┘          ↑ ↑
          [Ignores 0/1         │ └── Sending by PRN, PR instructions
           status]             └──── Receiving by INPUT instructions

        b15          to              b0
(S)+1 ┌──────────────────────────────┐
      └──────────────────────────────┘   (Ignores the 0/1 status of each bit)
```

(3) When processing is cancelled, the completion flag (designated bit device) for the instruction corresponding to the cancellation does not turn ON.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the module attempting access is not a special function module. (Error code: 2110)
- When computer link module control instructions cannot be used in the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of computer link module control instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which cancels the PR or PRN instruction being executed at the AJ71C24-S3 installed at I/O numbers X/Y020-X/Y03F is shown here.

[Ladder mode]

```
0 ├─SM400─X27──X2D─┬────────────[MOV   K1    D10   ]┤
    ├──┤├───┤├───┤/├─┤                               │
    │                └──[G.SPCLR        U2    D10   ]┤  Sets "1" in bit no. 0
    │
12 ├──────────────────────────────────[END    ]┤
```
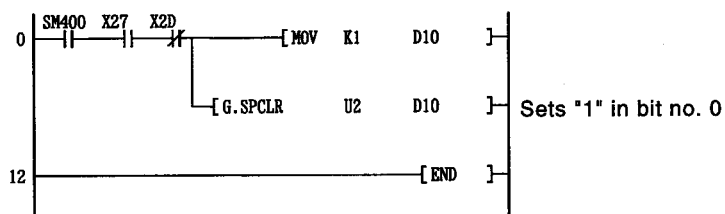
[List mode]

Step	Instruction	Device
0	LD	SM400
1	AND	X27
2	ANI	X2D
3	MOV	K1
		D10
5	G.SPCLR	U2
		D10
12	END	

10. AJ71QC24 CONTROL INSTRUCTIONS

AJ7QC24 instructions are instructions for conducting data communications between an AJ71QC24 and external devices connected to the AJ71QC24.

The following table shows AJ71QC24 instructions.

Category	Instruction Name	Description
Write user registration frame to EPROM	PUTE	Registers the user registration frame in EPROM, or deletes registered user registration frame.
Read user registration frame from EPROM	GETE	Reads the user registration frame registered in EPROM.
Data send by dedicated protocol on-demand function	ONDEMAND	Sends data in dedicated protocol by on-demand functions.
Designated number of data send in no-protocol protocol	OUTPUT	Sends designated number of data in no-protocol protocol.
Data send in no-protocol protocol Data send in accordance with schedule table	PRR	Sends data in no-protocol according to send schedule.
Data receive in no-protocol protocol	INPUT	Receives data in no-protocol protocol.
Data send in bidirectional protocol	BIDOUT	Sends data in bidirectional protocol.
Data receive in bidirectional protocol	BIDIN	Receives data in bidirectional protocol.
Read communications status	SPBUSY	Reads communication processing status by instructions.
Read other station device	READ	Reads device data from other station CPUs connected to AJ71QC24 and MELSECNET/10.
Write other station device	SWRITE	Writes data to device of other station CPU connected to AJ71QC24 and MELSECNET/10.
Data send to other station	SEND	Sends data to other station CPU connected to AJ71QC24 and MELSECNET/10.
Data receive from other station	RECV	Receives data from other station CPU connected to AJ71QC24 and MELSECNET/10.
Transient transmission request from other station	REQ	Sends transient request to other station CPU connected to AJ71QC24 and MELSECNET/10.

POINTS

(1) When AJ71QC24 control instructions are used, control is conducted in accordance with the following buffer memory setting values.
  • On-demand buffer memory address designation (A0H, 140H)
  • Send buffer memory first address (A2H, 142H)
  • Send buffer memory length designation (A3H, 143H)
  • Receive buffer memory first address (A6H, 146H)
  • Receive buffer memory length designation (A7H, 147H)

(2) AJ71QC24 control instructions cannot be used for the following computer link modules.
  Computer link module control instructions (see Chapter 9) cannot be used for AJ71QC24 type serial communication modules.
  • AJ71C24 computer link modules
  • AJ71C24-S3 computer link modules
  • AJ71C24-S6 computer link modules
  • AJ71C24-S8 computer link modules
  • AJ71UC24 computer link modules

(3) See the following manual for details of the AJ71QC24 serial communication module.
  • AJ71QC24 Serial Communication Module User's Manual

(1) About other station access with AJ71QC24 control instructions link dedicated instructions
The following is a general description of data communications using the AJ71QC24 operation mode and link dedicated instructions, which refers to accessing other stations via an AJ71QC24 by using following link dedicated instructions in the AJ71QC24 control instructions.
- READ instruction
- SWRITE instruction
- SEND instruction
- RECV instruction
- REQ instruction

(a) AJ71QC24 operation mode*
For other station access via AJ71QC24, set the AJ71QC24 on the access route as follows.
1) Set operation mode to dedicated protocol (format 1 to format 5).
2) Set to "no interlock"

(b) General description of data communication by link dedicated instructions
The following gives a general description of data communication with QnACPUs in other stations by using link dedicated instructions.
1) READ/SWRITE instructions
Instructions for reading and writing data to the device memory of the QnACPU of a designated station.
- READ..... Reads data from device memory of the QnACPU at the designated station.
- SWRITE..Writes data to the device memory of the QnACPU at the designated station.
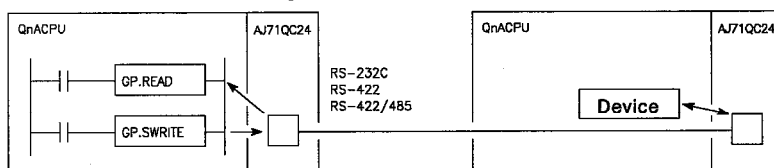
2) SEND/RECV instructions
Instructions for data communications between QnACPUs using the OS memory of the AJ71QC24.
- SEND..... Writes designated data to designated station AJ71QC24 OS memory.
- RECV..... Reads data from host station AJ71QC24 OS memory
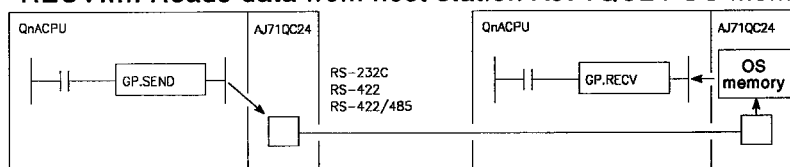
3) REQ instructions
Instructions for status control (remote RUN/remote STOP) and clock data read/write of the QnACPU at the designated station.
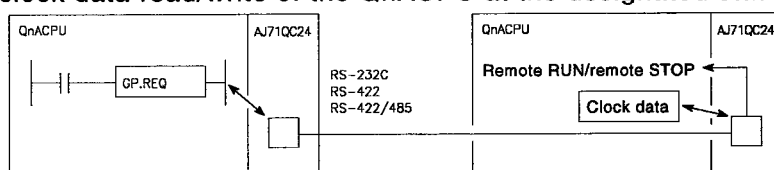
REMARK

1)* : See the AJ71QC24 Serial Communication Module User's Manual (Detailed Information) for details of the AJ71QC24 operation mode.

(2) Possible range of access with other stations

The following indicates the stations which can be accessed when accessing other stations via an AJ71QC24 with link dedicated instructions.

In the following descriptions, these accessible stations are expressed as [target station-1].

[Target station-1]

(a) The access described here is access between QnACPUs which is via AJ71QC24 only, and where the AJ71QC24s are connected by RS-232C, RS-422 interfaces, or by RS-422/485 interfaces.

(b) The connected QnACPUs (QnACPUs (1) to (9) in the following diagram) can conduct data communications by link dedicated instructions.

(c) When AJ71QC24s are connected by RS-422/485 interfaces, access between QnACPUs is possible even if external devices are connected in the circuit.

(AJ71QC24s connected by RS-232C/RS-422 interfaces)   1:1 connection possible

(Example)

Meaning of symbol on right-hand side of AJ71QC24 installation station
< > : AJ71QC24 setting station number
[ ] : AJ71QC24 head I/O signal

(AJ71QC24s connected by RS-422/485 interfaces)   1:1, 1:n, m:n connections possible

(Example)

(3) Cautions when accessing other stations

The following describes cautions when accessing other stations via an AJ71QC24 using link dedicated instructions.

(a) Method of establishing an interlock between external device and QnACPU

When the external device and QnACPU are connected in a 1:n or m:n configuration, an interlock must be established between the external device and each QnCPU so that the external device and each QnACPU do not use the RS-422/485 line at the same time.

Example of how to establish an interlock.

(Example) The possibility of executing QnACPU link dedicated instructions is controlled by external devices by means of dedicated protocol global functions. [1]

*1 The time interval is set by the user according to the system specifications.
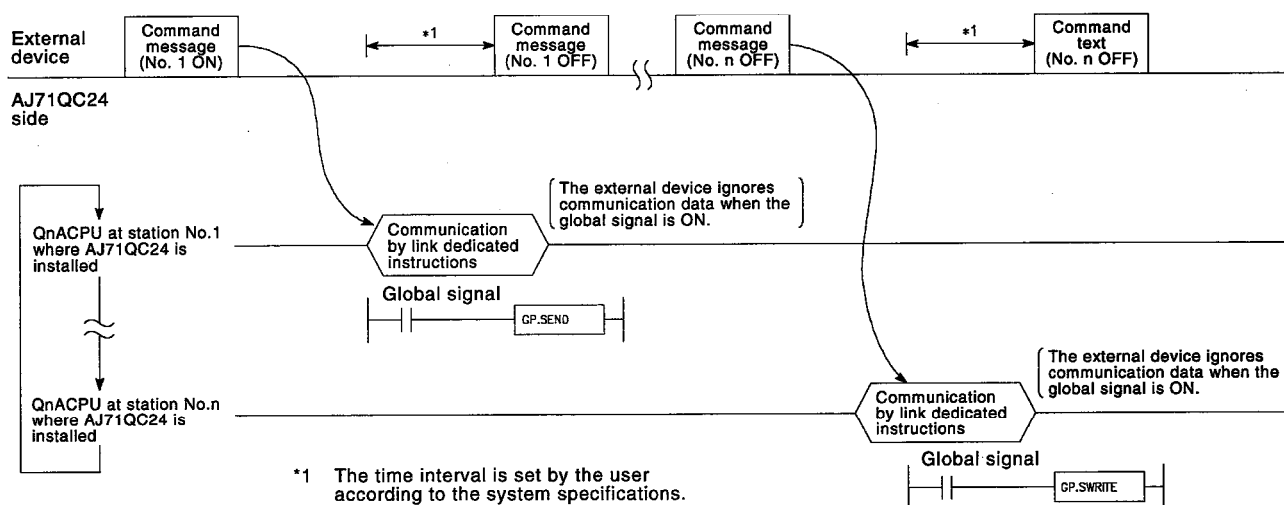
(b) Simultaneous execution of multiple instructions

The QnACPU cannot simultaneously execute multiple link dedicated instructions with the same interface (CH1 or CH2) of the relay AJ71QC24 designated.

It is essential to wait for the completion of data sending by one link dedicated instruction before executing the next link instruction.

Operation is terminated by an error if instructions are simultaneously executed.

(c) Wiring connection when via RS-422/485 interface

When accessing other stations via the RS-422/485 interface of the AJ71QC24 with a system configuration of 1:n at the relay RS-422/485 interface side, connect external devices on the line, and between AJ71QC24s, by connecting the wiring in the same way as for as an m:n connection. [2]

REMARKS

1)* : See the AJ71QC24 Serial Communication Module User's Manual for details of the dedicated protocol global functions.

2)* : See the AJ71QC24 Serial Communication User's Manual for details of the wiring method for a m:n connection.

10.1 Writing User Registration Frame to E²PROM

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D)	O	—				—			

[Instruction Symbol] [Execution condition]

| | | Command | | G.PUTE | Un | (S1) | (S2) | (D) | |
| PUTE | | | | | | | | | |

| | | Command | | GP.PUTE | Un | (S1) | (S2) | (D) | |
| PUTE | | | | | | | | | |

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices storing registered data	
(D)	Number of bit device which turns ON at execution completed	Control data

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by

(S1)+0	Register/ delete designation	• In a PUTE instruction, designates whether to register or delete registered data designated at S2.
		  Register : 1
		  Delete : 3
			1, 3	User

(S1)+1	Register/ delete result	• Stores result of registration/deletion by PUTE instruction
		  0 : Normal
		  other than 0 : Error code*
			—	System

(S1)+2	Designation frame number	• Sets user registration frame number	1000 to 1199	User
(S1)+3	Number of registered bytes	• Sets number of bytes of user registration frame	1 to 80	User

REMARKS

1)* : See the following manual for details of error codes for faults.
   • AJ71QC24 Serial Communication Module User's Manual.
2) The meanings of the entries in the "set by" column in the table above are as follows.
   • User   : Data set by the user before executing PUTE instruction.
   • System   : Result of PUTE instruction execution stored by QnACPU.

Function

(1) Registration and deletion of user registration frame are conducted in the AJ71QC24 designated at Un.

(2) Registering user registration frame
   (a) When registering the user registration frame, makes the device designated at (S1)+1 "1".
   When the device designated at (S1)+1 is "1", data from the device designated at (S2) onwards is registered in accordance with the control data designated at (S2).

   (b) The registration data is stored in 2-byte sections from the device designated at (S2) onwards.
   Therefore devices storing registration data must comprise (number of registered data)/2 points from the device designated at (S2).
   For example, when registering 6 bytes of data, 3 points from the device designated at (S2) are required.
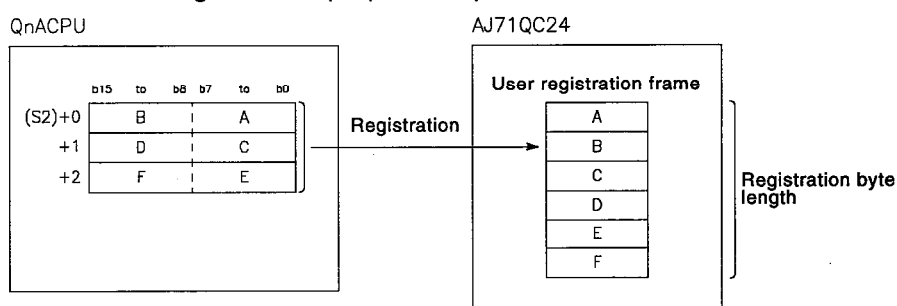
(3) Deleting user registration frame
   (a) When the user registration frame is deleted, the device designated at (S1)+1 is made "3".
   When the device designated at (S1)+1 is 3, the frame number designated at (S1)+2 is deleted.

   (b) The device storing the registered number of bytes designated at (S1)+3, and the registration data designated at (S2), are not used by PUTE instructions but are required for the PUTE instruction format.
   Set dummy data in (S1)+3 and a dummy device in (S2).

(4) During execution of a PUTE instruction, it is nor possible to execute another PUTE instruction or a GET instruction.
   If an attempt is made to execute a PUTE or GET instruction when a PUTE instruction is already being executed, the system waits until the completion of the PUTE instruction already being executed.

(5) The normal/error completion of PUTE instructions can be confirmed by means of the completion device ((D)) or status indication device ((D)+1) at completion.

(a) Completion device
: Turns ON at END processing of the scan completing PUTE instruction, and turns OFF at the next END processing.

(b) Completion status indication device
: Turns ON/OFF depending on the status when PUTE instruction is completed.
- Normal completion : Stays OFF, no change.
- Error completion : Turns ON at END processing of scan completing PUTE instruction, turns OFF at next END processing.

[Operation at PUTE instruction execution]

Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the control data contents are outside the setting range.
  (Error code: 4100)
- When the module attempting access is not a special function module.
  (Error code: 2110)
- When AJ71QC24 control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71QC24 control instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X30 turns ON, registers 8 bytes of data stored in D4-D7 to user registration frame number 1000 is shown below. (Control data is set in D0 to D3).

[Ladder mode]

```
0  ┤X30├─────────────────[MOV^P K1    D0  ]┤
   │                    ┌─[MOV^P K1000 D2  ]┤
   │                    ├─[MOV^P K8    D3  ]┤
   └[GP.PUTE  U0    D0   D4    M0  ]┤
18 ├──────────────────────────[END]┤
```

[List mode]

Step	Instruction	Device
0	LD	X30
1	MOVP	K1
		D0
4	MOVP	K1000
		D2
7	MOVP	K8
		D3
10	GP.PUTE	U0
		D0
		D4
		M0
18	END	

(2) A program which, when X30 turns ON, deletes the user registration frame number 1000 is shown below. (Control data is set in D0 to D3).

[Ladder mode]

```
0  ┤X30├─────────────────[MOV^P K3    D0  ]┤
   │                    ┌─[MOV^P K1000 D2  ]┤
   │                    ├─[MOV^P K1    D3^*1]┤
   └[GP.PUTE  U0    D0   D4^*2  M0  ]┤
18 ├──────────────────────────[END]┤
```
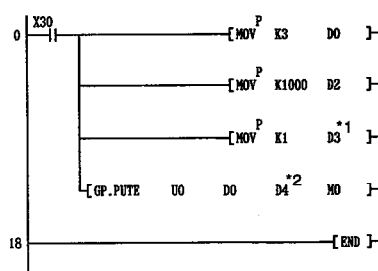
[List mode]

Step	Instruction	Device
0	LD	X30
1	MOVP	K3
		D0
4	MOVP	K1000
		D2
7	MOVP	K1
		D3
10	GP.PUTE	U0
		D0
		D4
		M0
18	END	

REMARKS

1) *1 : Store dummy data in D3 in the range of 1 to 80.
2) *2 : D4 is the dummy device.

10.2 Reading User Registration Frame from E²PROM

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O					—		
(S2)	—	O					—		
(D)	O	—					—		

[Instruction Symbol]   [Execution condition]

		Command						
GETE	⎍	⊣⊢		G.GETE	Un	(S1)	(S2)	(D)

		Command						
GETE	⌐	⊣⊢		GP.GETE	Un	(S1)	(S2)	(D)

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices storing the read registration data.	
(D)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Dummy	• Not used	0	—
(S1)+1	Read result	• Stores GETE instruction read result 0 : Normal other than 0 : Error Code*	—	System
(S1)+2	Designation frame number	• Sets user registration frame number	1000 to 1199	User
(S1)+3	Number of registered bytes	• Sets number of bytes of user registration frame	1 to 80	User

REMARKS

1)* : See the following manual for details of error codes for faults.
    AJ71QC24 Serial Communication Module User's Manual.
2) The meanings of the entries in the "set by" column in the table above are as follows.
    • User   : Data set by the user before executing GET instruction.
    • System   : Result of GET instruction execution stored by QnACPU.

Function

(1) Reads designated user registration frame data at the AJ71QC24 designated by Un.

QnACPU   AJ71QC24
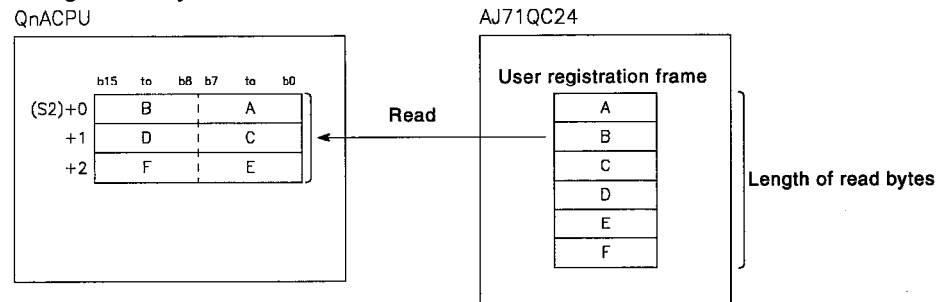
(2) During GETE instruction execution, other GETE instructions or PUTE instructions cannot be executed.
If an attempt is made to execute a GETE or PUTE instruction during GETE instruction execution, the system waits until completion of the execution of the instruction already being executed.

(3) GETE instruction normal/error completion can be confirmed by completion device (D) or completion status indication device ((D)+1).

   (a) Completion device
   : Turn ON at the END processing of the scan completing GETE instruction, and turns OFF at the next END processing.

   (b) Completion status indication device
   : Turn ON/OFF depending on the status at the time of completion of GETE instruction.
   • Normal completion : Stays OFF, no change.
   • Error completion : Turns ON at END processing of the scan completing GETE instruction, and turns OFF at the next END processing.

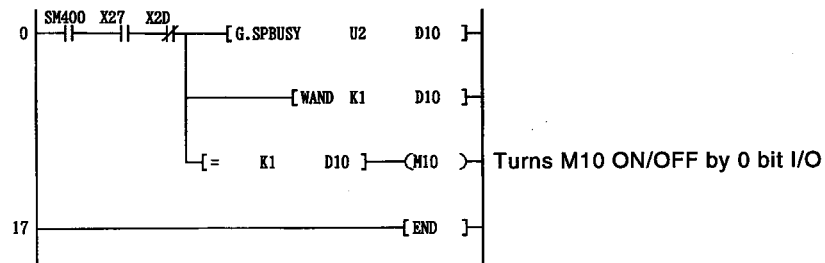[Operation at GETE instruction execution]

Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the control data contents are outside the setting range.
  (Error code: 4100)
- When the module attempting access is not a special function module.
  (Error code: 2110)
- When AJ71QC24 control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71QC24 control instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X30 turns ON, reads 10 bytes of data from user registration frame number 1000 and stores it from D10 onwards is shown here.
(Control data is set in D0 to D3).

[Ladder mode]   [List mode]

```
     X30                    P
 0  ─┤ ├──┬──────────────[MOV  K1000  D2 ]─
         │                   P
         ├──────────────[MOV  K10    D3 ]─
         │
         └[GP.GETE   U0   D0    D10   M0 ]─

15  ├──────────────────────────────[END]─
```

Step	Instruction	Device
0	LD	X30
1	MOVP	K1000
		D2
4	MOVP	K10
		D3
7	GP.GETE	U0
		D0
		D10
		M0
15	END	

10.3 Data Send by Dedicated Protocol On-Demand Function

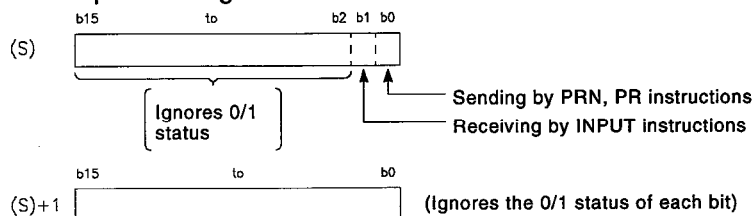| Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D)	O	—				—			

[Instruction Symbol]   [Execution condition]

ONDEMAND   ⎍   Command
— | |— [G.ONDEMAND | Un | (S1) | (S2) | (D)]

ONDEMAND   ⤒   Command
— | |— [GP.ONDEMAND | Un | (S1) | (S2) | (D)]

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices storing send data	
(D)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Send channel	• Sets the send channel 1 : Channel 1 2 : Channel 2	1, 2	User
(S1)+1	Send result	• Stores result of reading by ON DEMAND instruction 0 : Normal other than 0 : Error code [*1]	—	System
(S1)+2	Number of send data	• Sets number of data to send [*2]	1 to	User

REMARKS

1) *1 : See the following manual for details of error codes for faults.
AJ71QC24 Serial Communication Module User's Manual.

2) *2 : When bytes designated sets number of bytes, when words designated, sets number of words in AJ71QC24.

3) The meanings of the entries in the "set by" column in the table above are as follows.
• User   : Data set by the user before executing ONDEMAND instruction.
• System : Result of ONDEMAND instruction execution stored by QnACPU.

Function

(1) Sends data stored from the device designated at (S2) onwards by the on-demand function in dedicated protocol, to the AJ71QC24 designated at Un, according to the control data from the device designated at (S1) onwards.
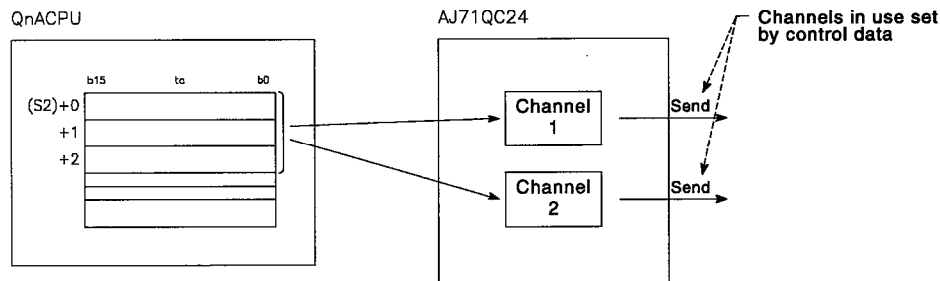
(2) The following instructions cannot be simultaneously executed in channels executing ONDEMAND instructions.
- Other ONDEMAND instructions
- OUTPUT instructions
- PRR instructions
- BIDOUT instructions

If an attempt is made to execute any of the above instructions while an ONDEMAND instruction is being executed, the system waits until the ONDEMAND instruction already being executed is completed.

(3) Normal/error completion of ONDEMAND instructions can be confirmed by means of the completion device (D) or completion status indication device ((D)+1).
   (a) Completion device
      : Turns ON at END processing of the scan completing ONDEMAND instruction, and turns Off at next END processing.
   (b) Completion status indication device
      : Turn ON/OFF depending on status at time of completion of ONDEMAND instructions.
      - Normal completion   : Stays OFF, no change.
      - Error completion   : Turns ON at END processing of scan completing ONDEMAND instruction, and turns OFF at next END processing.

[Operation at ONDEMAND instruction execution]
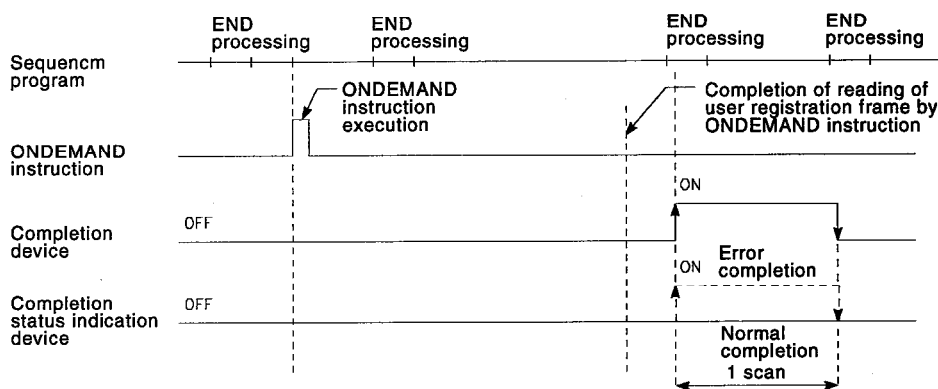
Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the control data contents are outside the setting range.
(Error code: 4100)
- When the module attempting access is not a special function module.
(Error code: 2110)
- When AJ71QC24 control instruction cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71QC24 control instruction devices is illegal.
(Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X30 turns ON, sends data (byte designation) stored in D10-D14 from channel 2 is shown here.
(Control data is set in D0 to D2).

[Ladder mode]   [List mode]

```
   X30                          P
0 ─┤├────────────────────[MOV  K2   D0 ]─
    │                         P
    ├───────────────────[MOV  K10  D2 ]─
    │
    └[GP.ONDEMAND  U0    D0    D10  M0 ]─
17 │─────────────────────────────[END]─
```

Step	Instruction	Device
0	LD	X30
1	MOVP	K2
		D0
4	MOVP ·	K10
		D2
7	GP.ONDEMAND	U0
		D0
		D10
		M0
17	END	

10.4 Sending Designated Number of Data in No-Protocol Mode

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D)	O	—				—			

[Instruction Symbol]   [Execution condition]

| OUTPUT | ⎍ | Command | | G.OUTPUT | Un | (S1) | (S2) | (D) | |
| OUTPUT | ⌐ | Command | | GP.OUTPUT | Un | (S1) | (S2) | (D) | |

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices storing send data	
(D)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by

(S1)+0	Send channel	• Sets the send channel
		  1 : Channel 1
		  2 : Channel 2
			1, 2	User

(S1)+1	Send result	• Stores result of sending by OUTPUT instruction
		  0 : Normal
		  other than 0 : Error code *1
			—	System

(S1)+2	Number of send data	• Sets number of data to send *2	1 to	User

REMARKS

1) *1 : See the following manual for details of error codes for faults.
   AJ71QC24 Serial Communication Module User's Manual.

2) *2 : When bytes designated sets number of bytes, when words designated, sets number of words in AJ71QC24.

3) The meanings of the entries in the "set by" column in the table above are as follows.
   • User   : Data set by the user before executing OUTPUT instruction.
   • System   : Result of OUTPUT instruction execution stored by QnACPU.

Function

(1) Sends data stored from the device designated at (S2) onwards according to control data from the device designated in (S1) onwards to AJ71QC24 designated at Un in no-protocol mode.
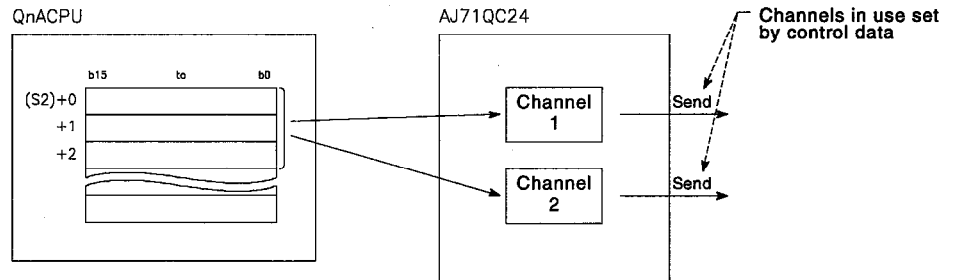
(2) The following instruction cannot be executed simultaneously in channels executing OUTPUT instruction.
- Other OUTPUT instructions
- ONDEMAND instructions
- PRR instructions
- BIDOUT instructions

If an attempt is made to execute the above instructions while an OUTPUT instruction is being executed, the system waits until the OUTPUT instruction being executed is completed.

(3) Normal/error completion of OUTPUT instructions can be confirmed by means of the completion device (D) or completion status indication device ((D)+1).

(a) Completion device
: Turns ON at END processing of scan completing OUTPUT, and turns OFF at next END processing.

(b) Completion status indication device
: Turns ON/OFF depending on status at time of completion of OUTPUT instruction.
- Normal completion : Stays OFF, no change.
- Error completion : Turn ON at END processing of scan completing OUTPUT instruction, and turns OFF at next END processing.

[Operation at execution of OUTPUT instruction]

Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the control data contents are outside the setting range.
(Error code: 4100)
- When the module attempting access is not a special function module.
(Error code: 2110)
- When AJ71QC24 control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71QC24 control instruction devices is illegal.
(Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X30 turns ON, sends data (byte designation) stored in D10-D14 from channel 1 is shown here.
(Control data is set in D0 to D2).

[Ladder mode]

```
      X30                        P
 0   ─┤↑├──────────────────[MOV  K1    D0  ]─
      │                         P
      │                  ──────[MOV  K10   D2  ]─
      │
      └[GP.OUTPUT  U0    D0    D10   M0  ]─

16   ────────────────────────────────[END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X30
1	MOVP	K1
		D0
4	MOVP	K10
		D2
7	GP.OUTPUT	U0
		D0
		D10
		M0
16	END	

10.5 Data Send Using Send Schedule Table in No-Protocol Mode

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	—	O		—					
(D)	O	—		—					

[Instruction Symbol]   [Execution condition]

			Command						
PRR	⌐⌐	⊣ ⊢		G.PRR	Un	(S)	(D)	
PRR	↑	⊣ ⊢	Command	GP.PRR	Un	(S)	(D)	

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S)	First device number of devices storing control data	Device name
(D)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by

(S)+0	Send channel	• Sets the send channel
		   1 : Channel 1
		   2 : Channel 2
			1, 2	User

(S)+1	Send result	• Stores result of send by PRR instruction
		   0 : Normal
		   other than 0 : Error code [*1]
			—	System

(S)+2	CR/LF addition designation	• Sets whether or not to add CR/LF to send data
		   0 : Not add CR/LF
		   1 : Add CR/LF
			0, 1	User

(S)+3	Send pointer	• Sets send schedule pointer	1 to 100	User
(S)+4	No. of schedules	• Number of schedules used for send	1 to 100	User

|REMARKS|

1) *1 : See the following manual for details of error codes for faults.
       AJ71QC24 Serial Communication Module User's Manual.
2)* : The meanings of the entries in the "set by" column in the table above are as follows.
    • User   : Data set by the user before executing PRR instruction.
    • System : Result of PRR instruction execution stored by QnACPU.

Function

(1) Sets the control data stored from the device designated at (S) onwards, and sends it in accordance with the AJ71QC24 schedule table to the AJ71QC24 designated at Un in the no-protocol mode.

(2) The following instructions cannot be simultaneously executed in channels executing PRR instructions.
- OUTPUT instructions
- ONDEMAND instructions
- Other PRR instructions
- BIDOUT instructions

If an attempt is made to execute any of the above instructions while a PRR instruction is being executed, the system waits until the PRR instruction being executed is completed.

(3) Normal/error completion of PRR instructions can be confirmed by means of the completion device (D) or completion status indication device ((D)+1).
(a) Completion device
: Turns ON at END processing of scan completing PRR instruction, and turns OFF at next END processing.

(b) Completion status indication device
: Turns ON/OFF depending on status at completion of PRR instruction.
- Normal completion   : Stays OFF, no change.
- Error completion   : Turns ON at END processing of scan completing PRR instruction, and turns OFF at next END processing.

[Operation at execution of PRR instruction]

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the control data contents are outside the setting range.
(Error code: 4100)
- When the module attempting access is not a special function module.
(Error code: 2110)
- When AJ71QC24 control instructions cannot be used with the designated module.   (Error code: 2112)
- When the designated instruction name is illegal.   (Error code: 4300)
- When the number of AJ71QC24 control instruction devices is illegal.
(Error code: 4301)
- When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) A program which, when X30 turns ON, sends send schedule points 10-15 from channel 2 is shown here.
At this time the program adds CR/LF.
(Control data is stored in D0 to D4)

[Ladder mode]
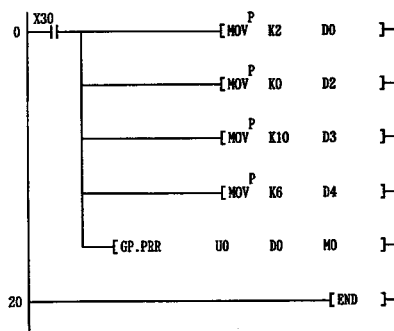
[List mode]

Step	Instruction	Device
0	LD	X30
1	MOVP	K2 D0
4	MOVP	K0 D2
7	MOVP	K10 D3
10	MOVP	K6 D4
13	GP.PRR	U0 D0 M0
20	END	

Ladder diagram (step 0):
```
X30
0 ─┤├──────────[MOVP  K2   D0 ]─
        ├──────[MOVP  K0   D2 ]─
        ├──────[MOVP  K10  D3 ]─
        ├──────[MOVP  K6   D4 ]─
        └──[GP.PRR  U0   D0   M0 ]─
20 ──────────────────────[END ]─
```

10.6 Data Receive in No-Protocol Protocol

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	—	O				—			
(D1)	—	O				—			
(D2)	O	—				—			

[Instruction Symbol]   [Execution condition]

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S)	First device number of devices storing control data	Device name
(D1)	First device number of devices storing received data	
(D2)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by
(S)+0	Receive channel	• Sets the send channel 1 : Channel 1 2 : Channel 2	1, 2	User
(S)+1	Receive result	• Stores the result of receive by INPUT instruction 0 : Normal other than 0 : Error code [1]	—	System
(S)+2	Number of received data	• Stores the number of receive data [2]	1 to	System
(S)+3	Permissible number of received data	• Sets the permissible number of words for (S)+2.	1 to	User

POINTS

(1) The G(P).INPUT command cannot be made into a pulse.

(2) Execute G(P).INPUT when I/O signal read request is ON.

REMARKS

1) *1 : See the following manual for details of error codes for faults.
        AJ71QC24 Serial Communication Module User's Manual.
2) *2 : When bytes designated sets number of bytes, when words designated, stores number
   of   words in AJ71QC24.
3) The meanings of the entries in the "set by" column in the table above are as follows.
   - User   : Data set by the user before executing INPUT instruction.
   - System : Result of INPUT instruction execution stored by QnACPU.

Function

(1) The data received in the TTY protocol of AJ71QC24 designated with
     "Un" is stored in devices starting at the device number designated with
     "D1," according to the control data starting at the device designated with
     "S."

(2) The following instructions cannot be executed in channels executing
     INPUT instructions.
     - Other INPUT instructions
     - BIDOUT instructions
     If an attempt is made to execute either of the above instructions while
     an INPUT instruction is being executed, the system waits until the PRR
     instruction being executed is completed.

(3) Normal/error completion of INPUT instructions can be confirmed by
     means of the completion device (D2) or completion status indication
     device ((D2)+1).
     (a) Completion device
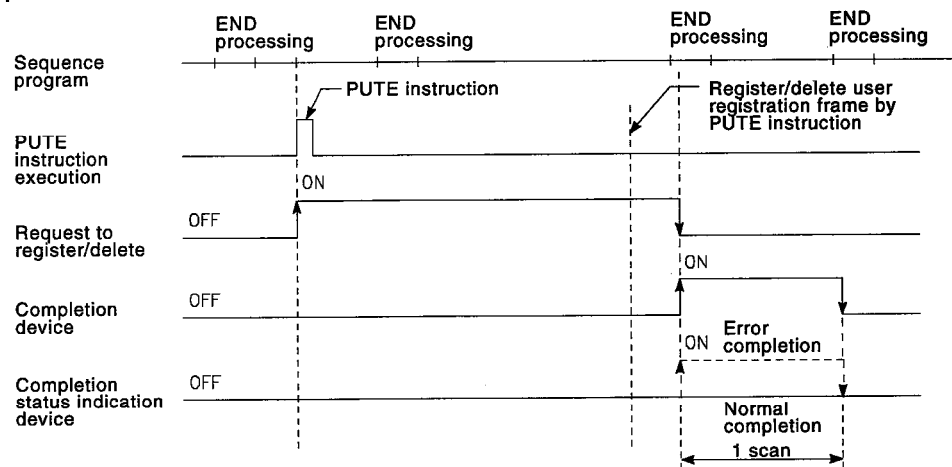   : Turns ON at END processing of scan completing INPUT instruction,
         and turns OFF at next END processing.

     (b) Completion status indication device
         : Turns ON/OFF depending on status at completion of INPUT
         instruction.
         - Normal completion   : Stays OFF, no change.
         - Error completion   : Turns ON at END processing of scan
                                  completing INPUT instruction, and turns
                                  OFF at next END processing.
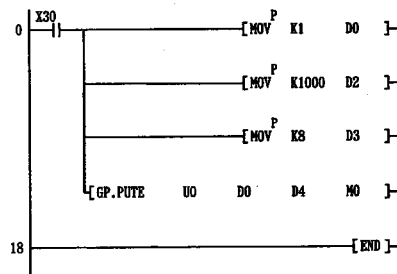
[Operation at execution of INPUT instruction]

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the control data contents are outside the setting range.
  (Error code: 4100)
- When the module attempting access is not a special function module.
  (Error code: 2110)
- When AJ71QC24 control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71QC24 control instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, stores data received in channel 2 to D10 and onwards is shown here.
The number of received data and permissible number of received data is set to 20.
(Control data is stored in D0 to D3)

[Ladder mode]

```
      X30                                    P
   0 |--| |--+------------------------[MOV  K2    D0  ]--
            |                              P
            +------------------------[MOV  K20   D2  ]--
            |                              P
            +------------------------[MOV  K20   D3  ]--
            |
            +-[GP.INPUT   U0    D0    D10    M0  ]--

  19 |-----------------------------------------[END ]--
```

[List mode]

Step	Instruction	Device
0	LD	X30
1	MOVP	K2
		D0
4	MOVP	K20
		D2
7	MOVP	K20
		D3
10	GP.INPUT	U0
		D0
		D10
		M0
19	END	

10.7 Data Send of Designated Number of Data in Bidirectional Protocol

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D)	O	—				—			

[Instruction Symbol]   [Execution condition]

BIDOUT   ⌐⌐   Command ──┤ ├── | G.BIDOUT | Un | (S1) | (S2) | (D) |

BIDOUT   ⌐   Command ──┤ ├── | GP.BIDOUT | Un | (S1) | (S2) | (D) |

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices storing send data	
(D)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by
(S)+0	Send channel	• Sets the send channel 1 : Channel 1 2 : Channel 2	1, 2	User
(S)+1	Send result	• Stores result of send by BIDOUT instruction 0 : Normal other than 0 : Error code [1]	—	System
(S)+2	Number of send data	• Sets number of data to send [2]	1 to	User

REMARKS

1) *1 : See the following manual for details of error codes for faults.
     AJ71QC24 Serial Communication Module User's Manual.
2) *2 : When bytes designated sets number of bytes, when words designated, sets number of words in AJ71QC24.
3) The meanings of the entries in the "set by" column in the table above are as follows.
   • User   : Data set by the user before executing BIDOUT instruction.
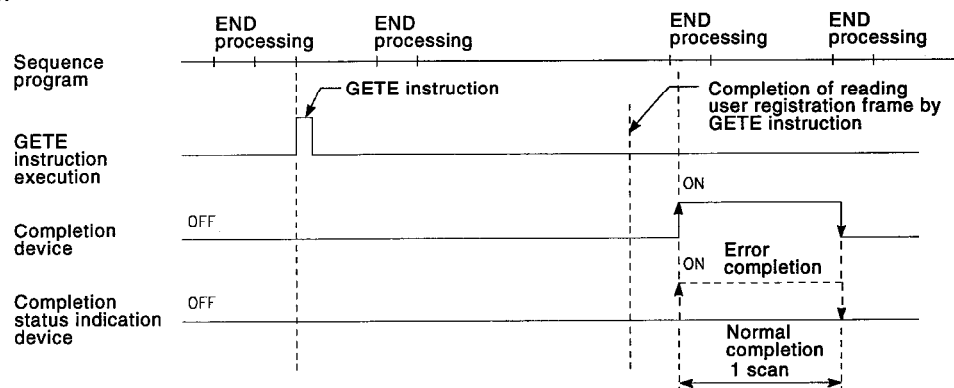   • System : Result of BIDOUT instruction execution stored by QnACPU.

Function

(1) Sends data stored from the device designated at (S2) onwards in bidirectional protocol mode of AJ71QC24 designated at Un, in accordance with control data of the devices starting from the one designated at (S1).

(2) The following instructions cannot be simultaneously executed in channels executing BIDOUT instructions.
   • OUTPUT instructions
   • ONDEMAND instructions
   • PRR instructions
   • Other BIDOUT instructions
   If an attempt is made to execute any of the instructions above while a BIDOUT instruction is being executed, the system waits until the BIDOUT instruction being executed is completed.

(3) Normal/error completion of BIDOUT instructions can be confirmed by means of the completion device (D) or completion status indication device ((D)+1).
   (a) Completion device
      : Turns ON at END processing of scan completing the BIDOUT instruction, and turns OFF at next END processing.

   (b) Completion status indication device
      : Turns ON/OFF depending on status at completion of BIDOUT instruction.
      • Normal completion   : Stays OFF, no change.
      • Error completion   : Turns ON at END processing of scan completing BIDOUT instruction, and turns OFF at next END
   processing.
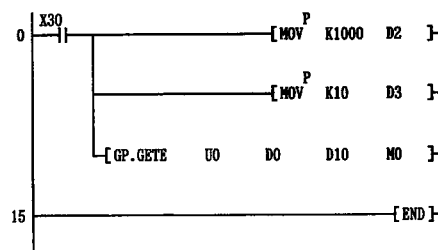
[Operation at execution of BIDOUT instruction]

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
   • When the control data contents are outside the setting range.
   (Error code: 4100)
   • When the module attempting access is not a special function module.
   (Error code: 2110)
   • When AJ71QC24 control instructions cannot be used with the designated module.   (Error code: 2112)
   • When the designated instruction name is illegal.   (Error code: 4300)
   • When the number of AJ71QC24 control instruction devices is illegal.
   (Error code: 4301)
   • When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) A program which, when X30 turns ON, sends data (byte designation) stored in D10-D14 from channel 1 is shown here.
(Control data is stored in D0 to D2)

[Ladder mode]
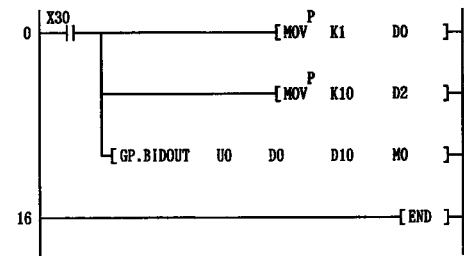
```
   X30                        P
0 ─┤├─┬─────────────────[MOV  K1    D0  ]─
      │                      P
      ├─────────────────[MOV  K10   D2  ]─
      │
      └─[GP.BIDOUT  U0   D0    D10   M0  ]─
16 ├──────────────────────────────[END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X30
1	MOVP	K1
		DO
4	MOVP	K10
		D2
7	GP.BIDOUT	U0
		DO
		D10
		M0
16	END	

10.8 Data Receive in Bidirectional Protocol

Set data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	—	O		—					
(D1)	—	O		—					
(D2)	O	—		—					

[Instruction Symbol]   [Execution condition]

BIDIN   ⎍⎍   Command ┤├ — | G.BIDIN | Un | (S) | (D1) | (D2) |

BIDIN   ⌐   Command ┤├ — | GP.BIDIN | Un | (S) | (D1) | (D2) |

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S)	First device number of devices storing control data	Device name
(D1)	First device number of devices storing received data	
(D2)	Number of the bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

Device	Content	Set Data	Setting Range	Set by

(S)+0	Receive channel	• Sets the receive channel
		  1 : Channel 1
		  2 : Channel 2
			1, 2	User

(S)+1	Receive result	• Stores result of receive by BIDIN instruction
		  0 : Normal
		  other than 0 : Error code [1]
			—	System

(S)+2	Number of received data	• Stores the number of receive data [2]	1 to	System
(S)+3	Permissible number of received data	• Sets the permissible number of words for (S)+2.	1 to	User

```
POINTS

(1) G(P).BIDIN commands cannot be changed into pulse.

(2) Execute G(P).BIDIN when I/O signal read request is ON.
```

| REMARKS |

1) *1 : See the following manual for details of error codes for faults.
AJ71QC24 Serial Communication Module User's Manual.
2) *2 : When bytes designated sets number of bytes, when words designated, stores number
of words in AJ71QC24.
3) The meanings of the entries in the "set by" column in the table above are as follows.
   - User   : Data set by the user before executing BIDIN instruction.
   - System   : Result of BIDIN instruction execution stored by QnACPU.

Function

(1)   The data received in the bi-directional protocol of AJ71QC24 designated with "Un" is stored in devices starting at the device number designated with "D1," according to the control data starting at the device designated with "S."

(2)   The following instructions cannot be simultaneously executed in channels executing BIDIN instructions
   - Other BIDIN instructions
   - INPUT instructions

If an attempt is made to execute any of the instructions above while a BIDIN instruction is being executed, the system waits until the BIDIN instruction being executed is completed.

(3)   Normal/error completion of BIDIN instructions can be confirmed by means of the completion device (D2) or completion status indication device ((D2)+1).
   (a) Completion device
       : Turns ON at END processing of scan completing BIDOUT instruction, and turns OFF at next END processing.

   (b) Completion status indication device
       : Turns ON/OFF depending on status at completion of BIDIN instruction.
       - Normal completion   : Stays OFF, no change.
       - Error completion   : Turns ON at END processing of scan completing BIDIN instruction, and turns OFF at next END processing.
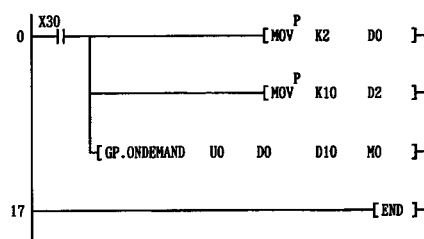
[Operation at execution of BIDIN instruction]

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
  - When the control data contents are outside the setting range.
    (Error code: 4100)
  - When the module attempting access is not a special function module.
    (Error code: 2110)
  - When AJ71QC24 control instructions cannot be used with the designated module. (Error code: 2112)
  - When the designated instruction name is illegal. (Error code: 4300)
  - When the number of AJ71QC24 control instruction devices is illegal.
    (Error code: 4301)
  - When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X30 turns ON, stores data received in channel 2 to D10 and onwards is shown here.
The number of received data and permissible number of received data is set to 20.
(Control data is stored in D0 to D3)

[Ladder mode]

```
    X30                        P
  0 ┤├──┬──────────────[MOV  K2    D0 ]┤
       │                    P
       ├──────────────[MOV  K20   D2 ]┤
       │                    P
       ├──────────────[MOV  K20   D3 ]┤
       │
       └[GP.BIDIN  U0    D0    D10   M0 ]┤
 19 ├─────────────────────────────[END]┤
```
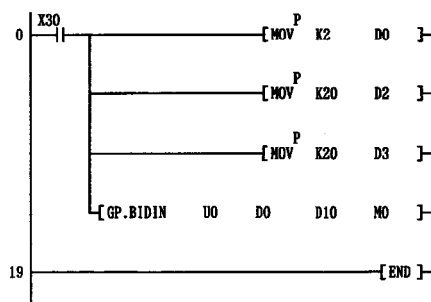
[List mode]

Steps	Instruction	Device
0	LD	X30
1	MOVP	K1
		D0
4	MOVP	K10
		D2
7	GP.BIDOUT	U0
		D0
		D10
		M0
16	END	

10.9 Read Communications Status

Set data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(D)	O			—					

```
[Instruction Symbol]    [Execution condition]
                         Command
    SPBUSY        ___   ──┤ ├──────────────────[ G.SPBUSY │ Un │ (D) ]──

                         Command
    SPBUSY        __┌┐  ──┤ ├──────────────────[ GP.SPBUSY │ Un │ (D) ]──
```

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(D)	First device number of devices storing the read communication status	Device name

Function

(1) Reads the execution status of AJ71QC24 control instructions for AJ71QC24 designated at head I/O number, and stores execution status to the device designated at (D) and onwards.

(2) The execution statuses are stored in (D) as follows: each bit is set to "1" when the processing for the corresponding instruction starts, and "0" on completion of processing for the corresponding instruction. The completion of processing of instructions is defined as when the instruction completion flag turns OFF.

```
        b15   to    b4 b3 b2 b1 b0
(D)+0  [         │ │ │ │ │ │ ]
                  ↑ ↑ ↑ ↑ ↑
                  │ │ │ │ └── Stores execution status of ONDEMAND, OUTPUT, PRR, and BIDOUT instructions for channel 1
                  │ │ │ └──── Stores execution status of INPUT and BIDIN instructions for channel 1
                  │ │ └────── Stores execution status of ONDEMAND, OUTPUT, PRR and BIDOUT instructions for channel 2
                  │ └──────── Stores execution status of INPUT and BIDIN instruction for channel 2
                  └────────── Stores execution status of GETE and PUTE instructions
(D)+1  [       0       ]      ("0" must be stored here.)
```

(3) If the execution condition is "executed during ON", the SPBUSY instruction is executed every scan while the read command is ON; if it is "executed once at ON", it is only executed in one scan when the read command goes from OFF to ON.
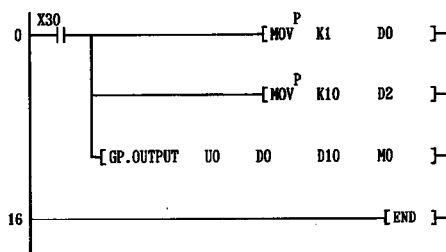
Operation Errors

    (1)   In the following cases an operation error occurs, the error flag (SM0)
          turns ON, and the error code is stored in SD0.
          • When the module attempting access is not a special function module.
                                      (Error code: 2110)
          • When AJ71QC24 control instructions cannot be used with the
            designated module.   (Error code: 2112)
          • When the designated instruction name is illegal. (Error code: 4300)
          • When a non-designatable device is designated. (Error code: 4302)

Program Example

A program which turns M10 ON on execution of a PRR instruction for
channel 1 of the AJ71QC24 installed at I/O numbers X/Y20 to X/Y3F is
shown here.

[Ladder mode]   [List mode]
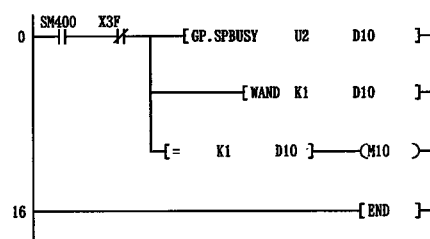
Step	Instruction	Device
0	LD	SM400
1	ANI	X3F
2	GP.SPBUSY	U2
		D10
9	WAND	K1
		D10
12	AND=	K1
		D10
15	OUT	M10
16	END	

10.10 Reading Devices at Other Stations

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D1)	—	O				—			
(D2)	O	O				—			

```
[Instruction Symbol]    [Execution condition]
                          Command
   READ        ⎍     ──┤├──  G.READ  | Un | (S1) | (S2) | (D1) | (D2) ──

                          Command
   READ        ⎁     ──┤├──  GP.READ | Un | (S1) | (S2) | (D1) | (D2) ──
```

Set data

Set Data	Description	Data Type
Un	Head I/O number of host station AJ71QC24	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices of other station storing read data	
(D1)	First device number of devices of host station storing read data	
(D2)	Host station bit device turning ON at reading completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

	Setting Details	Setting Range [Target Station-1]	Data Set By User	Data Set By System

(S1)	b15 to b7 to b0
	`| 0
		1/0	0	1 |`
				Error completion type (bit 7)
				0 : Not necessary to set the clock when error occurs
				  Not necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
				1 : Necessary to set the clock when error occurs
				  Necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
				  (Clock data controlled by error detection station)
					0001H
					0081H
						O	

(S1)+1	Completion status 0 : Normal end Other than 0: Error completion*	0 to		O
(S1)+2	Channel used by host station Designates interface of host station AJ71QC24 sending request to read.	1 : CH 1 2 : CH 2	O	
(S1)+3	(Not used)	—	—	—
(S1)+4	Target station network number	0	O	
(S1)+5	Target station number	0	O	
(S1)+6	Special Function Module station number When reading from [target station-1], designates target station AJ71QC24 station number (0 to 31).	0 to 31	O	

(S1)+7	Number of retransmissions
	Request to request :
	  Designates number request is retransmitted when data cannot be read.
	Reading completed :
	  Stores number of retransmissions for normal completion and error completion.
		0 to 15	O	O

(S1)+8	Arrival WDT time (unit: second) Designates WDT time until completion of execution of read instruction. When cannot read within the WDT time, repeats the read request (S1)+7 times. (Retransmission)	0 : default (10 secs) 1 to 32767 : 1 to 32767 seconds	O	
(S1)+9	Length of read data (unit: word) Designates number of words of data read from the device designated at (S2).	1 to 480	O	
(S1)+10	(Not used)	—	—	—
(S1)+11	Clock set flag When (S1) is 0081H (completion type for error is [1]), the validity or invalidity of data from (S1)+12 to (S1)+15 is stored.	0 : Invalid 1 : Valid		O
(S1)+12	Year (last 2 digits), month when error occurred Upper 8 bits : year (00H to 99H) Lower 8 bits : month (01H to 12H)	0001H to 9912H		O
(S1)+13	Day, hour when error occurred Upper 8 bits : day (01H to 31H) Lower 8 bits : hour (00H to 23H)	0100H to 3123H		O
(S1)+14	Minute, second when error occurred Upper 8 bits : minute (00H to 59H) Lower 8 bits : second (00H to 59H)	0000H to 5959H		O
(S1)+15	Day of the week when error occurred Day of the week (0000H: Sunday to 0006H: Saturday)	0000H to 0006H		O
(S1)+16	Error detected network number	0		O
(S1)+17	Error detected station number	0		O

* : See the AJ71QC24 Serial Communication Module User's Manual

Function

(1) Stores data of word devices starting from that designated at (S2) of the AJ71QC24 designated by the special function module station number in the control data, to devices starting from that designated at (D1) in the host station.
The completion device designated at (D2) turns ON when the reading of device data from the target station is completed.

(2) AJ71QC24 control instructions cannot be executed simultaneously in two or more places for the same channel of the same AJ71QC24.
If the execution conditions come into effect simultaneously in 2 or more places, subsequently executed AJ71QC24 control instructions must wait until a channel becomes available.
To use AJ71QC24 control instructions using the same channel in 2 or more places, use the completion device as the communication start command, and conduct sequential execution.

(3) Normal/error completion of read instructions can be confirmed by means of the completion device (D) or completion status indication device ((D)+1).
(a) Completion device
: Turns ON at END processing of scan completing READ instruction, and turns OFF at next END processing.

(b) Completion status indication device
: Turns ON/OFF depending on status at completion of READ instruction.
• Normal completion   : Stays OFF, no change.
• Error completion   : Turns ON at END processing of scan completing READ instruction, and turns OFF at next END processing.

[Operation at execution of READ instruction]

Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
• When the control data contents are outside the setting range.
(Error code: 4100)
• When the module attempting access is not a special function module.
(Error code: 2110)
• When AJ71QC24 control instructions cannot be used with the designated module.   (Error code: 2112)
• When the designated instruction name is illegal.   (Error code: 4300)
• When the number of AJ71QC24 control instruction devices is illegal.
(Error code: 4301)
• When a non-designatable device is designated.   (Error code: 4302)

Program Example

A program which reads data from the AJ71QC24 of special function module station number 2, in a multidrop system, is shown here.

```
Request   Read
to read   command
          M0
──┤├──────┤/├────────────────────────────────[ MOV  H81  D0 ]      Set control data
                                                                    Sets (S1) error completion type

                                               [ MOV  K2   D2 ]      Sets channel (CH2) used by ((S1)+2) host station

                                          [ FMOV  K0  D3  K3 ]      Sets ((S1)+3) to ((S1)+5).

                                               [ MOV  K2   D6 ]      Sets ((S1)+6) special function module station
                                                                    number (target station AJ71QC24)

                                               [ MOV  K5   D7 ]      Sets ((S1)+7) number of retransmissions (5 times)

                                               [ MOV  K2   D8 ]      Sets ((S1)+8) arrival WDT time (2 seconds)

                                               [ MOV  K4   D9 ]      Sets ((S1)+9) read data length (4 words)

                                                    [ SET  M0 ]      Sets read command flag


          AJ71
Read  Global QC24  WDT
command signal ready error
M0    X1B   X1E    X1F
──┤├───┤├───┤├────┤/├─────[ GP.READ  U0  D0  D100  D20  M1 ]      READ instruction execution
                                                                  X1B is a signal used with respect to external
M0    M1                                                          devices to
──┤├───┤├────────┌─────────────────────────────────┐
                 ¦ Processing program at reading completion ¦
           M2    └─────────────────────────────────┘
           ┤/├   ┌─────────────────────────────────┐
                 ¦ Processing program at normal operation ¦
                 ¦ completion                        ¦
           M2    └─────────────────────────────────┘
           ┤├    ┌─────────────────────────────────┐        Takes corrective action according to error code of
                 ¦ Processing program at error completion ¦        D1 storing ((S1)+1) completed status.
                 └─────────────────────────────────┘
                                                    [ RST  M0 ]
```

M2 turns ON/OFF depending on normal operation completion or error completion of READ instruction.

M1 turns ON for only 1 scan at completion of READ instruction execution.

Host station	
D0	0081H
D1	0000H
D2	0002H
D3	0000H
D4	0000H
D5	0000H
D6	0002H
D7	0005H
D8	0002H
D9	0004H
D10	0000H
D20	1234H
D21	3130H
D22	4241H
D23	002BH

Target station	
D100	1234H
D101	3130H
D102	4241H
D103	002BH

10.11 Writing to Other Station Devices

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D1)	—	O				—			
(D2)	O	O				—			
(D3)	O	O				—			

[Instruction Symbol]   [Execution condition]

SWRITE   ⊓⊔   Command
┤├──| G.SWRITE | Un | (S1) | (S2) | (D1) | (D2) | (D3) |

SWRITE   ⌐   Command
┤├──| GP.SWRITE | Un | (S1) | (S2) | (D1) | (D2) | (D3) |

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices of host station storing write data	
(D1)	First device number of devices of other station storing write data	
(D2)	Bit device of host station turning ON at write completion	Bit
(D3)	Bit device of target station turning ON at write completion	

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

	Setting Details	Setting Range [Target Station-1]	Data Set By	
			User	System

(S1)	b15 to b7 to b0
	
	| 0
		1/0	0	1 |
				
				Execution type (bit 0)
				  0 : No arrival confirmation
				    Execution of SWRITE instruction is completed at completion of sending request to write.
				  1 : Arrival confirmation
				    Execution of SWRITE instruction is completed at completion of writing data to write destination station.
				Error completion type (bit 7)
				  0 : Not necessary to set the clock when error occurs
				    Not necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
				  1 : Necessary to set the clock when error occurs
				    Necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
				    (Clock data controlled by error detection station)
					0000H
					0001H
					0080H
					0081H
						O	

	Setting Details	Setting Range	Data Set By	
		[Target Station-1]	User	System
(S1)+1	Completion status 0　　　　　: Normal end Other than 0: Error completion*	0 to		O
(S1)+2	Channel used by host station Designates interface of host station AJ71QC24 sending request to write.	1 : CH 1 2 : CH 2	O	
(S1)+3	(Not used)	—	—	—
(S1)+4	Target station network number	0	O	
(S1)+5	Target station number	0	O	
(S1)+6	Special function module station number Designates the target station AJ71QC24 station number (0 to 31) when writing to [target station -1].	0 to 31	O	
(S1)+7	Number of retransmissions Write request : 　Designates the number of retransmissions when data 　cannot be written when (S1) is 0001H/0081H 　(execution type is "1"). Write completed: 　Stores number of retransmissions for normal completion and 　error completion.	0 to 15	O	O
(S1)+8	Arrival WDT time (unit: second) Designates WDT time until end of execution of SWRITE instruction when (S1) is 0001H/0081H (execution type is "1"). When data cannot be written within the WDT time, the write request is repeated (S1)+7 times. (Retransmission)	0　　　　: default 　　　　　 (10 secs) 1 to 32767: 1 to 32767 　　　　　 seconds	O	
(S1)+9	Length of write data (unit: word) Designates number of words when writing data of device designated at (S2).	1 to 480	O	
(S1)+10	(Not used)	—	—	—
(S1)+11	Clock set flag When (S1) is 0080H/0081H (error completion type is "1"), the validity or invalidity of data from (S1)+12 to (S1)+15 is stored.	0 : Invalid 1 : Valid		O
(S1)+12	Year (last 2 digits), month when error occurred Upper 8 bits : year (00H to 99H) Lower 8 bits : month (01H to 12H)	0001H to 9912H		O
(S1)+13	Day, hour when error occurred Upper 8 bits : day (01H to 31H) Lower 8 bits : hour (00H to 23H)	0100H to 3123H		O
(S1)+14	Minute, second when error occurred Upper 8 bits : minute (00H to 59H) Lower 8 bits : second (00H to 59H)	0000H to 5959H		O
(S1)+15	Day of the week when error occurred Day of the week (0000H: Sunday to 0006H: Saturday)	0000H to 0006H		O
(S1)+16	Error detected network number	0		O
(S1)+17	Error detected station number	0		O

REMARK

1)* : See the following manual for details about error codes when operation is ended
　　　with an error.
　　　AJ71QC24 Serial Communication Module User's Manual.

Function

(1) Stores data stored in devices starting from that designated at (S2) to the word devices of the AJ71QC24 designated by the special function module station number in the control data, starting from the device designated at (D1).
The completion device designated at (D2) turns ON when writing of the device data to the target station is completed.

(2) AJ71QC24 control instructions cannot be executed simultaneously in two or more places for the same channel of the same AJ71QC24.
If the execution conditions come into effect simultaneously in 2 or more places, subsequently executed AJ71QC24 control instructions must wait until a channel becomes available.
To use AJ71QC24 control instructions using the same channel in 2 or more places, use the completion device in communication start commands, and conduct sequential execution.

(3) An interlock signal for use at execution of the SWRITE instruction can be established with the completion device ((D2)) or the completion status indication device ((D2)+1).
(a) Host station completion device
: Turns ON at END processing of scan completing SWRITE instruction, and turns OFF at next END processing.

(b) Completion status indication device
: Turns ON/OFF depending on status at time of completion of SWRITE instruction.
• Normal completion : Stays OFF, no change.
• Error completion : Turns ON at END processing of scan completing SWRITE instruction, and turns OFF at next END processing.

(c) Target station completion device
: Turns ON at END processing of scan completing SWRITE instruction, and turns OFF at next END processing.

[Operation at execution of SWRITE instruction]
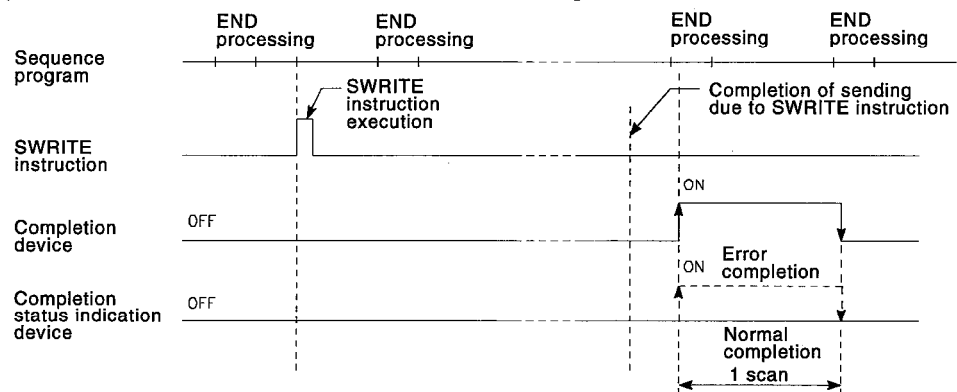
[Target station operation at SWRITE execution]
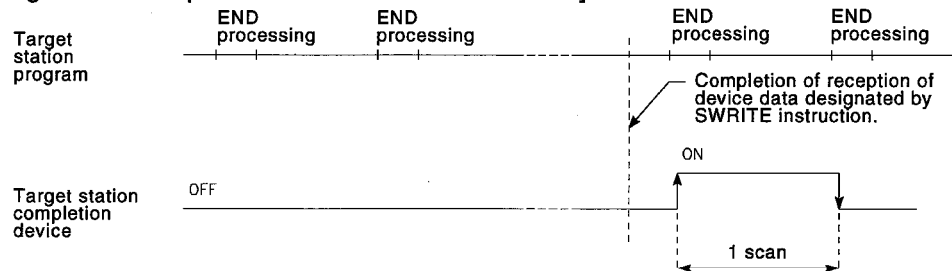
Operation Errors

  (1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the control data contents are outside the setting range.
        (Error code: 4100)
- When the module attempting access is not a special function module.
        (Error code: 2110)
- When AJ71QC24 control instructions cannot be used with the designated module.   (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of AJ71QC24 control instruction devices is illegal.
        (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

A program which writes data to the AJ71QC24 of special function module station number 2, in a multidrop system, is shown here.

Ladder	Description
Request to write / Write command MO	Set control data
[MOV H81 D0]	Sets ((S1)) execution type, error completion type
[MOV K2 D2]	Sets channel (CH2) used by ((S1)+2) host station
[FMOV K0 D3 K3]	Sets ((S1)+3) to ((S1)+5).
[MOV K2 D6]	Sets ((S1)+6) special function module station number (target station AJ71QC24)
[MOV K5 D7]	Sets ((S1)+7) number of retransmissions (5 times)
[MOV K2 D8]	Sets ((S1)+8) arrival WDT time (2 seconds)
[MOV K4 D9]	Sets ((S1)+9) length of written data (4 words)
[$MOV 0123ABCD D100]	Sets write data.
[SET M0]	Sets write command flag.

Write command MO — Global signal X1B — AJ71 QC24 ready X1E — WDT error X1F

[GP.SWRITE U0 D0 D20 D100 M1 M11]

SWRITE instruction execution
X1B is a signal used with respect to external devices to enable use of the line.

MO — M1

- - Processing program at writing completed - -

M2

- - Processing program at normal operation completion - -

M2

- - Processing program at error completion - -

Takes corrective action according to error code of D1 storing ((S1)+1) completed status.

[RST M0]

M2 turns ON/OFF depending on normal completion or error completion of SWRITE instruction.

M1 turns ON for only 1 scan at completion of execution of SWRITE instruction.

Host station

D0	0081H
D1	0000H
D2	0002H
D3	0000H
D4	0000H
D5	0000H
D6	0002H
D7	0005H
D8	0002H
D9	0004H
D10	0000H
D20	3130H
D21	3332H
D22	4241H
D23	4443H

Target station

D100	3130H
D101	3332H
D102	4241H
D103	4443H

10.12 Sending Data to Other Stations

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D)	O	O				—			

[Instruction Symbol]	[Execution condition]						
SEND	⌐_Command__	┤├	G.SEND	Un	(S1)	(S2)	(D)
SEND	⌐▲_Command__	┤├	GP.SEND	Un	(S1)	(S2)	(D)

Set data

Set Data	Description	Data Type
Un	Head I/O number of host station AJ71QC24	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices storing send data	
(D)	Bit device number turning ON at completion of sending	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

	Setting Details	Setting Range [Target Station-1]	Data Set By	
			User	System

(S1)	b15 to b7 to b0
	`  0  |1/0|  0  |1/0`
	
	Execution type (bit 0)
	  0 : No arrival confirmation
	    Execution of the SEND instruction is ended on completing transmission of the send data.
	  1 : Arrival confirmation
	    Execution of the SEND instruction is ended on arrival of the send data at the send destination station.
	Error completion type (bit 7)
	  0 : Not necessary to set the clock when error occurs
	    Not necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
	  1 : Necessary to set the clock when error occurs
	    Necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
	    (Clock data controlled by error detection station)
		0000H
		0001H
		0080H
		0081H
			O	

(S1)+1	Completion status
	  0 : Normal end
	  Other than 0 : Error completion*
		0 to		O

(S1)+2	Channel used by host station Designates the interface of the host station AJ71QC24 sending data.	1 : CH 1 2 : CH 2	O	
(S1)+3	Target station storing channel Designates the interface of send destination station AJ71QC24 sending data at the same interface as (S1)+2 above.	1 : CH 1 2 : CH 2	O	

	Setting Details	Setting Range [Target Station-1]	Data Set By User	Data Set By System
(S1)+4	Target station network number	0	O	
(S1)+5	Target station number	0	O	
(S1)+6	Special function module station number Designates target station AJ71QC24 station number (0 to 31) when sending to [target station -1].	0 to 31	O	
(S1)+7	Number of retransmissions Send request : Designates the number of retransmissions when data cannot be sent when (S1) is 0001H/0081H (execution type is [1]). Send completion : Stores number of retransmissions for normal completion and error completion.	0 to 15	O	O
(S1)+8	Arrival WDT time (unit: second) Designates the WDT time until completion of execution of SEND instruction when (S1) is 0001H/0081H (execution type is [1]). Retransmits (S1)+7 number of times when cannot send within the WDT time.	0 : default (10 secs) 1 to 32767 : 1 to 32767 seconds	O	
(S1)+9	Length of send data (unit: word) Designates the number of send data designated at (S2).	1 to 480	O	
(S1)+10	(Not used)	—	—	—
(S1)+11	Clock set flag When (S1) is 0080H/0081H (error completion type is [1]), the validity or invalidity of data from (S1)+12 to (S1)+15 is stored.	0 : Invalid 1 : Valid		O
(S1)+12	Year (last 2 digits), month when error occurred Upper 8 bits : year (00H to 99H) Lower 8 bits : month (01H to 12H)	0001H to 9912H		O
(S1)+13	Day, hour when error occurred Upper 8 bits : day (01H to 31H) Lower 8 bits : hour (00H to 23H)	0100H to 3123H		O
(S1)+14	Minute, second when error occurred Upper8 bits : minute (00H to 59H) Lower 8 bits : second (00H to 59H)	0000H to 5959H		O
(S1)+15	Day of the week when error occurred Day of the week (0000H: Sunday to 0006H: Saturday)	0000H to 0006H		O
(S1)+16	Error detected network number	0		O
(S1)+17	Error detected station number	0		O

[Note]

1) AJ71QC24 can only store the data sent by SEND instruction once. Wherever possible, execute the send instruction so that there is arrival confirmation.
2) Prepare contiguous areas with the following numbers of words for the word devices used with SEND instruction.
   - (S1) (Control data storage device) .... 18 words
   - (S1) (Send data storage first device) ... (S1)+9 (send data length) designation

REMARK

1)*: See the following manual for details about error codes at error end.
   AJ71QC24 Serial Communication Module User's Manual.

Function

(1) Sends the data of word devices starting from that designated at (S2) to the designated channel in the AJ71QC24 designated by the special function module station number in the control data.

(2) AJ71QC24 control instructions cannot be executed simultaneously in two or more places for the same channel of the same AJ71QC24.
If the execution conditions come into effect simultaneously in 2 or more places, subsequently executed AJ71QC24 control instructions must wait until a channel becomes available.
To use AJ71QC24 control instructions using the same channel in 2 or more places, use the completion device in communication start commands, and conduct sequential execution.

(3) An interlock signal for use at execution of the SEND instruction can be established with the completion device ((D2)) or the completion status indication device ((D2)+1).
   (a) Host station completion device
      : Turns ON at END processing of scan completing reading due to the SEND instruction, and turns OFF at next END processing.
   (b) Completion status indication device
      : Turns ON/OFF depending on the status on completing SEND instruction.
      • Normal completion   : Stays OFF, no change.
      • Error completion   : Turns ON at END processing of scan completing SEND instruction, and turns OFF at next END processing.

[Operation at execution of SEND instruction]
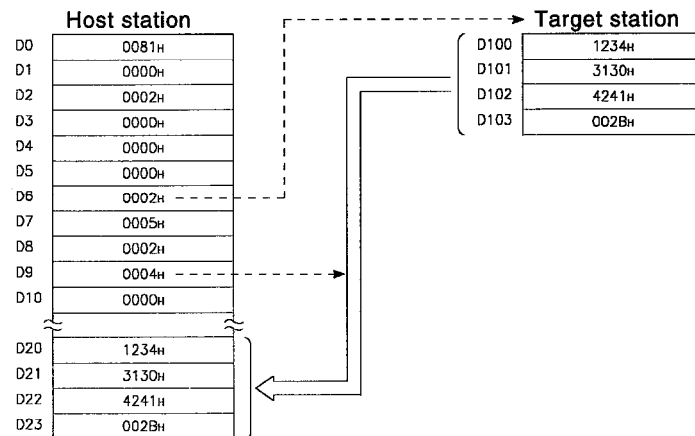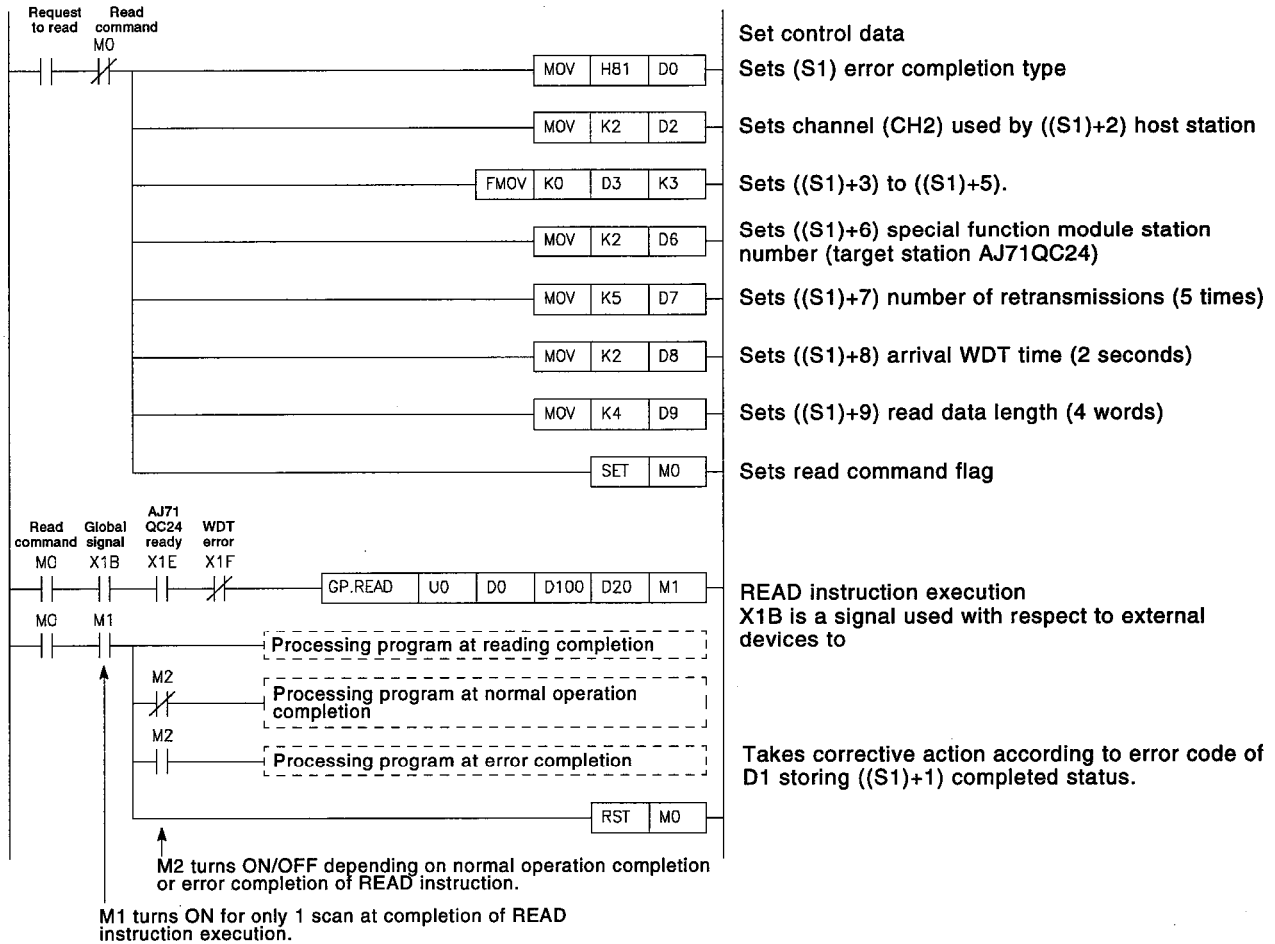

Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
   • When the control data contents are outside the setting range.
                                                      (Error code: 4100)
   • When the module attempting access is not a special function module.
                                                      (Error code: 2110)
   • When AJ71QC24 control instructions cannot be used with the designated module.   (Error code: 2112)
   • When the designated instruction name is illegal. (Error code: 4300)
   • When the number of AJ71QC24 control instruction devices is illegal.
                                                      (Error code: 4301)
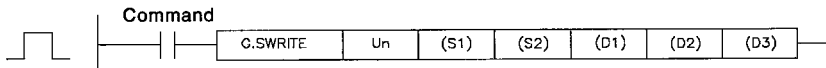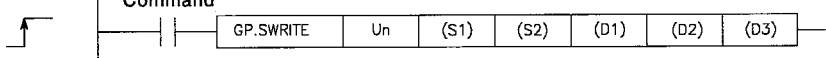   • When a non-designatable device is designated.   (Error code: 4302)

Program Example

A program which transmits data to the AJ71QC24 whose special function module station number is 2 is shown here.

Ladder element	Description
Request to send / Send command MO: `MOV H81 D0`	Set control data / Sets ((S1)) execution type, error completion type
`MOV K2 D2`	Sets channel (CH2) used by ((S1)+2) host station
`MOV K2 D3`	Sets ((S1)+3) target station storage channel (CH2).
`FMOV K0 D4 K2`	Sets ((S1)+4) to ((S1)+5).
`MOV K2 D6`	Sets ((S1)+6) special function module station number (target station AJ71QC24)
`MOV K5 D7`	Sets ((S1)+7) number of retransmissions (5 times)
`MOV K2 D8`	Sets ((S1)+8) arrival WDT time (2 seconds)
`MOV K4 D9`	Sets ((S1)+9) send data length (4 words)
`$MOV 0123ABCD D100`	Sets send data.
`SET MO`	Sets send command flag.
Send command MO / Global signal X1B / AJ71QC24 ready X1E / WDT error X1F: `GP.SEND U0 D0 D100 M1`	SEND instruction execute. X1B is a signal used with respect to external devices to enable use of the line.
MO M1: Processing program at sending completed	
M2 (normally closed): Processing program at normal operation completion	
M2: Processing program at error completion	Takes corrective action according to error code of D1 storing ((S1)+1) completed status.
`RST MO`	

M2 turns ON/OFF depending on normal operation end/error end of SEND instruction.

M1 turns ON for only 1 scan at completion of execution of SEND instructions.

10.13 Receiving Data from Other Stations

Set Data	Usable Devices								
	Internal device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	—	O		—					
(D1)	—	O		—					
(D2)	O	O		—					

[Instruction Symbol]   [Execution condition]

		Command						
RECV	⎍	─┤├─	G.RECV	Un	(S)	(D1)	(D2)	

		Command						
RECV	⌐	─┤├─	GP.RECV	Un	(S)	(D1)	(D2)	

Set data

Set Data	Description	Data Type
Un	Head I/O number of host station AJ71QC24	16-bit binary
(S)	First device number of devices storing control data	Device name
(D1)	First device number of devices storing received data	
(D2)	Bit device number turning ON at receive completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

	Setting Details	Setting Range [Target Station-1]	Data Set By	
			User	System
(S1)	b15 to b7 to b0 / 0 / 1/0 / 0 Error completion type (bit 7) 0 : Not necessary to set the clock when error occurs Not necessary to set clock data when error occurs in (S1)+11 to (S1)+15. 1 : Necessary to set the clock when error occurs Necessary to set clock data when error occurs in (S1)+11 to (S1)+15. (Clock data controlled by error detection station)	0000H 0080H	O	
(S1)+1	Completion status 0 : Normal end Other than 0 : Error end	0 to		O
(S1)+2	Channel used by host station Designates the AJ71QC24 interface number reading received data	1 : CH 1 2 : CH 2	O	
(S1)+3	Send source station channel Stores the number of the AJ71QC24 interface sending the send source station data	1 : CH 1 2 : CH 2		O
(S1)+4	Send source station network number	0		O
(S1)+5	Send source station number	0		O
(S1)+6	(Not used)	—	—	—
(S1)+7				
(S1)+8	Arrival WDT time (unit: second) Designates the WDT time until execution end of RECV instruction. Error ends when cannot receive data within the WDT time.	0 : default (10 secs) 1 to 32767 : 1 to 32767 seconds	O	
(S1)+9	Length of received data (unit: word) Stores the number of words of received data stored in device designated at (S2).	1 to 480		O
(S1)+10	(Not used)	—	—	—
(S1)+11	Clock set flag Stores the validity/invalidity of data in (S1)+12 to (S1)+15, when (S1) is 0080H (the error end type is [1]).	0 : Invalid 1 : Valid		O
(S1)+12	Year (last 2 digits), month when error occurred Upper 8 bits : year (00H to 99H) Lower 8 bits : month (01H to 12H)	0001H to 9912H		O
(S1)+13	Day, hour when error occurred Upper 8 bits : day (01H to 31H) Lower 8 bits : hour (00H to 23H)	0100H to 3123H		O
(S1)+14	Minute, second when error occurred Upper 8 bits : minute (00H to 59H) Lower 8 bits : second (00H to 59H)	0000H to 5959H		O
(S1)+15	Day of the week when error occurred Day of the week (0000H: Sunday to 0006H: Saturday)	0000H to 0006H		O

Function

(1) Stores data sent by SEND instruction from the control data host channel of the AJ71QC24 designated at Un, to word devices starting from that designated at (S2).

(2) AJ71QC24 control instructions cannot be executed simultaneously in two or more places for the same channel of the same AJ71QC24.
If the execution conditions come into effect simultaneously in 2 or more places, subsequently executed AJ71QC24 control instructions must wait until a channel becomes available.
To use AJ71QC24 control instructions using the same channel in 2 or more places, use the completion device in communication start commands, and conduct sequential execution.

(3) An interlock signal for use at execution of the RECV instruction can be established with the completion device ((D2)) or the completion status indication device ((D2)+1).
   (a) Host station completion device
      : Turns ON at END processing of scan completing the RECV instruction, and turns Off at next END processing.
   (b) Completion status indication device
      : Turns ON/OFF depending on status on ending RECV instruction.
      • Normal completion　　: Stays OFF, no change.
      • Error completion　　: Turns ON at END processing of scan ending RECV instruction, and turns OFF at next END processing.

[Operation at execution of RECV instruction]

Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
   • When the control data contents are outside the setting range.
                                                    (Error code: 4100)
   • When the module attempting access is not a special function module.
                                                    (Error code: 2110)
   • When AJ71QC24 control instructions cannot be used with the designated module.   (Error code: 2112)
   • When the designated instruction name is illegal.　(Error code: 4300)
   • When the number of AJ71QC24 control instruction devices is illegal.
                                                    (Error code: 4301)
   • When a non-designatable device is designated.　(Error code: 4302)

Program Example

(1) A program which reads data written by the SEND instruction to channel 2 of the AJ71QC24 installed at X/Y10 to X/Y2F, to D300 onwards, is shown here.

Control data set command

Set control data

| MOVP | H80 | D20 | — Sets (S1) error completion type

| MOVP | K2 | D22 | — Sets channel (CH2) used by ((S1)+2) host station

| MOVP | K1 | D28 | — Sets ((S1)+8) arrival WDT time (1 second)

| SET | M3 | — Sets control data designated end flag.

Request to read received data / WDT error
X01A M3 X2F

| GP.RECV | U1 | D20 | D300 | M4 | — RECV instruction execution

M4

─ Processing program at receive completed ─

M5
─ Processing program at normal operation completion ─

M5
─ Processing program at error completion ─ — Takes corrective action according to error code of D21 storing ((S1)+1) completed status.

M5 turns ON/OFF depending on normal operation end/error end of RECV instruction.
M4 turns ON for only 1 scan at completion of execution of RECV instruction.

10.14 Other Station Transient Transmission Request

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(D1)	—	O				—			
(D2)	O	O				—			

[Instruction Symbol] [Execution condition]

REQ ⊓⌐ Command

| | | G.REQ | Un | (S1) | (S2) | (D1) | (D2) | |

REQ ⌐ Command

| | | GP.REQ | Un | (S1) | (S2) | (D1) | (D2) | |

Set data

Set Data	Description	Data Type
Un	AJ71QC24 head I/O number	16-bit binary
(S1)	First device number of devices storing control data	Device name
(S2)	First device number of devices storing request data	
(D1)	First device number of devices storing response data	
(D2)	Bit device turning ON at execution completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control data

	Setting Details	Setting Range	Data Set By	
		[Target Station-1]	User	System

(S1)	b15 to b7 to b4 to b0
	`[0 |1/0| 0
		1	0	1]`
				
				Error completion type (bit 7)
				0 : Not necessary to set the clock when error occurs
				  Not necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
				1 : Necessary to set the clock when error occurs
				  Necessary to set clock data when error occurs in (S1)+11 to (S1)+15.
				  (Clock data controlled by error detection station)
					0011H
					0091H
						O	

(S1)+1	Completion status 0 : Normal end Other than 0 : Error end	0 to		O
(S1)+2	Channel used by host station Designates host station AJ71QC24 interface sending the request.	1 : CH 1 2 : CH 2	O	
(S1)+3	Target station I/O signal	03FFH	O	
(S1)+4	Target station network number	0	O	
(S1)+5	Target station number	0	O	
(S1)+6	Special function module station number Designates target station AJ71QC24 station number (0 to 31) when sending request to [target station -1]	0 to 31	O	

(S1)+7	Number of retransmissions
	Read/write request :
	  Designates the number of times to retransmit the request when cannot read/write.
	Read/write completed :
	  Stores number of retransmissions for normal completion and error completion.
		0 to 15	O	

(S1)+8	Arrival WDT time (unit: second)
	Designates WDT time until completion of execution of REQ Instruction.
	  Repeats transmission of request (S1)+7 number of times when cannot receive response within the WDT time. (Retransmission)
		0 : default (10 secs)
		1 to 32767
		  : 1 to 32767 seconds
			O	

(S1)+9	Length of send data (unit: word) Designates number of words in data designated at (S2).	2 : Reading 6 : Writing	O	
(S1)+10	Length of received data (unit: word) When reading clock data, stores the number of words of data written in the device designated at (D1). When writing clock data, designates (S1)+10 as a dummy.	4 : Reading 0 : Writing		O
(S1)+11	Clock set flag When (S1) is 0091H (completion type for error is [1]), the validity or invalidity of data from (S1)+12 to (S1)+15 is stored.	0 : Invalid 1 : Valid		O
(S1)+12	Year (last 2 digits), month when error occurred Upper 8 bits : month (01H to 12H) Lower 8 bits : year (00H to 99H)	0100H to 1299H		O
(S1)+13	Day, hour when error occurred Upper 8 bits : hour (00H to 23H) Lower 8 bits : day (01H to 31H)	0001H to 2331H		O
(S1)+14	Minute, second when error occurred Upper 8 bits : second (00H to 59H) Lower 8 bits : minute (00H to 59H)	0000H to 5959H		O

(continued)

	Setting Details	Setting Range	Data Set By	
		[Target Station-1]	User	System
(S1)+15	Day of the week when error occurred Day of the week (0000H: Sunday to 0006H: Saturday)	0000H to 0006H		O
(S1)+16	Error detected network number	0		O
(S1)+17	Error detected station number	0		O

Request data

(1) Remote RUN/STOP

	Setting Details	Setting Range	Data Set By	
		[Target Station-1]	User	System
(S2)	Remote control	0010H	O	
(S2)+1	Remote control request content Designates contents of request for remote control.	0001H : Remote RUN 0003H : Remote STOP	O	
(S2)+2	Mode *1 During remote RUN, designates whether or not to forcibly RUN. Designates 0001H in remote STOP.	0001H : Does not forcibly execute 0002H : Forcibly executes	O	
(S2)+3	Clear mode *2 During remote RUN, designates whether or not to clear QnACPU device memory (ie. initializing). Designates 0000H in remote STOP.	0000H : Does not clear 0001H : Clears (except latch range) 0002H : Clears (including latch range)	O	

*1 Mode ((S2)+2) contains data for the forced execution of remote RUN.
If it is not possible to forcibly execute remote RUN at the QnACPU whose status is being controlled because of trouble at the station requesting QnACPU remote STOP/PAUSE, or at external devices, etc., use other devices to forcibly conduct remote RUN.

*2 Clear mode ((S2)+3) contains data for designating clear processing (initialization) of the QnACPU device memory at the start of QnACPU operations by remote RUN.
The QnACPU RUNS according to the parameter setting (PC file setting → device initial value) after the designated clearance.

(2) Reading/writing clock data

	Setting	Setting range	Data set	
		[Target station - 1]	User	System
(S2)	System reading/writing	0001H : Reading 0011H : Writing	O	
(S2)+1	Description of request Designate the description of the system reading/writing request.	0002H : Clock read 0001H : Clock write	O	

(S2)+2	Change pattern
	  To write clock data
	    Set the bits corresponding to clock data (S2)+3 to (S2)+6 to be written.
	    The (S2)+3 to (S2)+6 data corresponding to the active bit is valid.
	  To read clock data
	    There is no need to designate (S2)+2 through (S2)+6.
	
	b15 to b6 b5 b4 b3 b2 b1 b0
	[0 | 1/0 | 1/0 | 1/0 | 1/0 | 1/0 | 1/0 | 1/0]
	1: Writes (change). Day of week Year
	0: Do not write (Does not change). Sec. Month
	  Min. Day Hours
		0001H to 997FH	O	

(S2)+3	Store the new day and month in BCD codes. Upper 8 bits: day (01H to 31H), month (01H to 12H)	0101H to 3112H	O	
(S2)+4	Store the new minutes and hours in BCD codes. Upper order 8 bits: minutes (00H to 59H), Lower order 8 bits: hours (00H to 23H)	0000H to 5923H	O	
(S2)+5	Changing second, minute Upper 8 bits : second (00H to 59H) Lower 8 bits : minute (00H to 59H)	0000H to 0659H	O	

[Note]   1) Clock data cannot be written when the target QnACPU is system protected (when system protect switch SW5 is ON).
Each request is error completed.

Response data

(1) To read/write clock data

	Setting Details	Setting Range	Data Set By	
		[Target Station-1]	User	System
(D1)	Request type	Clock data reading: 0081H Clock data writing: 0091H	O	O
(D1)+1	Sub-request type	Clock data reading: 0002H Clock data writing: 0001H	O	O
(D1)+2	Read month, year (last 2 digits) Upper 8 bits : month (01H to 12H) Lower 8 bits : year (00H to 99H)	0100H to 1299H		O
(D1)+3	Read hour, day Upper 8 bits : hour (00H to 23H) Lower 8 bits : day (01H to 31H)	0001H to 2331H		O
(D1)+4	Read second, minute Upper 8 bits : second (00H to 59H) Lower 8 bits : minute (00H to 59H)	0000H to 5959H		O
(D1)+5	Read day of the week Day of the week (0000H: Sunday to 0006H: Saturday)	0000H to 0006H		O

Function

(1) Sends the request data from (S1) onwards to AJ71QC24 designated at control data special function module station number.

(2) AJ71QC24 control instructions cannot be executed simultaneously in two or more places for the same channel of the same AJ71QC24.
If the execution conditions come into effect simultaneously in 2 or more places, subsequently executed AJ71QC24 control instructions must wait until a channel becomes available.
To use AJ71QC24 control instructions using the same channel in 2 or more places, use the completion device in communication start commands, and conduct sequential execution.

(3) An interlock signal for use at execution of the REQ instruction can be established with the completion device ((D2)) or the completion status indication device ((D2)+1).
   (a) Host station completion device
      : Turns ON at END processing of scan completing reading due to the REQ instruction, and turns OFF at next END processing.
   (b) Completion status indication device
      : Turns ON/OFF depending on the status on completing REQ instruction.
      • Normal completion   : Stays OFF, no change.
      • Error completion   : Turns ON at END processing of scan completing REQ instruction, and turns OFF at next END processing.

[Operation at execution of REQ instruction]

Operation Errors

(1) In the following cases, an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
   • When the control data contents are outside the setting range.
                                                    (Error code: 4100)
   • When the module attempting access is not a special function module.
                                                    (Error code: 2110)
   • When AJ71QC24 control instructions cannot be used with the designated module.   (Error code: 2112)
   • When the designated instruction name is illegal.   (Error code: 4300)
   • When the number of AJ71QC24 control instruction devices is illegal.
                                                    (Error code: 4301)
   • When a non-designatable device is designated.   (Error code: 4302)

Program Example

A program which remote STOPS the AJ71QC24 whose special function module station number is 2 in a multidrop system is shown here.

```
Control    Control
request    command
           M0                                              Set control data
 ─┤├───────┤/├────────────────────────[ MOV │ H91  │ D0  ]─ Sets (S1) error completion type
           │
           ├──────────────────────────[ MOV │ K2   │ D2  ]─ Sets channel (CH2) used by ((S1)+2) host station
           │
           ├──────────────────────────[ MOV │ H3FF │ D3  ]─ Sets ((S1)+3) target station I/O signal.
           │
           ├───────────────────[ FMOV │ K0  │ D4  │ K2  ]─ Sets ((S1)+4) to ((S1)+5).
           │
           ├──────────────────────────[ MOV │ K2   │ D6  ]─ Sets ((S1)+6) special function module station number
           │                                                 (target station AJ71QC24)
           ├──────────────────────────[ MOV │ K5   │ D7  ]─ Sets ((S1)+7) number of retransmissions (5 times)
           │
           ├──────────────────────────[ MOV │ K2   │ D8  ]─ Sets ((S1)+8) arrival WDT time (2 seconds)
           │
           ├──────────────────────────[ MOV │ K4   │ D9  ]─ Sets ((S1)+9) read data length (4 words)
           │
           ├──────────────────────────[ MOV │ K0   │ D10 ]─ Sets ((S1)+10).
           │
           ├──────────────────────────[ MOV │ H10  │ D20 ]─ Sets (S2) remote control.
           │
           ├──────────────────────────[ MOV │ H2   │ D21 ]─ Sets ((S2)+1) remote STOP.
           │
           ├──────────────────────────[ MOV │ H1   │ D22 ]─ Sets ((S2)+2).
           │
           ├──────────────────────────[ DMOV │ H0  │ D23 ]─ Sets ((S2)+3) (D1))
           │
           └─────────────────────────────────────[ SET │ M0 ]─ Sets control command flag

Control          AJ71Q
com-     Global   C24    WDT
mand     signal   ready  error
M0       X1B      X1E    X1F
─┤├──────┤├───────┤├─────┤/├───[ GP.REQ │ U0 │ D0 │ D20 │ D24 │ M1 ]─  REQ instruction execution
                                                                        X1B is a signal used with respect to external
M0       M1                                                             devices to enable use of the line.
─┤├──────┤├────────────┌─────────────────────────────────┐
                       │ Processing program at control completed │
                  M2   └─────────────────────────────────┘
                  ─┤/├─┌─────────────────────────────────┐
                       │ Processing program at normal operation │
                       │ completion                       │
                  M2   └─────────────────────────────────┘
                  ─┤├──┌─────────────────────────────────┐        Takes corrective action according to error code
                       │ Processing program at error completion │   of D1 storing ((S1)+1) completed status.
                       └─────────────────────────────────┘
                                               ─────────[ RST │ M0 ]─
```
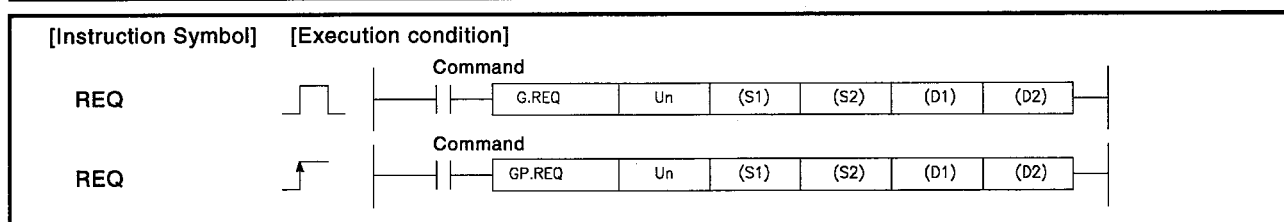
M2 turns ON/OFF depending on the normal completion/error completion of REQ instruction.

M1 turns ON for only 1 scan at REQ instruction execution completion.

11. ID INTERFACE MODULE INSTRUCTIONS

ID interface module instructions are instructions for reading/writing data to ID data carriers, through ID interface modules.

(1) Instructions that correspond to all versions

Category	Instruction Name	Description	Refer to
ID controller initial setting	IDINIT1 IDINIT2	Writes channel 1 or channel 2 control data to ID interface module buffer memory.	11.1
Reading from ID data carrier	IDRD1 IDRD2	Reads data from ID data carrier through channels 1 or 2.	11.2
Writing to ID data carrier	IDWD1 IDWD2	Writes data to ID data carrier through channels 1 or 2.	11.3
Continuous reading from ID data carrier	IDARD1 IDARD2	Reads data after the ID data carrier has entered the communication range with the ID reader/writer.	11.4
Continuous writing to ID data carrier	IDAWD1 IDAWD2	Writes data after the ID data carrier has entered the communication range with the ID reader/writer.	11.5
Data comparison with ID data carrier	IDCMP1 IDCNP2	Compares the data of the ID data carrier and of the device memory.	11.6
Batch writing of same data to ID data carrier	IDFILL1 IDFILL2	Batch writes the same data into a designated area of the ID data carrier.	11.7
Copying between ID data carriers	IDCOPY1 IDCOPY2	Copies data between 2 ID data carriers through channels 1 and 2.	11.8
0 clear of the ID data carrier	IDCLR1 IDCLR2	Clears all data within the ID data carrier to 0 via ID interface module.	11.9

(2) Instructions that are supported by function version B and later

Category	Instruction Name	Description	Refer to
Comparison read from the ID data carrier	IDCRD1 IDCRD2	Verifies data by re-reading the data that has already been read.	11.10
Comparison write to the ID data carrier	IDCWD1 IDCWD2	Verifies data by reading the data that has already been written.	11.12
Continuous comparison read from the ID data carrier	IDSRD1 IDSRD2	Verifies data by re-reading the data after waiting until the data enters the ID reader/writer communication range, and reading it.	11.13
Continuous comparison write to ID data carrier	IDSWD1 IDSWD2	Verifies data by reading the data that has been written after waiting until the data enters the ID reader/writer communication range, and writing it.	11.14
Continuous high-speed read from the ID data carrier	IDFRD1 IDFRD2	Reads data at high speed after waiting until the data enters the ID reader/writer communication range.	11.15
Continuous high-speed write to ID data carrier	IDFWD1 IDFWD2	Writes data at high speed after waiting until the data enters the ID reader/writer communication range.	11.16

POINT

(1) See the following manual for details about the ID interface module ID reader/writer, and ID data carrier.
- AJ71ID1-R4/AJ71ID2-R4 and A1SJ71ID2-R4/A1SJ71ID2-R4 ID Interface Module User's Manuals   IB-66595

(2) Regardless of whether an ID interface module is set to word or bit specification, data is read/written by word (rather than by bit) for the ID interface instructions.
Read/write data after the user verifies on how to handle data using either word or bit.

(3) Setting Y(n+1)4 and Y(n+1)C to off during ID interface instruction execution interrupts the instruction being executed.

(4) See Section 1.3 for function version B.

11.1 ID Controller Initial Setting

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant	Other
	Bit	Word		Bit	Word				
(S)	—	O		—					

```
[Instruction symbol]   [Execution condition]                                    □ represents 1 or 2
                                    Command
   IDINIT1, IDINIT2      ┌─┐    ├──┤ ├────────────────────┤ GP.IDINIT □ │ Un │ (S) ├┤
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of ID controller	16-bit binary
(S)	First device number of devices storing initial setting data designated in ID controller	Device name

Initial Set Data

Device	Description	Default Value	Setting Range
(S) + 0	• Number of retries designation Sets the number of retries if communications between the ID data carrier and reader/writer could not be conducted normally.	• 3	• 1 to 10 • 0 (no retries)
(S) + 1	• Processing unit designation Sets whether the communication with the ID data carrier is conducted in word units or byte units.	• 0 (word unit)	• 0 (word unit) • 1 (byte unit)

Function

(1) Writes initial set data of devices from that designated at (S) onwards to the ID interface module designated by the head I/O number.

(2) IDINIT1 instructions conduct initial settings for ID interface module channel 1, and IDINIT2 instructions for channel 2.

(3) Conduct the initial setting with these instructions after starting the system, and before executing the first ID interface module instructions. If other ID controller dedicated instructions have already been executed, the initial settings of these instructions are ignored.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the module attempting access is not a special function module.
(Error code: 2110)
- When the ID interface module control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of ID interface module instruction devices is illegal.
(Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

POINT
(1) The initial setting data content is not checked in IDINIT1 or IDINIT2 instructions. If the initial setting data is outside the setting range, the ID interface module conducts control by using default values.

11.2 Reading from ID Data Carrier

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J▢\▢		Special Function Module U▢\G▢	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O	O		—				O	—
(D1)	—	O		—				—	—
n2	O	O		—				O	—
(D2)	O	O		—				—	—

[Instruction symbol]   [Execution condition]   ▢ represents 1 or 2.

```
                        Command
IDRD1, IDRD2    ⊓⌐  ──┤↑├──┤ G.IDRD ▢ │ Un │ n1 │ (D1) │ n2 │ (D2) ├──
                        Command
IDRD1, IDRD2     ⌐   ──┤↑├──┤ GP.IDRD ▢ │ Un │ n1 │ (D1) │ n2 │ (D2) ├──
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of ID interface module	16-bit binary
n1	First address of ID data carrier	
(D1)	First number of device storing data to be read	Device name
n2	Number of read data (0 to 3900)	16-bit binary
(D2)	Number of the bit device turning ON after execution completed (at error completion (D2)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Reads the number of data designated at n2 from the address designated at ID data carrier n1 through the ID interface designated by the head I/O number, and stores data from the device designated at (D1) onwards.

(2) After reading is completed, when the END instruction is executed for the scan completing the instruction, the bit device designated at (D2) is turned ON, and automatically turns OFF after one scan.
At error completion, the completion status indication device ((D2)+1) also turns ON for one scan.

(3) IDRD1 instructions are executed in ID interface module channel 1, and IDRD2 instructions in ID interface module channel 2.

(4) There is no operation when the value designated at n2 is 0.

(5) Error completion occurs when the address designated at n1, or the number of data designated at n2, exceeds the permissible range for the ID data carrier.
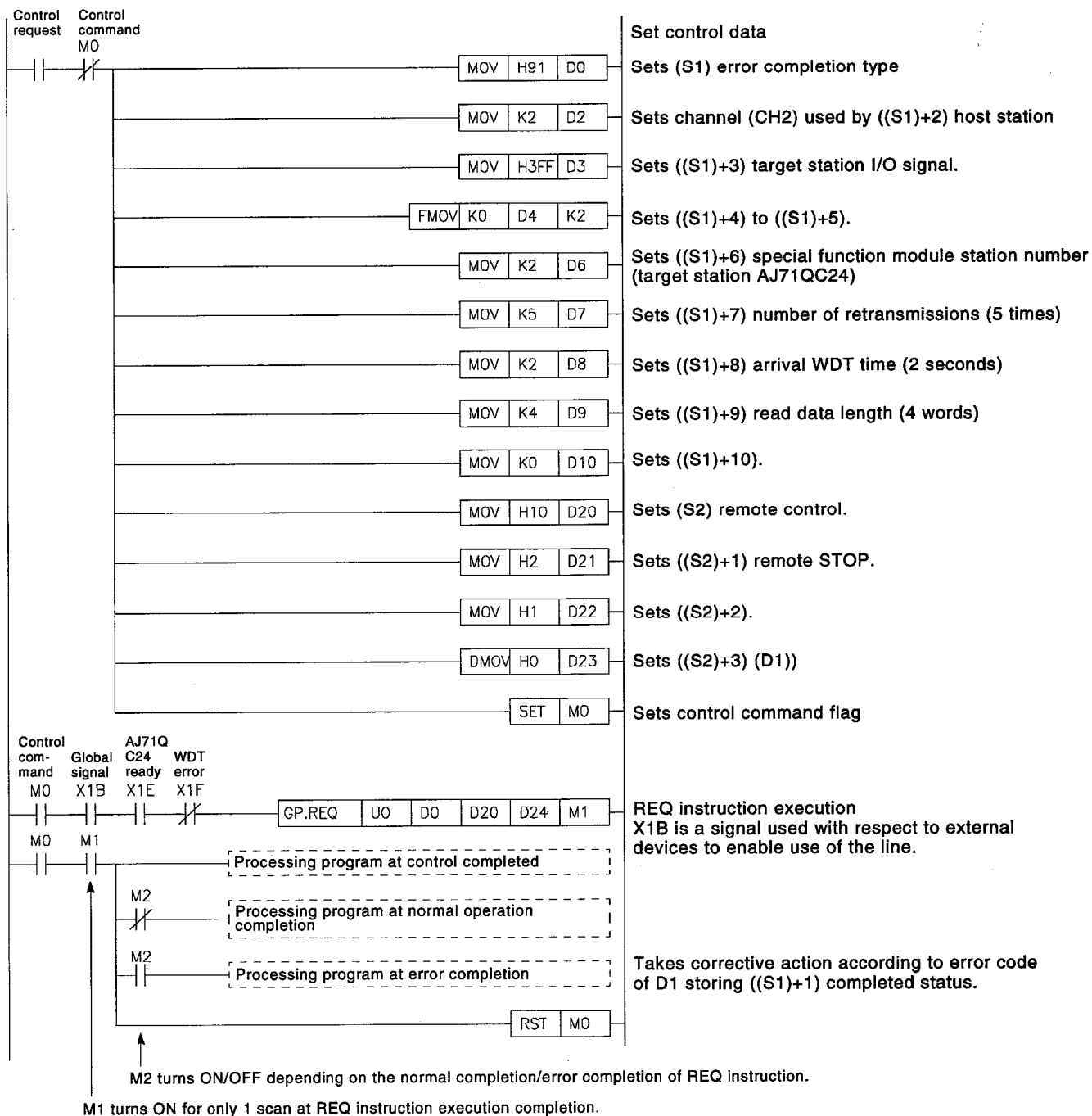
Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the number of points n2 from the device number designated at (D1) exceeds the applicable device.   (Error code: 4101)
- When the value designated at n2 is outside the range 0 to 3900.
                                                                      (Error code: 4100)
- When the module attempting access is not a special function module.
                                                                      (Error code: 2110)
- When the ID interface module control instructions cannot be used with the designated module.   (Error code: 2112)
- When the designated instruction name is illegal.   (Error code: 4300)
- When the number of ID interface module instruction devices is illegal.
                                                                      (Error code: 4301)
- When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, reads 5 words of data from ID data carrier address 100 through channel 1 of the ID interface module installed at I/O numbers X/Y60 to X/Y7F, and stores this data from D0 onwards, is shown here.

[Ladder mode]

```
     X0
0  ──┤├──[GP.IDRD1  U6   K100  D0   K5   M0  ]──

13  ─────────────────────────────────────[ END ]──
```
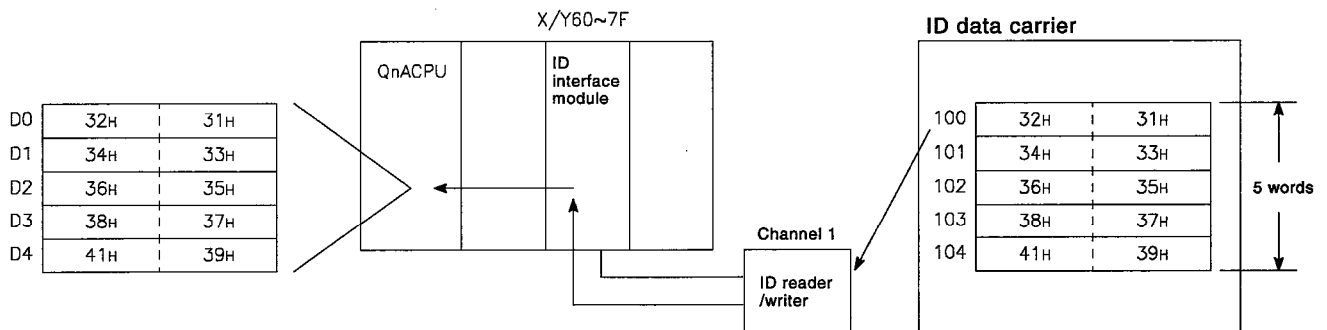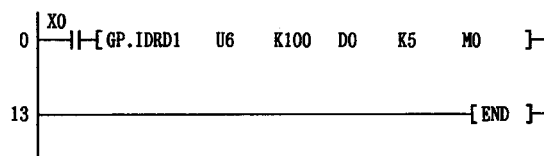
[List mode]

Step	Instruction	Device
0	LD	X0
1	GP.IDRD1	U6
		K100
		D0
		K5
		M0
13	END	

[Operation]

11.3 Writing to ID Data Carrier

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O	O		—				O	—
(S)	—	O		—				—	—
n2	O	O		—				O	—
(D)	O	—		—				—	—

[Instruction symbol]   [Execution condition]   ☐ represents 1 or 2.

| IDWD1, IDWD2 | ⌐⌐ | Command ──┤ ├── | G.IDWD ☐ | Un | n1 | (S) | n2 | (D) | |

| IDWD1, IDWD2 | ⌐ | Command ──┤ ├── | GP.IDWD ☐ | Un | n1 | (S) | n2 | (D) | |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of ID interface module	16-bit binary
n1	First address of ID data carrier	
(S)	First device number of devices storing write data	Device name
n2	Number of write data (0 to 3900)	16-bit binary
(D)	Number of bit device turning ON at execute completion (at error completion, (D)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Writes n2 points of data starting from the device designated at (S) to ID data carrier addresses starting at the one designated at n1, through the ID interface module designated by the head I/O number.

(2) After writing is completed, at the END instruction execution of the scan completing the instruction, the bit device designated at (D) turns ON and automatically turns OFF after one scan.
At error completion, the completion status indication device ((D)+1) also turns ON for one scan.

(3) IDWD1 instructions execute by ID interface module channel 1, and IDWD2 instructions by channel 2.

(4) There is no operation when the value designated at n2 is 0.

(5) Error completion occurs when the address designated at n1, or the number of data designated at n2 exceeds the permissible range for the ID data carrier.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the number of points n2 from the device number designated at (S) exceeds the applicable device. (Error code: 4101)
- When the value designated at n2 is outside the range 0 to 3900. (Error code: 4100)
- When the module attempting access is not a special function module. (Error code: 2110)
- When the ID interface module control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of ID interface module instruction devices is illegal. (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, writes the data stored in D0 to D4 to 5 words from ID data carrier address 100, through channel 2 of the ID interface module installed at I/O numbers X/Y60 to X/Y7F.

[Ladder mode]
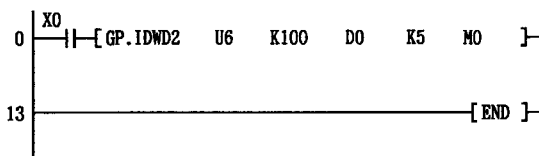
[List mode]

Step	Instruction	Device
0	LD	X0
1	GP.IDWD2	U6
		K100
		D0
		K5
		M0
13	END	

[Operation]

11.4 Continuous Reading from ID Data Carrier

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module ·U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O	O		O					—
(D1)	—	O		—					—
n2	O	O		O					—
(D2)	O	—		—					—

```
[Instruction symbol]   [Execution condition]                              ☐ represents 1 or 2.
                                    Command
   IDCARD1, IDARD2      ⌐L    ⊢──┤ ├──┤ G.IDARD ☐ │ Un │ n1 │ (D1) │ n2 │ (D2) ├─┤

                                    Command
   IDCARD1, IDARD2       ↑    ⊢──┤ ├──┤ GP.IDARD ☐ │ Un │ n1 │ (D1) │ n2 │ (D2) ├─┤
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of ID interface module	16-bit binary
n1	First address of ID data carrier	
(D1)	First number of device storing data to be read	Device name
n2	Number of read data (0 to 3900)	16-bit binary
(D2)	Number of the bit device turning ON after execution completed (at error completion (D2)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Reads the number of data designated at n2 from the ID data carrier addresses starting at the one designated by n1, through the ID interface designated by the head I/O number, and stores this data at devices starting from that designated at (D1).

(2) When the ID data carrier is not within the range of communication with the ID reader/writer, the system waits for the ID data carrier to enter the communication range, and then reads data from it.

(3) When continuous reading is completed, at the END instruction execution of the scan completing instruction, the bit device designated at (D2) turns ON and automatically turns OFF after one scan.
At error completion, the completion status indication device ((D2)+1) also turns ON for one scan.

(4) IDRD1 instructions execute by ID interface module channel 1, and IDRD2 instructions by channel 2.

(5) There is no operation when the value designated at n2 is 0.

(6) Error completion occurs when the address designated at n1, or the number of data designated at n2 exceeds the permissible range for the ID data carrier.
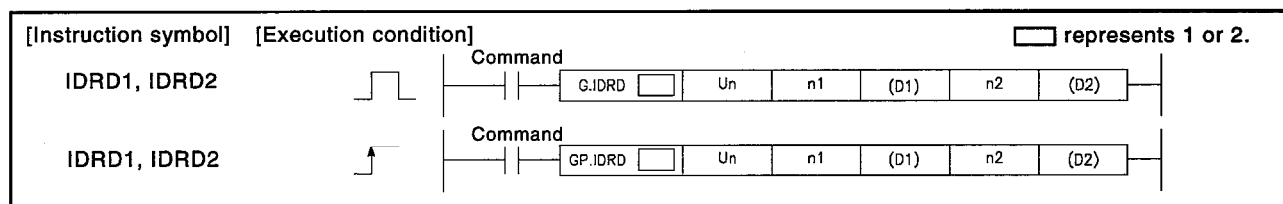
Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.

• When the number of points n2 from the device number designated at (D1) exceeds the applicable device.   (Error code: 4100)

• When the value designated at n2 is outside the range 0 to 3900.
(Error code: 4100)

• When the module attempting access is not a special function module.
(Error code: 2110)

• When the ID interface module control instructions cannot be used with the designated module.   (Error code: 2112)

• When the designated instruction name is illegal.   (Error code: 4300)

• When the number of ID interface module instruction devices is illegal.
(Error code: 4301)

• When a non-designatable device is designated.   (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, waits for the ID data carrier to enter the communication range, reads 5 words of data from ID data carrier address 100, and stores the data from D0 onwards, is shown here.

[Ladder mode]

[List mode]

Step	Instruction	Device
0	LD	X0
1	GP.IDARD1	U6
		K100
		D0
		K5
		M0
13	END	

[Operation]

11 – 10

11.5 Continuous Writing to ID Data Carrier

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O	O				O			—
(S)	—	O				—			—
n2	O	O				O			—
(D)	O	—				—			—

[Instruction symbol]　[Execution condition]　　　　　　　　　　　　　　　　□ represents 1 or 2.

Command

IDAWD1, IDAWD2　⌐Л　⊣ ⊢─[G.IDAWD □ | Un | n1 | (S) | n2 | (D)]⊣

Command

IDAWD1, IDAWD2　⌐↑　⊣ ⊢─[GP.IDAWD □ | Un | n1 | (S) | n2 | (D)]⊣

Set Data

Set Data	Description	Data Type
Un	Head I/O number of ID controller	16-bit binary
n1	First address of ID data carrier	
(D1)	First device number of devices storing write data	Device name
n2	Number of write data (0 to 3900)	16-bit binary
(D2)	Number of bit device turning ON at execution completion (at error completion, (D)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Writes n2 points of data from the device designated at (S) to the ID data carrier address designated at n1 onwards, through the ID interface module designated by the head I/O number.

(2) When the ID data carrier is not in the range of communication with the ID reader/writer, the system waits for the ID data carrier to enter the range of communication, and then writes data to it.

(3) When continuous writing is completed, at the END instruction execution of the scan completing the instruction, the bit device designated at (D) turns ON and automatically turns OFF after one scan.
At error completion, the completion status indication device ((D)+1) also turns ON for one scan.

(4) IDAWD1 instructions are executed with respect to ID interface module channel 1, and IDAWD2 instructions with respect to channel 2.

(5) There is no operation when the value designated at n2 is 0.

(6) Error completion occurs when the address designated at n1, or the number of data designated at n2 exceeds the permissible range for the ID data carrier.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the number of points n2 from the device number designated at (S) exceeds the applicable device. (Error code: 4101)
- When the value designated at n2 is outside the range 0 to 3900.
  (Error code: 4100)
- When the module attempting access is not a special function module.
  (Error code: 2110)
- When the ID interface module control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of ID interface module instruction devices is illegal.
  (Error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 turns ON, waits for the ID data carrier to enter the communication range, reads 5 words of data from ID data carrier address 100, and stores the data from D0 onwards, is shown here.

[Ladder mode]

```
   X0
0 ─┤├──[GP.IDAWD2    U6    K100    D0    K5    M0  ]─

13 ──────────────────────────────────────[ END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X0
1	GP.IDAWD2	U6
		K100
		D0
		K5
		M0
13	END	

[Operation]

11.6 Data Comparison with ID Data Carrier

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J⬚\⬚		Special Function Module U⬚\G⬚	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O	O				O			—
(S)	—	O				—			—
n2	O	O				O			—
(D)	O	—				—			—

[Instruction symbol]   [Execution condition]   ⬚ represents 1 or 2.

IDCMP1, IDCMP2   ⊓⌐   Command
                        ─┤├──[G.IDCMP ⬚ | Un | n1 | (S) | n2 | (D)]─

IDCMP1, IDCMP2   ⌐   Command
                        ─┤├──[GP.IDCMP ⬚ | Un | n1 | (S) | n2 | (D)]─

Set Data

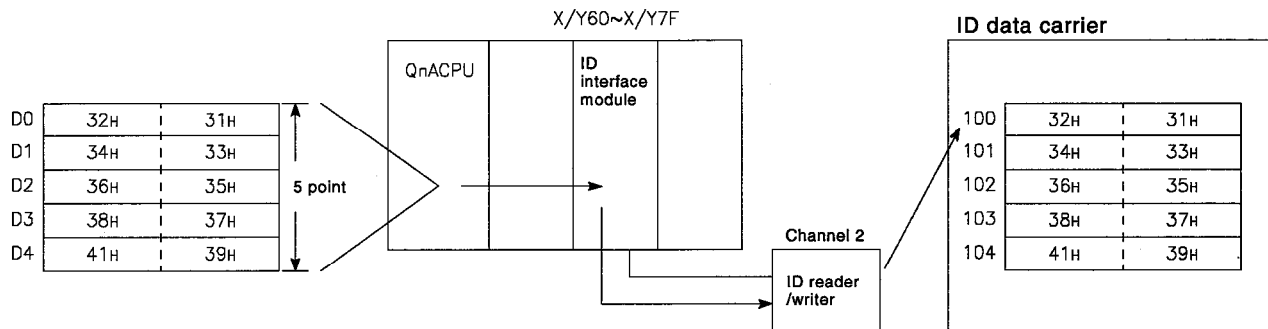| Set Data	Description	Data Type
Un	Head I/O number of ID controller	16-bit binary
n1	First address of ID data carrier	
(D1)	First device number of devices storing comparison data	Device name
n2	Number of comparison data (0 to 3900)	16-bit binary
(D2)	Number of bit device turning ON at execution completion (at error completion, (D)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Writes n2 points of data from the device designated at (S) to the ID data carrier address designated at n1, through the ID interface module designated by the head I/O number.

(2) Error completion occurs if the result of the comparison shows inconsistent data.

(3) When data comparison is completed, at the END instruction execution of the scan completing the instruction, the bit device designated at (D) turns ON and automatically turns OFF after one scan.
At error completion, the completion status indication device ((D)+1) also turns ON for one scan.

(4) IDCMP1 instructions are executed with respect to ID interface module channel 1, and IDCMP2 instructions with respect to channel 2.

(5) There is no operation when the value designated at n2 is "0".

(6) Error completion occurs when the address designated at n1, or the number of data designated at n2, exceeds the permissible range for the ID data carrier.

Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the range designated at S2 exceeds the applicable device range of the device designated at (S). (Error code: 4101)
- When the value designated at n2 is outside the range 0 to 3900. (Error code: 4100)
- When the module attempting access is not a special function module. (Error code: 2110)
- When the ID interface module control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of ID interface module instruction devices is illegal. (error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 is ON, compares 5 word data from ID data carrier address 100 through channel 2 of the ID interface module installed in I/O number X/Y60 to X/Y7F, with word (point) data from D0.
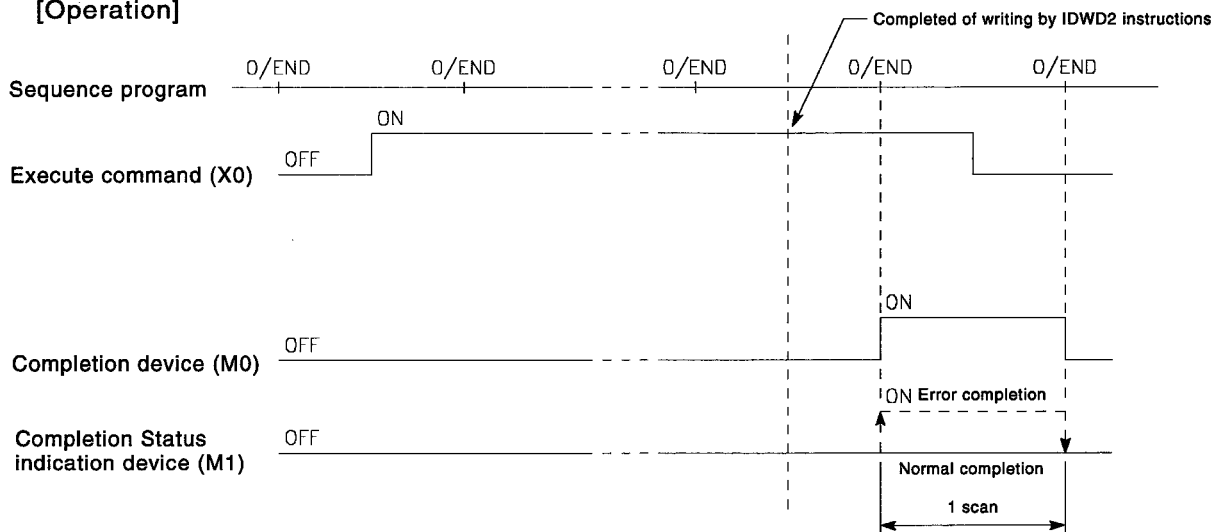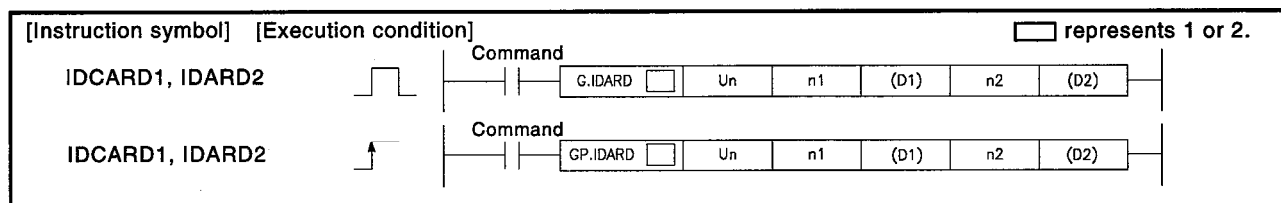

[Ladder mode]

```
   X0
0 ─┤├──[ GP.IDCMP2   U6   K100   D0   K5   M0 ]─

13 ──────────────────────────────────[ END ]─
```
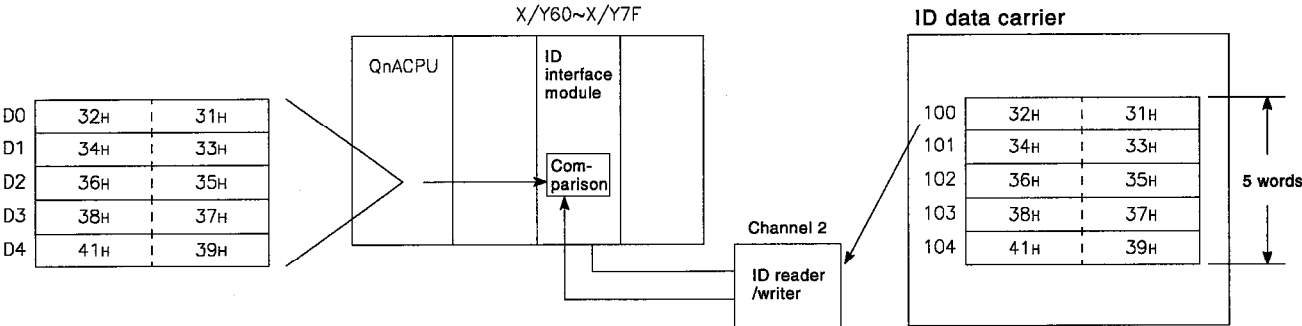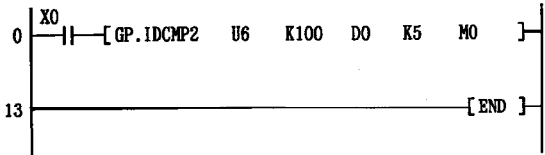
[List mode]

Step	Instruction	Device
0	LD	X0
1	GP.IDCMP2	U6
		K100
		D0
		K5
		M0
13	END	

[Operation]
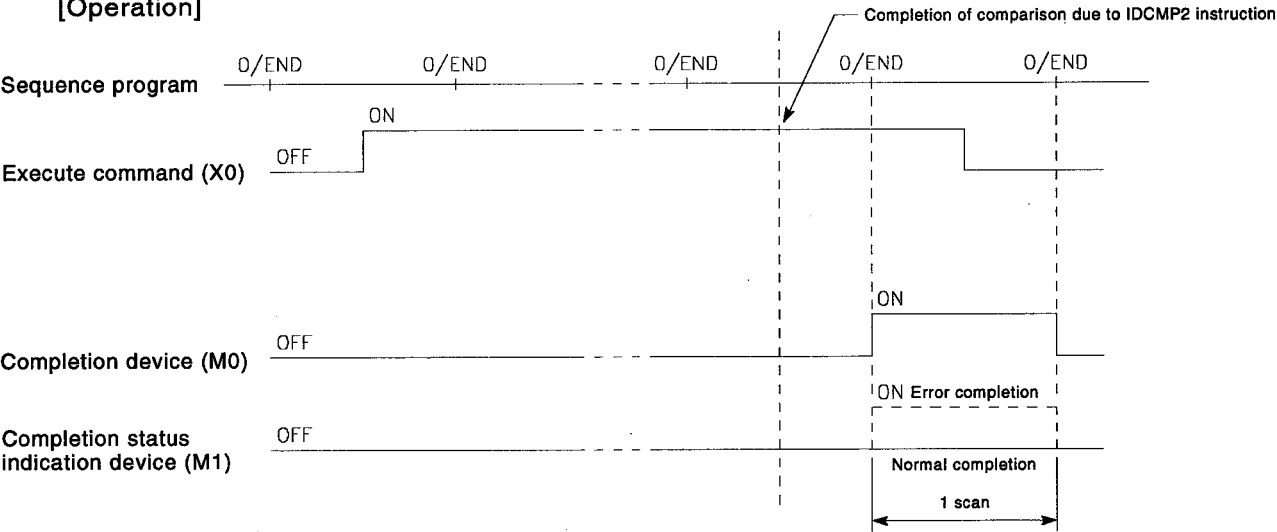
11.7 Batch Writing Same Data to ID Data Carrier

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O				O				—
(S)	O				O				—
n2	O				O				—
(D)	O				—				—

[Instruction symbol]   [Execution condition]   ☐ represents 1 or 2.

IDFILL1, IDFILL2

Command
| G.IDFILL ☐ | Un | n1 | (S) | n2 | (D) |

IDFILL1, IDFILL2

Command
| GP.IDFILL ☐ | Un | n1 | (S) | n2 | (D) |

Set Data

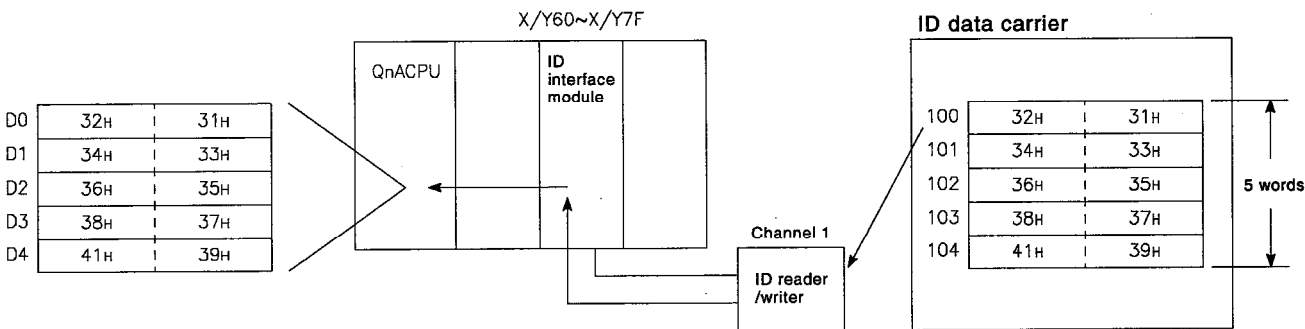| Set Data	Description	Data Type
Un	Head I/O number of ID controller	16-bit binary
n1	First address of ID data carrier	
(S)	Write data or first device number of devices storing write data	
n2	Number of write data (0 to 3900)	
(D)	Number of bit device turning ON at execute completion (at error completion, (D)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Writes data designated at (S) from ID data carrier address designated at n1 to an area of the number of data designated at n2, through the ID interface module designated by the head I/O number.

(2) When batch writing of same data is completed, at the END instruction execution of the scan completing instruction, the bit device designated at (D) turns ON and automatically turns OFF after the next scan.
At error completion, the completion status indication device ((D)+1) also turns ON for one scan.

(3) IDFILL1 instructions are executed with respect to ID interface module channel 1, and IDFILL2 instructions with respect to channel 2.

(4) There is no operation when the value designated at n2 is "0".

(5) Error completion occurs when the address designated at n1, or the number of data designated at n2, exceeds the permissible range for the ID data carrier.
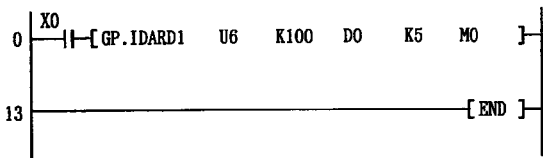
Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
  • When the value designated at n2 is outside the range 0 to 3900.
    (Error code: 4100)
  • When the module attempting access is not a special function module.
    (Error code: 2110)
  • When the ID interface module control instructions cannot be used with the designated module. (Error code: 2112)
  • When the designated instruction name is illegal. (Error code: 4300)
  • When the number of ID interface module instruction devices is illegal.
    (Error code: 4301)
  • When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 is ON, batch writes 5 words of data from ID data carrier address 100, through channel 2 of the ID interface module installed at I/O numbers X/Y60 to X/Y7F, is shown here.

[Ladder mode]

```
   X0
 0 ─┤├─[GP.IDFILL1    U6    K100    D0    K5    M0 ]─

14 ─────────────────────────────────[END]─
```
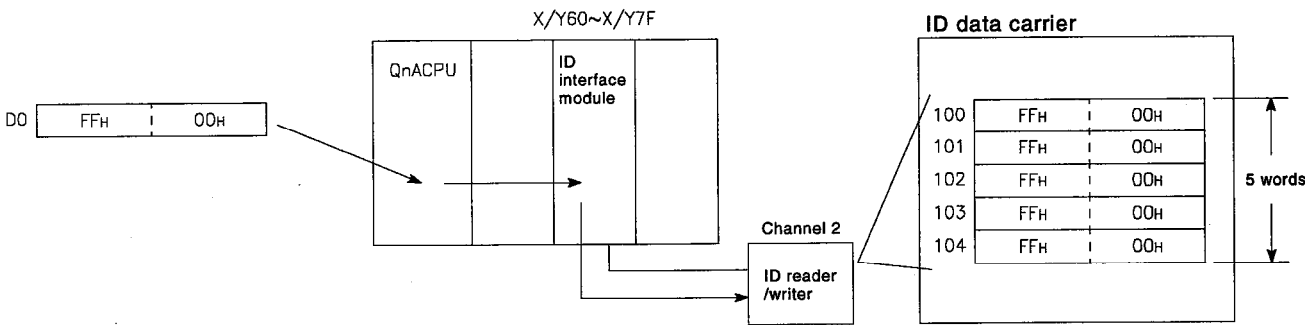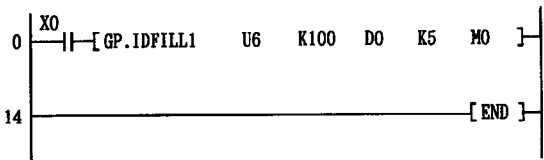
[List mode]

Step	Instruction	Device
0	LD	X0
1	GP.IDFILL1	U6
		K100
		D0
		K5
		M0
14	END	

[Operation]

11 – 16
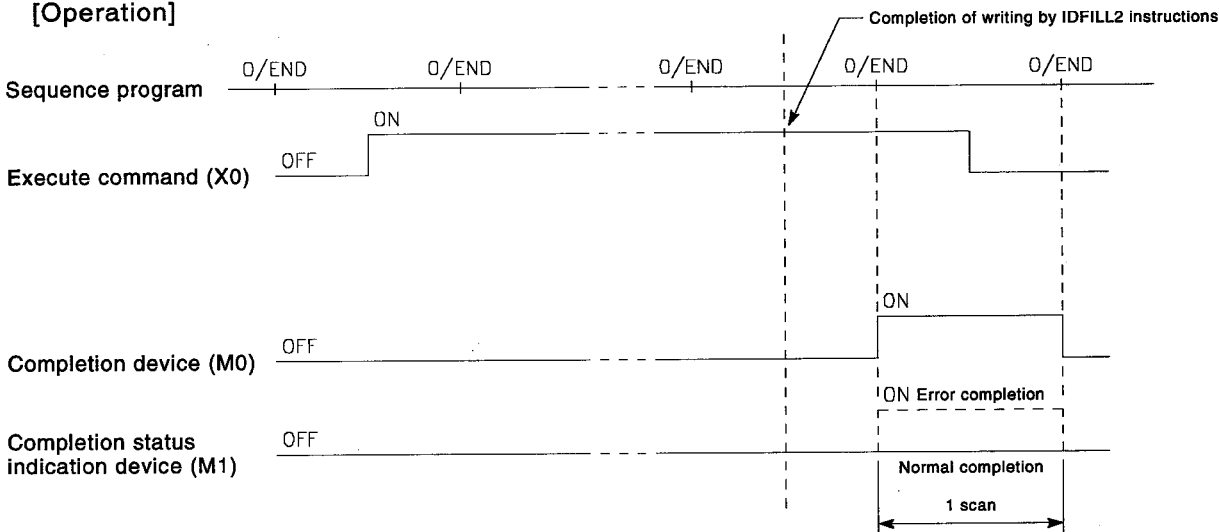
11.8 Copying between ID Data Carriers

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O	—						O	—
n2	O	—						O	—
n3	O	—						O	—
(D)	O	—						—	—

[Instruction symbol]   [Execution condition]   □ represents 1 or 2.

IDCOPY1, IDCOPY2

Command

| | | G.IDCOPY □ | Un | n1 | n2 | n3 | (D) | |

IDCOPY, IDCOPY2

Command

| | | GP.IDCOPY □ | Un | n1 | n2 | n3 | (D) | |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of ID interface module	16-bit binary
n1	First address of copy source ID data carrier	
n2	First address of copy destination data carrier	
n3	Number of data copied (0 to 3900)	
(D)	Number of bit device turning ON at execute completion (at error completion, (D)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).
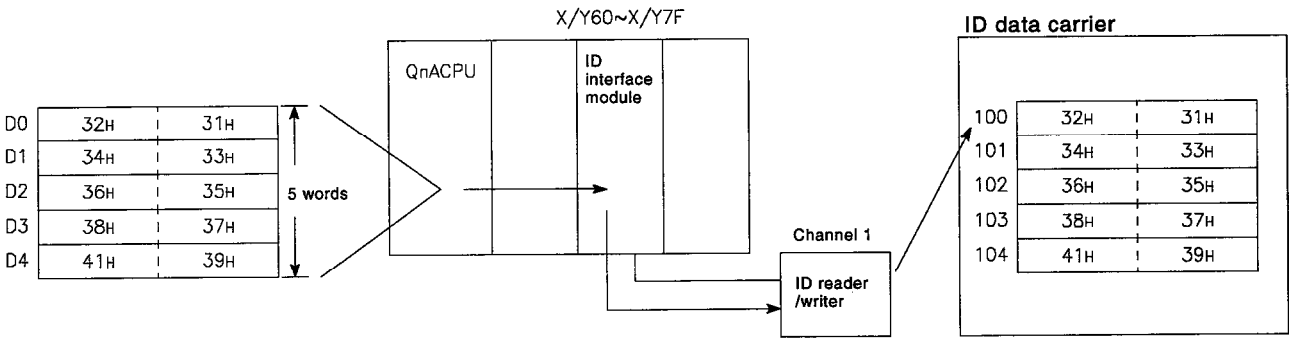
Function

(1) Copies the number of data designated at n2 from the copy source ID data carrier address designated at n1, to the copy destination ID data carrier address designated at n2, through the ID interface module designated by the head I/O number.

(2) When copying between ID data carriers is completed, at the END instruction execution of the scan completing the instruction, the bit device designated at (D) turns ON and automatically turns OFF after one scan. At error completion, the completion status indication device ((D)+1) also turns ON for 1 scan.

(3) The IDCOPY1 instruction copies from ID interface module channel 1 to channel 2, and the IDCOPY2 instruction copies from channel 2 to channel 1.

(4) There is no operation when the value designated at n2 is "0".

(5) Error completion occurs when the addresses designated at n1 and n2, or the number of data designated at n3, exceeds the permissible designation range for the ID data carrier.

(6) Because these instructions use both channels 1 and 2, error completion occurs when there is only 1 channel.
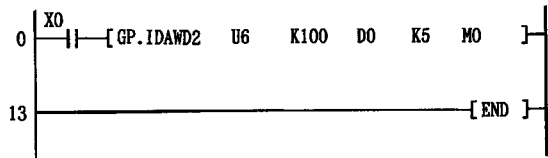
Operation Errors

(1) In the following cases an operation error occurs, the error flag (SM0) turns ON, and the error code is stored in SD0.
- When the value designated at n2 is outside the range 0 to 3900.
  (Error code: 4100)
- When the module attempting access is not a special function module.
  (Error code: 2110)
- When the ID interface module control instructions cannot be used with the designated module. (Error code: 2112)
- When the designated instruction name is illegal. (Error code: 4300)
- When the number of ID interface module instruction devices is illegal.
  (error code: 4301)
- When a non-designatable device is designated. (Error code: 4302)

Program Example

(1) A program which, when X0 is ON, copies 5 words of data from channel 1 ID data carrier address 100 to channel 2 ID data carrier addresses 200 to 204, through an ID interface module installed at I/O numbers X/Y60 to X/Y7F, is shown here.

X/Y60~X/Y7F

| QnACPU | ID controller | |

ID data carrier (A)

100	32H	31H
101	34H	33H
102	36H	35H
103	38H	37H
104	41H	39H

Channel 1

ID reader /writer

ID data carrier (B)

200	32H	31H
201	34H	33H
202	36H	35H
203	38H	37H
204	41H	39H

Channel 2

ID reader /writer

[Ladder mode]

```
    X0
0 ─┤ ├─[ GP.IDCOPY1   U6   K100  K200  K5   M0 ]─

15 ──────────────────────────────────[ END ]─
```

[List mode]

Step	Instruction	Device
0	LD	X0
1	GP.IDCOPY1	U6
		K100
		K200
		K5
		M0
15	END	

[Operation]

Completion of copying by IDCOPY1 instruction

Sequence program

Execute command (X0)

Completion device (M0)

Completion status indication device (M1)

ON

Error completion

Normal completion
1 scan

11.9 ID Data Carrier Clear

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
(D)	O			—					

```
[Instruction symbol]   [Execution condition]
                                          Command
   IDCLR1/2              ‾|_|‾       —| |——————————————————| G.IDCLR□ | Un | (D) |—

                                          Command
   IDCLR1/2              _|‾         —| |——————————————————| GP.IDCLR□ | Un | (D) |—
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of ID interface module (00 to FE: Upper 2 digits when an I/O number is represented in 3 digits.)	16-bit binary
D	Number of bit device turning ON at execute completion (at error completion, (D)+1 also turns ON)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) The data area of ID data carrier is all cleared to 0 via the ID interface module specified by Un.

(2) Upon clearing all data to 0 and execution of the END instruction (for which the scanning whose instruction has been completed), the bit device specified in (D) turns on, then turns off automatically after one scan cycle.
Also, the status display device [(D) + 1] turns on for one scan cycle upon an error recovery.

(3) IDCLR1 is executed for channel 1 of ID interface module, and IDCLR2 for channel 2 of ID interface module.

Program Example

(1) When X0 is ON, this program reads and compares 4 words of data from address 100 of the ID data carrier by way of channel 1 of the ID interface module mounted to the I/O number X/Y60 to X/Y7F, and then stores the data in D0 onward.

11.10 Comparison Read from ID Data Carrier (Function version B or later)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(D1)	—	O		—					
n2	O			—					
(D2)	O			—				O	—

```
[Instruction symbol]   [Execution condition]
                                                    Command
   IDCRD1/2              ⌐⌐⌐⌐         ──┤ ├──────────── G.IDCRD□  Un  n1  (S)  n2  (D) ──┤

                                                    Command
   IDCRD1/2              ⌐⌐┌          ──┤ ├──────────── GP.IDCRD□  Un  n1  (S)  n2  (D) ──┤
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the ID interface module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Head number of the ID data carrier	Device name
(D1)	Head number of the device which stores the read data	
n2	Number of read data (0 to 3900)	16-bit binary
(D2)	Device which turns ON scan 1 after data has been read(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) By way of the ID interface module specified by Un, it compares the amount of data specified by n2 that was read from the address specified by n1 of the ID data carrier with the data which was read again from the ID data carrier, and then stores the data in the device specified by (D1). If the comparison results do not match, there is an error completion.

(2) After reading ends, the bit device specified by (D2) goes ON after the END instruction of the scan for the completed instruction has executed, and automatically goes OFF after 1 scan.
If there is an error completion, the status display at completion device [(D2)+1] also goes ON for 1 scan.

(3) IDCRD1 is executed for channel 1 of the ID interface module, and IDCRD2 is executed for channel 2.

(4) If the value specified by n2 is 0, there is no processing.

(5) If the address specified by n1 and the number of data specified by n2 exceed the specifiable range for the ID carrier, then an error completion occurs.

REMARKS

1) If the comparison results do not match, the following signals go ON, and it is possible to check the match using Xn5 (channel 1) and XnD (channel 2).

2) The basic number of steps of the IDCRD1 and IDCRD2 instructions is 9 steps.

Operation Errors

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.
- The module to be accessed is not a special function module.

(Error code: 2110)
- The ID interface instruction for the specified module cannot be used.

(Error code: 2112)
- The number of n2 points of data from the device specified by (D1) exceeds the device.

(Error code: 4101)
- The value specified by n2 is not 0 to 3900.　　　(Error code: 4100)
- The specified instruction name is strange.　　　(Error code: 4300)
- The number of devices of the ID interface instructions is strange.

(Error code: 4301)
- A device that cannot be specified was specified.　　　(Error code: 4302)

Program Example

(1) When X0 is ON, this program reads and compares 4 words of data from address 100 of the ID data carrier by way of channel 1 of the ID interface module mounted to the I/O number X/Y60 to X/Y7F, and then stores the data in D0 onward.

ID data carrier

D0	32H	31H
D1	34H	33H
D2	36H	35H
D3	38H	37H

QnACPU | ID Interface Module

Comparison

ID reader/writer

Read

100	32H	31H
101	34H	33H
102	36H	35H
103	38H	37H

4 words

X0

GP.IDCRD1	U6	K100	D0	K4	M0

Sequence program — END processing　END processing — — — — END processing　END processing

Execution completion of the IDCRD1 instruction

IDCRD1 instruction

Completion device　OFF

ON

ON Error completion

Statusdisplay at completion device　OFF

Normal completion

1 scan

11.11 Comparison Write to ID Data Carrier (Function version B or later)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(S)	—	O		—					
n2	O			—					
(D)	O			—				O	—

[Instruction symbol]   [Execution condition]

IDCWD1/2

Command

| G.IDCWD□ | Un | n1 | (S) | n2 | (D) |

IDCWD1/2

Command

| GP.IDCWD□ | Un | n1 | (S) | n2 | (D) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the ID interface module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Head number of the ID data carrier	Device name
(S)	Head number of the device which stores the read data	
n2	Number of read data (0 to 3900)	16-bit binary
(D)	Device which turns ON scan 1 after data has been read(D)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

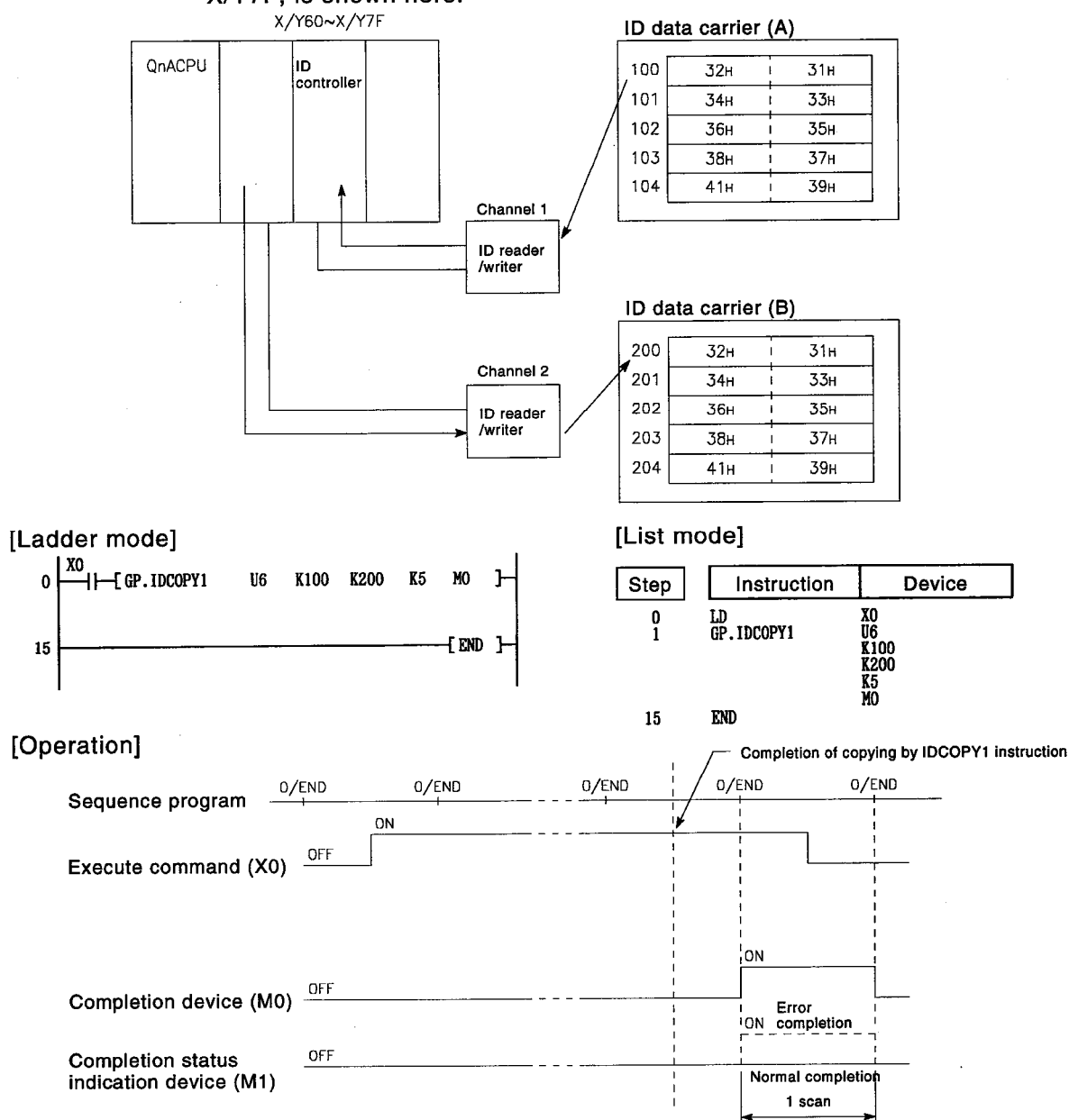(1) By way of the ID interface module specified by Un, it writes the amount of data specified by n2 from the device specified by (S) to the address specified by n1 of the ID data carrier, then compares the written data with the data which was read again from the ID data carrier.
If the comparison results do not match, there is an error completion.

(2) After writing ends, the bit device specified by (D) goes ON after the END instruction of the scan for the completed instruction has executed, and automatically goes OFF after 1 scan.
If there is an error completion, the status display at completion device [(D)+1] also goes ON for 1 scan.

(3) IDCWD1 is executed for channel 1 of the ID interface module, and IDCWD2 is executed for channel 2.

(4) If the value specified by n2 is 0, there is no processing.

(5) If the address specified by n1 and the number of data specified by n2 exceed the specifiable range for the ID carrier, then an error completion occurs.

REMARKS

1) If the comparison results do not match, the following signals go ON, and it is possible to check the match using Xn5 (channel 1) and XnD (channel 2).

2) The basic number of steps of the IDCWD1 and IDCWD2 instructions is 9 steps.

Operation Errors

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.
- The module to be accessed is not a special function module.
    (Error code: 2110)
- The ID interface instruction for the specified module cannot be used.
    (Error code: 2112)
- The number of n2 points of data from the device specified by (D1) exceeds the device.
    (Error code: 4101)
- The value specified by n2 is not 0 to 3900.   (Error code: 4100)
- The specified instruction name is strange.   (Error code: 4300)
- The number of devices of the ID interface instructions is strange.
    (Error code: 4301)
- A device that cannot be specified was specified.   (Error code: 4302)

Program Example

(1) When X0 is ON, this program reads and compares 4 words of data from address 100 of the ID data carrier by way of channel 1 of the ID interface module mounted to the I/O number X/Y60 to X/Y7F, and then stores the data in D0 onward.

11.12 Continuous Comparison Read from ID Data Carrier   (Function version B or later)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(D1)	—	O		—					
n2	O			—				O	
(D2)	O			—					

[Instruction symbol]   [Execution condition]

IDCRD1/2

Command

| G.IDCRD□ | Un | n1 | (D1) | n2 | (D2) |

IDCRD1/2

Command

| GP.IDCRD□ | Un | n1 | (D1) | n2 | (D2) |

Set Data

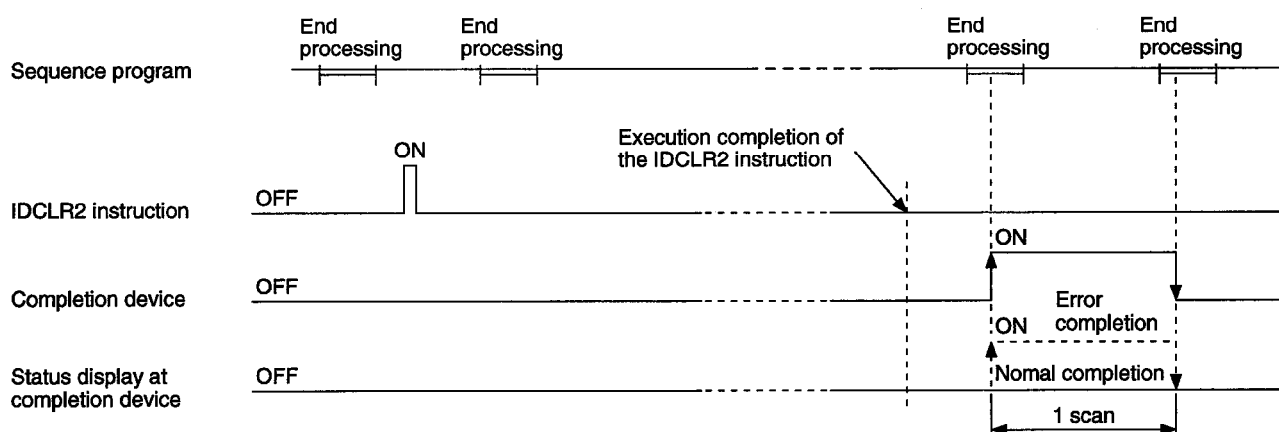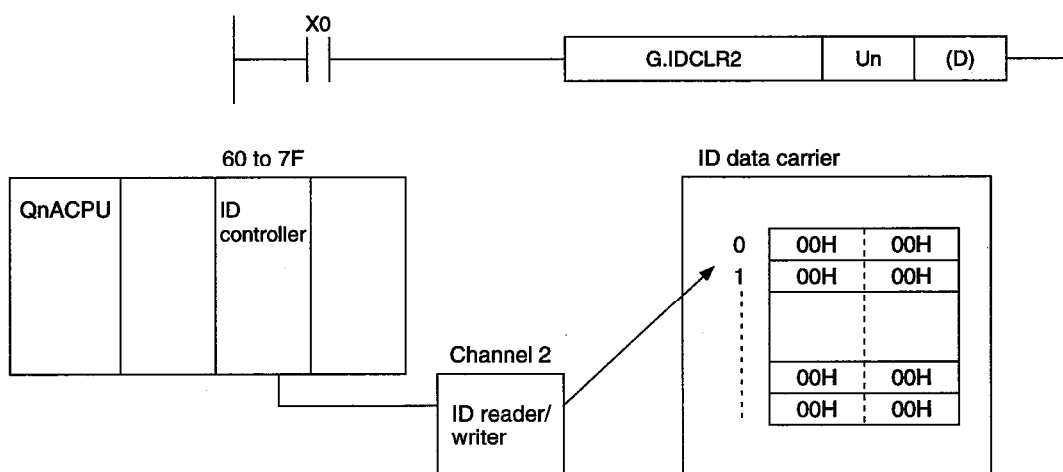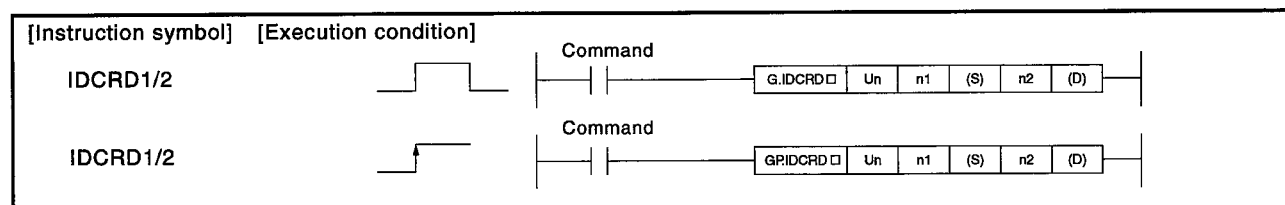| Set Data	Description	Data Type
Un	Head I/O number of the ID interface module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Head number of the ID data carrier	Device name
(S)	Head number of the device which stores the read data	
n2	Number of read data (0 to 3900)	16-bit binary
(D)	Device which turns ON scan 1 after data has been read(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) By way of the ID interface module specified by Un, it compares the amount of data specified by n2 that was read from the address specified by n1 of the ID data carrier with the data which was read again from the ID data carrier, and then stores the data in the device specified by (D1). If the comparison results do not match, there is an error completion.

(2) If the ID data carrier is not in the communication range with the ID reader/writer, it waits until the ID data carrier is in the communication range, then reads data from the ID carrier that has entered the communication range.

(3) After reading ends, the bit device specified by (D2) goes ON after the END instruction of the scan for the completed instruction has executed, and automatically goes OFF after 1 scan. If there is an error completion, the status display at completion device [(D2)+1] also goes ON for 1 scan.

(4) IDSRD1 is executed for channel 1 of the ID interface module, and IDSRD2 is executed for channel 2.

(5) If the value specified by n2 is 0, there is no processing.

(6) If the address specified by n1 and the number of data specified by n2 exceed the specifiable range for the ID data carrier, an error completion occurs.

REMARKS

1) If the comparison results do not match, the following signals go ON, and it is possible to check the match using Xn5 (channel 1) and XnD (channel 2).

2) The basic number of steps of the IDSRD1 and IDSRD2 instructions is 10 steps.

Operation Errors

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.
- The module to be accessed is not a special function module.
　　　　　　　　　　　　　　　　　　　　　　　(Error code: 2110)
- The ID interface instruction for the specified module cannot be used.
　　　　　　　　　　　　　　　　　　　　　　　(Error code: 2112)
- The number of n2 points of data from the device specified by (D1) exceeds the device.
　　　　　　　　　　　　　　　　　　　　　　　(Error code: 4101)
- The value specified by n2 is not 0 to 3900.　　(Error code: 4100)
- The specified instruction name is strange.　　(Error code: 4300)
- The number of devices of the ID interface instructions is strange.
　　　　　　　　　　　　　　　　　　　　　　　(Error code: 4301)
- A device that cannot be specified was specified.　(Error code: 4302)

Program Example

(1) When X0 is ON, this program reads and compares 4 words of data from address 100 of the ID data carrier by way of channel 1 of the ID interface module mounted to the I/O number X/Y60 to X/Y7F, and then stores the data in D0 onward.

Sequence program

END processing   END processing   END processing   END processing

IDSRD1 instruction

Execution completion of the IDSRD1 instruction

Completion device   OFF

ON

ON Error completion

Statusdisplay at completion device   OFF

Normal completion

1 scan

11.13 Continuous Comparison Write to ID Data Carrier (Function version B or later)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(S)	—	O		—					
n2	O			—				O	
(D)	O			—					

[Instruction symbol]   [Execution condition]

IDSWD1/2

Command
| G.IDSWD□ | Un | n1 | (S) | n2 | (D) |

IDSWD1/2

Command
| GP.IDSWD□ | Un | n1 | (S) | n2 | (D) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the ID interface module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Head number of the ID data carrier	Device name
(S)	Head number of the device which stores the read data	
n2	Number of read data (0 to 3900)	16-bit binary
(D)	Device which turns ON scan 1 after data has been read(D)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) By way of the ID interface module specified by Un, it writes the amount of data specified by n2 from the device specified by (S) to the address specified by n1 of the ID data carrier, then compares the written data with the data which was read again from the ID data carrier. If the comparison results do not match, there is an error completion.

(2) If the ID data carrier is not in the communication range of the ID reader/writer, then it waits until the ID data carrier is in the communication range, then it writes data to and reads from the data carrier which is in the communication range.

(3) After writing ends, the bit device specified by (D) goes ON after the END instruction of the scan for the completed instruction has executed, and automatically goes OFF after 1 scan. If there is an error completion, the status display at completion device [(D)+1] also goes ON for 1 scan.

(4) IDSWD1 is executed for channel 1 of the ID interface module, and IDSWD2 is executed for channel 2.

(5) If the value specified by n2 is 0, there is no processing.

(6) If the address specified by n1 and the number of data specified by n2 exceed the specifiable range for the ID data carrier, an error completion occurs.
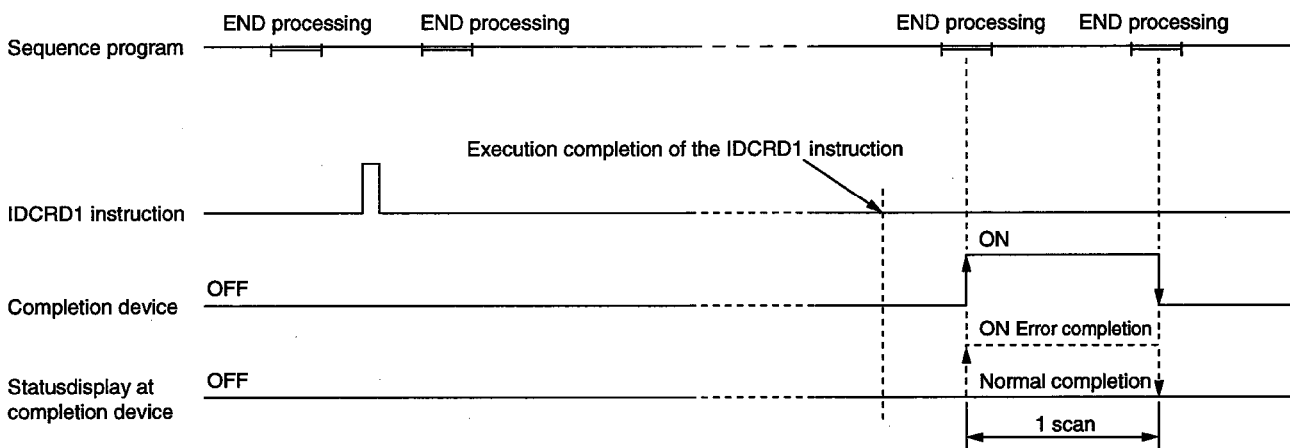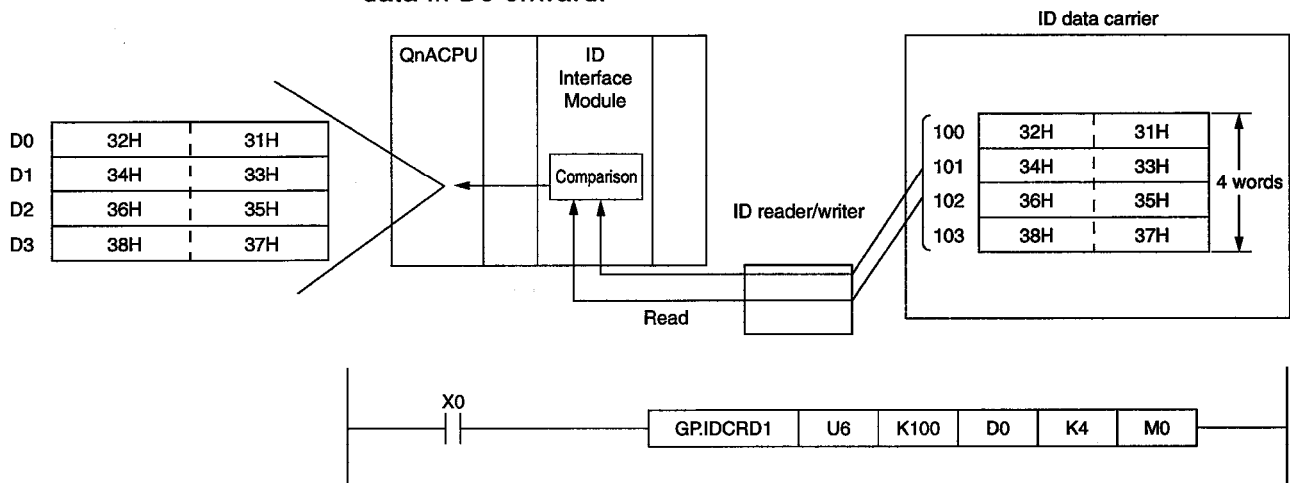

|REMARKS|

1) If the comparison results do not match, the following signals go ON, and it is possible to check the match using Xn5 (channel 1) and XnD (channel 2).

2) The basic number of steps of the IDSRD1 and IDSRD2 instructions is 10 steps.

Operation Errors

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.
   • The module to be accessed is not a special function module.
                                           (Error code: 2110)
   • The ID interface instruction for the specified module cannot be used.
                                           (Error code: 2112)
   • The number of n2 points of data from the device specified by (D1) exceeds the device.
                                           (Error code: 4101)
   • The value specified by n2 is not 0 to 3900.   (Error code: 4100)
   • The specified instruction name is strange.   (Error code: 4300)
   • The number of devices of the ID interface instructions is strange.
                                           (Error code: 4301)
   • A device that cannot be specified was specified.   (Error code: 4302)

Program Example

(1) When X0 is ON, this program reads and compares 4 words of data from address 100 of the ID data carrier by way of channel 1 of the ID interface module mounted to the I/O number X/Y60 to X/Y7F, and then stores the data in D0 onward.

	END processing	END processing			END processing	END processing	
Sequence program			- - -				

Execution completion of the IDSWD1 instruction

IDSWD1 instruction

Completion device — OFF — ON

ON Error completion

Statusdisplay at completion device — OFF — Normal completion

1 scan

11.14 Comparison High Speed Read from ID Data Carrier (Function version B or later)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(D1)	—	O		—					
n2	O			—					
(D2)	O			—				O	—

[Instruction symbol]   [Execution condition]

IDFRD1/2 — Command — | G.IDFRD□ | Un | n1 | (D1) | n2 | (D2) |

IDFRD1/2 — Command — | GP.IDFRD□ | Un | n1 | (D1) | n2 | (D2) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the ID interface module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Head number of the ID data carrier	Device name
(D1)	Head number of the device which stores the read data	
n2	Number of read data (0 to 3900)	16-bit binary
(D2)	Device which turns ON scan 1 after data has been read(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) By way of the ID interface module specified by Un, it reads at high speed the amount of data specified by n2 from the address specified by n1 of the ID data carrier, and then stores the data in the device specified by (D1).

(2) If the ID data carrier is not in the communication range with the ID reader/writer, it waits until the ID data carrier is in the communication range, then reads data from the ID carrier that is in the communication range.

(3) After reading ends, the bit device specified by (D2) goes ON after the END instruction of the scan for the completed instruction has executed, and automatically goes OFF after 1 scan.
If there is an error completion, the status display at completion device [(D2)+1] also goes ON for 1 scan.

(4) IDFRD1 is executed for channel 1 of the ID interface module, and IDFRD2 is executed for channel 2.

(5) If the value specified by n2 is 0, there is no processing.

(6) If the address specified by n1 and the number of data specified by n2 exceed the specifiable range for the ID data carrier, an error completion occurs.
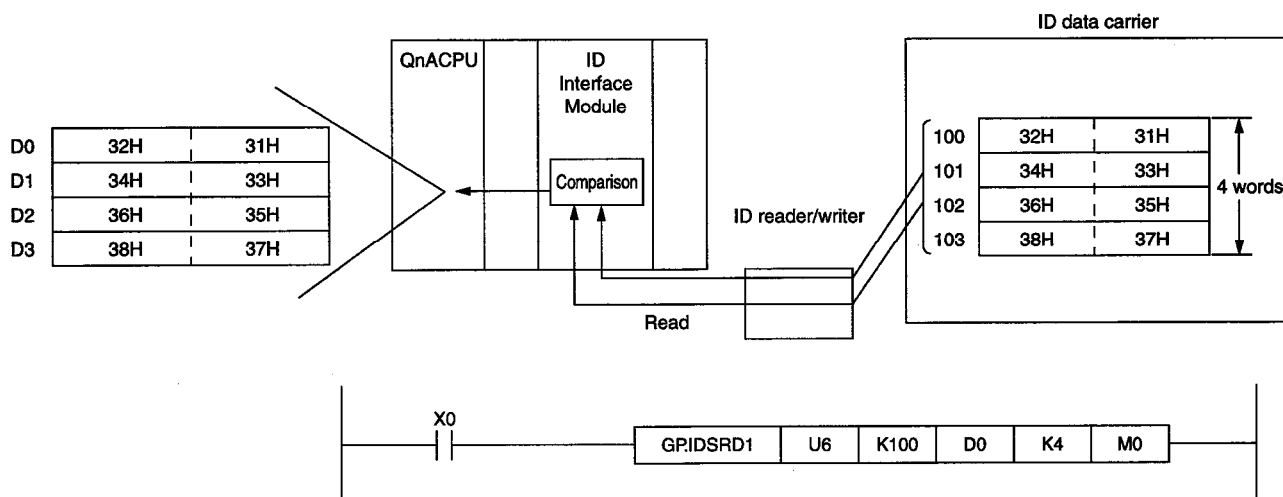
REMARKS

1) If the comparison results do not match, the following signals go ON, and it is possible to check the match using Xn5 (channel 1) and XnD (channel 2).

2) The basic number of steps of the IDFRD1 and IDFRD2 instructions is 10 steps.

Operation Errors

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.
- The module to be accessed is not a special function module.
  (Error code: 2110)
- The ID interface instruction for the specified module cannot be used.
  (Error code: 2112)
- The number of n2 points of data from the device specified by (D1) exceeds the device.
  (Error code: 4101)
- The value specified by n2 is not 0 to 3900.   (Error code: 4100)
- The specified instruction name is strange.   (Error code: 4300)
- The number of devices of the ID interface instructions is strange.
  (Error code: 4301)
- A device that cannot be specified was specified.   (Error code: 4302)

Program Example

(1) When X0 is ON, this program reads and compares 4 words of data from address 100 of the ID data carrier by way of channel 1 of the ID interface module mounted to the I/O number X/Y60 to X/Y7F, and then stores the data in D0 onward.

	END processing	END processing		END processing	END processing

Sequence program

Execution completion of the IDFRD1 instruction

IDFRD1 instruction

ON

Completion device   OFF

ON Error completion

Statusdisplay at completion device   OFF

Normal completion

1 scan

11.15 Continuous High Speed Write to ID Data Carrier   (Function version B or later)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(S)	—	O		—					
n2	O			—					
(D)	O			—				O	—

[Instruction symbol]   [Execution condition]

IDFWD1/2

Command

| G.IDFWD□ | Un | n1 | (S) | n2 | (D) |

IDFWD1/2

Command

| GP.IDFWD□ | Un | n1 | (S) | n2 | (D) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the ID interface module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Head number of the ID data carrier	Device name
(S)	Head number of the device which stores the written data	
n2	Number of written and read data (0 to 3900)	16-bit binary
(D)	Device which turns ON scan 1 after data has been written(D)+1 is also turned ON at an error completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) By way of the ID interface module specified by Un, it writes the amount of data specified by n2 from the device specified by (S) to the address specified by n1 of the ID data carrier, then compares the written data with the data which was read again from the ID data carrier.
If the comparison results do not match, there is an error completion.

(2) If the ID data carrier is not in the communication range of the ID reader/writer, then it waits until the ID data carrier is in the communication range, then it writes data to and reads from the data carrier which is in the communication range.

(3) After writing ends, the bit device specified by (D) goes ON after the END instruction of the scan for the completed instruction has executed, and automatically goes OFF after 1 scan.
If there is an error completion, the status display at completion device [(D)+1] also goes ON for 1 scan.

(4) IDFWD1 is executed for channel 1 of the ID interface module, and IDFWD2 is executed for channel 2.

(5) If the value specified by n2 is 0, there is no processing.

(6) If the address specified by n1 and the number of data specified by n2 exceed the specifiable range for the ID carrier, then an error completion occurs.

| REMARKS |

1) If the comparison results do not match, the following signals go ON, and it is possible to check the match using Xn5 (channel 1) and XnD (channel 2).

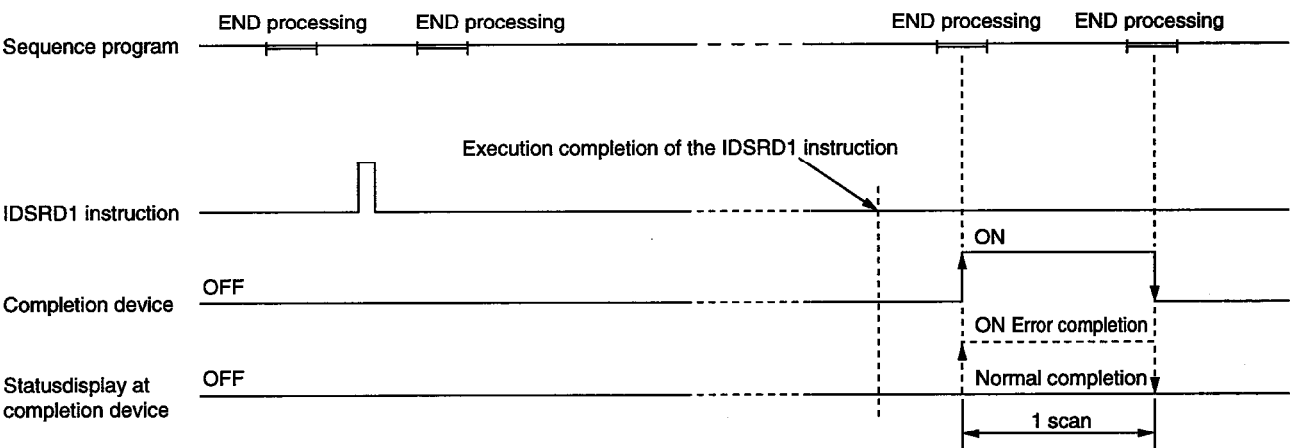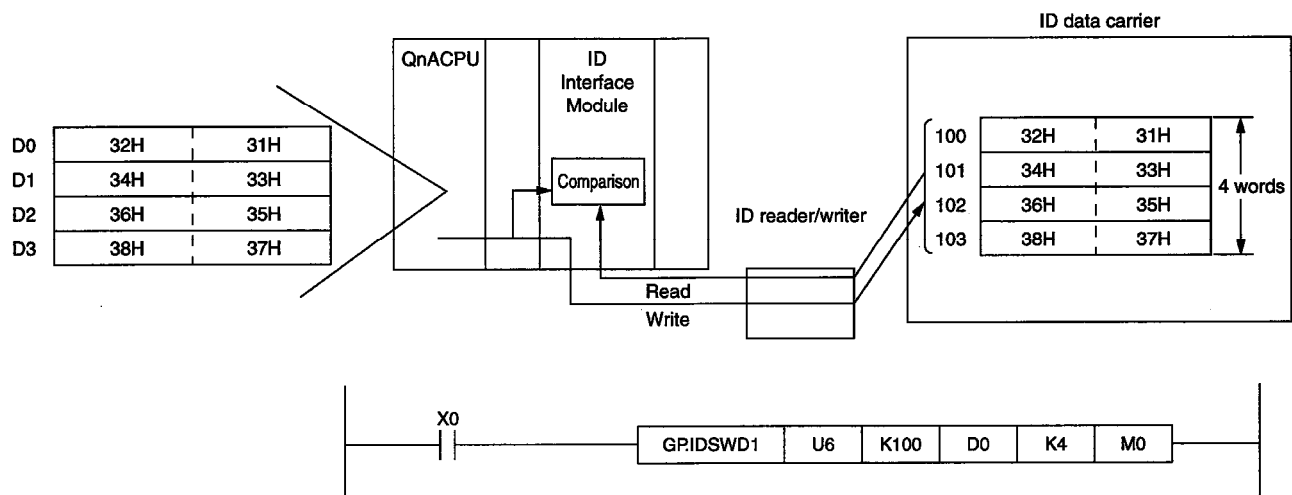2) The basic number of steps of the IDFWD1 and IDFWD2 instructions is 10 steps.

Operation Errors

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.
  * The module to be accessed is not a special function module.
    (Error code: 2110)
  * The ID interface instruction for the specified module cannot be used.
    (Error code: 2112)
  * The number of n2 points of data from the device specified by (D1) exceeds the device.
    (Error code: 4101)
  * The value specified by n2 is not 0 to 3900.   (Error code: 4100)
  * The specified instruction name is strange.   (Error code: 4300)
  * The number of devices of the ID interface instructions is strange.
    (Error code: 4301)
  * A device that cannot be specified was specified.   (Error code: 4302)

Program Example

(1) When X0 is ON, this program reads and compares 4 words of data from address 100 of the ID data carrier by way of channel 1 of the ID interface module mounted to the I/O number X/Y60 to X/Y7F, and then stores the data in D0 onward.

Sequence program ‖ END processing ‖ END processing — — — — ‖ END processing ‖ END processing

Execution completion of the IDFWD1 instruction

IDFWD1 instruction

Completion device — OFF — ON

ON Error completion

Statusdisplay at completion device — OFF — Normal completion

1 scan

12. CC-Link INSTRUCTIONS (FUNCTION VERSION B OR LATER)

CC-Link instructions are instructions for performing communication with other stations connected to the CC-Link.

The CC-Link instructions are shown in Table 12.1.

Furthermore, the CC-Link control instructions can be used with the module of the function version B or later.

Table 12.1 The CC-Link Instructions

Classification	Instruction Name	Description	Usable/ unusable		Reference Section
			ID	RD	
Read from buffer memory of an intelligent device station	RIRD	Reads a specified number of data from a specified buffer of an intelligent device station.	O	×	12.1
Write to buffer memory of an intelligent device station	RIWT	Writes a specified number of data to a specified buffer memory of an intelligent device station.	O	×	12.2
Read from buffer memory of an intelligent device station (with handshake)	RIRCV	Reads a specified number of data from a specified buffer memory of an intelligent device station. (performs a handshake using a handshake signal.)	O	×	12.3
Write to buffer memory of an intelligent device station (with handshake)	RISEND	Writes a specified number of data to a specified buffer memory of an intelligent device station. (performs a handshake using a handshake signal.)	O	×	12.4
Read from buffer memory for auto update of the master station	RIFR	Reads a specified number of data from the buffer memory for auto update of the master station.	O	×	12.5
Write to buffer memory for auto update of the master station	RITO	Writes a specified number of data to the buffer memory for auto update of the master station.	O	×	12.6
Communication with an intelligent device station	CCL	Communicates with the buffer memory of an intelligent device station.	O	×	12.7
	CCLEND				
Read communication status of intelligent device station	SPCBUSY	Reads the communication status of an intelligent device station.	O	×	12.8
Interrupt communication processing with intelligent device station	SPCCLR	Interrupts communication processing of an intelligent device station.	O	×	12.9

REMARKS

1) "ID" in Table 12.1 indicates an intelligent device station, and "RD" indicates a remote device station.

2) "-" in the usable/unusable column of Table 12.1 indicates usable, and "" indicates unusable. However, whether or not certain instruction in Table 12.1 can be used differs depending on the remote station used, so refer to the manual for the remote stations used.

3) See Section 1.3 for the function version B.

(1) Precautions when using CC-Link instructions

(a) When using the dedicated instructions given in Table 12.1, the model name (AJ61QBT11) must be registered with a parameter I/O assigned.

(b) The backup memory capacity of the intelligent device station differs depending on each intelligent device.
Refer to the manual for the intelligent devices being used.

(c) Only one of the RIRD, RIWR, RISEND, and RIRCV instructions can be executed for scan 1 for the same station.
If two or more of the instructions are executed for scan 1, the second instruction on will be ignored.

(d) The RIRD, RIWR, RISEND, RIRCV instructions can be executed at the same time for different stations.
However, only a total of 64 instructions can be executed at the same time.
The remaining number that can be executed is stored in SD780, and when the remaining number becomes 0, SM780 goes ON.

(e) The device data used by a dedicated instruction shown in Table 12.1 should not be changed until after the instruction is completed.
If the device data is rewritten while an instruction is executing, the dedicated instruction will not end properly.

(f) The instructions RIRD, RIWR, RIFR and RITO can be used by the CC-Link master station as well as local stations.
All other instruction can be used only by the master station.

(g) Do not rewrite the CC-Link auto refresh setting while an instruction is executing or during STEP RUN.
If the CC-Link auto refresh setting is rewritten while an instruction is executing or during STEP RUN, the CC-Link instruction will not be able to end properly.

(h) To use instructions RIRD, RIWT, RISEND or RIRCV, consideration must be taken so that signal data RY (n+1)E and RY (n+1)F used for special instructions is not overwritten by the user.

Program example with automatic refreshment of QnACPU
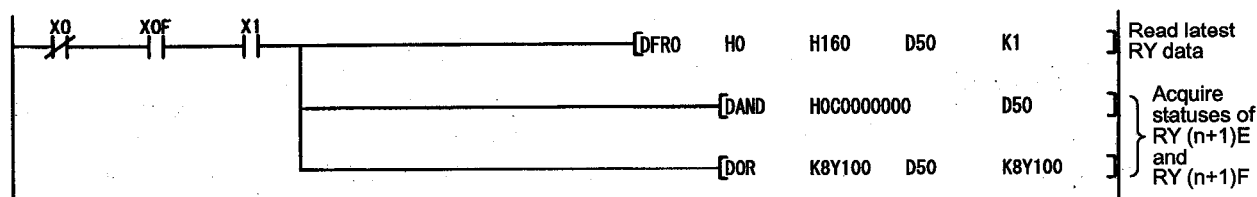
(i) Execute the instructions for controlling CC-Link in the data link mode. If they are executed in the offline mode, no error occurs but the instructions do not end. (The completion device does not turn on.)

12.1 Read Data from Buffer Memory of an Intelligent Device Station (RIRD)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J⬚\⬚		Special Function Module U⬚\G⬚	Index Register Z⬚	Constant K, H	Other
	Bit	Word		Bit	Word				
(S)	—	O				—			
(D1)	—	O				—			
(D2)	O					—			

[Instruction symbol]   [Execution condition]

Command

RIRD ⊐_⌐_ ⊢—| |————— | G.RIRD | Un | (S) | (D1) | (D2) |——

Command

RIRD ⊐_⌐ ⊢—| |————— | GP.RIRD | Un | (S) | (D1) | (D2) |——

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
(S)	Head number of the device which stores control data	Device name
(D1)	Head number of the device which stores read data	
(D2)	Device which turns ON scan 1 after data has been read(D2) + 1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control Data

(1) Master module software version A to H

Device	Content	Set Data	Setting Range	Set by
(S)+0	Completion status	The status at the end of the instruction is stored. 0 : No error (normal completion) Other than 0: Error code *1	—	System
(S)+1	Station number	Specifies the station number of the intelligent device station.	0 to 64	User
(S)+2	Access code/attribute	• When accessing the buffer memory of an intelligent device station, "0004H" is set. • When accessing the random access buffer memory of a local station, "2004H" is set.	0004H 2004H	User
(S)+3	Buffer memory address	Specifies the head address of the buffer memory.	*2	User
(S)+4	Number of points to read	• Specifies the number of data to read (in word units).	1 to 480 *3	User

| REMARKS |

1) *1: Refer to the following manual for information about error codes when an error occurs.
[If the error code is between 4000H and 4FFFH]
• User's Manual (Details) of the source CPU module
[If the error code is between B000H and BFFFH]
• Control & Communication-Link System Master • Local Module type AJ61QBT11/ A1SJ61QBT11 User's Manual

2) *2: Refer to the manual for the intelligent device station which reads data.
When specifying a random access buffer memory, the address of the start of the random access memory should be set to 0.

3) *3: Indicates the maximum number of data that can be read.
This should be specified so it is inside the setting range of the receiving buffer according to the buffer capacity and parameters of the intelligent device station.

4) The basic number of steps of the RIRD instruction is 8 steps.

(2) Master module software version J or later

Device	Content	Set Data	Setting Range	Set by
(S)+0	Completion status	The status at the end of the instruction is stored. 0 : No error (normal completion) Other than 0: Error code *1	—	System
(S)+1	Station number	Specifies the station number of the specified station.	0 to 64	User
(S)+2	Access code/attribute	Access code (upper 8 bits) : See (a) and (b).	See (a).(b)	User
		Attribute (lower 8 bits) (a) For accessing the buffer memory inside CC-Link : 04H (b) For accessing the device of CPU : 05H	04H or 05H	User
(S)+3	Address of buffer memory, or number of device	Specifies the head address of buffer memory, or the head number of device.	*2	User
(S)+4	Number of points to read Refer to (3).	Specifies the number of data to read (in word units).	1 to 480 *3 1 to 32 *4	User

| REMARKS |

1) *1: Refer to the following manual for information about error codes when an error occurs.
Control & Communication-Link System Master • Local Module type AJ61QBT11/ A1SJ61QBT11 User's Manual

2) *2: Refer to the manual for the intelligent device station which reads data.
When specifying a random access buffer memory, the address of the start of the random access memory should be set to 0.

3) *3: Indicates the maximum number of data that can be read.
This should be specified so it is inside the setting range of the receiving buffer according to the buffer capacity and parameters of the intelligent device station.

4) *4: When the CPU device is read in case that the partner CPUs are other than QnACPU/AnUCPU/A2UCPU, the setting range is from 1 to 32 words.

5) The basic number of steps of the RIRD instruction is 8 steps

(a) Buffer memory within CC-Link

Buffer Memory Data		Access Code
Buffer within intelligent device station		00H
Buffer within master and local stations	Random access buffer	20H
	Remote input	21H
	Remote output	22H
	Remote register	24H
	Link special relay	63H
	Link special register	64H

(b) Device memory inside CPU

Device Data	Name	Device Type Bit	Device Type Word	Access Code
Input relay	X	O		01H
Output relay	Y	O		02H
Internal relay	M	O		03H
Latch relay	L	O		83H
Link relay	B	O		23H
Timer (contact)	T	O		09H
Timer (coil)	T	O		0AH
Timer (present value)	T		O	0CH
Retentive timer (contact)	ST	O		89H
Retentive timer (coil)	ST	O		8AH
Retentive timer (present value)	ST		O	8CH
Counter (contact)	C	O		11H
Counter (coil)	C	O		12H
Counter (present value)	C		O	14H
Data register	D		O	04H
Link register	W		O	24H
File register	R		O	84H
Special link relay	SB	O		63H
Special link register	SW		O	64H
Special relay	SM	O		43H
Special register	SD		O	44H

*1 Device that are not listed above cannot be accessed.
*2 Specify using 0 or a multiple of 16 to access a bit device.
  Not specifying 0 or a multiple of 16 generates an error.

(3) Number of read points for each target PLC CPU type

Instruction	Device	Description of process	Target PLC CPU A0J2,A0J2H,A1,A1N,A1SH,A2, A2N(S1),A2S,A2SH,A3,A3N, A3H,A3M,A2C,A52G,A2CJ, A1S,A1SJ,A1SJH,A2A(S1),A3A	Target PLC CPU A2U,A2USH,A2US(S1),A3U, A4U,Q2A,Q2AS,Q2ASH(S1), Q3A,Q4A,QCPU-A
RIRD (Batch reading)	Bit device	Data is read from a bit device (X, Y, M, etc.).	32 words	480 words
	Word device	Data is read from a word device (D, R, T, C, etc.).	32 words	480 words

Function

(1) Data is read from the buffer memory address specified for the intelligent device station whose station number was specified by the control data starting from (S) of the master station module specified by Un, and it is stored in the device specified by (D1).

(a) Master module software version A to H.
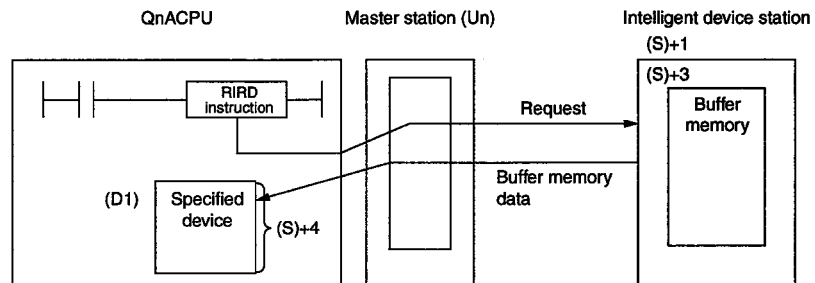
(b) Master moudle software version J or later.
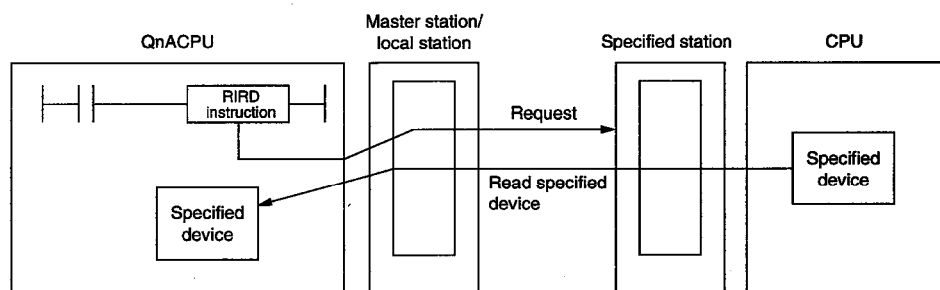
(2) The RIRD instruction can be executed at the same time for multiple intelligent device stations.
However, it is not possible to execute the instruction at two or more places simultaneously for the same intelligent device station.

(3) For the RIRD instruction interlock signal there is a Completion device (D2), and Status display at completion device [(D2)+1].

(a) Completion device:
This device goes ON at the END process of the scan of the completed RIRD instruction, and then goes OFF at the next END process.

(b) Status display at completion device:
This device is turned ON/OFF by the status at the end of the RIRD instruction.
● Normal completion: Stays OFF and does not change.
● Error completion: Goes ON at the END process of the scan of the Completed RIRD instruction, and goes OFF at the next END process.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The head I/O number specified by Un is not the special function module. (Error code: 2110)

- The contents of the control data are not inside the setting range. (Error code: 4100)

- The number of executions of CC-Link instructions exceeds the number of 32 that can be executed simultaneously.(Error code: 4107)

- CC-Link parameters are not set. (Error code: 4108)

- The specified instruction name is strange. (Error code: 4305)

Program Example

(1) When X0 is ON, this program stores 10 points of data, that were read starting from address 100H of the intelligent device station of station number 1 which is connected to the master station module and that is mounted in the position of head I/O number 40, to D0 and on.
(If the refresh device of the special register (SW) is set at SW0)

```
      X0 SW80.0 M100
   0 ─┤├──┤/├──┤/├────────────────────────────[MOVP  K1    D101 ]
                                               [MOVP  H4    D102 ]
                                               [MOVP  H100  D103 ]
                                               [MOVP  K10   D104 ]
                                       [GP. RIRD U4  D100  D0   M0 ]
                                               [SET   M100 ]

      M0
  19 ─┤├──────────────────────────────────  Performs receiving completion  ──
      M1
      ─┤/├─────────────────────────────────  Performs normal completion  ──
      M1
      ─┤├──────────────────────────────────  Performs error completion  ──
                                               [RST   M100 ]
  29 ────────────────────────────────────────[END ]
```

12.2 Write Data to Buffer Memory of an Intelligent Device Station (RIWT)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(D2)	—	O				—			
(D)	O					—			

[Instruction symbol]   [Execution condition]

RIWT

RIWT

Command						
	G.RIWT	Un	(S1)	(S2)	(D)	

Command						
	GP.RIWT	Un	(S1)	(S2)	(D)	

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
(S1)	Head number of the device which stores the control data	Device name
(S2)	Head number of the device which stores the write data	
(D)	Device which turns ON scan 1 at the end of writing data(D)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control Data

(1)   Master module software version A to H

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Completion status	The status at the end of the instruction is stored. 0 : No error (normal completion) Other than 0: Error code *1	—	System
(S1)+1	Station number	Specifies the station number of the specified station.	0 to 64	User
(S1)+2	Access code/attribute	• When accessing the buffer memory of an intelligent device station, "0004H" is set. • When accessing the random access buffer memory of a local station, "2004H" is set	0004H 2004H	User
(S1)+3	Buffer memory address	Specifies the head address of the buffer memory.	*2	User
(S1)+4	Number of points to read	Specifies the number of data to write (in word units).	1 to 480 *3	User

REMARKS

1) *1: Refer to the following manual for information about error codes when an error occurs.
   Control & Communication-Link System Master • Local Module type
   AJ61QBT11/A1SJ61QBT11 User's Manual

2) *2: Refer to the manual for the intelligent device station which writes data.
   When specifying a random access buffer memory, the address of the start of the random
   access memory should be set to 0.

3) *3: Indicates the maximum number of data that can be written.
   This should be specified so it is inside the setting range of the transmission buffer
   according to the buffer capacity and parameters of the intelligent device station.

4) The basic number of steps of the RIWT instruction is 8 steps.

(2) Master module software version J or later

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Completion status	The status at the end of the instruction is stored. 0 : No error (normal completion) Other than 0: Error code *1	—	System
(S1)+1	Station number	Specifies the station number of the specified station.	0 to 64	User
(S1)+2	Access code/attribute	Access code (upper 8 bits) : See (a) and (b).	See (a).(b)	User
		Attribute (lower 8 bits) (a) For accessing the buffer memory inside CC-Link : 04H (b) For accessing the word device/file register of CPU : 05H	04H or 05H	User
(S1)+3	Address of buffer memory, or number of device	Specifies the head address of buffer memory, or the head number of device.	*2	User
(S1)+4	Number of points to write Refer to (3).	Specifies the number of data to write (in word units).	1 to 480 *3 1 to 32 *4	User

REMARKS

1) *1: Refer to the following manual for information about error codes when an error occurs.
   Control & Communication-Link System Master • Local Module type
   AJ61QBT11/A1SJ61QBT11 User's Manual

2) *2: Refer to the manual for the intelligent device station which writes data.
   When specifying a random access buffer memory, the address of the start of the random
   access memory should be set to 0.

3) *3: Indicates the maximum number of data that can be written.
   This should be specified so it is inside the setting range of the transmission buffer
   according to the buffer capacity and parameters of the intelligent device station.

4) *4: When writing to the CPU device in case that the partner CPUs are other than
   QnACPU/AnUCPU/A2UCPU, the setting range is from 1 to 32 words.

5) The basic number of steps of the RIWT instruction is 8 steps

(a) Buffer memory within CC-Link

Buffer Memory Data		Access Code
Buffer within intelligent device station		00H
Buffer within master and local stations	Random access buffer	20H
	Remote input	21H
	Remote output	22H
	Remote register	24H
	Link special relay	63H
	Link special register	64H

(b) Device memory inside CPU

Device Data	Name	Device Type Bit	Device Type Word	Access Code
Input relay	X	O		01H
Output relay	Y	O		02H
Internal relay	M	O		03H
Latch relay	L	O		83H
Link relay	B	O		23H
Timer (contact)	T	O		09H
Timer (coil)	T	O		0AH
Timer (present value)	T		O	0CH
Retentive timer (contact)	ST	O		89H
Retentive timer (coil)	ST	O		8AH
Retentive timer (present value)	ST		O	8CH
Counter (contact)	C	O		11H
Counter (coil)	C	O		12H
Counter (present value)	C		O	14H
Data register	D		O	04H
Link register	W		O	24H
File register	R		O	84H
Special link relay	SB	O		63H
Special link register	SW		O	64H
Special relay	SM	O		43H
Special register	SD		O	44H

*1 Device that are not listed above cannot be accessed.
*2 Specify using 0 or a multiple of 16 to access a bit device.
 Not specifying 0 or a multiple of 16 generates an error.

(3) Number of points read by target PLC CPU type

Instruction	Device	Description of process	Target PLC CPU A0J2,A0J2H,A1,A1N,A1SH,A2, A2N(S1),A2S,A2SH,A3,A3N, A3H,A3M,A2C,A52G,A2CJ, A1S,A1SJ,A1SJH,A2A(S1),A3A	Target PLC CPU A2U,A2USH,A2US(S1),A3U, A4U,Q2A,Q2AS,Q2ASH(S1), Q3A,Q4A,QCPU-A
RIWT (batch write)	Bit device	Data is written to a bit device (X, Y, M, etc.).	32 words	480 words
	Word device	Data is written to a word device (D, R, T, C, etc.).	32 words	480 words

Function

(1) Writes data of the device specified by (S2) from the master station module specified by Un to the buffer memory specified for the intelligent device station whose station number was specified by the control data starting from (S1).

(a) Master module software version A to H.
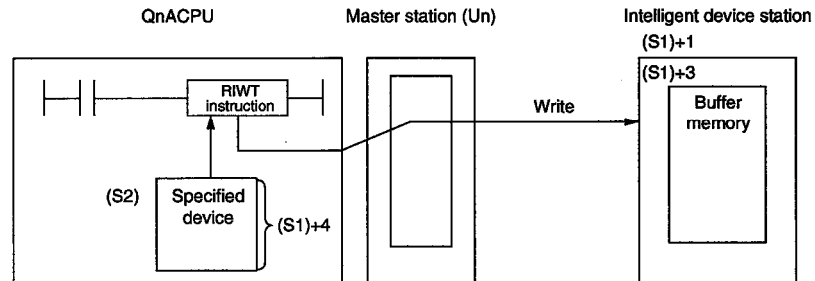
(b) Master moudle software version J or later.
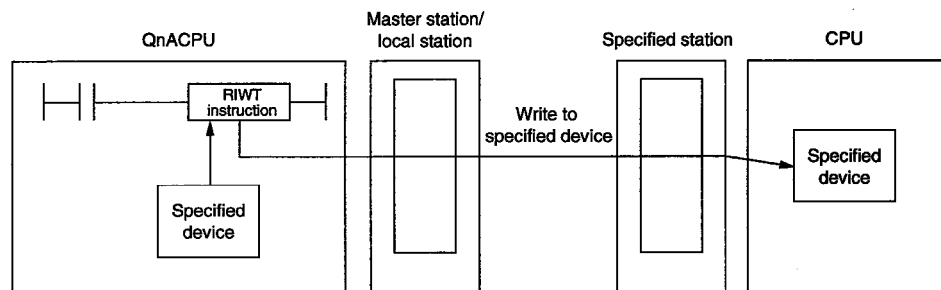
(2) The RIWT instruction can be executed at the same time for multiple intelligent device stations.
However, it is not possible to execute the instruction at two or more places simultaneously for the same intelligent device station.

(3) For the RIWT instruction interlock signal there is a Completion device (D), and Status display at completion device [(D)+1].
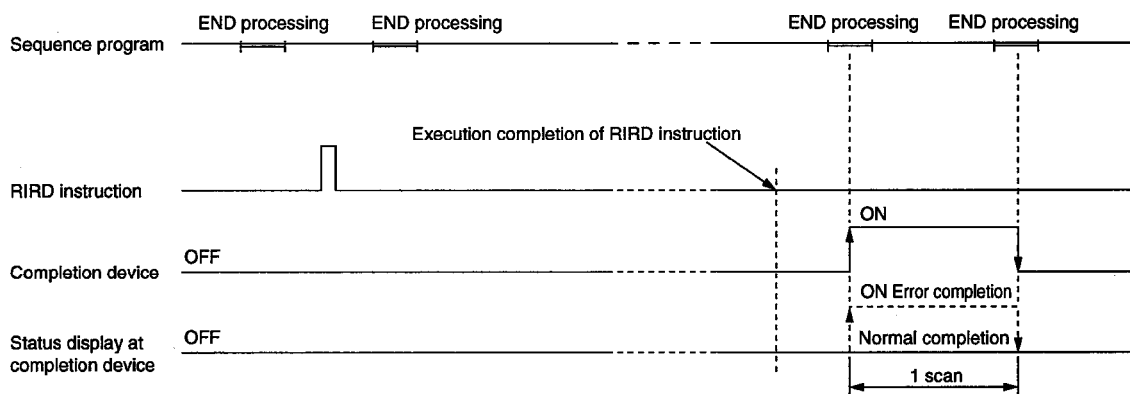(a) Completion device:
This device goes ON at the END process of the scan of the completed RIWT instruction, and then goes OFF at the next END process.
(b) Status display at completion device:
This device is turned ON/OFF by the status at the end of the RIWT instruction.
• Normal completion: Stays OFF and does not change.
• Error completion: Goes ON at the END process of the scan of the completed RIWT instruction, and goes OFF at the next END process.
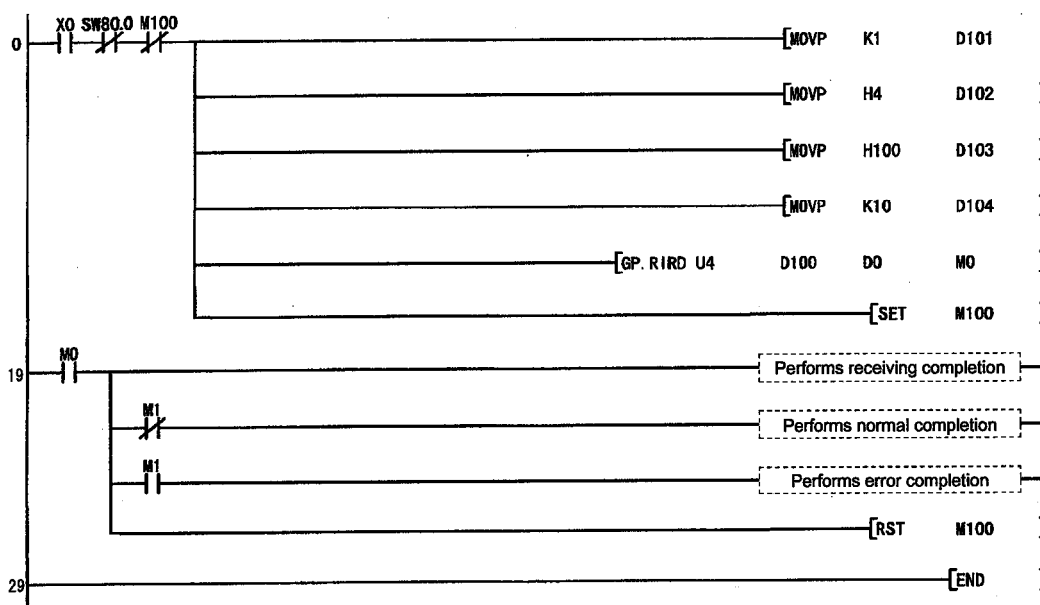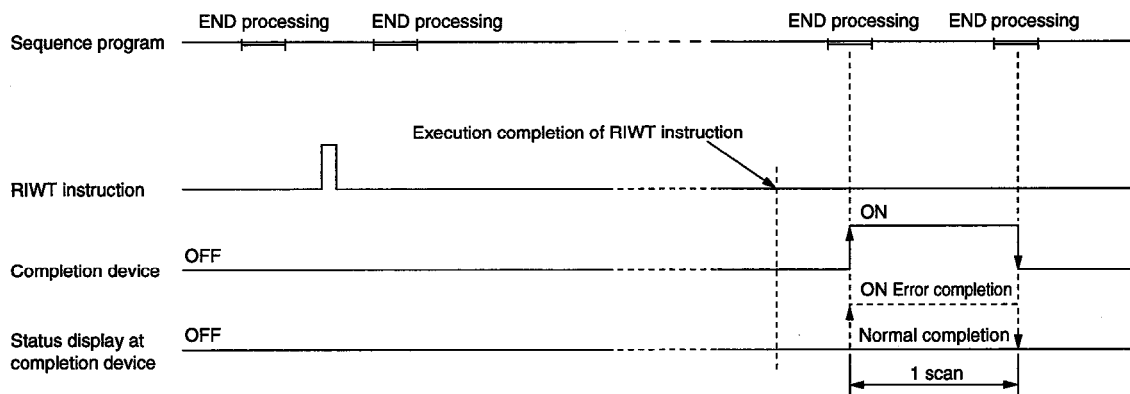
Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The head I/O number specified by Un is not the special function module. (Error code: 2110)

- The contents of the control data are not inside the setting range. (Error code: 4100)

- The number of executions of CC-Link instructions exceeds the number of 32 that can be executed simultaneously.(Error code: 4107)

- CC-Link parameters are not set. (Error code: 4108)

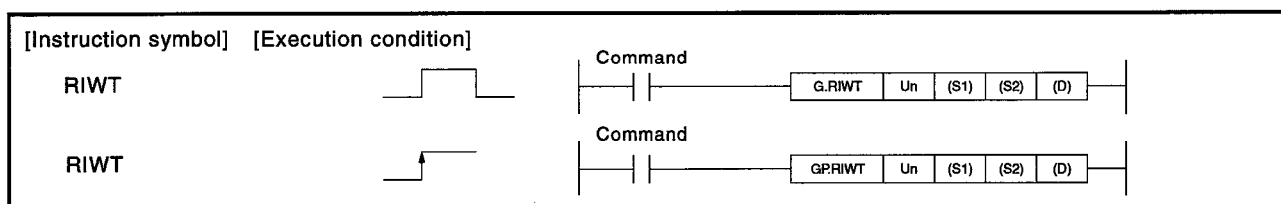- The specified instruction name is strange. (Error code: 4305)

Program Example

(1) When X0 is ON, this program stores 10 points of data from D0 to address 100H onward of the intelligent device station of station number 1 which is connected to the master station module and that is mounted in the position of head I/O number 40.
(If the refresh device of the special register (SW) is set at SW0)
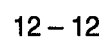
12.3 Read Data from Buffer Memory of an Intelligent Device Station (RIRCV)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(D1)	—	O				—			
(S2)	—	O				—			
(D2)	O					—			

[Instruction symbol]   [Execution condition]

RIRCV

Command

⊢⊣ ⊢——— G.RIRCV | Un | (S1) | (D1) | (S2) | (D2) ⊢——⊣

RIRCV

Command

⊢⊣ ⊢——— GP.RIRCV | Un | (S1) | (D1) | (S2) | (D2) ⊢——⊣

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
(S1)	Head number of the device which stores the control data	Device name
(D1)	Head number of the device which stores read data	
(S2)	Head number of the device which stores the interlock signal	
(D2)	Device which turns ON scan 1 after data has been read(D2) + 1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Completion status	The status at the end of the instruction is stored. 0 : No error (normal completion) Other than 0: Error code *1	—	System
(S1)+1	Station number	Specifies the station number of the intelligent device station.	0 to 64	User
(S1)+2	Access code/ attribute	• When accessing the buffer memory of an intelligent device station, "0004H" is set. • When accessing the random access buffer memory of a local station, "2004H" is set	0004H 2004H	User
(S1)+3	Buffer memory address	Specifies the head address of the buffer memory.	*2	User
(S1)+4	Number of points to read	Specifies the number of data to read (in word units).	1 to 480 *3	User

REMARKS

1) *1: Refer to the following manual for information about error codes when an error occurs.
Control & Communication-Link System Master • Local Module type AJ61QBT11/
A1SJ61QBT11 User's Manual

2) *2: Refer to the manual for the intelligent device station which reads data.
When specifying a random access buffer memory, the address of the start of the
random access memory should be set to 0.

3) *3: Indicates the maximum number of data that can be read.
This should be specified so it is inside the setting range of the transmission buffer
according to the buffer capacity and parameters of the intelligent device station.

4) The basic number of steps of the RIRCV instruction is 10 steps.

Setting for the device which stores the interlock signals

Device	Content	Set Data	Setting Range	Set by
(S2)+0	b15 to b8 b7 to b0 / 0 / RY	RY: Request device	0 to 127	System
		The upper 8 bits are set to '0'.	0	User
(S2)+1	b15 to b8 b7 to b0 / RWr *1 / RX	RX: Completion device	0 to 127	User
		RWr: Device which stores the error codeIf there is no device for storing the error code, this should be set to FFH.	0 to 15	
(S2)+2	b15 to b0 / Completion mode	0: Ended by the contents of device 1 (RXn). 1: Ended by the contents of device 2 (RXn, RXn+1)/ (RXn+1 is ON when there is an error completion.)	0/1	User

*1: The same error code as the completion status of the control data is
stored in the error code storage device.

Function

(1) Data is read from the buffer address specified by the intelligent device
station whose station number was specified by the control data of (S1)
onward of the master station module that was specified by Un, and it is
stored in the device specified by (D1).
When doing this, a handshake is performed according to the handshake
signal specified by (S3).
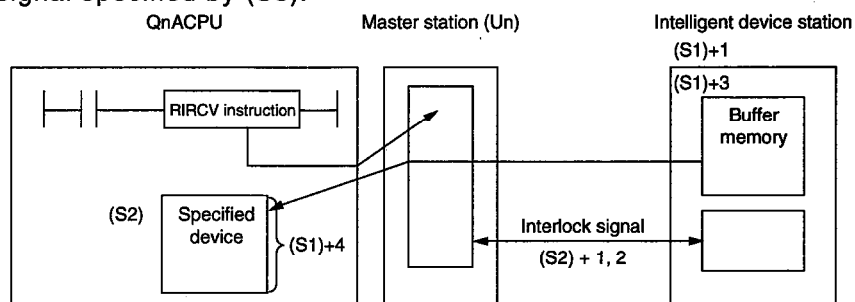
(2) The RIRCV instruction can be executed at the same time for multiple
intelligent device stations. However, it is not possible to execute two or
more instructions simultaneously for the same intelligent device station.

(3) For the RIRCV instruction interlock signal there is a Completion device (D), and Status display at completion device [D+1].

(a) Completion device:
This device goes ON at the END process of the scan of the completed RIRCV instruction, and then goes OFF at the next END process.

(b) Status display at completion device:
This device is turned ON/OFF by the status at the end of the RIRCV instruction.
• Normal completion:Stays OFF and does not change.
• Error completion: Goes ON at the END process of the scan of the completed RIRCV instruction, and goes OFF at the next END process.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

• The head I/O number specified by Un is not the special function module.   (Error code: 2110)

• The contents of the control data are not inside the setting range.
(Error code: 4100)

• The number of executions of CC-Link instructions exceeds the number of 32 that can be executed simultaneously.(Error code: 4107)

• CC-Link parameters are not set.   (Error code: 4108)

• The specified instruction name is strange.   (Error code: 4305)

Program Example

(1) When X0 is ON, this program reads 10 points of data starting from address 100H of the memory buffer of the intelligent device station of station number 1 which is connected to the master station module and that is mounted in the position of head I/O number 40, to D0 onward. The settings for the interlock signal storage device should be: Request device: RY0, Completion device: RX0, Error code storage device: RWr0, Completion mode: 0.

```
    X0
────┤├──────┬──────────────────────────────┤ MOV │ K1   │ D101 ├──────
            │
            ├──────────────────────────────┤ MOV │ H4   │ D102 ├──────
            │
            ├──────────────────────────────┤ MOV │ H100 │ D103 ├──────
            │
            ├──────────────────────────────┤ MOV │ K10  │ D104 ├──────
            │
            ├──────────────────────────────┤ MOV │ K0   │ D200 ├──────
            │
            ├──────────────────────────────┤ MOV │ K0   │ D201 ├──────
            │
            ├──────────────────────────────┤ MOV │ K0   │ D202 ├──────
            │
            └──┤ GP.RIRCV │ U4 │ D100 │ D0 │ D200 │ M0 ├──────

    M0        M1
────┤├───────┤/├────┌─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐───
            │       │        Performs normal completion      │
            │       └─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─┘
            │   M1
            └───┤├──┌─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐───
                    │        Performs error completion       │
                    └─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─┘
```

12.4 Write Data to Buffer Memory of an Intelligent Device Station (RISEND)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O				—			
(S2)	—	O				—			
(S3)	—	O				—			
(D)	O					—			

[Instruction symbol]　　[Execution condition]

RISEND

```
              Command
         ┌─┤├───────────┤ G.RISEND │ Un │ (S1) │ (S2) │ (S3) │ (D) ├──┤
```

RISEND

```
              Command
         ┌─┤↑├───────────┤ GP.RISEND │ Un │ (S1) │ (S2) │ (S3) │ (D) ├──┤
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
(S1)	Head number of the device which stores the control data	Device name
(S2)	Head number of the device which stores write data	
(S3)	Head number of the device which stores the interlock signal	
(D)	Device which turns ON scan 1 at the end of writing data(D)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Completion status	The status at the end of the instruction is stored. 0 : No error (normal completion) Other than 0: Error code *1	—	System
(S1)+1	Station number	Specifies the station number of the intelligent device station.	0 to 64	User
(S1)+2	Access code/ attribute	• When accessing the buffer memory of an intelligent device station, "0004H" is set. • When accessing the random access buffer memory of a local station, "2004H" is set	0004H 2004H	User
(S1)+3	Buffer memory address	Specifies the head address of the buffer memory.	*2	User
(S1)+4	Number of points to write	Specifies the number of data to write (in word units).	1 to 480 *3	User

REMARKS

1) *1: Refer to the following manual for information about error codes when an error occurs.
   Control & Communication-Link System Master • Local Module type AJ61QBT11/
   A1SJ61QBT11 User's Manual

2) *2: Refer to the manual for the intelligent device station which writes data.
   When specifying a random access buffer memory, the address of the start of the
   random access memory should be set to 0.

3) *3: Indicates the maximum number of data that can be wirtten.
   This should be specified so it is inside the setting range of the transmission buffer
   according to the buffer capacity and parameters of the intelligent device station.

4) The basic number of steps of the RIRCV instruction is 10 steps.

Setting for the device which stores the interlock signals

Device	Content	Set Data	Setting Range	Set by
(S3)+0	b15 to b8 b7 to b0 / 0 / RY	RY: Request device	0 to 127	User
		The upper 8 bits are set to '0'.	0	User
(S3)+1	b15 to b8 b7 to b0 / RWr *1 / RX	RX: Completion device	0 to 127	System
		RWr: Device which stores the error code. If there is no device for storing the error code, this should be set to FFH.	0 to 15	System
(S3)+2	b15 to b0 / Completion mode	0: Ended by the contents of device 1 (RXn). 1: Ended by the contents of device 2 (RXn, RXn+1)/ (RXn+1 is ON when there is an error completion.)	0/1	System

*1: The same error code as the completion status of the control data is
   stored in the error code storage device.

Function

(1) Data of the device specified from the master station device specified by
   Un is written to the buffer address specified by the intelligent device
   station whose station number was specified by the control data of (S1)
   onward.
   When doing this, a handshake is performed according to the handshake
   signal specified by (S3).
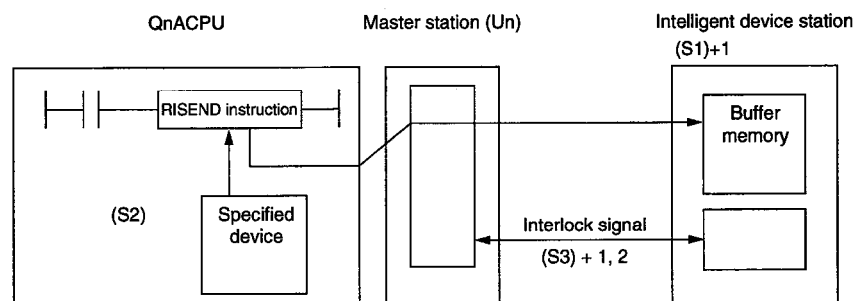
(2) The RISEND instruction can be executed at the same time for multiple
   intelligent device stations. However, it is not possible to execute two or
   more instructions simultaneously for the same intelligent device station.

(3) For the RISEND instruction interlock signal there is a Completion device (D), and Status display at completion device [D+1].

    (a) Completion device:
        This device goes ON at the END process of the scan of the completed RISEND instruction, and then goes OFF at the next END process.

    (b) Status display at completion device:
        This device is turned ON/OFF by the status at the end of the RISEND instruction.
        • Normal completion:Stays OFF and does not change.
        • Error completion: Goes ON at the END process of the scan of the completed RIRCV instruction, and goes OFF at the next END process.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

    • The head I/O number specified by Un is not the special function module.   (Error code: 2110)

    • The contents of the control data are not inside the setting range.   (Error code: 4100)

    • The number of executions of CC-Link instructions exceeds the number of 32 that can be executed simultaneously.(Error code: 4107)

    • CC-Link parameters are not set.   (Error code: 4108)

    • The specified instruction name is strange.   (Error code: 4305)

Program Example

(1) When X0 is ON, this program reads 10 points of data starting from address 100H of the memory buffer of the intelligent device station of station number 1 which is connected to the master station module and that is mounted in the position of head I/O number 40.
The settings for the interlock signal storage device should be: Request device: RY0,
Completion device: RX0, Error code storage device: RWr0, Completion mode: 0.
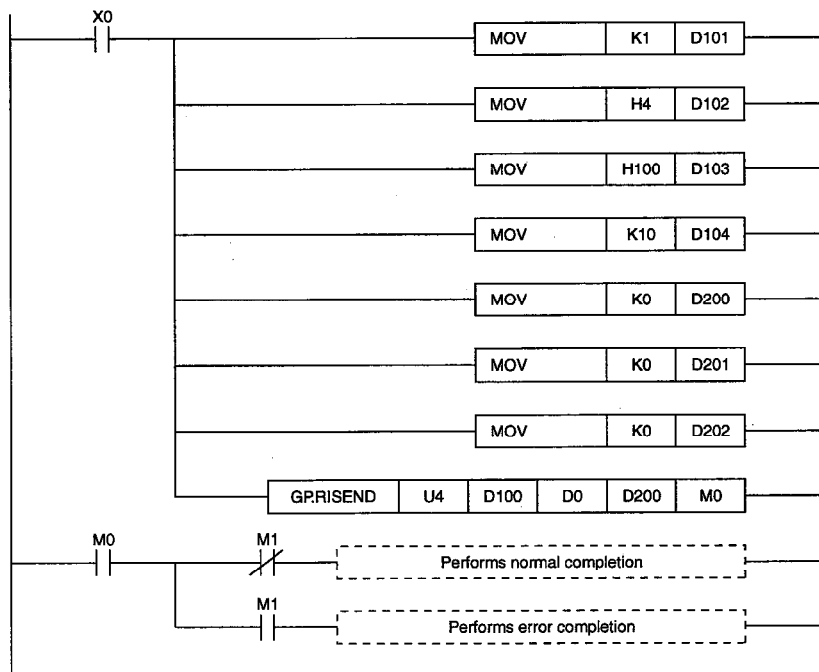
12.5 Read Data from Buffer Memory of the Master Station (RIFR)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	—	O		—				O	—
n2	—	O		—				O	—
(D)	—	O		—					
n3	—	O		—				O	—

[Instruction symbol]　[Execution condition]

Command

RIFR ⎍ ┤├── | G.RIFR | Un | n1 | n2 | (D) | n3 |

Command

RIFR ⎍ ┤├── | GP.RIFR | Un | n1 | n2 | (D) | n3 |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Remote station number or random access buffer specification　　Remote station number:　　　　　　　1 to 64　　Random access buffer specification:　　FFH	
n2	Offset value of the remote station auto update buffer memory or the random access buffer specified in the master station	
(D)	Head number of the device which stores the read data	Device name
n3	Number of points to read (1 to 4096)	16-bit binary

Function

(1) Data points (n3) are read from the buffer memory for auto update that is specified by (n2) of the intelligent device station whose station number specified by (n1) of the master station module specified by Un, and then the data is sort in the device specified by (D1).
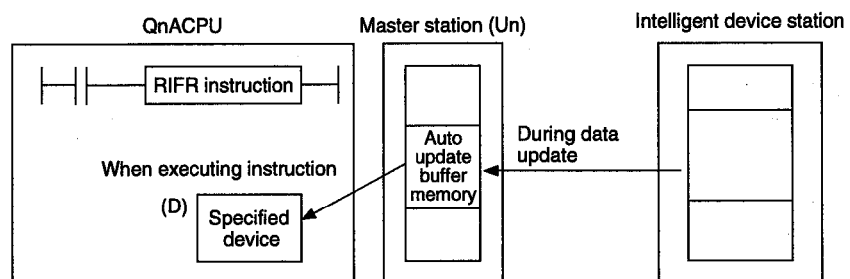
(2) The RIFR instruction reads data while the instruction is executing.

(3) The number of points that can be read by the RIFR instruction is 4096 points.

(4) The number of points of the auto update buffer memory are set by the station information of the CC-Link setting of the parameters.
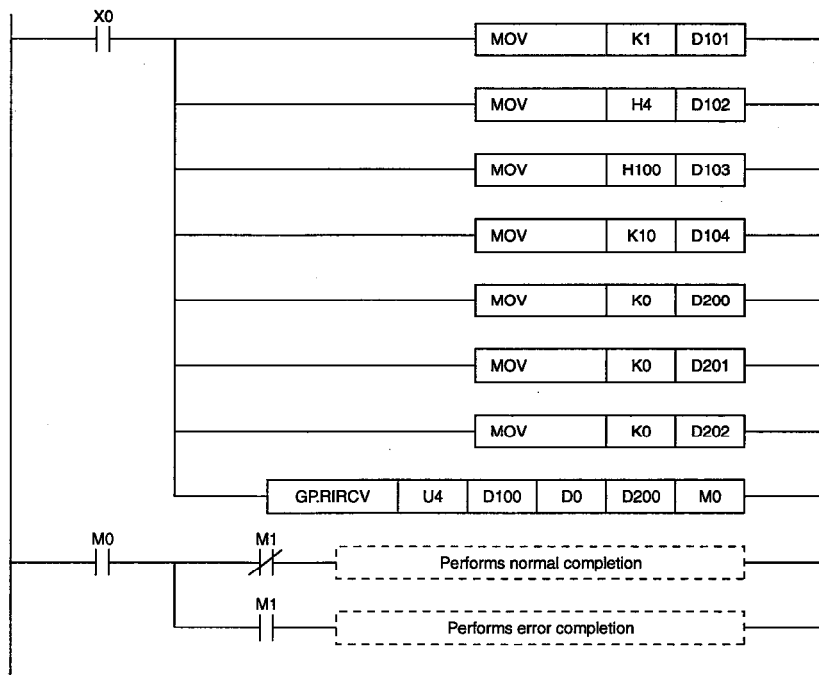
Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The head I/O number specified by Un is not the special function module. (Error code: 2110)

- The number of points specified by n3 exceeds 4096. (Error code: 4100)

- The station number specified by n1 does not exist. (Error code: 4102)

- The specified instruction name is strange. (Error code: 4305)

If the number of read points is "0," no error is caused but no process is performed.

Program Example

(1) When X0 is ON, this program reads 10 points of data, starting from the address 100H of the auto update buffer memory of intelligent device station 1 which is connected to the master station module mounted in position whose head I/O number is 40, to D0 onward.

X0						
	GP.RIFR	U4	K1	H100	D0	K10
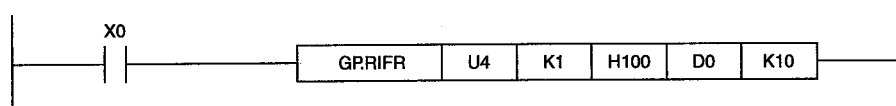
REMARKS

1) The number of basic steps of the RIFR instruction is 9 steps.

12.6 Write Data to Buffer Memory of the Master Station (RITO)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	—	O		—				O	—
n2	—	O		—				O	—
(S)	—	O		—					
n3	—	O		—				O	—

[Instruction symbol]   [Execution condition]

RITO   _⌐_   Command
                    ─┤ ├──────── G.RITO │ Un │ n1 │ n2 │ (S) │ n3 ──

RITO   _↑⌐   Command
                    ─┤ ├──────── GP.RITO │ Un │ n1 │ n2 │ (S) │ n3 ──

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary

n1	Remote station number or random access buffer specification
	  Remote station number: 1 to 64
	  Random access buffer specification: FFH	

n2	Offset value of the remote station auto update buffer memory or the random access buffer specified in the master station.	
(S)	Head number of the device which stores the write data	Device name
n3	Number of points to write (1 to 4096)	16-bit binary

Function

(1) Data points (n3), from the device specified by (D1) in the intelligent device station whose station number is specified by (n1) of the master station module specified by Un, are written to the buffer memory for auto update that is specified by (n2).
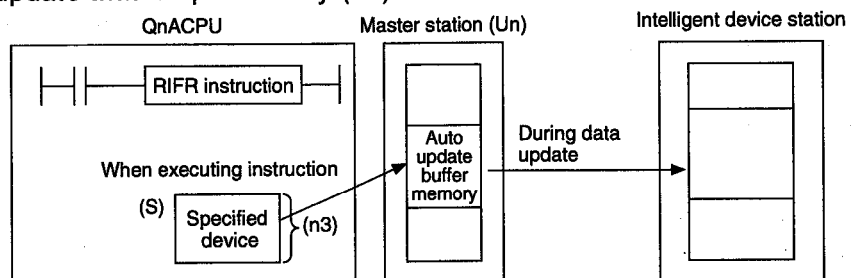
(2) The RITO instruction reads data while the instruction is executing.

(3) The number of points that can be read by the RITO instruction is 4096 points.

(4) The number of points of the auto update buffer memory are set by the station information of the CC-Link setting of the parameters.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The head I/O number specified by Un is not the special function module. (Error code: 2110)

- The number of points specified by n3 exceeds 4096. (Error code: 4100)

- The station number specified by n1 does not exist. (Error code: 4102)

- The specified instruction name is strange. (Error code: 4305)

If the number of read points is "0," no error is caused but no process is performed.

Program Example

(1) When X0 is ON, this program writes 10 points of data from D0 onward to the address starting from 100H of the buffer memory of the intelligent device station of station number 1 which is connected to the master station module and that is mounted in the position of head I/O number 40.

X0		GP.RITO	U4	K1	H100	D0	K10	
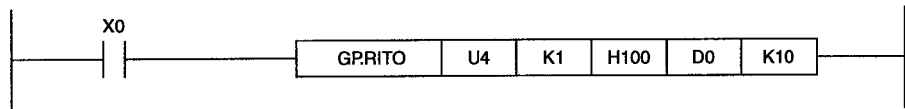
REMARKS

1) The number of basic steps of the RITO instruction is 9 steps.

12.7 Communication with Buffer Memory of an Intelligent Device Station (CCL to CCLEND)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Z☐	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O								—
n2	O								—
(D1)	—	O		—					
(S)	—	O		—					
n3	O								—
(D2)		O		—					
(D3)	O			—					

[Instruction symbol]   [Execution condition]

CCL
CCLEND

Command

G.CCL	Un

FROM	n1	n2	(D1)	n3

PRC	(D2)	(D3)

TO	n1	n2	(S)	n3

PRC	(D2)	(D3)

G.CCLEND	Un

CCL
CCLEND

Command

G.CCL	Un

FROMP	n1	n2	(D1)	n3

PRC	(D2)	(D3)

TOP	n1	n2	(S)	n3

PRC	(D2)	(D3)

G.CCLEND	Un

| REMARKS |

1) The number of basic steps of the CCL instruction is 5 steps.
   The number of basic steps of the CCLEND instruction is 7 steps.

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Station number of the intelligent device station that performs communication (1 to 64)	
n2	Head address number of the area (buffer memory) of the intelligent device station that performs communication	
(D1)	Head number of the device which stores the read data	Device
(S)	Head number of the device which stores the write data	
n3	Number of data points that are read or written (1 to 480)	16-bit binary
(D2)	Number of the bit device that goes ON when processing ends	Bit
(D3)	Dummy (no processing)[Specifies the number of an arbitrary output (Y) device]	

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) Performs communication with the remote terminal module that is specified by (n1) of the intelligent device stations that are connected to the master station module specified by Un.

(2) During communication with the intelligent device station by the CCL instruction, it automatically controls the master station module transmission request, transmission end signal, read request, read end signal, and buffer memory address.

(3) The CCL instruction is used in combination with the FROM/TO instruction and PRC instruction, and must be followed with a CCLEND instruction.
The PRC instruction is used together with the FROM/TO instruction.

(4) It is possible to enter up to a maximum of 32 FROM/TO instructions between the CCL instruction and CCLEND instruction.

[When reading (FROM)]
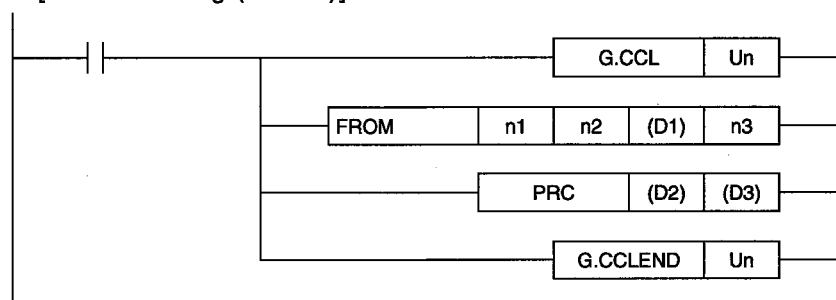
Overview of operation
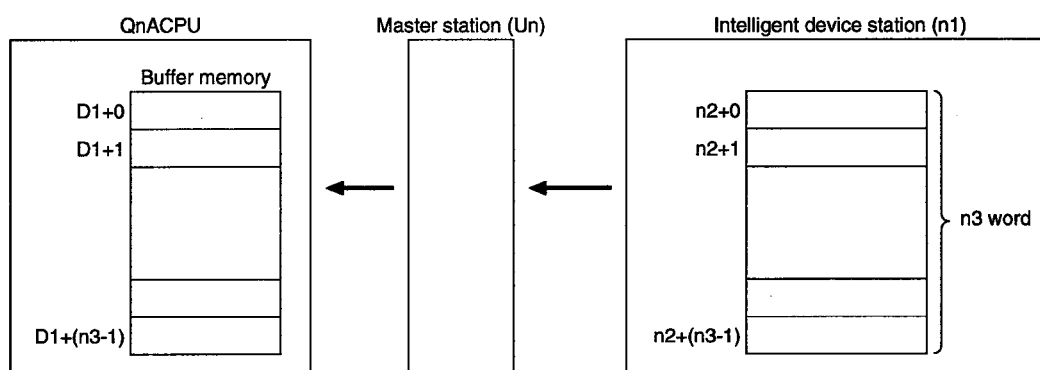
[When writing (TO)]
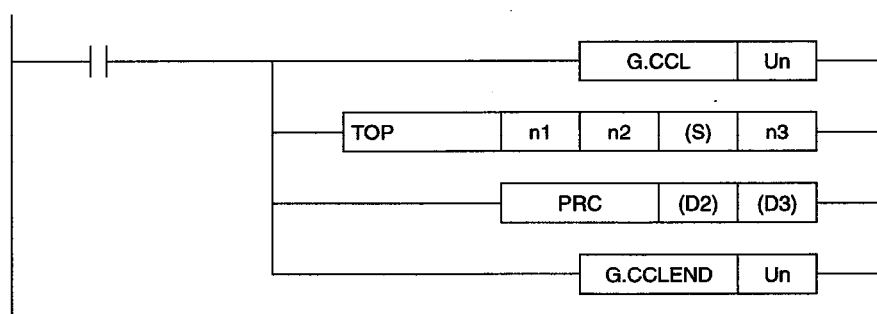
Overview of operation
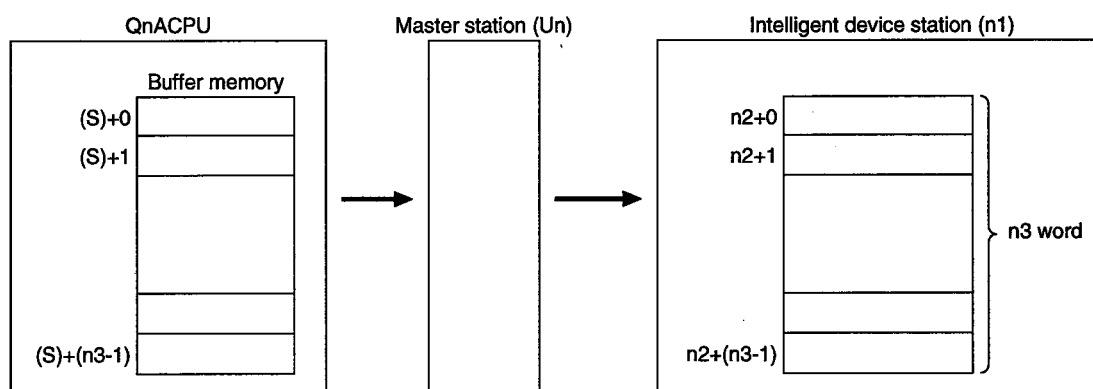
(5) The intelligent device station number specified by n1 specifies the numbers to be assigned to the intelligent device station which performs communication.

(6) The head number for the buffer memory address on the intelligent device station side which performs communication is specified for n2. The communication area starts from the head buffer memory address specified by n2 and is the range of the number of points specified by n3.

(7) The head number of the device that stores the read data is specified for (D1).
The read data is stored in the range of points specified by n3 starting from the device specified by (D1).

(8) The head number for the data written to the intelligent device station or the device which stores the written data is specified for (S).
If a constant is specified, then the specified value (same data) is written for the number of points specified by n3 starting from the buffer memory address specified by the intelligent device station.
If the device number is specified, data stored in the range of points specified by n3 starting from the specified device number is written starting from the specified address number of the buffer memory of the intelligent device station.

(9) The number of points to read/write is specified for n3.

(10) The bit device used as the end flag of the communication process is specified for (D2).
This flag automatically goes ON when the END instruction of the scan of the completed communication process of the intelligent device station is executed, and goes OFF at the END of the next scan.
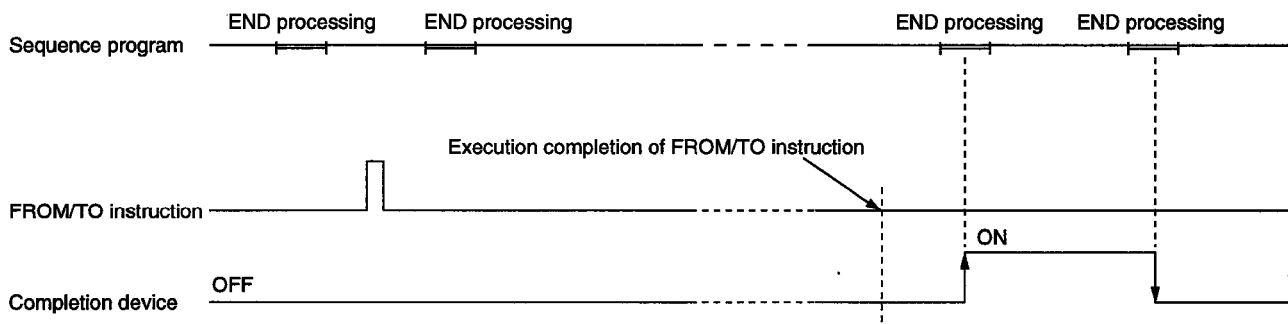
(11) The device specified by (D3) is meaningless (no processing) dummy information of the program. Any arbitrary output number (Y) should be specified.

(12) For communication processing with an intelligent device station by the CCL instruction, it is possible to perform communication with a maximum of 32 intelligent device stations for all of the master stations used.

(13) The communication method is shown on the next page. When the FROM/TO instruction is executed, registration is performed for the communication request registration area, and update processing is performed according to the registered contents, and when execution ends, the next instruction is executed.
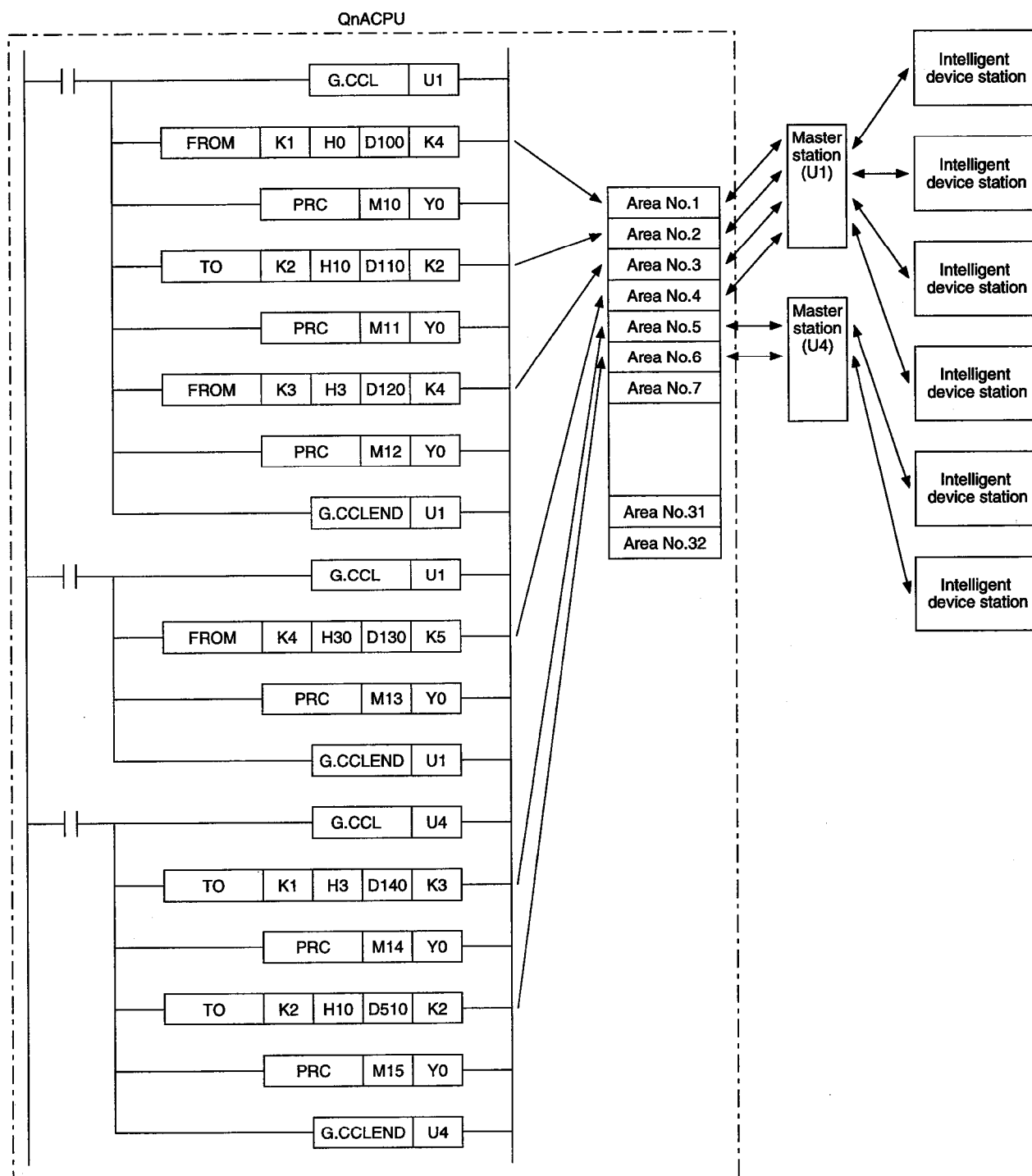
(14) When registering to the communication request registration area, the device number of the specified bit device by (D2) is checked, and if processing is being performed using the same device number, registration is not performed even if the instruction is executed.

(15) When processing according to the registered contents ends, the device specified by (D2) is turned ON, and the contents are deleted from the communication request registration area.

(16)It is possible to register up to 32 communication requests in the communication request registration area. If the number exceeds 32, an error occurs and registration is not performed.

(17)It is possible to check the status of the communication request registration area by SM730 and SD730.
- SM730   If no more requests can be registered in the communication request registration area, it is ON, and when there is available space it automatically goes OFF.
- SD730   Stores the remaining number of requests that can be registered in the communication request registration area.

(18)If an instruction is executed for an intelligent device station that is performing communication, the current processing will continue and after it ends, processing is performed for the same intelligent device station.

Operation Error

(1)   In the following cases error occurs. The error flag (SM0) goes ON, and the error code is stored in SD0.

- In the FROM/TO instruction, the number of the last device exceeds the range of points specified by n3 beyond the device number specified by (D1) and (S).   (Error code: 4100)

- During execution of the FROM/TO instruction, the communication request registration area becomes full and registration is not possible.
                                                                        (Error code: 4100)

- The CCL-CCLEND instruction is strange.   (Error code: 4305)

- CCL-CCLEND are not paired.   (Error code: 4305)

12.8 Read Communication Status (SPCBUSY)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
(D)	—	O				—			

[Instruction symbol] **[Execution condition]**

SPCBUSY   ⎍   Command ⊣ ⊢ —————— | G.SPCBUSY | Un | (D) |—

SPCBUSY   ⎏   Command ⊣ ⊢ —————— | GP.SPCBUSY | Un | (D) |—

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
(D)	Device which stores the communication status that was read	Device name

Function

(1) The execution status of the following instructions is read for the intelligent device stations connected to the master station, and 8 points are stored starting from the device specified by (D).
   • RIRD (Refer to Section 12.1.)
   • RIWT (Refer to Section 12.2.)
   • RIRCV (Refer to Section 12.3.)
   • RISEND (Refer to Section 12.4.)
   • CCL (Refer to Section 12.7.)

(2) For the execution status stored in (D), "1" is stored when data begins to be sent to or received from the intelligent device stations by the instructions listed above, and "0" is stored when processing ends. When processing of each instruction ends, the end flags of the instructions go from ON to OFF.

```
          b15          to          b0
(D)+0 |  |  |  |  |  |  |  |  |  |  |  |
```
— Stores the data transmission status for the 1st station.
— Stores the data receive status for the 1st station.
— Stores the data transmission status for the 2nd station.
— Stores the data receive status for the 2nd station.
— Stores the data transmission status for the 8th station.
— Stores the data receive status for the 8th station.

REMARKS

1) The number of basic steps for the SPCBUSY instruction is 8 steps.

b15   to   b0

(D)+1

Stores the data transmission status for the 9th station.
Stores the data receive status for the 9th station.
Stores the data transmission status for the 10th station.
Stores the data receive status for the 10th station.

Stores the data transmission status for the 16th station.
Stores the data receive status for the 16th station.

(D)+2

Stores the data transmission status for the 17th station.
Stores the data receive status for the 17th station.
Stores the data transmission status for the 18th station.
Stores the data receive status for the 18th station.

Stores the data transmission status for the 24th station.
Stores the data receive status for the 24th station.

(D)+3

Stores the data transmission status for the 25th station.
Stores the data receive status for the 25th station.
Stores the data transmission status for the 26th station.
Stores the data receive status for the 26th station.

Stores the data transmission status for the 32nd station.
Stores the data receive status for the 32nd station.

(D)+4

Stores the data transmission status for the 33rd station.
Stores the data receive status for the 33rd station.
Stores the data transmission status for the 34th station.
Stores the data receive status for the 34th station.

Stores the data transmission status for the 40th station.
Stores the data receive status for the 40th station.

(D)+5

Stores the data transmission status for the 41st station.
Stores the data receive status for the 41st station.
Stores the data transmission status for the 42nd station.
Stores the data receive status for the 42nd station.

Stores the data transmission status for the 48th station.
Stores the data receive status for the 48th station.

(D)+6

Stores the data transmission status for the 49th station.
Stores the data receive status for the 49th station.
Stores the data transmission status for the 50th station.
Stores the data receive status for the 50th station.

Stores the data transmission status for the 56th station.
Stores the data receive status for the 56th station.

Stores the data transmission status for the 57th station.
Stores the data receive status for the 57th station.
Stores the data transmission status for the 58th station.
Stores the data receive status for the 58th station.

Stores the data transmission status for the 64th station.
Stores the data receive status for the 64th station.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The head I/O number specified by Un is not the special function module.
(Error code: 2110)

- The instruction for the module whose head I/O number was specified by Un cannot be executed.
(Error code: 2110)

- A device which cannot be specified is specified.　　(Error code: 4004)

- The specified instruction name is strange.　　(Error code: 4305)

Program Example

(1) This program reads the communication status of the master station module mounted in the position starting from I/O number 40 into D10 to D17.
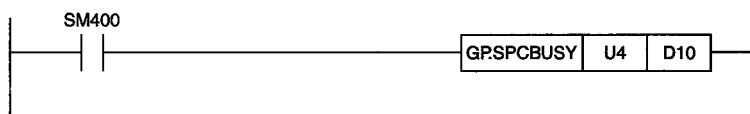
12.9 Forced Interrupt of Communication Processing (SPCCLR)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
(S)	—	O				—			

```
[Instruction symbol]    [Execution condition]

                                              Command
  SPCCLR              ⎍‾⎍                 ──┤ ├───────────────── G.SPCCLR │ Un │ (S) ──

                                              Command
  SPCCLR              ⎍‾                  ──┤ ├───────────────── GP.SPCCLR │ Un │ (S) ──
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of the master station module (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
(S)	Device which stores the interrupt specification data	Device name

Function

(1) Performs a forced interrupt of the send/receive process for the intelligent device stations connected to the master station by the following instructions..
   • RIRD (Refer to Section 12.1.)
   • RIWT (Refer to Section 12.2.)
   • RIRCV (Refer to Section 12.3.)
   • RISEND (Refer to Section 12.4.)
   • CCL (Refer to Section 12.7.)

(2) For the 8 points starting from (S), sets "1" in the appropriate bits for the instruction to be interrupted.

```
       b15              to              b0
(S)+0 ┌─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┬─┐
      └─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┴─┘
       ↑↑                      ↑↑↑↑
```
        ─── Interrupts the data transmission instruction for the 1st station.
        ─── Interrupts the data receive instruction for the 1st station.
        ─── Interrupts the data transmission instruction for the 2nd station.
        ─── Interrupts the data receive instruction for the 2nd station.

        ─── Interrupts the data transmission instruction for the 8th station.
        ─── Interrupts the data receive instruction for the 8th station.

REMARKS

The number of basic steps of the SPCCLR instruction is 7 steps.

b15   to   b0

(D)+1

— Interrupts the data transmission instruction for the 9th station.
— Interrupts the data receive instruction for the 9th station.
— Interrupts the data transmission instruction for the 10th station.
— Interrupts the data receive instruction for the 10th station.

— Interrupts the data transmission instruction for the 16th station.
— Interrupts the data receive instruction for the 16th station.

(D)+2

— Interrupts the data transmission instruction for the 17th station.
— Interrupts the data receive instruction for the 17th station.
— Interrupts the data transmission instruction for the 18th station.
— Interrupts the data receive instruction for the 18th station.

— Interrupts the data transmission instruction for the 24th station.
— Interrupts the data receive instruction for the 24th station.

(D)+3

— Interrupts the data transmission instruction for the 25th station.
— Interrupts the data receive instruction for the 25th station.
— Interrupts the data transmission instruction for the 26th station.
— Interrupts the data receive instruction for the 26th station.

— Interrupts the data transmission instruction for the 32nd station.
— Interrupts the data receive instruction for the 32nd station.

(D)+4

— Interrupts the data transmission instruction for the 33rd station.
— Interrupts the data receive instruction for the 33rd station.
— Interrupts the data transmission instruction for the 34th station.
— Interrupts the data receive instruction for the 34th station.

— Interrupts the data transmission instruction for the 40th station.
— Interrupts the data receive instruction for the 40th station.

(D)+5

— Interrupts the data transmission instruction for the 41st station.
— Interrupts the data receive instruction for the 41st station.
— Interrupts the data transmission instruction for the 42nd station.
— Interrupts the data receive instruction for the 42nd station.

— Interrupts the data transmission instruction for the 48th station.
— Interrupts the data receive instruction for the 48th station.

(D)+6

— Interrupts the data transmission instruction for the 49th station.
— Interrupts the data receive instruction for the 49th station.
— Interrupts the data transmission instruction for the 50th station.
— Interrupts the data receive instruction for the 50th station.

— Interrupts the data transmission instruction for the 56th station.
— Interrupts the data receive instruction for the 56th station.

```
          b15            to            b0
(D)+7  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
        ↑  ↑                          ↑  ↑  ↑
                                         └─── Interrupts the data transmission instruction for the 57th station.
                                      └────── Interrupts the data receive instruction for the 57th station.
                                   └───────── Interrupts the data transmission instruction for the 58th station.
                                └──────────── Interrupts the data receive instruction for the 58th station.

        └───────────────────────────────────── Interrupts the data transmission instruction for the 64th station.
           └──────────────────────────────────── Interrupts the data receive instruction for the 64th station.
```

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The head I/O number specified by Un is not the special function module.

(Error code: 2110)

- The instruction for the module whose head I/O number was specified by Un cannot be executed.

(Error code: 2112)

- A device which cannot be specified is specified. (Error code: 4004)

- The specified instruction name is strange. (Error code: 4305)

Program Example

(1) This program stops transmission to intelligent device station 1 of the master station module mounted in the position whose head I/O number is 40.

```
   SM400
──┤ ├──────────────────────────────────┤ MOVP  │ K1  │ D10 ├──

    ├──────────────────────────────────┤ MOVP  │ K0  │ D11 ├──

          ├────────────────────────────┤ GP.SPCCLR │ U4 │ D10 ├──
```
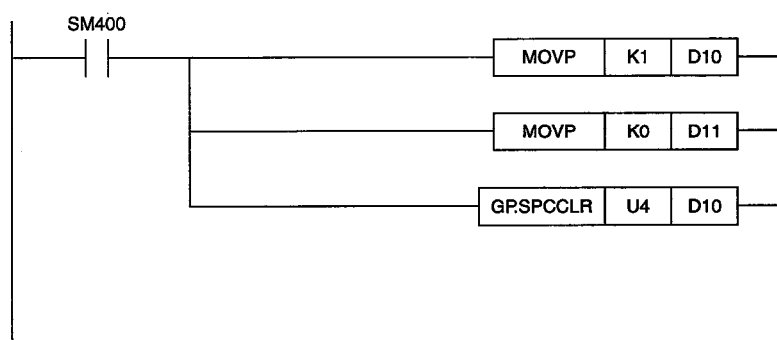
13. AD75 INSTRUCTIONS (FUNCTION VERSION B OR LATER)

AD75 instructions are instructions that set the AD75 parameters and positioning data. Table 13.1 lists the AD75 instructions.

Furthermore, the AD75 control instructions can be used with the module of the function version B or later.

Table 13.1 The AD75 Instructions

Classification	Instruction Name	Description	Reference section
Positioning start axis 1	PSTART	Starts the positioning operation for each axis.	13.1
Interpolation positioning start	PHOSTA	Starts positioning during interpolation of axis 2.	13.2
Zero return start	PZPR	Starts zero return.	13.3
Present value change request	PADCH	Changes the present value.	13.4
Forward JOG start/stop	PJOG+	Starts or stops the forward JOG operation.	13.5
Reverse JOG start/stop	PJOG-	Starts or stops the reverse JOG operation.	13.6
Manual pulse generator operation enable/disable	PMPG	Enables or disables the manual pulse generator.	13.7
Speed change request	PSPCH	Changes the speed.	13.8
Axis error reset	PERRST	Reset an axis error.	13.9
Basic parameter setting	PBPSET	Sets basic parameters 1 and 2.	13.10
Extended parameter setting	PEPSET	Sets extended parameters 1 and 2.	13.11
Zero return parameter setting	POPSET	Sets the zero return parameter.	13.12
Positioning data setting	PPOSET	Sets the positioning data.	13.13
Positioning start data setting	PSDSET	Sets the positioning start data.	13.14
Positioning special start data setting	PSPSET	Sets the positioning special start data.	13.15
Condition data setting	PCTSET	Sets condition data.	13.16
Error number/ warning number read	PERWR	Stores the axis error and axis warning numbers in a specified device.	13.17
Monitor data read	PMDRD	Stores the feed present value, feed speed and M code in a specified device.	13.18
Positioning data I/F (Interface) setting	PIFSET	Sets the positioning data I/F.	13.19

POINTS

1) Instructions for controlling AD75 cannot be used for A1SD75M1/M2/M3 or AD75M1/M2/M3.

2) If A1SD75P1/P2/P3, AD75P1/P2/P3 are used, only one instruction can be executed for one axis during one scan. If two or more instructions are executed for one axis, trouble will occur in the positioning operation.

3) It is not possible to simultaneously execute the PSTART, PZPR, and PADCH instructions for the same axis. An interlock should be created that will not allow other PSTART, PZPR and PADCH instructions to be executed while the PSTART, PZPR and PADCH instructions are being executed. If other PSTART, PZPR and PADCH instructions are executed when the PSTART, PZPR and PADCH instructions are being executed, only the completion device of the instruction executed last will go ON.

4) See Section 1.3 for the function version B.

13.1 Positioning Start Axis 1 (PSTART)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z □	Constant K, H	Other
	Bit	Word		Bit	Word				
	O			—				O	—
(S)	O			—				O	—
(D)	O			—				—	—

[Instruction symbol]　[Execution condition]

PSTART　　　　　 _⎍_　　 Command ⊢⊣⊢ | G.PSDSET | Un | n | (S) | n2 |

PSTART　　　　　 _⌐_　　 Command ⊢⊣⊢ | GP.PSDSET | Un | n | (S) | n2 |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S)	Positioning start data number	
(D)	Bit device number activated upon end of instruction (D)+1 is turned on, too, at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) When the positioning start signal for the axis specified by n is OFF, positioning starts by the positioning start data number that was specified by (S).

(2) The areas for positioning start numbers for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Positioning start number area	1150	1200	1250

(3) After the instruction is finished, the start signal is turned off upon execution of the END instruction at the end of the last scan, and the bit device designated at (D) is turned on then it is automatically turned off after a scan. The bit device designated at (D) is turned on then it is automatically turned off after a scan, too, if stoppage is caused by a stop signal. At an error completion, the status display device [(D)+1] at an error completion is turned on for one scan.

(4) If instructions other than PSTART turn the positioning start signal OFF while the PSTART instruction is being executed, an error completion will occur.

REMARKS

1) The basic number of steps of the PSTART instruction is 9 steps.

2) The PSTART instruction is the starting instruction for 1 axis.
   The positioning start operation during interpolation operation is performed by the PHOSTA instruction. (Refer to Section 13.2.)

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange.   (Error code: 4002)

- The number of devices is strange.   (Error code: 4003)

- A device which cannot be specified is specified.   (Error code: 4004)

- The value specified by n is not 1 to 3.   (Error code: 4100)

Program Example

(1) When X0 is ON, this program uses positioning start data number 100 and starts positioning axis 1 of the AD75 mounted to I/O number X/Y60 to X/Y7F.

X0					
├─┤ ├─	GP.PSTART	U6	K1	K100	M0
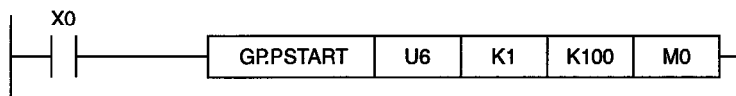
13.2 Interpolation Positioning Start (PHOSTA)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S)	O			—				O	—
(D)	O			—					

```
[Instruction symbol]   [Execution condition]

    PHOSTA              ┌─┐                Command
                     ──┘ └──             ──┤├──────[ G.PHOSTA | Un | n | (S) | (D) ]──

                                           Command
    PHOSTA              ──┘              ──┤├──────[ GP.PHOSTA | Un | n | (S) | (D) ]──
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Reference axis number (1 to 3)	
(S)	Positioning start data number	
(D)	Bit device number turned on upon end of instruction (D)+1 is turned on, too, at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) When the positioning start signal for the reference axis and interpolation axis specified by n is OFF, positioning starts by the positioning start data number that was specified by (S).

Reference Axis Specified by n	Axis 1	Axis 2	Axis 3
Interpolation axis	Axis 2	Axis 3	Axis 1

(2) The areas for positioning start numbers for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Positioning start number area	1150	1200	1250

(3) After the instruction is finished, the start signal is turned off upon execution of the END instruction at the end of the last scan, and the bit device designated at (D) is turned on then it automatically is turned off after a scan. The bit device designated at (D) is turned on then automatically off after a scan, too, if stoppage is caused by a stop signal. At an error completion, the status display device [(D)+1] at an error completion is turned on for one scan.

(4) If instructions other than PHOSTA turn the positioning start signal OFF while the PHOSTA instruction is being executed, an error completion will occur.


POINTS

The positioning start operation during interpolation operation should only be performed for the reference axis.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange. (Error code: 4002)

- The number of devices is strange. (Error code: 4003)

- A device which cannot be specified is specified. (Error code: 4004)

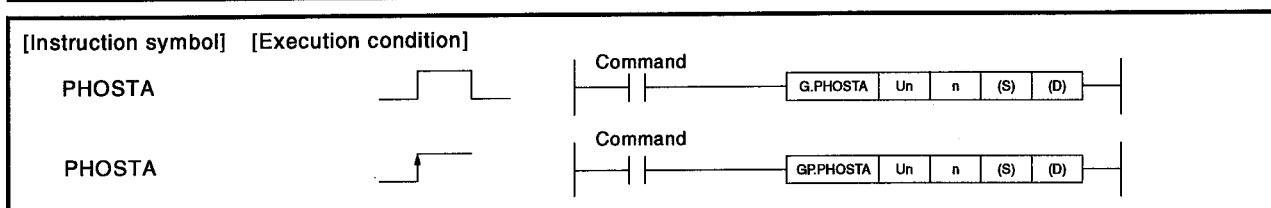- The value specified by n is not 1 to 3. (Error code: 4100)

- The PHOSTA instruction is executed for AD75P1(-S3).
  (Error code: 4100)

- A number other than 1 was specified for n for AD75P2(-S3).
  (Error code: 4100)

Program Example

(1) When X0 is ON, this program uses positioning start data number 100 and starts performing interpolation positioning of axis 1 and axis 2 of the AD75 mounted to I/O number X/Y60 to X/Y7F.

```
    X0
├──┤ ├──────────┤ GP.PHOSTA │ U6 │ K1 │ K100 │ M0 ├──┤
```

REMARKS

The basic number of steps of the PHOSTA instruction is 9 steps.

13.3 Zero Return Start (PZPR)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(D)	O			—					

[Instruction symbol]   [Execution condition]

PZPR

PZPR

Command

| G.PZPR | Un | n1 | (D) |

Command

| G.P.PZPR | Un | n1 | (D) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(D)	Bit device number turned on upon completion of instruction (D)+1 is turned on, too, at an error completion	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) When the positioning start signal for the axis specified by n is OFF, "9001" is set in the positioning start number area of the axis specified by n, and zero return begins.

(2) The areas for positioning start numbers for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Positioning start number area	1150	1200	1250

(3) After the instruction is finished, the bit device designated at (D) is turned on upon execution of the END instruction at the end of the last scan, and it is automatically turned off after a scan.
At an error completion, the status display device [(D)+1] at the time of completion, too, is turned on for one scan.

(4) If instructions other than PZPR turn the positioning start signal OFF while the PZPR instruction is being executed, an error completion will occur.

REMARKS
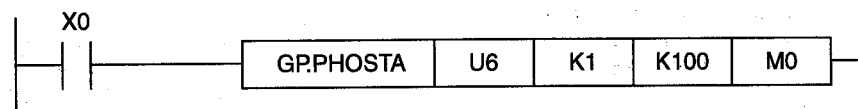
1) The basic number of steps of the PZPR instruction is 7 steps.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
(Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
(Error code: 2112)

- The specified instruction name is strange.   (Error code: 4002)

- The number of devices is strange.   (Error code: 4003)

- A device which cannot be specified is specified.   (Error code: 4004)

- The value specified by n is not 1 to 3.   (Error code: 4100)

Program Example

(1) When X0 is ON, this program performs the origin reset operation for axis 1 of the AD75 mounted to I/O number X/Y60 to X/Y7F.

```
     X0
  ┤ ├────────────────┤ GP.PZPR │ U6 │ K1 │ M0 ├
```

13.4 Present Value Change Request (PADCH)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S)	O			—				O	—
(D)	O			—					

[Instruction symbol]   [Execution condition]

PADCH   ⌐‾⌐

Command
—| |——[G.PADCH | Un | n | (S) | (D)]—

PADCH   ⌐‾

Command
—| |——[GP.PADCH | Un | n | (S) | (D)]—

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S)	Present value change value	32-bit binary
(D)	Bit device number turned on upon completion of instruction ((D)+1 is turned on, too, at an error completion.)	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

Function

(1) When the positioning start signal for the axis specified by n is OFF, it changes the present value to the value specified by (S)+1 and (S).

(2) The present value change areas for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Present value change area	1155, 1154	1205, 1204	1255, 1254

(3) After the instruction is finished, the bit device designated at (D) is turned on upon execution of the END instruction at the end of the last scan, and it is automatically turned off after a scan.
At an error completion, the status display device [(D)+1] at the time of completion, too, is turned on for one scan.

(4) If instructions other than PADCH turn the positioning start signal OFF while the PADCH instruction is being executed, an error completion will occur.

| REMARKS |

1) The basic number of steps of the PADCH instruction is 9 steps.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

  • The module to be accessed is not a special function module.
  (Error code: 2110)

  • The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

  • The specified instruction name is strange. (Error code: 4002)

  • The number of devices is strange. (Error code: 4003)

  • A device which cannot be specified is specified. (Error code: 4004)

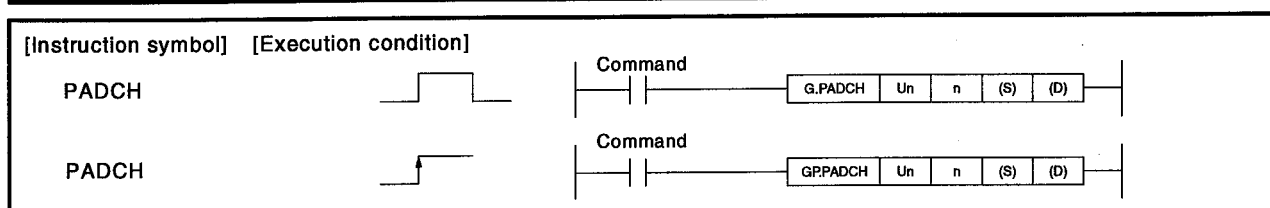 • The value specified by n is not 1 to 3. (Error code: 4100)

Program Example

(1) When X0 is ON, this program changes the present value of axis 1 of the AD75 mounted to I/O number X/Y60 to X/Y7F to the value of D1 and D2.

```
    X0
  ──┤ ├──────────┤ GP.PSDSET │ U6 │ K1 │ D1 │ M0 ├──
```

13.5 Forward JOG Start/Stop (PJOG+)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S)	O			—				O	—

```
[Instruction symbol]    [Execution condition]
                                          Command
   PJOG+            ──┌─┐──       ──┤ ├──────────────┤ G.PJOG+ │ Un │ n │ (S) ├──┤
                       ┘ └                            
```

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S)	JOG speed	32-bit binary

Function

(1) When the Forward JOG Start/Reverse JOG Start operation of the axis specified by n is OFF, the forward JOG operation is performed using the JOG speed data specified by (S)+1 and (S).

(2) The JOG speed areas for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
JOG speed area	1161, 1160	1211, 1210	1261, 1260

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

• The module to be accessed is not a special function module.
(Error code: 2110)

• The AD75 instructions cannot be used for the module to be accessed.
(Error code: 2112)

• The specified instruction name is strange. (Error code: 4002)

• The number of devices is strange. (Error code: 4003)

• A device which cannot be specified is specified. (Error code: 4004)

• The value specified by n is not 1 to 3. (Error code: 4100)

| REMARKS |

1) The basic number of steps of the PJOG+ instruction is 8 steps.

Program Example

(1) When X0 is ON, this program starts the forward JOG operation at JOG speed 200 for axis 2 of the AD75 mounted to I/O number X/Y60 to X/Y7F.

```
    X0    X65 *1
 ──┤ ├──┤/├────────────┤ G.PJOG+ │ U6 │ K2 │ K200 ├──
```

| REMARKS |

1)*1 This is an interlock not to perform the forward JOG starting while the specified axis is busy.

13.6 Reverse JOG Start/Stop (PJOG-)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J⬚\⬚		Special Function Module U⬚\G⬚	Index Register Z⬚	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S)	O			—				O	—

[Instruction symbol]   [Execution condition]

PJOG-

Command

	G.PJOG	Un	n	(S)

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S)	JOG speed	32-bit binary

Function

(1) When the forward JOG start/reverse JOG start operation of the axis specified by n is OFF, the reverse JOG operation is performed using the JOG speed data specified by (S)+1 and (S).

(2) The JOG speed areas for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
JOG speed area	1161, 1160	1211, 1210	1261, 1260

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

• The module to be accessed is not a special function module.
(Error code: 2110)

• The AD75 instructions cannot be used for the module to be accessed.
(Error code: 2112)

• The specified instruction name is strange.   (Error code: 4002)

• The number of devices is strange.   (Error code: 4003)

• A device which cannot be specified is specified.   (Error code: 4004)

• The value specified by n is not 1 to 3.   (Error code: 4100)
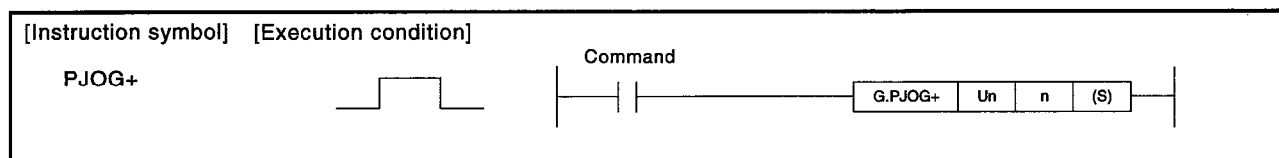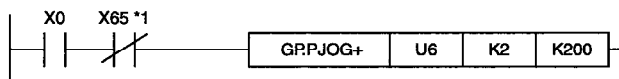

| REMARKS |

1) The basic number of steps of the PJOG- instruction is 8 steps.

Program Example
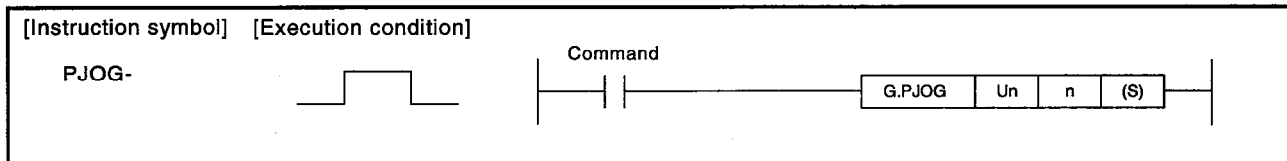
(1) When X0 is ON, this program starts the reverse JOG operation at JOG speed K200 for axis 2 of the AD75 mounted to I/O number X/Y60 to X/Y7F.

```
  X0    X65 *1
├─┤ ├──┤/├──────────────┤ GP.PJOG │ U6 │ K2 │ K200 ├
```
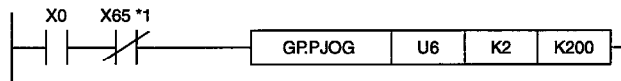
| REMARKS | ·

1)*1 This is an interlock not to perform the reverse JOG starting while the specified axis is busy.

13.7 Manual Pulse Generator Operation Enable/Disable (PMPG)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S)	O			—					

[Instruction symbol]   [Execution condition]

PMPG

Command

| G.PMPG | Un | n | (D) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(D)	Device which displays the ON/OFF status of the manual pulse generator enable flag	Bit

Function

(1) Corresponding to the specified contact point, this turns ON/OFF the manual pulse generator enable flag for the axis specified by n, and the bit device specified by (D).

• When the manual pulse generator enable flag is ON, the bit device specified by (D) is ON.

• When the manual pulse generator enable flag is OFF, the bit device specified by (D) is OFF.

The device specified by (D) cannot be turned ON/OFF by the user.

(2) The manual pulse generator enable flag areas for axis 1, axis 2 and axis 3 are shown in the table below.

| Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Manual pulse generator enable flag area	1167	1217	1267

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
(Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
(Error code: 2112)
- The specified instruction name is strange. (Error code: 4002)

- The number of devices is strange. (Error code: 4003)

- A device which cannot be specified is specified. (Error code: 4004)

- The value specified by n is not 1 to 3. (Error code: 4100)

Program Example

(1) When X0 is ON, this program turns ON the manual pulse generator enable flag and M0 for axis 1 of the AD75 mounted to the I/O number X/Y60 to X/Y7F, and when X0 is OFF, it turns the manual pulse generator enable flag and M0 OFF.

```
    X0    X65 *1
    ┤ ├───┤╱├──────────┤ G.PMPG │ U6 │ K2 │ M0 ├
```

┌─────────┐
│**REMARKS**│
└─────────┘
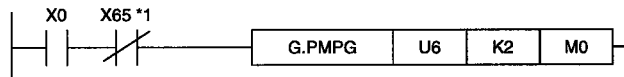
1) The basic number of steps of the PMPG instruction is 7 steps.

2)*1: This is an interlock not to perform the manual pulse generator enable when the specified axis is busy.

13.8 Speed Change Request (PSPCH)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J▢\▢		Special Function Module U▢\G▢	Index Register Z▢	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S)	O			—				O	—

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S)	Speed change value	32-bit binary

Function

(1) Changes the speed during the positioning operation to the speed specified by (S)+1 and (S).

(2) The speed change value areas and speed change request areas for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Speed change value area	1156, 1155	1206, 1205	1256, 1255
Speed change request area	1158	1208	1258

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange. (Error code: 4002)

- The number of devices is strange. (Error code: 4003)

- A device which cannot be specified is specified. (Error code: 4004)

- The value specified by n is not 1 to 3. (Error code: 4100)

| REMARKS |

1) The basic number of steps of the PSPCH instruction is 8 steps.

Program Example

(1) When X0 is ON, this program changes the speed of axis 2 of the AD75 mounted to I/O number X/Y60 to X/Y7F to 200.

```
   X0
   | |                          ┌─────────┬────┬────┬──────┐
───| |──────────────────────────┤ G.PSPCH │ U6 │ K2 │ K200 ├
   | |                          └─────────┴────┴────┴──────┘
```
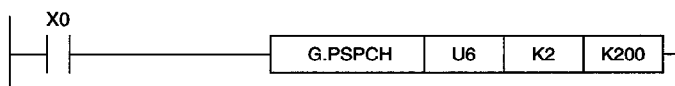
13.9 Axis Error Reset (PERRST)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—

[Instruction symbol]   [Execution condition]

PERRST ‾‾‾|__|‾‾

Command
|—| |————————| G.PERRST | Un | n |—|

PERRST ‾‾‾|‾‾‾

Command
|—| |————————| GP.PERRST | Un | n |—|

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	

Function

(1) Resets the axis error of the axis specified by n.

(2) Sets 1 in the following axis error reset areas for axis 1, axis 2 and axis 3.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Axis error reset area	1167	1217	1267

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
(Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
(Error code: 2112)

- The specified instruction name is strange.   (Error code: 4002)

- The number of devices is strange.   (Error code: 4003)

- A device which cannot be specified is specified.   (Error code: 4004)

- The value specified by n is not 1 to 3.   (Error code: 4100)

| REMARKS |

1) The basic number of steps of the PERRST instruction is 7 steps.

Program Example

(1) When X0 is ON, this program resets the error of axis 2 of the AD75 mounted to I/O number X/Y60 to X/Y7F.

```
  X0
──┤ ├──────────────────────────[ G.PERRST │ U6 │ K2 ]──
```
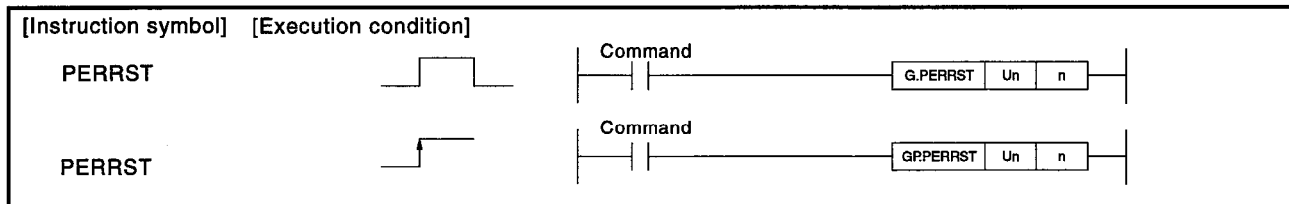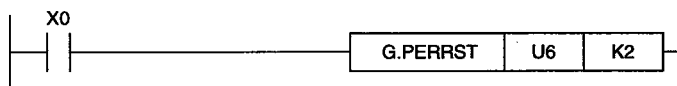
13.10 Basic Parameter Setting (PBPSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J:\:		Special Function Module U:\G:	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S1)	—	O		—					
(S2)	—	O		—					

[Instruction symbol] [Execution condition]

PBPSET ⊐⎍� Command ⊢─┤ ├──── G.PBPSET | Un | n | (S1) | (S2) ──┤

PBPSET ⊐⌐ Command ⊢─┤ ├──── GP.PBPSET | Un | n | (S1) | (S2) ──┤

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S1)	Basic parameter 1 storage source head address	Device name
(S2)	Basic parameter 2 storage source head address	

Function

(1) Sets the data stored in the device specified by (S1) and (S2) in basic parameters 1 and 2.

(2) The relationship between the basic parameter 1 storage source device and the basic parameter 1 area of the buffer memory is shown in the table below.

Set Item	Storage Source Device	Basic Parameter 1 Area		
		Axis 1	Axis 2	Axis 3
Unit setting	(S1)+0	0	150	300
Number of pulses per rotation (Ap)	(S1)+1	1	151	301
Amount of movement per rotation (Al)	(S1)+2	2	152	302
Unit magnification (Am)	(S1)+3	3	153	303
Pulse output mode	(S1)+4	4	154	304
Rotation direction setting	(S1)+5	5	155	305

REMARKS

1) The basic number of the PBPSET instruction is 7 steps.

2) Refer to User's Manual for the AD75 about the setting ranges of data for basic parameters 1 and 2.

(3) The relationship between the basic parameter 2 storage source device and the basic parameter 2 area of the buffer memory is shown in the table below.

| Set Item	Storage Source Device	Basic Parameter 1 Area		
		Axis 1	Axis 2	Axis 3
Speed limits	(S2)+0	6	156	306
	(S2)+1	7	157	307
Acceleration time 0	(S2)+2	8	158	308
	(S2)+3	9	159	309
Deceleration time 0	(S2)+4	10	160	310
	(S2)+5	11	161	311
Bias speed at start up	(S1)+6	12	162	312
	(S1)+7	13	163	313
Stepping motor mode selection	(S1)+8	14	164	314

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange. (Error code: 4002)

- The number of devices is strange. (Error code: 4003)

- A device which cannot be specified is specified. (Error code: 4004)

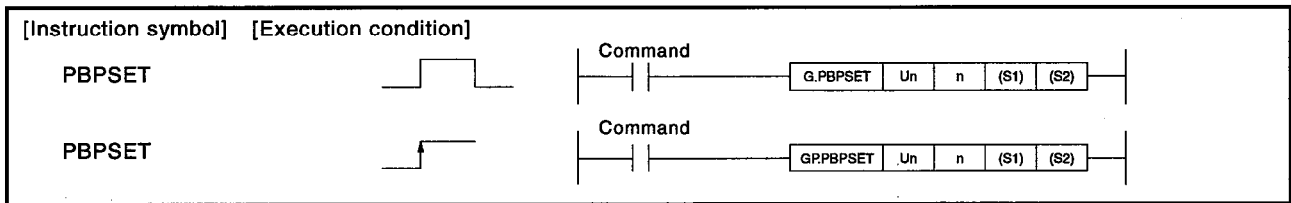- The value specified by n is not 1 to 3. (Error code: 4100)

Program Example

(1) When X0 is ON, this program sets the basic parameters of axis 1 of the AD75 mounted at I/O number X/Y60 to X/Y7F.
(Basic parameters 1 are stored in D0 to D5, and basic parameters 2 are stored in D10 to D18.)

```
   X0
───┤ ├───────────[ GP.PBPSET │ U6 │ K1 │ D0 │ D10 ]───
```
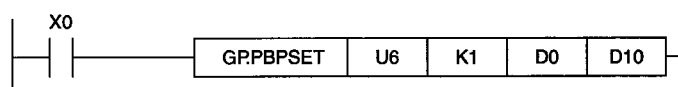
13.11 Extended Parameter Setting (PEPSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n		O				—		O	—
(S1)	—		O			—		—	—
(S2)	—		O			—			

[Instruction symbol]   [Execution condition]

PEPSET   ⌐_⌐

Command

├─┤ ├─────────[G.PEPSET | Un | n | (S1) | (S2)]─┤

PEPSET   ⌐‾

Command

├─┤ ├─────────[GP.PEPSET | Un | n | (S1) | (S2)]─┤

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S1)	Basic parameter 1 storage source head address	Other
(S2)	Basic parameter 2 storage source head address	

Function

(1) Sets the data stored in the device specified by (S1) and (S2) in extended parameter 1 and 2.

REMARKS

1) The basic number of steps of the PEPSET instruction is 9 steps.

2) Refer to the User's Manual for the AD75 about the setting range of the data of extended parameters 1 and 2.

(2) The relationship between the extended parameter 1 storage source device and the extended parameter 1 area of the buffer memory is shown in the table below.

Set Item	Storage Source Device	Basic Parameter 1 Area		
		Axis 1	Axis 2	Axis 3
Backlash compensation amount	(S1)+0	15	165	315
Software stroke limit (upper limit)	(S1)+1	16	166	316
	(S1)+2	17	167	317
Software stroke limit (lower limit)	(S1)+3	18	168	318
	(S1)+4	19	169	319
Software stroke limit selection	(S1)+5	20	170	320
Enable software stroke limit of the JOG operation and manual pulse generator operation	(S1)+6	21	171	321
Command imposition range	(S1)+7	22	172	322
	(S1)+8	23	173	323
Torque limit value setting	(S1)+9	24	174	324
M code ON signal output timing	(S1)+10	25	175	325
Speed change mode, speed change type	(S1)+11	26	176	326
Interpolation speed specification method	(S1)+12	27	177	327
Speed control present send value update request command	(S1)+13	28	178	328
Manual pulse generator selection	(S1)+14	29	179	329
Pulse output logic selection of drive module	(S1)+15	30	180	330
Acceleration/Deceleration time size selection	(S1)+16	31	181	331

(3) The relationship between the extended parameter 2 storage source device and extended parameter 2 area of the buffer memory is shown in the table below.

Set Item	Storage Source Device	Basic Parameter 1 Area		
		Axis 1	Axis 2	Axis 3
Acceleration time 1	(S2)+0	36	186	336
	(S2)+1	37	187	337
Acceleration time 2	(S2)+2	38	188	338
	(S2)+3	39	189	339
Acceleration time 3	(S2)+4	40	190	340
	(S2)+5	41	191	341
Deceleration time 1	(S2)+6	42	192	342
	(S2)+7	43	193	343
Deceleration time 2	(S2)+8	44	194	344
	(S2)+9	45	195	345
Deceleration time 3	(S2)+10	46	196	346
	(S2)+11	47	197	347
JOG speed limit value	(S2)+12	48	198	348
	(S2)+13	49	199	349
JOG operation acceleration time selection	(S2)+14	50	200	350
JOG operation deceleration time selection	(S2)+15	51	201	351
Acceleration/deceleration processing selection	(S2)+16	52	202	352
S curve ratio	(S2)+17	53	203	353
Rapid stop deceleration time	(S2)+18	54	204	354
	(S2)+19	55	205	355
Stop group 1 rapid stop selection	(S2)+20	56	206	356
Stop group 2 rapid stop selection	(S2)+21	57	207	357
Stop group 3 rapid stop selection	(S2)+22	58	208	358
Positioning completed signal output time	(S2)+23	59	209	359
Circular interpolation tolerance range	(S2)+24	60	210	360
	(S2)+25	61	211	361
External start function selection	(S2)+26	62	212	362

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange. (Error code: 4002)

- The number of devices is strange. (Error code: 4003)

- A device which cannot be specified is specified. (Error code: 4004)

- The value specified by n is not 1 to 3. (Error code: 4100)

Program Example

(1) When X0 is ON, this program sets the extended parameters for axis 1 of the AD75 mounted to the I/O number X/Y60 to X/Y7F.
(Extended parameters 1 are stored in D0 to D16, and extended parameters 2 are stored in D30 to D56.)

```
     X0
   ──┤├───────────────┤ GP.PEPSET │ U6 │ K1 │ D0 │ D30 ├─
```
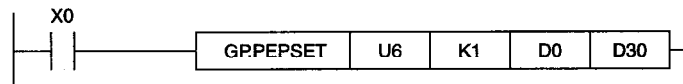
13.12 Zero Return Parameter Setting (POPSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S1)	—	O		—				—	—
(S2)	—	O		—				—	—

[Instruction symbol]   [Execution condition]

POPSET   ⎍   Command

|———| |———————| G.POPSET | Un | n | (S1) | (S2) |———|

POPSET   ⤒   Command

|———| |———————| GP.POPSET | Un | n | (S1) | (S2) |———|

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S1)	Head device of the basic parameter storage source for zero return	Device
(S2)	Head device of the extended parameter storage source for zero return	

Function

(1) Sets the data stored in the device specified by (S1) and (S2) in the zero return basic and extended parameters.

REMARKS

1) The basic number of steps of the POPSET instruction is 9 steps.

2) Refer to the User's Manual for the AD75 about the setting range of the data of zero return parameters 1 and 2.

(2) The relationship between the basic parameter storage source device for zero return and the basic parameter area for zero return of the buffer memory is shown in the table below.

Set Item	Storage Source Device	Basic Parameter 1 Area		
		Axis 1	Axis 2	Axis 3
Zero return method	(S1)+0	70	220	370
Zero return direction	(S1)+1	71	221	371
Zero address	(S1)+2	72	222	372
	(S1)+3	73	223	373
Zero return speed	(S1)+4	74	224	374
	(S1)+5	75	225	375
Creep speed	(S1)+6	76	226	376
	(S1)+7	77	227	377
Zero return retry	(S1)+8	78	228	378

(3) The relationship between the extended parameter storage source device for zero return and the extended parameter area for zero return of the buffer memory is shown in the table below.

Set Item	Storage Source Device	Basic Parameter 1 Area		
		Axis 1	Axis 2	Axis 3
Zero return dwell time	(S2)+0	79	229	379
Movement amount setting after near zero point dog	(S2)+1	80	230	380
	(S2)+2	81	231	381
Zero return acceleration time selection	(S2)+3	82	232	382
Zero return deceleration time selection	(S2)+4	83	233	383
Zero shift amount	(S2)+5	84	234	384
	(S2)+6	85	235	385
Zero return torque limits	(S2)+7	86	236	386
Empty	(S2)+8	87	237	387
Zero return speed specification	(S2)+9	88	238	388
Dwell time setting at zero return retry	(S2)+10	89	239	389

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)
- The specified instruction name is strange.   (Error code: 4002)

- The number of devices is strange.   (Error code: 4003)

- A device which cannot be specified is specified.   (Error code: 4004)

- The value specified by n is not 1 to 3.   (Error code: 4100)

Program Example

(1) When X0 is ON, this program sets the zero return data for axis 1 of the AD75 mounted at I/O number X/Y60 to X/Y7F.
(The basic parameters for zero return are stored in D0 to D8, and the extended parameters for zero return are stored in D10 to D20.)

```
    X0
  ──┤├──────────────┤ GP.POPSET │ U6 │ K1 │ D0 │ D10 ├──
```
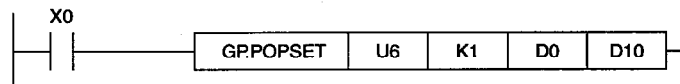
13.13 Positioning Data Setting (PPOSET)
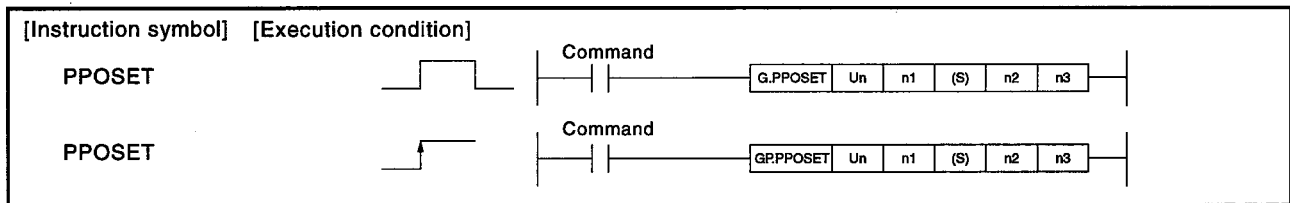
Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S)	—	O		—					
n2	O			—				—	—
n3	O			—				O	—

[Instruction symbol]   [Execution condition]

PPOSET
Command
| G.PPOSET | Un | n1 | (S) | n2 | n3 |

PPOSET
Command
| GP.PPOSET | Un | n1 | (S) | n2 | n3 |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Axis number (1 to 3)	
(S)	Positioning data storage source head device	Device name
n2	Head positioning data number (0 to 100)	16-bit binary
n3	Number of data settings (0 to 100)	

Function

(1) Sets the set amount of positioning data specified by n3 from the device specified by (S) to the head positioning data number specified by n2 onward.
(The data that is stored in the device of the positioning identifier, is added and set.)

(2) The positioning data areas for axis 1, axis 2 and axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Positioning data area	1300 to 2299	2300 to 3299	3300 to 4299

(3) When the values specified by n2 and n3 are 0, there is no processing.

REMARKS

1) The basic number of steps of the PPOSET instruction is 9 steps.

(4) The relationship between the positioning data storage source device and the positioning data area of the buffer memory of positioning data number 1 is shown in the table below.

Set Item		Storage Source Device	Positioning Data Area		
			Axis 1	Axis 2	Axis 3
Positioning identifier	Operation pattern	(S1)+0	1300	2300	3300
	Acceleration time number	(S1)+1			
	Deceleration time number	(S1)+2			
	Instruction code for control method	(S1)+3			
M code		(S1)+4	1301	2301	3301
Dwell time		(S1)+5	1302	2302	3302
Unused		(S1)+6	1303	2303	3303
Command speed		(S1)+7	1304	2304	3304
		(S1)+8	1305	2305	3305
Positioning address		(S1)+9	1306	2306	3306
		(S1)+10	1307	2307	3307
Arc address		(S1)+11	1308	2308	3308
		(S1)+12	1309	2309	3309

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)
- The specified instruction name is strange. (Error code: 4002)
- The number of devices is strange. (Error code: 4003)
- A device which cannot be specified is specified. (Error code: 4004)
- The value specified by n is not 1 to 3. (Error code: 4100)
- The value specified by n2 and n3 is not 0 to 100. (Error code: 4100)
- The value specified by n2 + n3 is more than 102. (Error code: 4100)
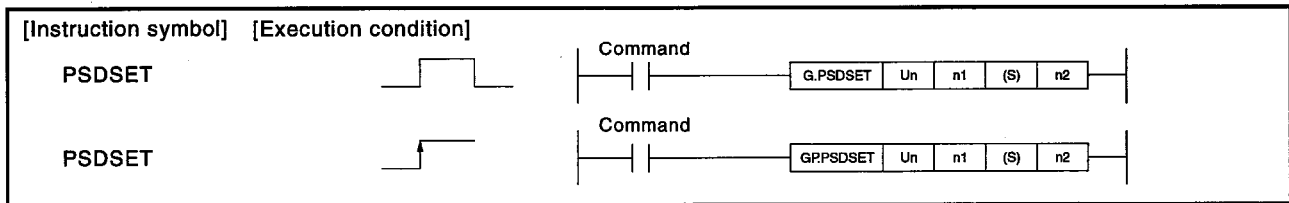
Program Example

(1) When X0 is ON, this program sets positioning data number 1 for axis 1 of the AD75 mounted at I/O number X/Y60 to X/Y7F.
(The positioning data number is stored in D0 to D12.)

X0							
—┤ ├—	GP.PPOSET	U6	K1	D0	K1	K1	
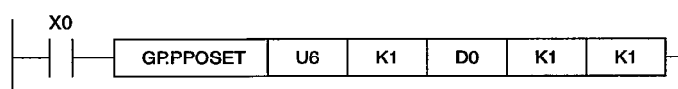
13.14 Positioning Start Data Setting (PSDSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	—	O				—			
(S)	—	O				—			
n2	O					—			

[Instruction symbol]   [Execution condition]

PSDSET   ⌐⌐   Command ⊢⊢── [G.PSDSET | Un | n1 | (S) | n2]

PSDSET   ⌐   Command ⊢⊢── [GP.PSDSET | Un | n1 | (S) | n2]
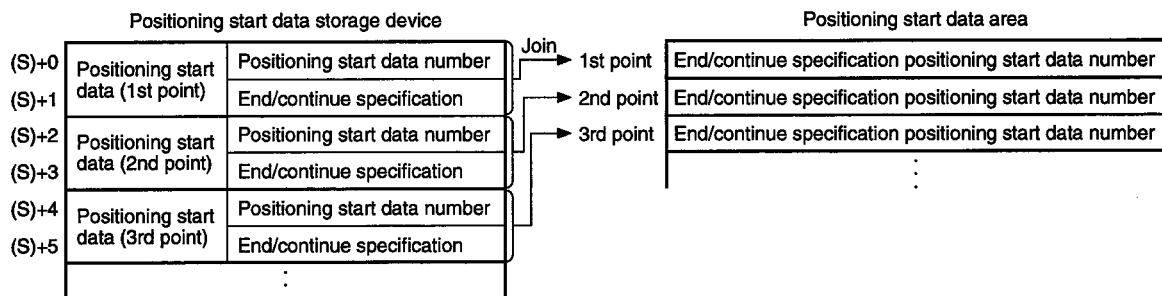
Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Axis number (1 to 3)	
(S)	Head number of the device which stores the positioning start data	Device name
n2	Number of point settings (0 to 50)	Bit

Function

(1) Joins the devices with the positioning start data starting from point 1 to point n2 that is stored to the device specified by (S) onward, and stores it in the buffer memory for the positioning start data area for the specified axis number.
The relationship between the positioning data specified by (S) and the data in the buffer memory for the positioning start data area is shown below.

Positioning start data storage device

(S)+0	Positioning start data (1st point)	Positioning start data number	
(S)+1		End/continue specification	
(S)+2	Positioning start data (2nd point)	Positioning start data number	
(S)+3		End/continue specification	
(S)+4	Positioning start data (3rd point)	Positioning start data number	
(S)+5		End/continue specification	

Join → 1st point
→ 2nd point
→ 3rd point

Positioning start data area

End/continue specification positioning start data number
End/continue specification positioning start data number
End/continue specification positioning start data number

(2) The positioning start number can be specified between 1 to 600.

| REMARKS |

1) The basic number of steps of the PSDSET instruction is 9 steps.

(3) The positioning end/continue specification is as follows:
- End: 0
- Continue: 1

(4) The positioning start data areas for axis 1 to axis 3 are shown below.

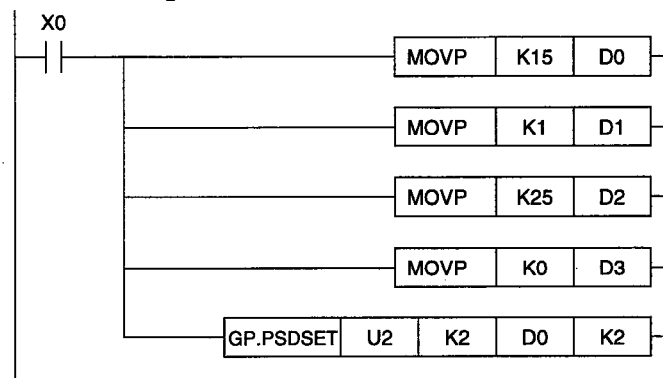| Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Positioning start data area	4300 to 4349	4500 to 4549	4800 to 4849

(5) The number points specified by n2 can be set between 1 to 50.
If the number of points specified by n2 is "0", there is no processing.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange.   (Error code: 4002)

- The number of devices is strange.   (Error code: 4003)

- A device which cannot be specified is specified.   (Error code: 4004)

- The value specified by n is not 1 to 3.   (Error code: 4100)

- n2 is not 0 to 50.   (Error code: 4100)

Program example

(1) When X0 is ON, this program sets points 1 to 2 of the positioning start data for axis 2 of the AD75 mounted at I/O number X/Y20 to X/Y3F.
The positioning start data sets the following:
- Point 1: Positioning data number 15, Continue
- Point 2: Positioning data number 25, End

```
     X0
    ─┤ ├──┬──────────────────────────┤ MOVP │ K15 │ D0 ├─
         │
         ├──────────────────────────┤ MOVP │ K1  │ D1 ├─
         │
         ├──────────────────────────┤ MOVP │ K25 │ D2 ├─
         │
         ├──────────────────────────┤ MOVP │ K0  │ D3 ├─
         │
         └──────┤ GP.PSDSET │ U2 │ K2 │ D0 │ K2 ├─
```

13.15 Positioning Special Start Data Setting (PSPSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(S)	—	O		—					
n2	O			—				O	—

[Instruction symbol]   [Execution condition]

PSPSET ⊓ ⊔

Command
─┤├──── G.PSPSET | Un | n1 | (S) | n2 ──

PSPSET ─⌐

Command
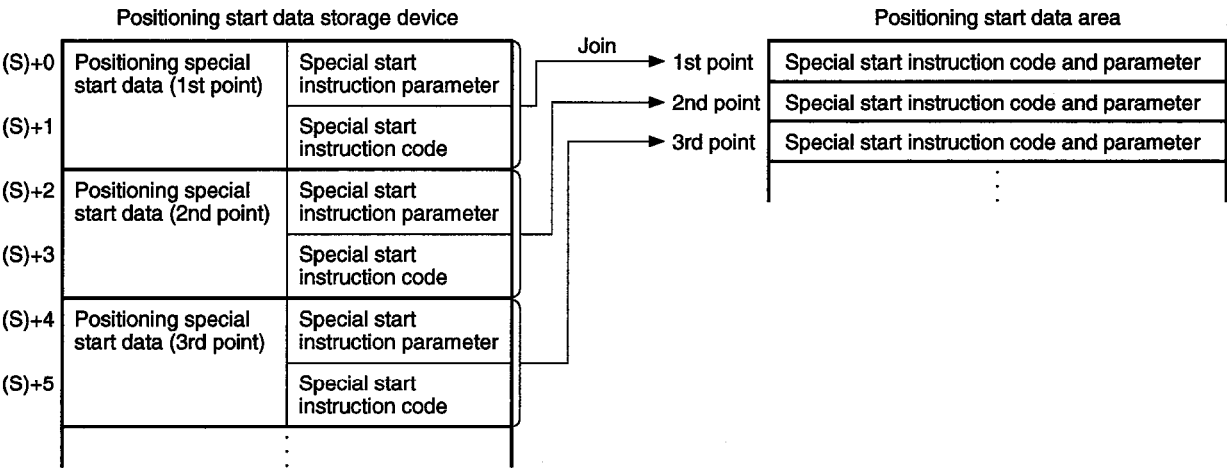─┤├──── GP.PSPSET | Un | n1 | (S) | n2 ──

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Axis number (1 to 3)	
(S)	Head number of the device which stores the positioning special start data	Device name
n2	Number of points setting (0 to 50)	Bit

Function

(1) Joins the devices with the positioning start data starting from point 1 to point n2 that is stored to the device specified by (S) onward, and stores it in the buffer memory for the positioning start data area for the specified axis number.
The relationship between the positioning data specified by (S) and the data in the buffer memory for the positioning start data area is shown below.

Positioning start data storage device

(S)+0	Positioning special start data (1st point)	Special start instruction parameter
(S)+1		Special start instruction code
(S)+2	Positioning special start data (2nd point)	Special start instruction parameter
(S)+3		Special start instruction code
(S)+4	Positioning special start data (3rd point)	Special start instruction parameter
(S)+5		Special start instruction code

Join → 1st point
→ 2nd point
→ 3rd point

Positioning start data area

Special start instruction code and parameter
Special start instruction code and parameter
Special start instruction code and parameter

(2) If the number of points specified by n2 is "0", there is no processing.

(3) The positioning start data areas for axis 1 to axis 3 are shown in the table below.

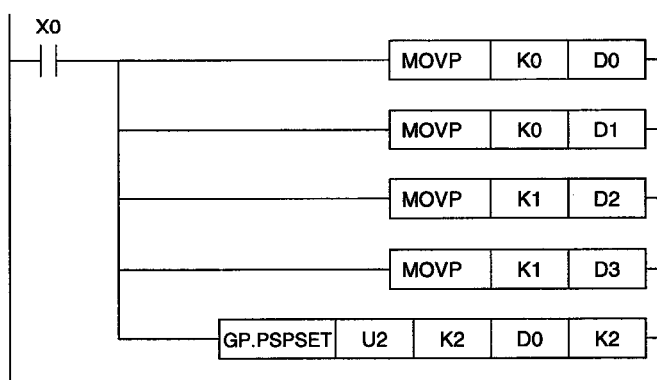| Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Positioning start data area	4350 to 4399	4550 to 4599	4850 to 4899

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange.   (Error code: 4002)

- The number of devices is strange.   (Error code: 4003)

- A device which cannot be specified is specified.   (Error code: 4004)

- The value specified by n is not 1 to 3.   (Error code: 4100)

- n2 is not 0 to 50.   (Error code: 4100)

Program Example

(1) When X0 is ON, this program sets points 1 and 2 of the positioning special axis data for axis 2 of the AD75 mounted at I/O number X/Y20 to X/Y3F.
The positioning special start data sets the following:
- Point 1: Normal operation
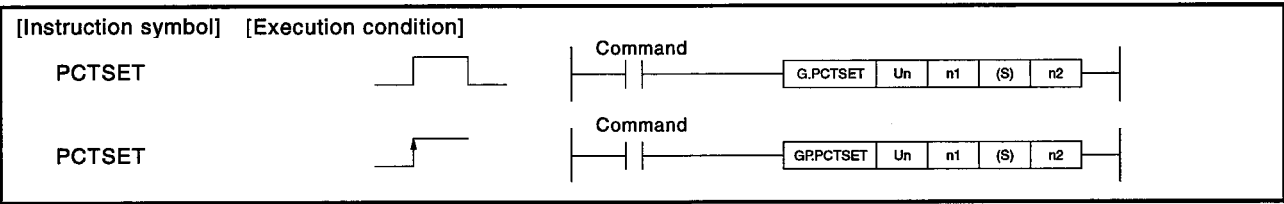- Point 2: Conditional operation, Condition data number 1

```
    X0
 ───┤├──────────────────────────────┤ MOVP │ K0 │ D0 ├

                                     ┤ MOVP │ K0 │ D1 ├

                                     ┤ MOVP │ K1 │ D2 ├

                                     ┤ MOVP │ K1 │ D3 ├

                  ┤ GP.PSPSET │ U2 │ K2 │ D0 │ K2 ├
```

REMARKS

1) The number of basic steps of the PSPSET instruction is 9 steps.

13.16 Condition Data Setting (PCTSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J◻\◻		Special Function Module U◻\G◻	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	O			—				O	—
(S)	—	O		—					
n2	O			—				O	—

[Instruction symbol]   [Execution condition]

PCTSET   ⌐⎍   Command ⊣⊢ — G.PCTSET | Un | n1 | (S) | n2

PCTSET   ⌐‾   Command ⊣⊢ — GP.PCTSET | Un | n1 | (S) | n2
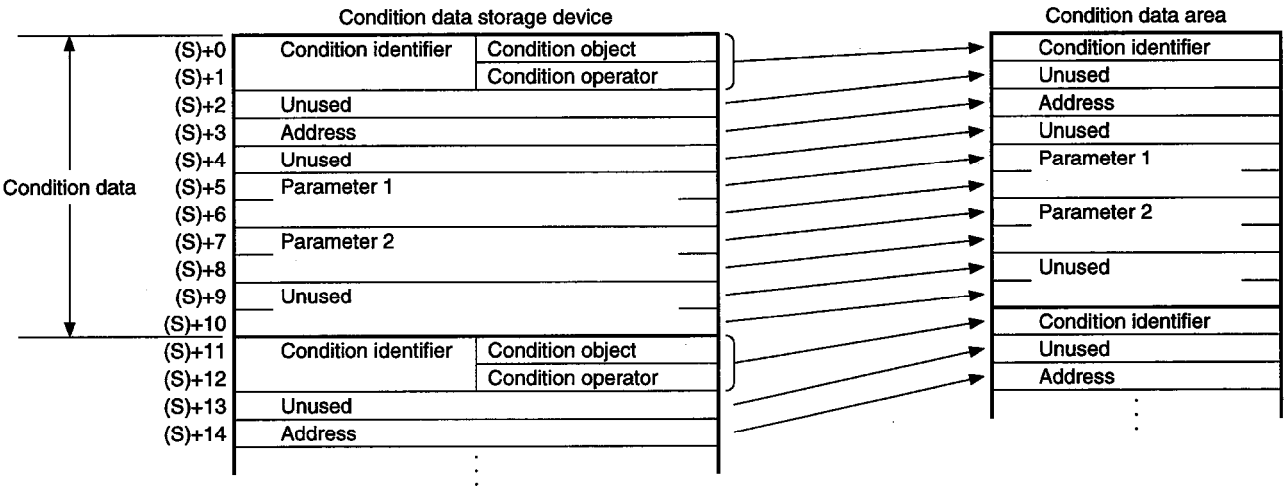
Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n1	Axis number (1 to 3)	
(S)	Head number of the device which stores the condition data	Device name
n2	Number of condition data settings (0 to 50)	16-bit binary

Function

(1) Joins the devices with n2 points of condition data from the device specified by (S) and stores it in the buffer memory for the condition data area of the specified axis number.

The relationship between the condition data specified by (S) and the data of the buffer memory for the condition data area is shown below.

		Condition data storage device				Condition data area
	(S)+0	Condition identifier	Condition object		→	Condition identifier
	(S)+1		Condition operator		→	Unused
	(S)+2	Unused			→	Address
	(S)+3	Address			→	Unused
	(S)+4	Unused			→	Parameter 1
Condition data	(S)+5	Parameter 1			→	
	(S)+6				→	Parameter 2
	(S)+7	Parameter 2			→	
	(S)+8				→	Unused
	(S)+9	Unused			→	
	(S)+10				→	Condition identifier
	(S)+11	Condition identifier	Condition object		→	Unused
	(S)+12		Condition operator		→	Address
	(S)+13	Unused				
	(S)+14	Address				

(2) If the number of points specified by n2 is "0", there is no processing.

(3) The positioning start data areas for axis 1 to axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Condition data area	4400 to 4499	4650 to 4749	4900 to 4999

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
(Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
(Error code: 2112)

- The specified instruction name is strange. (Error code: 4002)

- The number of devices is strange. (Error code: 4003)

- A device which cannot be specified is specified. (Error code: 4004)

- The value specified by n is not 1 to 3. (Error code: 4100)

- n2 is not 0 to 50. (Error code: 4100)

Program Example

(1) When X0 is ON, this program sets 1 for the condition data for axis 2 of the AD75 mounted at I/O number X/Y20 to X/Y3F.
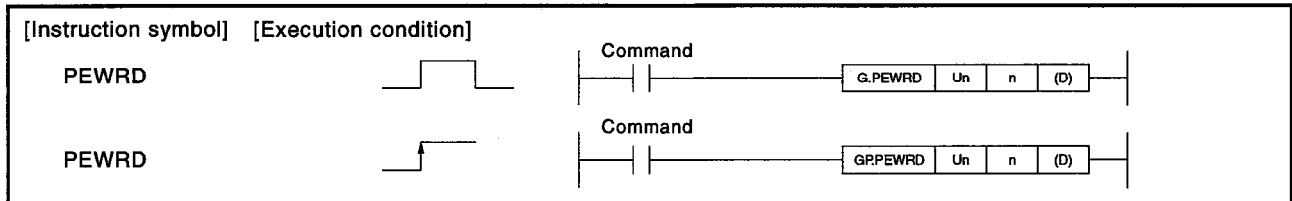The positioning special start data is stored in D0 to D10.

```
   X0
---| |----------[ GP.PCTSET | U2 | K2 | D0 | K2 ]--
```

┌─────────┐
│ REMARKS │
└─────────┘
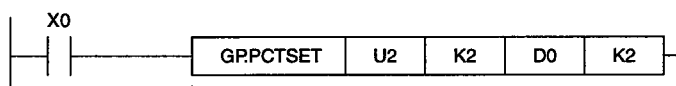
1) The basic number of steps of the PCTSET instruction is 9 steps.

13.17 Error Number/Warning Number Read (PEWRD)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(D)	—	O		—					

[Instruction symbol]   [Execution condition]

PEWRD   ⎍   Command ⊢—┤ ├——————— | G.PEWRD | Un | n | (D) |—

PEWRD   ⎍   Command ⊢—┤ ├——————— | G.PPEWRD | Un | n | (D) |—

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(D)	Head number of the device which stores the error/warning number	Device name

Function

(1) Stores the error number/warning number of the axis number specified by n to the device specified by (D) onward.
   • Error number: Device specified by (D)
   • Warning number: Device specified by (D)+1

(2) The error number/warning number areas for axis 1 to axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Error number area	807	907	1007
Warning number area	808	908	1008

REMARKS

1) The basic number of steps of the PEWRD instruction is 8 steps.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)
- The specified instruction name is strange.   (Error code: 4002)

- The number of devices is strange.   (Error code: 4003)

- A device which cannot be specified is specified.   (Error code: 4004)

- The value specified by n is not 1 to 3.   (Error code: 4100)

- • The axis set by n does not exist.   (Error code: 4100)

Program Example

(1) When X0 is ON, this program reads the error number of axis 2 of the AD75 mounted at I/O number X/Y20 to X/Y3F to D0 and the warning number to D1.

```
    X0
  ──┤ ├──────────────────┤ GP.PEWRD │ U2 │ K2 │ D0 ├─
```

13.18 Monitor Data Read (PMORD)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(D)	—	O		—					

[Instruction symbol] [Execution condition]

PMORD

Command

| G.PMDRD | Un | n | (D) |

PMORD

Command

| GP.PMDRD | Un | n | (D) |

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(D)	Head number of the device which stores the monitor data	Device name

Function

(1) Stores the monitor data (feed present value, feed speed and valid M code) for the axis number specified by n to the device specified by (D) onward.

(2) n specifies 1 to 3 for the number of axis for which reading is to be performed.
The relationship between the number of axis specified by n and the number of axis for which reading is performed is shown in the table below.

Number of Axis Specified by n	1	2	3
Axis number to be read	Axis 1	Axis 1 and axis 2	Axis 1, axis 2 and axis 3

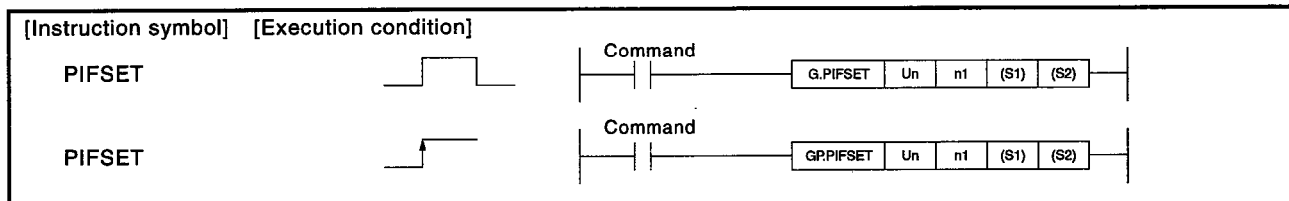(3) The feed present value, feed speed, and valid M code areas for axis 1 to axis 3 are shown in the table below.

Axis Number	Buffer Memory Address		
	Axis 1	Axis 2	Axis 3
Feed present value area	801, 800	901, 900	1001, 1000
Feed speed area	805, 804	905, 904	1005, 1004
Valid M code area	807, 806	907, 906	1007, 1006

(4) Stores the data of (3) to the head number of the monitor data storage device specified by (D) onward.

(D)+0	Feed present value of axis 1
+1	
+2	Feed speed of axis 1
+3	
+4	Valid M code of axis 1
+5	Feed present value of axis 2
+6	
+7	Feed speed of axis 2
+8	
+9	Valid M code of axis 2
+10	Feed present value of axis 3
+11	
+12	Feed speed of axis 3
+13	
+14	Valid M code of axis 3

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

• The module to be accessed is not a special function module.
(Error code: 2110)

• The AD75 instructions cannot be used for the module to be accessed.
(Error code: 2112)

• The specified instruction name is strange.   (Error code: 4002)

• The number of devices is strange.   (Error code: 4003)

• A device which cannot be specified is specified.   (Error code: 4004)

• The value specified by n is not 1 to 3.   (Error code: 4100)

```
   X0
───┤ ├──────────────────┤ GP.PMDRD │ U2 │ K2 │ D0 ├──
```
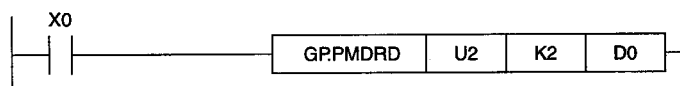
Program Example

(1) When X0 is ON, this program reads the monitor data for axis 1 and axis 2 of the AD75 mounted to I/O number X/Y20 to X/Y3F to D0 to D9.

13.19 Positioning Data I/F (Interface) Setting (PIFSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n	O			—				O	—
(S1)	—	O		—					
(S2)	—	O		—					

[Instruction symbol]   [Execution condition]

PIFSET   ⎍   Command ─┤├──────── G.PIFSET | Un | n1 | (S1) | (S2) ─

PIFSET   ⎍   Command ─┤├──────── GP.PIFSET | Un | n1 | (S1) | (S2) ─

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	16-bit binary
n	Axis number (1 to 3)	
(S1)	Head number of the device which stores the data of the positioning data I/F	Device name
(S2)	Head number of the device which stores the read/write positioning data	

Function

(1) Stores the data for the positioning data I/F storage device specified by (S1) to buffer memory address 1103 to 1106 of the AD75.
(Joins and sets the data stored in the device for the write pattern.)
The relationship between the positioning data I/F storage device and the positioning data area of the buffer memory is shown in the table below.

Description		Storage Source Device	Positioning I/F Area
Object axis		(S1)+0	1103
Positioning data number		(S1)+1	1104
Write pattern	Positioning data field	(S1)+2	1105
	Address field	(S1)+3	
Read/write request		(S1)+4	1106

REMARKS

1) The basic number of steps of the PIFSET instruction is 10 steps.

2) Refer to the User's Manual of the AD75 about the positioning data I/F area.

(2) Stores data of the read/write positioning data storage device specified by (S2) to buffer address 1108 to 1137 of the AD75.
(Joins and sets the data stored in the device for the positioning identifier.)
The relationship between the read/write positioning data storage device and the positioning data area of the buffer memory is shown in the table below.

Description		Storage Source Device	Positioning I/F Area		
			Axis 1	Axis 2	Axis 3
Posi-tioning identi-fier	Positioning operation pattern	(S1)+0	1108	1118	1128
	Acceleration time number	(S1)+1			
	Deceleration time number	(S1)+2			
	Control method	(S1)+3			
M code		(S1)+4	1109	1119	1129
Dwell time		(S1)+5	1110	1120	1130
Unused		(S1)+6	1111	1121	1131
Command speed		(S1)+7	1112	1122	1132
		(S1)+8	1113	1123	1133
Positioning address		(S1)+9	1114	1124	1134
		(S1)+10	1115	1125	1135
Arc address		(S1)+11	1116	1126	1136
		(S1)+12	1117	1127	1137

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The module to be accessed is not a special function module.
  (Error code: 2110)

- The AD75 instructions cannot be used for the module to be accessed.
  (Error code: 2112)

- The specified instruction name is strange. (Error code: 4002)

- The number of devices is strange. (Error code: 4003)

- A device which cannot be specified is specified. (Error code: 4004)

- The value specified by n is not 1 to 3. (Error code: 4100)

Program Example

(1) When X0 is ON, this program sets the positioning data I/F for axis 1 of the AD75 mounted at I/O number X/Y60 to X/Y7F.
The positioning data I/F data storage device data is stored in D0 to D4, and the read/write positioning data storage device data is stored in D100 to D112.

```
      X0
  ──┤ ├──────────────┤ GP.PHOSTA │ U6 │ K1 │ D0 │ D100 ├─
```

14. ETHERNET MODULE INSTRUCTIONS

The Ethernet instructions are instructions for setting parameters for the Ethernet interface module, and for reading and writing data of other station.

The Ethernet module instructions are shown in Table 14.1.

Table 14.1 The CC-Link Instructions

Classification		Instruction Name	Description	Reference Section
Parameter settings		G(P).EPRSET	Sets the Ethernet interface module I/O number, network number, station number, group number, and IP address for QnACPU.	14.1
Send/ receive instruction for QnA	Other station device read	J(P).READ G(P).READ J(P).SREAD G(P).SREAD	Reads the data of the word device of other station to the host station.	14.2
	Other station device write	J(P).WRITE G(P).WRITE J(P).SWRITE G(P).SWRITE	Writes the data of the host station to the word device of other station.	14.3
	Data send	J(P).SEND G(P).SEND	Sends data (message) to other station.	14.4
	Data receive	J(P).RECV G(P).RECV	Reads data (message) that is sent by other station.	14.5
	Other station transient request	J(P).REQ G(P).REQ	Sends a transient request to other station and executes it. (Status control (Remote RUN/STOP), read/write of clock data, read/write of E^{2}PROM data)	14.6
A- compatible send/ receive instruction	Other station device read	J(P).ZNRD	Reads data from the word device of other station to the host station.	14.7
	Other station device write	J(P).ZNWR	Writes data from the host station to the word device of other station.	14.8

14.1 Parameter Settings (EPRSET)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O		—					
(S2)	—	O		—					
(D1)	—	O		—					
(D2)	O			—					

[Instruction symbol]   [Execution condition]

EPRSET

Command

I47 —| |— [G.EPRSET | Un | n1 | n2 | n3 | n4]—

—[IRET]—

EPRSET

Command

I47 —| |— [GP.EPRSET | Un | n1 | n2 | n3 | n4]—

—[IRET]—

Set Data

Set Data	Description	Data Type
Un	Head I/O number of AD75 (00 to FE: Upper two digits when the I/O number is expressed using three digits)	32-bit binary
n1	Network number (1 to 239)	
n2	Group number (0 to 9)	
n3	Station number (1 to 64)	
n4	IP address	

Function

(1) Registers the Ethernet parameter to be set to a QnA series Ethernet-module into a QnACPU.

(2) The Ethernet parameter is a parameter to use the MELSECNET/10 relay communication function of a QnA series Ethernet module.
By registering the Ethernet parameter to QnACPU using one of the following methods, the Ethernet parameter is written to an Ethernet-module from a QnACPU at startup of PLCs listed below, and used.

1) Register to QnACPU using this parameter setting instruction (EPRSET).

2) Register to QnACPU using the parameter setting of GPP function software package (GPPQ).
(Settings are available only for products SW2☐ -GPPQ or later.)

(3)   In the following cases, it checks the data set in the set data, and the data are normal, it writes the set data to AJ71QE71.

- When turning the power ON
- When resetting the CPU
- When switching from STOP to RUN

(4)   The Ethernet parameters set by the parameters of the peripheral device performs the same processing as the parameter setting instruction. Therefore, it is not possible to set the same I/O number using the Ethernet parameters set by the parameters of the peripheral device and the parameter setting instruction.
If the head I/O number of the Ethernet parameters set by the parameters of the peripheral device and that of the parameter setting instruction are the same, and operation error (error code: 3103) will occur.

(5)   Precaution

(a)   The EPRSET instruction is set between 147 (fixed) and the IRET instruction.
Do not use any other instruction other than the EPRSET instruction between 147 and the IRET instruction.

(b)   147 cannot be used at two or more places for one CPU.

REMARKS

1)   The basic number of steps of the EPRSET instruction is 14 steps.

Operation Error

(1)   Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- There are five or more Ethernet interface modules mounted.
(Error code: 2106)

- There is no Ethernet interface 0.0module (function version B) interface mounted in the position of the I/O number set by the parameter.
(Error code: 3103)

- There is a duplicate I/O number specification.   (Error code: 3103)

- The number of mounted Ethernet interface modules and the number of parameter settings differ.   (Error code: 3103)

- There are five or more Ethernet settings.   (Error code: 3103)

- n1 to n3 is outside the setting range.   (Error code: 3104)

- The Ethernet and MELSECNET/10 network number are the same.
(Error code: 3104)

- The I/O number specification is outside the CPU range.
(Error code: 3104)

- The n1 to n4 specification is other than a 32-bit constant.
(Error code: 3104)

14.2 Reading Word Device Data from Other Station (READ)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Z☐	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O		—					
(S2)	—	O		—					
(D1)	—	O		—					
(D2)	O			—					

[Instruction symbol]   [Execution condition]

READ

Command	J.READ	Jn	(S1)	(S2)	(D1)	(D2)

READ

Command	JP.READ	Jn	(S1)	(S2)	(D1)	(D2)

READ

Command	G.READ	Un	(S1)	(S2)	(D1)	(D2)

READ

Command	GP.READ	Un	(S1)	(S2)	(D1)	(D2)

Set Data

Set Data	Description	Data Type
Jn	Host station network number (1 to 239, 254) 254: Network specified by a valid module at the time of other station accessing.	16-bit binary
Un	Head I/O number of the Ethernet interface module of the host station (00 to FE: Upper two digits when the I/O number is expressed using three digits.)	
(S1)	Head device of the host station which stores the control data *1	Device name
(S2)	Head device of the object station which stores the data to be read	
(D1)	Head device of the host station which stores the data that has been read	
(D2)	Host station device which turns ON 1 scan at the completion of the instruction.(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

POINTS

(1) The READ instruction can only be executed for the QnACPU of the object station. (The READ instruction cannot be executed for the ACPU connected to MELSECNET/10 or Ethernet.) The object station number should only be set to the station number of the QnACPU.

(2) When using the READ instruction to read word device data of other station, the device setting ranges of the parameters of both the host station and object station should be set the same. If the setting ranges of the host station and the object station are different, instruction input by the peripheral device will be impossible and an error will occur for the host station/object station when an instruction is executed.

REMARKS

1) *1: The control data at the completion of an instruction stores the completion status ((S+1)+1)and clock data ((S1)+10 to (S1)+14) when an error occurs.

2) The number of steps of the READ instruction is 9 steps.

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Error completion type	• Stores the setting status of the clock data on error completion. Do not set clock data: Bit 7 (b7) is set to 0. Set clock data: Bit 7 (b7) is set to 1. [Stored to (S1)+11 on]	0001H 0081H	User
(S1)+1	Completion status	• Stores the status at the completion of the instruction. 0: No errors (normal completion) Other than 0: Error code *1	—	System
(S1)+2	Channel used by host station	• Sets the channel used by the host station.	1 to 8	User
(S1)+3	Dummy	• Unused	0	—
(S1)+4	Network number of target station	• Specifies the network number of the station from which the device data is read.	1 to 239, 254	User
(S1)+5	Target station number	• Specifies the station number of the station from which the device data is read.	1 to 64	User
(S1)+6	Dummy	• Unused	0	User
(S1)+7	Number of transmission retries	• Sets the number of transmission retries for when reading by the READ instruction is not completed within the monitored time specified by (S1)+8.	0 to 15	User
	Results of retries	• Stores the number of transmission retries performed.	0 to 15	System
(S1)+8	Response monitoring time	• Sets the monitoring time of the READ instruction in units of TCP re-transmitting timer value or more. (unit: sec.) If reading is not completed within the set time, transmission will be retried the number of times specified by (S1)+7.	1 to 16383 0 to TCP re-transmitting timer value	User
(S1)+9	Receive data length	• Sets the number of data to be read.(unit: word)	1 to 480	User
(S1)+10	Unused	—	—	—
(S1)+11	Clock data set flag (set only on error)	• Stores whether clock data is valid/invalid. Invalid clock data: 0 Valid clock data: 1	—	System
(S1)+12	Clock data (Set only on error)*2	Upper 8 bits: Month (01H to 12H),Lower 8 bits:Year (D0H to 99H)	—	System
(S1)+13		Upper 8 bits: Hour (00H to 23H),Lower 8 bits:Date (D1H to 31H)		
(S1)+14		Upper 8 bits: Sec. (00H to 59H),Lower 8 bits:Minute (D0H to 59H)		
(S1)+15		Upper 8 bits: 00H, Lower 8 bits:Day (D0H to 6H)		
(S1)+16	Error detection network number	• Network numbers of the station are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 239	System
(S1)+17	Reception data length	• Network numbers of the stations are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 64	

┌───┐
│ **POINTS** │
│ │
│ The read-data storage device (D1) requires a continuous area (the │
│ maximum 480 words) for the read data length (S1+9). │
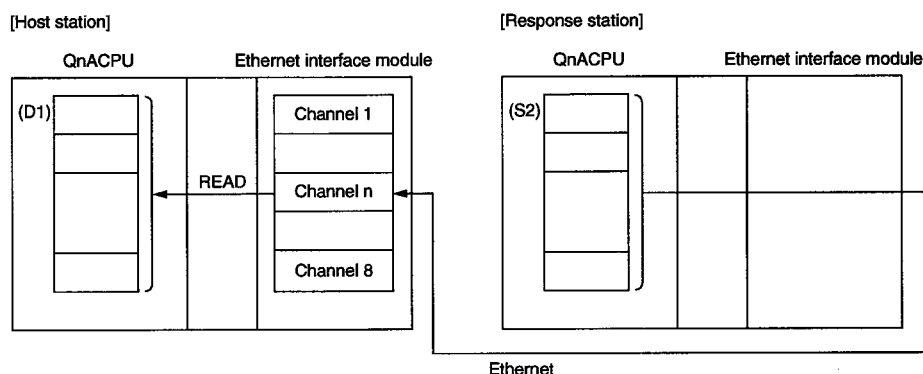└───┘

REMARKS

1) *1: Refer to the following manual for error codes when an error occurs.(product IB-66661-C or later)
   • Model AJ71QE71 (B5) Ethernet Interface Module User's Manual

2) *2: The following data is stored for a day of the week.

Day of the Week Data	0	1	2	3	4	5	6
Day of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat

Function

(1) Stores the data of the word device, which is specified by (S2) of the MELSECNET/10 or Ethernet connected station that is specified by the network number or station number in the control data, in the the device specified by (D1) of the host station.
When the device data from the object station number is finished being read, the completion device specified by (D2) goes ON.

[Host station]   [Response station]

QnACPU   Ethernet interface module   QnACPU   Ethernet interface module

Ethernet

(2) Besides reading the device data of a station that is connected to the network of the host station, it is possible to read data from a station that is connected to a network number specified by MELSECNET/10 or Ethernet.
See the following manual, and set the necessary parameters prior to receiving data.
• QnA corresponding Ethernet Interface Module User's Manual (Products IC-66661-C and later)

(3) It is not possible to execute two or more data link instructions or Ethernet module instructions for the same channel.
If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(4) It is possible to check the status during execution of the READ instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the set data using the completion status display flag [(D2)+1].

(a) Completion device(D2):
Goes ON at the END processing of the scan when the READ instruction is completed, and goes OFF at the next END processing.

(b) Status display at completion device [(D2)+1]:
Goes ON/OFF depending on the status when the READ instruction is completed

• Normal completion:Remains OFF with no change.
• Error completion: Goes ON at the END processing of the scan of the completed READ instruction, and goes OFF at the next END processing.

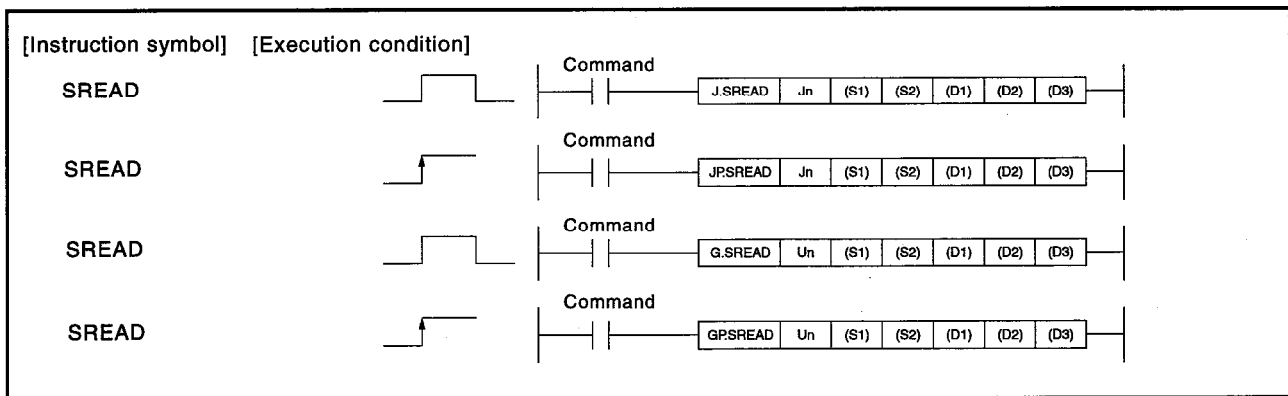[Host station operation during execution of the READ instruction]

| | END processing | END processing | | | END processing | END processing |

Sequence program

Execution completion of READ instruction

READ instruction

ON

Communications directive flag

OFF

ON

Completion device

OFF

ON Error completion

Status display at completion device

OFF

Normal completion

1 scan
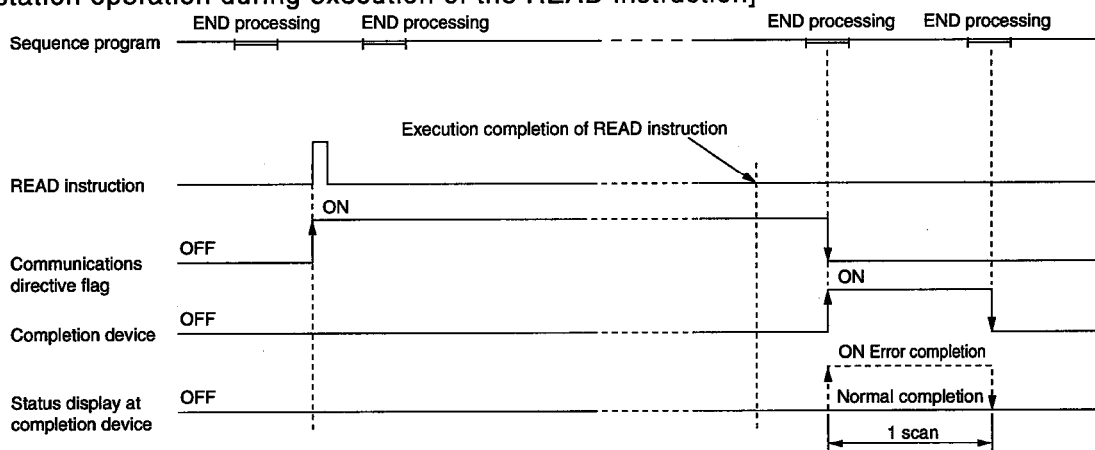
(5) When executed by J.READ/G.READ, the next read processing is performed when the first read processing is completed while the read command is ON.
When executing by JP.READ/GP.READ, only the first read processing is performed when the read command goes from OFF to ON.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

• The contents of the control data are not inside the setting range.
(Error code: 4100)

• The network number specified by Jn is not connected to the host station. (Error code: 4102)

• The module whose head I/O number is specified by Un is not an Ethernet interface module. (Error code: 2111)

14.3 Reading Word Device Data from Other Station (SREAD)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Z☐	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O					—		
(S2)	—	O					—		
(D1)	—	O					—		
(D2)	O						—		
(D3)	O						—		

[Instruction symbol]   [Execution condition]

Set Data

Set Data	Description	Data Type
Jn	Host station network number (1 to 239, 254) 254: Network specified by a valid module at the time of other station accessing	16-bit binary
Un	Head I/O number of the Ethernet interface module of the host station(00 to FE: Upper two digits when the I/O number is expressed using three digits.)	
(S1)	Head device of the host station which stores the control data *1	Device name
(S2)	Head device of the object station which stores the data to be read	
(D1)	Head device of the host station which stores the data that has been read	
(D2)	Host station device which turns ON 1 scan at the completion of the instruction.(D2)+1 is also turned ON at an error completion.	Bit
(D3)	Target device which turns ON 1 scan at the completion of the instruction.	

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

POINTS

(1) The SREAD instruction can only be executed for the QnACPU of the object station.(The SREAD instruction cannot be executed for the ACPU connected to MELSECNET/10 or Ethernet.)
The object station number should only be set to the station number of the QnACPU.

(2) When using the SREAD instruction to read word device data of another station, the device setting ranges of the parameters of both the host station and object station should be set the same.
If the setting ranges of the host station and the object station are different, instruction input by the peripheral device will be impossible and an error will occur for the host station/object station when an instruction is executed.

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Error completion type	• Stores the setting status of the clock data on error completion. Do not set clock data: Bit 7 (b7) is set to 0. Set clock data: Bit 7 (b7) is set to 1. [Stored to (S1)+11 on]	0001H 0081H	User
(S1)+1	Completion status	• Stores the status at the completion of the instruction. 0: No errors (normal completion) Other than 0: Error code *1	—	System
(S1)+2	Channel used by host station	• Sets the channel used by the host station.	1 to 8	User
(S1)+3	Dummy	• Unused	0	—
(S1)+4	Network number of target station	• Specifies the network number of the station from which the device data is read.	1 to 239, 254	User
(S1)+5	Target station number	• Specifies the station number of the station from which the device data is read.	1 to 64	User
(S1)+6	Dummy	• Unused	0	User
(S1)+7	Number of transmission retries	• Sets the number of transmission retries for when reading by the READ instruction is not completed within the monitored time specified by (S1)+8.	0 to 15	User
	Results of retries	• Stores the number of transmission retries performed.	0 to 15	System
(S1)+8	Response monitoring time	• Sets the monitoring time of the READ instruction in units of TCP re-transmitting timer value or more. (unit: sec.) If reading is not completed within the set time, transmission will be retried the number of times specified by (S1)+7.	1 to 16383 0 to TCP re-transmitting timer value	User
(S1)+9	Receive data length	• Sets the number of data to be read.(unit: word)	1 to 480	User
(S1)+10	Unused	—	—	—
(S1)+11	Clock data set flag (set only on error)	• Stores whether clock data is valid/invalid. Invalid clock data: 0 Valid clock data: 1	—	System
(S1)+12	Clock data (Set only on error)*3	Upper 8 bits: Month (01H to 12H),Lower 8 bits:Year (D0H to 99H)	—	System
(S1)+13		Upper 8 bits: Hour (00H to 23H),Lower 8 bits:Date (D1H to 31H)		
(S1)+14		Upper 8 bits: Sec. (00H to 59H),Lower 8 bits:Minute (D0H to 59H)		
(S1)+15		Upper 8 bits: 00H, Lower 8 bits:Day (D0H to 6H)		
(S1)+16	Error detection network number	• Network numbers of the station are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 239	System
(S1)+17	Reception data length	• Network numbers of the stations are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 64	

REMARKS

1) *1: The control data at the completion of an instruction stores the completion status and clock data when an error occurs.

2) *2: Refer to the following manual for error codes when an error occurs.
   • Model AJ71QE71 (B5) Ethernet Interface Module User's Manual

3) The number of steps of the SREAD instruction is 10 steps.
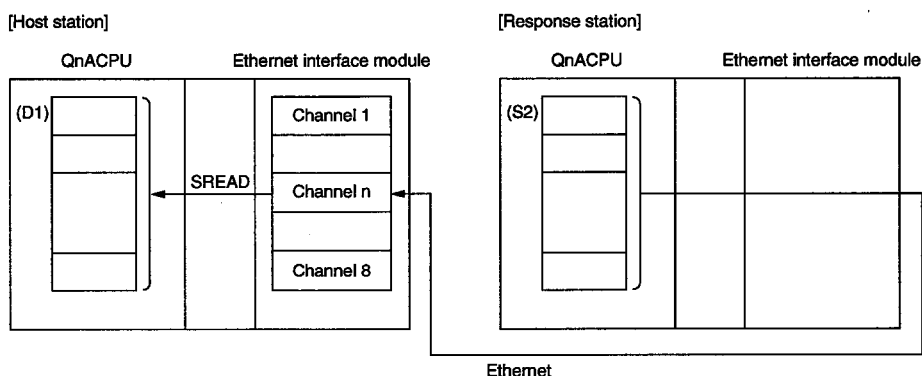
4) *3: The following data is stored for a day of the week.

Day of the Week Data	0	1	2	3	4	5	6
Day of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat

Function

(1) Stores the data of the word device, which is specified by (S2) of the MELSECNET/10 or Ethernet station that is specified by the network number or station number in the control data, in the the device specified by (D1).

When the device data from the object station number is finished being read, the completion device specified by (D2) goes ON.

In addition, at the other station, when the device data specified by (S2) has been sent, the device specified by (D3) goes ON.

[Host station]   [Response station]

QnACPU   Ethernet interface module   QnACPU   Ethernet interface module

(D1)		Channel 1		(S2)	
	SREAD	Channel n			
		Channel 8			

Ethernet

(2) Besides reading the device data of a station that is connected to the network of the host station, it is possible to read data from a station that is connected to a network number specified by MELSECNET/10 or Ethernet.

See the following manual, and set the necessary parameters prior to receiving data.

• QnA corresponding Ethernet Interface Module User's Manual
  (Products IC-66661-C and later)

(3) It is not possible to execute two or more data link instructions or Ethernet module instructions for the same channel.

If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(4) It is possible to check the status during execution of the SREAD instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data using the completion status display flag [(D2)+1].

(a) Communications directive flag:

Goes ON during execution of the SREAD instruction, and goes OFF at the END processing of the scan when reading is finished.

(b) Completion device:
Goes ON during execution of the SREAD instruction, and goes OFF at the END processing of the scan when reading is finished.

(c) Status display at completion device:
Goes ON at the END processing of the scan when the SREAD
instruction is completed, and goes OFF at the next END processing.

- Normal completion: Remains OFF with no change.
- Error completion: Goes ON at the END processing of the scan of
the completed SREAD instruction, and goes
OFF at the next END processing.

[Host station operation during execution of the SREAD instruction]
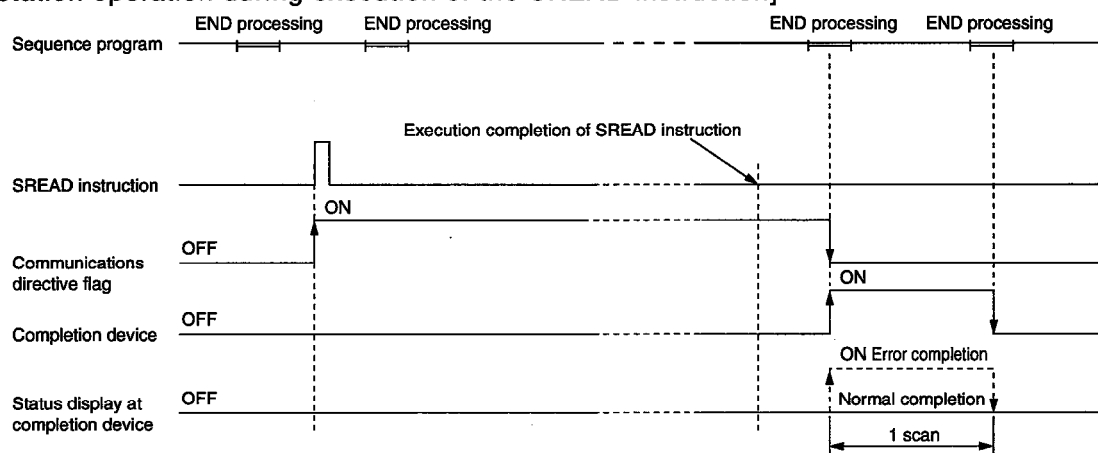
[Other station operation during execution for the SREAD instruction]
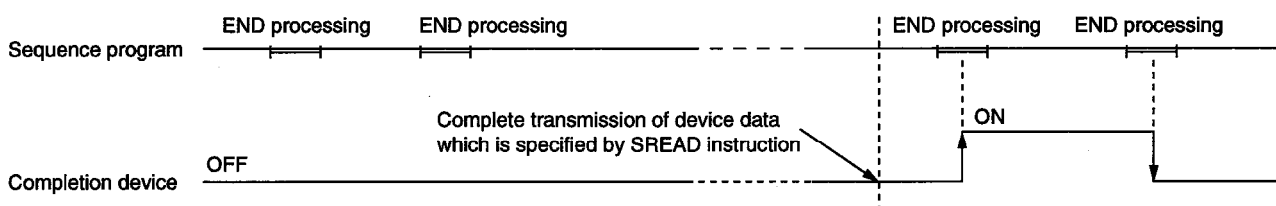
(5) When executed by J.SREAD/G.SREAD, the next read processing is
performed when the first read processing is completed while the read
command is ON.
When executing by JP.SREAD/GP.SREAD, only the first read
processing is performed when the read command goes from OFF to ON.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0)
goes ON, and the error code is stored in SD0.

- The contents of the control data are not inside the setting range.
(Error code: 4100)

- The network number specified by Jn is not connected to the host
station. (Error code: 4102)

- The module whose head I/O number is specified by Un is not an
Ethernet interface module. (Error code: 2111)

14.4 Writing Word Device Data to Other Station (WRITE)

Set Data	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O		—					
(S2)	—	O		—					
(D1)	—	O		—					
(D2)	O			—					

(Usable Devices header spans the device columns)

[Instruction symbol]   [Execution condition]

WRITE

Command

| J.WRITE | Jn | (S1) | (S2) | (D1) | (D2) |

WRITE

Command

| JP.WRITE | Jn | (S1) | (S2) | (D1) | (D2) |

WRITE

Command

| G.WRITE | Un | (S1) | (S2) | (D1) | (D2) |

WRITE

Command

| GP.WRITE | Un | (S1) | (S2) | (D1) | (D2) |

Set Data

Set Data	Description	Data Type
Jn	Host station network number (1 to 239, 254) 254: Network specified by a valid module at the time of other station accessing.	16-bit binary
Un	Head I/O number of the Ethernet interface module of the host station (00 to FE: Upper two digits when the I/O number is expressed using three digits.)	
(S1)	Head device of the host station which stores the control data *1	Device name
(S2)	Head device of the object station which stores the data to be written	
(D1)	Head device of the host station which stores the data that has been written	
(D2)	Host station device which turns ON 1 scan at the completion of the instruction.(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

POINTS

(1) The WRITE instruction can only be executed for the QnACPU of the object station.(The WRITE instruction cannot be executed for the ACPU connected to MELSECNET/10 or Ethernet.)
The object station number should only be set to the station number of the QnACPU.

(2) When using the WRITE instruction to write word device data to other station, the device setting ranges of the parameters of both the host station and object station should be set the same.If the setting ranges of the host station and the object station are different, instruction input by the peripheral device will be impossible and an error will occur for the host station/object station when an instruction is executed.

REMARKS

1) *1: The control data at the completion of an instruction stores the completion status (SD+1) and clock data [(S1)+10 to (S1)+14] when an error occurs.

2) The number of steps of the WRITE instruction is 10 steps.

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Error completion type	• Stores the setting status of the clock data on error completion. Do not set clock data: Bit 7 (b7) is set to 0. Set clock data: Bit 7 (b7) is set to 1. [Stored to (S1)+11 on]	0001H 0081H	User
(S1)+1	Completion status	• Stores the status at the completion of the instruction. 0: No errors (normal completion) Other than 0: Error code *1	—	System
(S1)+2	Channel used by host station	• Sets the channel used by the host station.	1 to 8	User
(S1)+3	Dummy	• Unused	0	—
(S1)+4	Network number of target station	• Specifies the network number of the station from which the device data is read.	1 to 239, 254	User
(S1)+5	Target station number	• Specifies the station number of the station from which the device data is read.	1 to 64	User
(S1)+6	Dummy	• Unused	0	User
(S1)+7	Number of transmission retries	• Sets the number of transmission retries for when reading by the READ instruction is not completed within the monitored time specified by (S1)+8.	0 to 15	User
	Results of retries	• Stores the number of transmission retries performed.	0 to 15	System
(S1)+8	Response monitoring time	• Sets the monitoring time of the READ instruction in units of TCP re-transmitting timer value or more. (unit: sec.) If reading is not completed within the set time, transmission will be retried the number of times specified by (S1)+7.	1 to 16383 0 to TCP re-transmitting timer value	User
(S1)+9	Receive data length	• Sets the number of data to be read.(unit: word)	1 to 480	User
(S1)+10	Unused	—	—	—
(S1)+11	Clock data set flag (set only on error)	• Stores whether clock data is valid/invalid. Invalid clock data: 0 Valid clock data: 1	—	System
(S1)+12	Clock data (Set only on error)*2	Upper 8 bits: Month (01H to 12H),Lower 8 bits:Year (D0H to 99H)	—	System
(S1)+13		Upper 8 bits: Hour (00H to 23H),Lower 8 bits:Date (D1H to 31H)		
(S1)+14		Upper 8 bits: Sec. (00H to 59H),Lower 8 bits:Minute (D0H to 59H)		
(S1)+15		Upper 8 bits: 00H, Lower 8 bits:Day (D0H to 6H)		
(S1)+16	Error detection network number	• Network numbers of the station are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 239	System
(S1)+17	Reception data length	• Network numbers of the stations are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 64	

POINTS

The read-data storage device (D1) requires a continuous area (the maximum 480 words) for the read data length (S1+9).
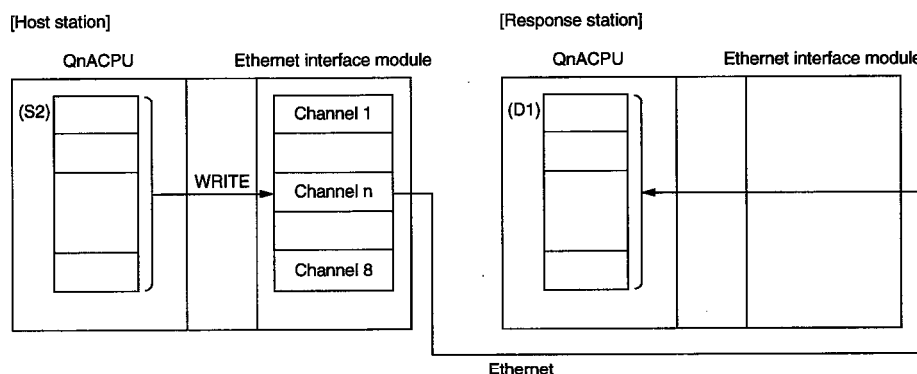
REMARKS

1) *1: Refer to the following manual for error codes when an error occurs.(product IB-66661-C or later)
 • Model AJ71QE71 (B5) Ethernet Interface Module User's Manual

2) *2: The following data is stored for a day of the week.

Day of the Week Data	0	1	2	3	4	5	6
Day of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat

Function

(1) Stores the data of the device which is specified by (S2) of host station to the word device specified by (D1) of the MELSECNET/10 or Ethernet station that is specified by the network number or station number in the control data.
When the device data from the object station number has been written, the completion device specified by (D2) goes ON.

[Host station]   [Response station]

QnACPU   Ethernet interface module   QnACPU   Ethernet interface module

(S2)   Channel 1   (D1)
WRITE   Channel n
Channel 8

Ethernet

(2) Besides writing the device data to a station that is connected to the network of the host station, it is possible to write data to a station that is connected to a network number specified by MELSECNET/10 or Ethernet.
See the following manual, and set the necessary parameters prior to receiving data.
• QnA corresponding Ethernet Interface Module User's Manual (Products IC-66661-C and later)

(3) It is not possible to execute two or more data link instructions or Ethernet module instructions for the same channel.
If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(4) It is possible to check the status during execution of the WRITE instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data using the completion status display flag [(D2)+1].
(a) Completion device(D2):
Goes ON during execution of the WRITE instruction, and goes OFF at the END processing of the scan when reading is finished.

(b) Status display at completion device [(D2)+1]:
Goes ON at the END processing of the scan when the WRITE instruction is completed, and goes OFF at the next END processing.
• Normal completion: Remains OFF with no change.
• Error completion: Goes ON at the END processing of the scan of the completed WRITE instruction, and goes OFF at the next END processing.

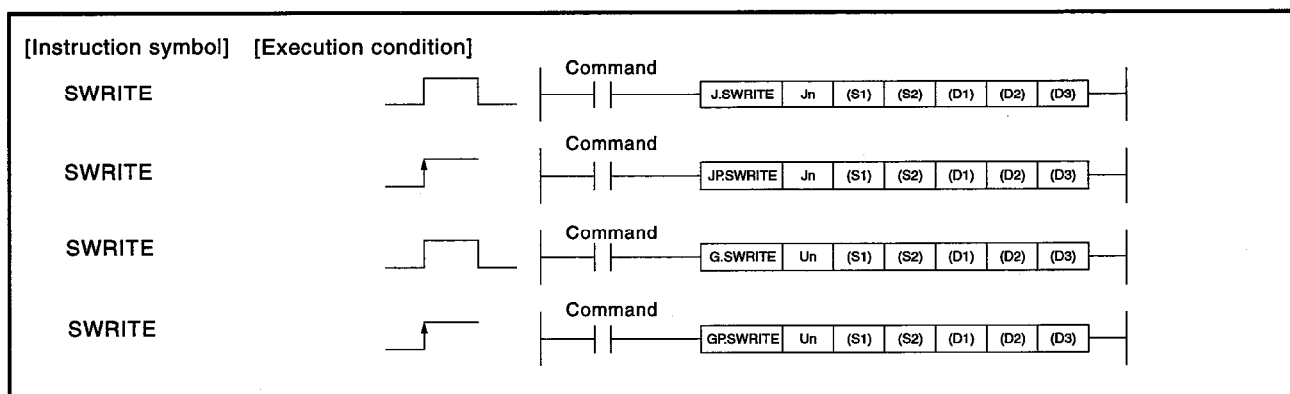[Host station operation during execution of the WRITE instruction]
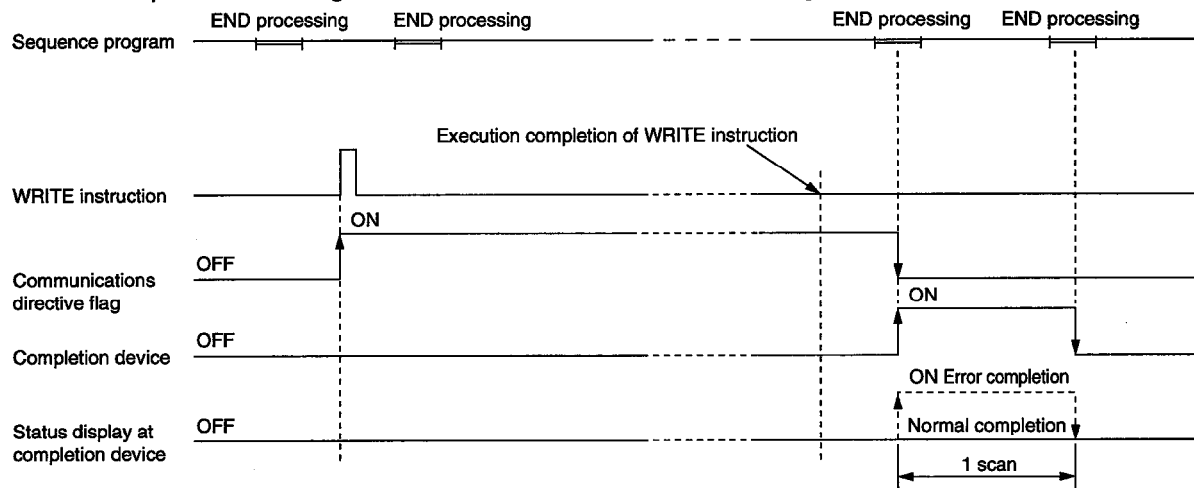
(5) When executed by J.WRITE/G.WRITE, the next write processing is performed when the first write processing is completed while the write command is ON.
When executing by JP.WRITE/GP.WRITE, only the first write processing is performed when the write command goes from OFF to ON.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The contents of the control data are not inside the setting range.
(Error code: 4100)

- The network number specified by Jn is not connected to the host station. (Error code: 4102)

- The module whose head I/O number is specified by Un is not an Ethernet interface module. (Error code: 2111)

14.5 Writing Word Device Data to Other Station (SWRITE)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O		—					
(S2)	—	O		—					
(D1)	—	O		—					
(D2)	O			—					
(D3)	O			—					

[Instruction symbol]   [Execution condition]

SWRITE	⎍	Command ⊣⊢	J.SWRITE	Jn	(S1)	(S2)	(D1)	(D2)	(D3)
SWRITE	⤒	Command ⊣⊢	JP.SWRITE	Jn	(S1)	(S2)	(D1)	(D2)	(D3)
SWRITE	⎍	Command ⊣⊢	G.SWRITE	Un	(S1)	(S2)	(D1)	(D2)	(D3)
SWRITE	⤒	Command ⊣⊢	GP.SWRITE	Un	(S1)	(S2)	(D1)	(D2)	(D3)

Set Data

Set Data	Description	Data Type
Jn	Host station network number (1 to 239, 254) 254: Network specified by a valid module at the time of other station accessing	16-bit binary
Un	Head I/O number of the Ethernet interface module of the host station(00 to FE: Upper two digits when the I/O number is expressed using three digits.)	
(S1)	Head device of the host station which stores the control data *1	Device name
(S2)	Head device of the object station which stores the data to be written	
(D1)	Head device of the host station which stores the data that has been written	
(D2)	Host station device which turns ON 1 scan at the completion of the instruction.(D2)+1 is also turned ON at an error completion.	Bit
(D3)	Target device which turns ON 1 scan at the completion of the instruction.	

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

POINTS

(1) The SWRITE instruction can only be executed for the QnACPU of the object station. (The SWRITE instruction cannot be executed for the ACPU connected to MELSECNET/10 or Ethernet.)
The object station number should only be set to the station number of the QnACPU.

(2) When using the SWRITE instruction to write word device data to another station, the device setting ranges of the parameters of both the host station and object station should be set the same.
If the setting ranges of the host station and the object station are different, instruction input by the peripheral device will be impossible and an error will occur for the host station/object station when an instruction is executed.

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Error completion type	• Stores the setting status of the clock data on error completion. Do not set clock data: Bit 7 (b7) is set to 0. Set clock data: Bit 7 (b7) is set to 1. [Stored to (S1)+11 on]	0001H 0081H	User
(S1)+1	Completion status	• Stores the status at the completion of the instruction. 0: No errors (normal completion) Other than 0: Error code *2	—	System
(S1)+2	Channel used by host station	• Sets the channel used by the host station.	1 to 8	User
(S1)+3	Dummy	• Unused	0	—
(S1)+4	Network number of target station	• Specifies the network number of the station from which the device data is read.	1 to 239, 254	User
(S1)+5	Target station number	• Specifies the station number of the station from which the device data is read.	1 to 64	User
(S1)+6	Dummy	• Unused	0	User
(S1)+7	Number of transmission retries	• Sets the number of transmission retries for when reading by the READ instruction is not completed within the monitored time specified by (S1)+8.	0 to 15	User
	Results of retries	• Stores the number of transmission retries performed.	0 to 15	System
(S1)+8	Response monitoring time	• Sets the monitoring time of the READ instruction in units of TCP re-transmitting timer value or more. (unit: sec.) If reading is not completed within the set time, transmission will be retried the number of times specified by (S1)+7.	1 to 16383 0 to TCP re-transmitting timer value	User
(S1)+9	Receive data length	• Sets the number of data to be read.(unit: word)	1 to 480	User
(S1)+10	Unused	—	—	—
(S1)+11	Clock data set flag (set only on error)	• Stores whether clock data is valid/invalid. Invalid clock data: 0 Valid clock data: 1	—	System
(S1)+12	Clock data (Set only on error)*3	Upper 8 bits: Month (01H to 12H),Lower 8 bits:Year (D0H to 99H)	—	System
(S1)+13		Upper 8 bits: Hour (00H to 23H),Lower 8 bits:Date (D1H to 31H)		
(S1)+14		Upper 8 bits: Sec. (00H to 59H),Lower 8 bits:Minute (D0H to 59H)		
(S1)+15		Upper 8 bits: 00H, Lower 8 bits:Day (D0H to 6H)		
(S1)+16	Error detection network number	• Network numbers of the station are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 239	System
(S1)+17	Reception data length	• Network numbers of the stations are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 64	

REMARKS

1) *1: The control data at the completion of an instruction stores the completion status and clock data when an error occurs.

2) *2: Refer to the following manual for error codes when an error occurs.
   • Model AJ71QE71 (B5) Ethernet Interface Module User's Manual

3) The number of steps of the SWRITE instruction is 11 steps.
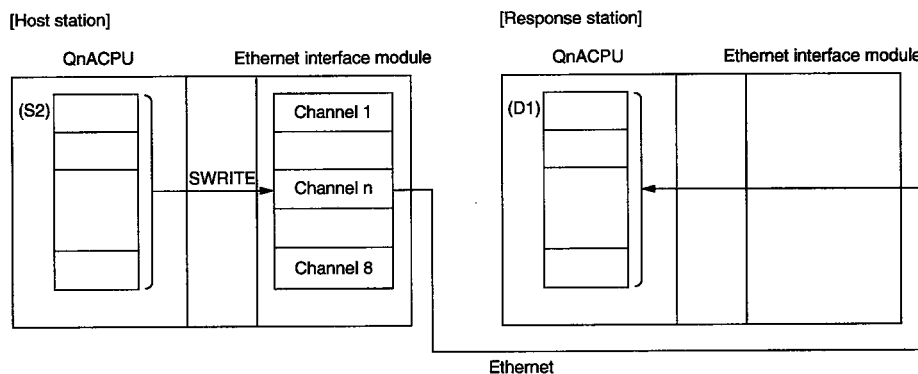
4) *3: The following data is stored for a day of the week.

Day of the Week Data	0	1	2	3	4	5	6
Day of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat

Function

(1) Stores the data of the device which is specified by (S2) of host station to word device specified by (D1) of the MELSECNET/10 or Ethernet station that is specified by the network number or station number in the control data.
When the device data from the object station number has been written, the completion device specified by (D2) goes ON.
In addition, at the other station, when the device data specified by (S2) has been written, the device specified by (D3) goes ON.

(2) Besides writing the device data to a station that is connected to the network of the host station, it is possible to write data to a station that is connected to a network number specified by MELSECNET/10 or Ethernet. See the following manual, and set the necessary parameters prior to receiving data.
  • QnA corresponding Ethernet Interface Module User's Manual (Products IC-66661-C and later)

(3) It is not possible to execute two or more data link instructions or Ethernet module instructions for the same channel.
If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(4) It is possible to check the status during execution of the SWRITE instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data using the completion status display flag [(D2)+1].
 (a) Completion device(D2):
    Goes ON during execution of the SWRITE instruction, and goes OFF at the END processing of the scan when writing is finished

 (b) Status display at completion device [(D2)+1]:
    Goes ON at the END processing of the scan when the SWRITE instruction is completed, and goes OFF at the next END processing.
    • Normal completion: Remains OFF with no change.
    • Error completion: Goes ON at the END processing of the scan of the completed SWRITE instruction, and goes OFF at the next END processing.

[Host station operation during execution of the SWRITE instruction]
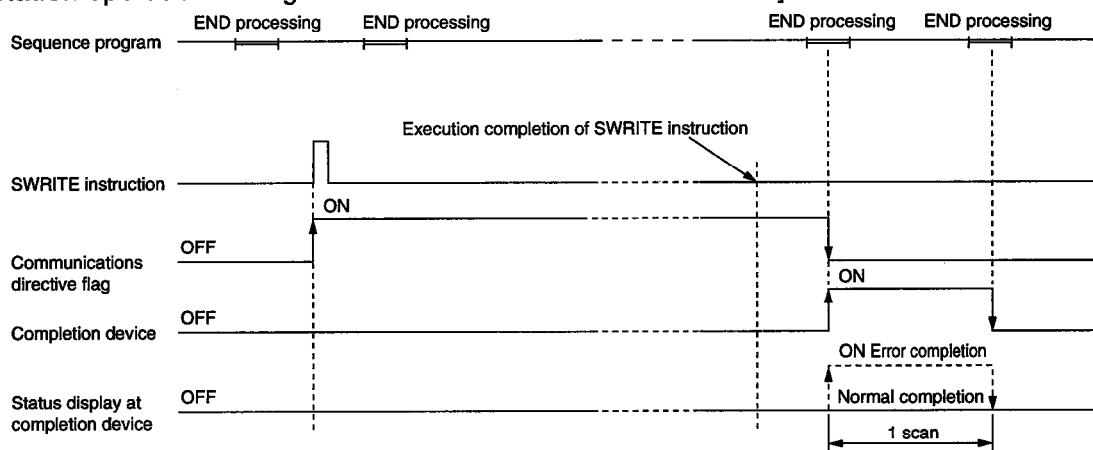
[Other station operation during execution for the SWRITE instruction]
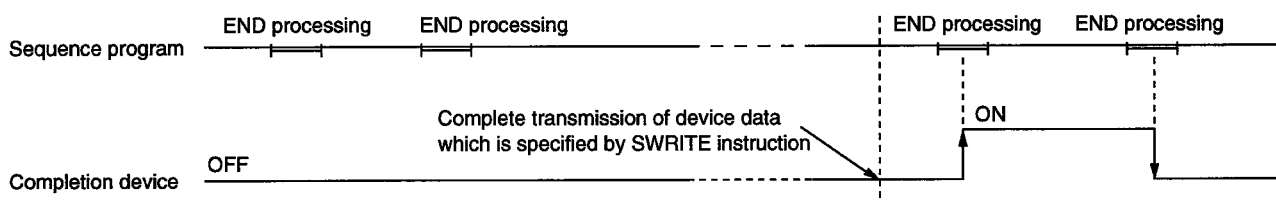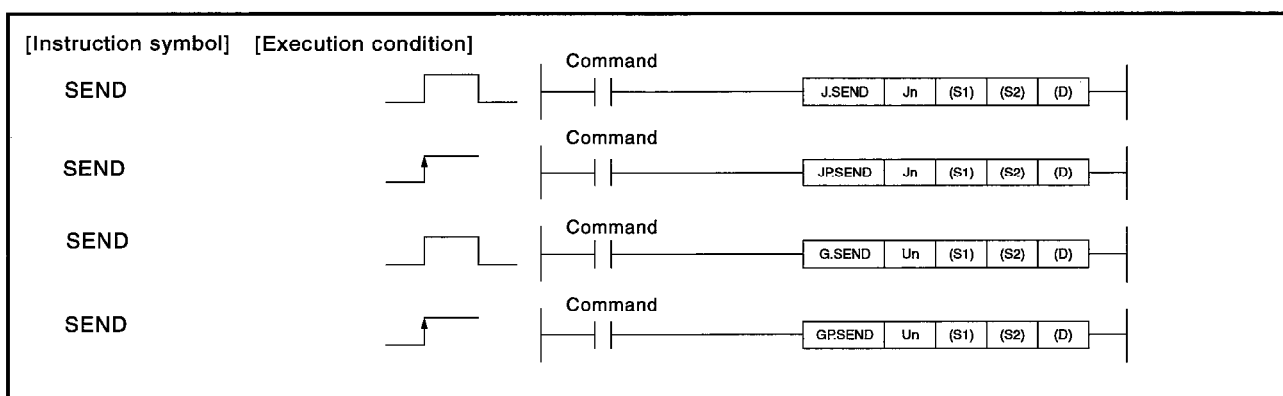

(5) When executed by J.SWRITE/G.SWRITE, the next write processing is performed when the first write processing is completed while the write command is ON.
When executing by JP.SWRITE/GP.SWRITE, only the first write processing is performed when the write command goes from OFF to ON.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

• The contents of the control data are not inside the setting range.
(Error code: 4100)

• The network number specified by Jn is not connected to the host station. (Error code: 4102)

• The module whose head I/O number is specified by Un is not an Ethernet interface module. (Error code: 2111)

14.6 Sending Data to Other Station (SEND)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Z□	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O		—					
(S2)	—	O		—					
(D)	O			—					

[Instruction symbol] [Execution condition]

SEND	⎍	Command ―┤ ├―――――――――	J.SEND	Jn	(S1)	(S2)	(D)	
SEND	⎍	Command ―┤ ├―――――――――	JP.SEND	Jn	(S1)	(S2)	(D)	
SEND	⎍	Command ―┤ ├―――――――――	G.SEND	Un	(S1)	(S2)	(D)	
SEND	⎍	Command ―┤ ├―――――――――	GP.SEND	Un	(S1)	(S2)	(D)	

Set Data

Set Data	Description	Data Type
Jn	Host station network number (1 to 239, 254) 254: Network specified by a valid module at the time of other station accessing.	16-bit binary
Un	Head I/O number of the Ethernet interface module of the host station(00 to FE: Upper two digits when the I/O number is expressed using three digits.)	
(S1)	Head device of the host station which stores the control data *1	Device name
(S2)	Head device of the host station which stores the data that has been sent	
(D)	Host station device which turns ON 1 scan at the completion of the instruction.(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

> **POINTS**
>
> (1) The SEND instruction can only be executed for the QnACPU of
>   the object station.(The SEND instruction cannot be executed for the
>   ACPU connected to MELSECNET/10 or Ethernet.)

REMARKS

1) *1: The control data at the completion of an instruction stores the completion status
   (S1+1) and clock data [(S1)+10 to (S1)+14] when an error occurs.

2) The number of steps of the SEND instruction is 8 steps.

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Error completion type	• Stores the setting status of the clock data on error completion. Do not set clock data: Bit 7 (b7) is set to 0. Set clock data: Bit 7 (b7) is set to 1. [Stored to (S1)+11 on]	0001H 0081H	User
(S1)+1	Completion status	• Stores the status at the completion of the instruction. 0: No errors (normal completion) Other than 0: Error code *1	—	System
(S1)+2	Channel used by host station	• Sets the channel used by the host station.	1 to 8	User
(S1)+3	Dummy	• Unused	0	—
(S1)+4	Network number of target station	• Specifies the network number of the station from which the device data is read.	1 to 239, 254	User
(S1)+5	Target station number	• Specifies the station number of the station from which the device data is read.	1 to 64	User
(S1)+6	Dummy	• Unused	0	User
(S1)+7	Number of transmission retries	• Sets the number of transmission retries for when reading by the READ instruction is not completed within the monitored time specified by (S1)+8.	0 to 15	User
(S1)+7	Results of retries	• Stores the number of transmission retries performed.	0 to 15	System
(S1)+8	Response monitoring time	• Sets the monitoring time of the READ instruction in units of TCP re-transmitting timer value or more. (unit: sec.) If reading is not completed within the set time, transmission will be retried the number of times specified by (S1)+7.	1 to 16383 0 to TCP re-transmitting timer value	User
(S1)+9	Receive data length	• Sets the number of data to be read.(unit: word)	1 to 480	User
(S1)+10	Unused	—	—	—
(S1)+11	Clock data set flag (set only on error)	• Stores whether clock data is valid/invalid. Invalid clock data: 0 Valid clock data: 1	—	System
(S1)+12	Clock data (Set only on error)*2	Upper 8 bits: Month (01H to 12H),Lower 8 bits:Year (D0H to 99H)	—	System
(S1)+13		Upper 8 bits: Hour (00H to 23H),Lower 8 bits:Date (D1H to 31H)		
(S1)+14		Upper 8 bits: Sec. (00H to 59H),Lower 8 bits:Minute (D0H to 59H)		
(S1)+15		Upper 8 bits: 00H, Lower 8 bits:Day (D0H to 6H)		
(S1)+16	Error detection network number	• Network numbers of the station are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 239	System
(S1)+17	Reception data length	• Network numbers of the stations are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 64	System

POINTS

The read-data storage device (D1) requires a continuous area (the maximum 480 words) for the read data length (S1+9).

REMARKS

1) *1: Refer to the following manual for error codes when an error occurs.
   • Model AJ71QE71 (B5) Ethernet Interface Module User's Manual

2) *2: The following data is stored for a day of the week.

Day of the Week Data	0	1	2	3	4	5	6
Day of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat

Function

(1) Stores the data from the device specified by (S2) of the host station, to the channel which is specified by (S2) of the MELSECNET/10 or Ethernet station that is specified by the network number or station number in the control data.
The data transmitted is stored in the channel that is set using S2 of the applicable station.
Use the RECV instruction to read the data transmitted on the applicable station.
When the device data from the object station number is finished being written, the completion device specified by (D) goes ON.
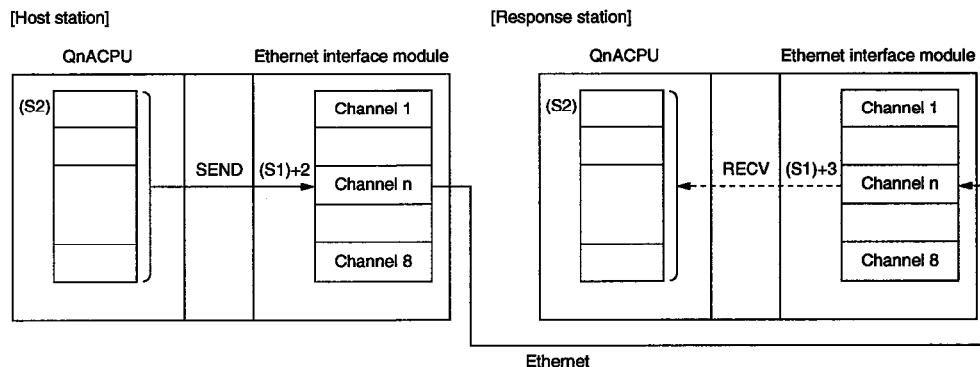
[Host station]   [Response station]

| QnACPU | Ethernet interface module | QnACPU | Ethernet interface module |

(S2) ... SEND (S1)+2 → Channel 1 / Channel n / Channel 8 ... (S2) ... RECV (S1)+3 ← Channel 1 / Channel n / Channel 8

Ethernet

(2) Besides reading the device data of a station that is connected to the network of the host station, it is possible to read data from a station that is connected to a network number specified by MELSECNET/10 or Ethernet.

(3) It is not possible to execute two or more data-link instructions or Ethernet module instructions for the same channel.
If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(4) It is possible to check the status during execution of the SEND instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data using the completion status display flag [(D2)+1].

(a) Completion device(D2):
Goes ON at the END processing of the scan when the SEND instruction is completed, and goes OFF at the next END processing.

(b) Status display at completion device [(D2)+1]:
Goes ON/OFF depending on the status when the SEND instruction is completed.
• Normal completion: Remains OFF with no change.
• Error completion: Goes ON at the END processing of the scan of the completed READ instruction, and goes OFF at the next END processing.

[Host station operation during execution of the SEND instruction]
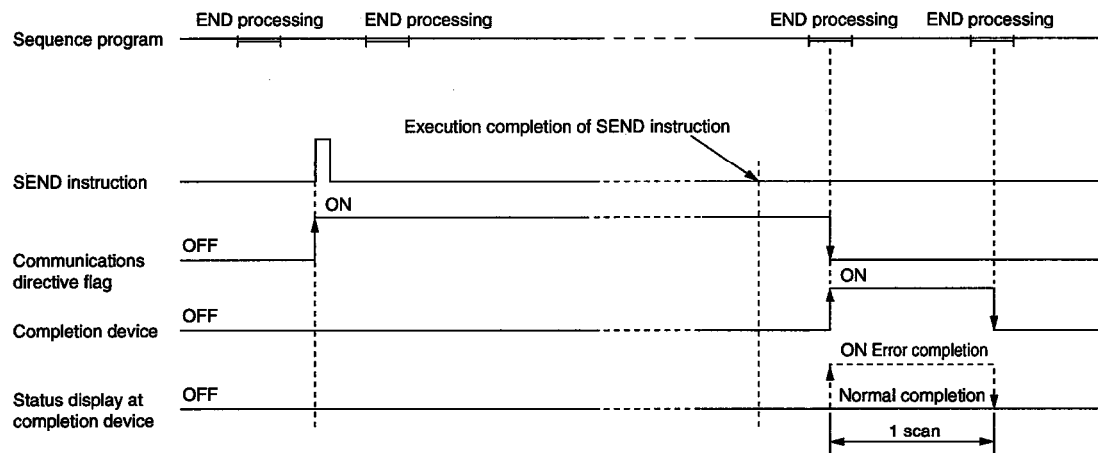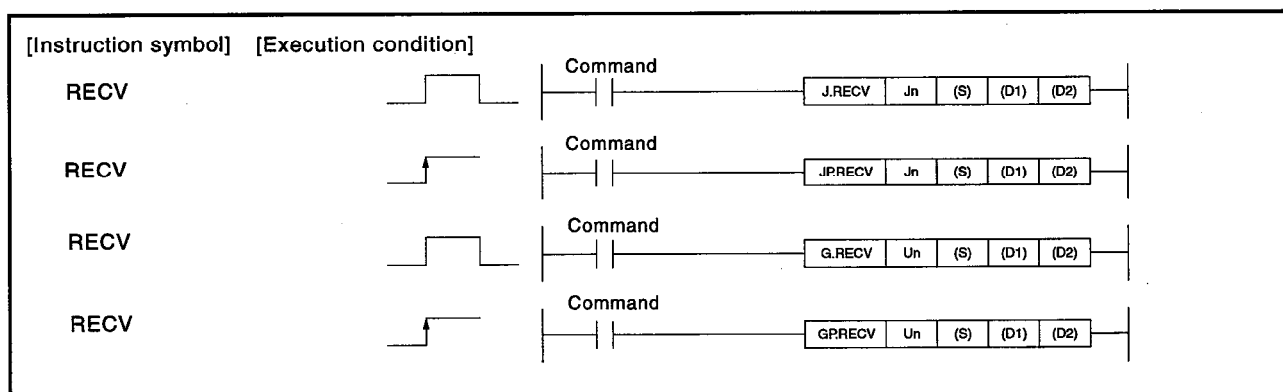

(5) When executing by JP.SEND/GP.SEND, only the first write processing is performed when the write command goes from OFF to ON.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The contents of the control data are not inside the setting range.
(Error code: 4100)

- The network number specified by Jn is not connected to the host station. (Error code: 4102)

- The module whose head I/O number is specified by Un is not an Ethernet interface module. (Error code: 2111)

14.7 Receiving Data from Other Station (RECV)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Z☐	Constant K, H	Other
	Bit	Word		Bit	Word				
(S)	—	O		—					
(D1)	—	O		—					
(D2)	O			—					

[Instruction symbol]   [Execution condition]

RECV

Command

| J.RECV | Jn | (S) | (D1) | (D2) |

RECV

Command

| JP.RECV | Jn | (S) | (D1) | (D2) |

RECV

Command

| G.RECV | Un | (S) | (D1) | (D2) |

RECV

Command

| GP.RECV | Un | (S) | (D1) | (D2) |

Set Data

Set Data	Description	Data Type
Jn	Host station network number (1 to 239, 254) 254: Network specified by a valid module at the time of other station accessing.	16-bit binary
Un	Head I/O number of the Ethernet interface module of the host station (00 to FE: Upper two digits when the I/O number is expressed using three digits.)	
(S)	Head device of the host station which stores the control data *1	Device name
(D1)	Head device of the host station which stores the data that has been received	
(D2)	Host station device which turns ON 1 scan at the completion of the instruction.(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

POINTS

The RECV instruction can only be executed for the QnACPU of the object station.

REMARKS

1) The number of steps of the RECV instruction is 8 steps.

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Error completion type	• Stores the setting status of the clock data on error completion. Do not set clock data: Bit 7 (b7) is set to 0. Set clock data: Bit 7 (b7) is set to 1. [Stored to (S1)+11 on]	0001H 0081H	User
(S1)+1	Completion status	• Stores the status at the completion of the instruction. 0: No errors (normal completion) Other than 0: Error code *1	—	System
(S1)+2	Channel used by host station	• Sets the channel used by the host station.	1 to 8	User
(S1)+3	Dummy	• Unused	0	—
(S1)+4	Network number of target station	• Specifies the network number of the station from which the device data is read.	1 to 239, 254	User
(S1)+5	Target station number	• The station number of the target station is stored. 1 to 64: Station No. (received from station number station)	—	System
(S1)+6	Dummy	• Unused	0	User
(S1)+7	Number of transmission retries	• Sets the number of transmission retries for when reading by the READ instruction is not completed within the monitored time specified by (S1)+8.	0 to 15	User
(S1)+7	Results of retries	• Stores the number of transmission retries performed.	0 to 15	System
(S1)+8	Response monitoring time	• Sets the monitoring time of the READ instruction in units of TCP re-transmitting timer value or more. (unit: sec.) If reading is not completed within the set time, transmission will be retried the number of times specified by (S1)+7.	1 to 16383 0 to TCP re-transmitting timer value	User
(S1)+9	Receive data length	• Sets the number of data to be read.(unit: word)	1 to 480	User
(S1)+10	Unused	—	—	—
(S1)+11	Clock data set flag (set only on error)	• Stores whether clock data is valid/invalid. Invalid clock data: 0 Valid clock data: 1	—	System
(S1)+12	Clock data (Set only on error)*2	Upper 8 bits: Month (01H to 12H),Lower 8 bits:Year (D0H to 99H)	—	System
(S1)+13		Upper 8 bits: Hour (00H to 23H),Lower 8 bits:Date (D1H to 31H)		
(S1)+14		Upper 8 bits: Sec. (00H to 59H),Lower 8 bits:Minute (D0H to 59H)		
(S1)+15		Upper 8 bits: 00H, Lower 8 bits:Day (D0H to 6H)		
(S1)+16	Error detection network number	• Network numbers of the station are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 239	System
(S1)+17	Reception data length	• Network numbers of the stations are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 64	

POINTS

(1) The reception data storage device (D1) requires a continuous area (max. 480 words) of a "transmission data length" designated in the SEND instruction issued by the source of transmission.

(2) Execute the RECV instruction each time the bit of the corresponding channel of the RECV instruction execution request area (address: 205) in the buffer memory is turned on (there is reception data).

(3) In a reception station provided with two or more Ethernet modules having the same network number, designate "Un" to designate the Ethernet module receiving the RECV instruction.

When the RECV instruction is executed with "Jn" designation, the PLC CPU executes the RECV instruction to the first module having the head I/O number.

(Example) To execute RECV instruction to station number 3 upon a SEND instruction issued from station number 1, designate "U2."
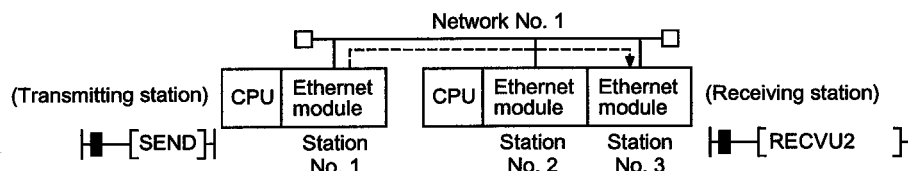
REMARKS

1) *1: Refer to the following manual for error codes when an error occurs.
   • Model AJ71QE71 (B5) Ethernet Interface Module User's Manual

2) *2: The following data is stored for a day of the week.

Day of the Week Data	0	1	2	3	4	5	6
Day of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat

Function

(1) Stores the data sent from the station connected to the MELSECNET/10 or Ethernet station that is specified by the network number or station number in the control data in the device specified by (D1) from the Ethernet module of the host station.

* Use the SEND instruction for data transmission.
   Upon receiving data from a transmitting station, the received data is stored in the host's channel that is specified by the transmitting station, and the corresponding bit of the RECV instruction execution request area (address : 205) of the Ethernet module's buffer memory is turned on. Using this corresponding bit of the RECV instruction execution request turning ON as the timing of a read, the received data is read from the reception data storage channel.
   When the device data from the Ethernet module is finished being read, the completion device specified by (D) goes ON.

[Host station]   [Response station]
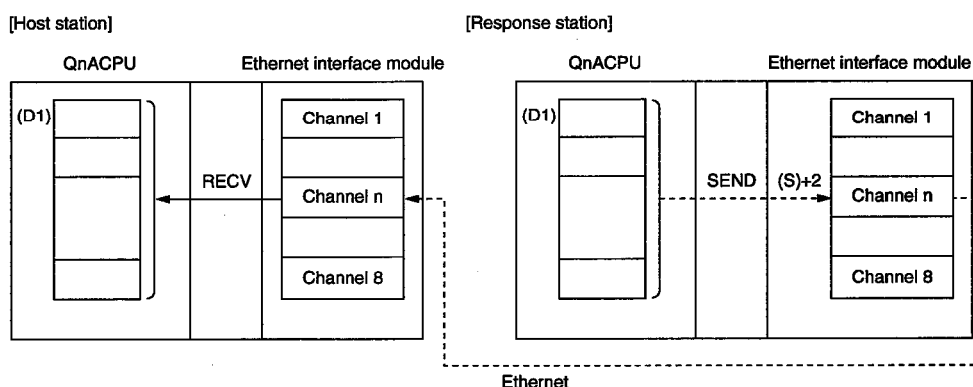
(2) It is not possible to execute two or more Ethernet module instructions for the same channel.
   If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(3) It is possible to check the status during execution of the RECV instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data using the completion status display flag [(D2)+1].

   (a) Completion device(D2):
      Goes ON at the END processing of the scan when the RECV instruction is completed, and goes OFF at the next END processing.

   (b) Status display at completion device [(D2)+1]:
      Goes ON/OFF depending on the status when the RECV instruction is completed.
      • Normal completion: Remains OFF with no change.
      • Error completion: Goes ON at the END processing of the scan of the completed RECV instruction, and goes OFF at the next END processing.

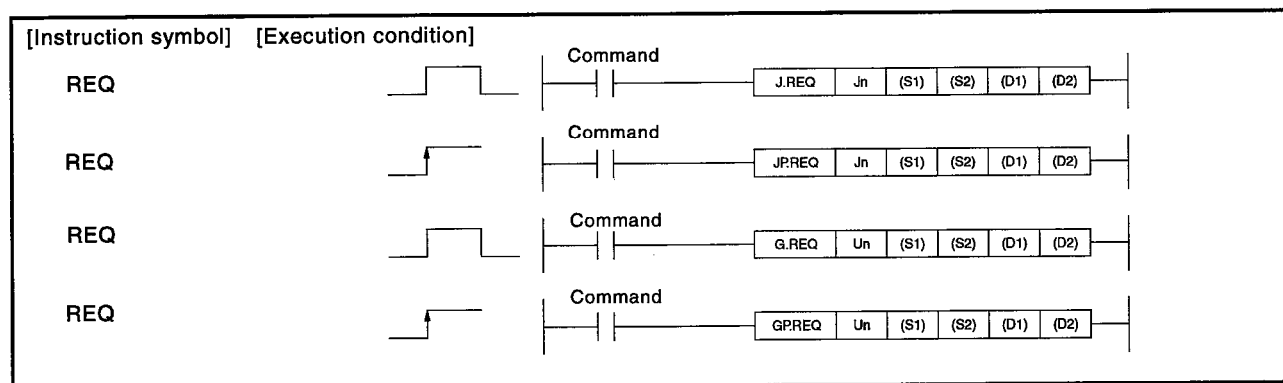[Host station operation during execution of the RECV instruction]
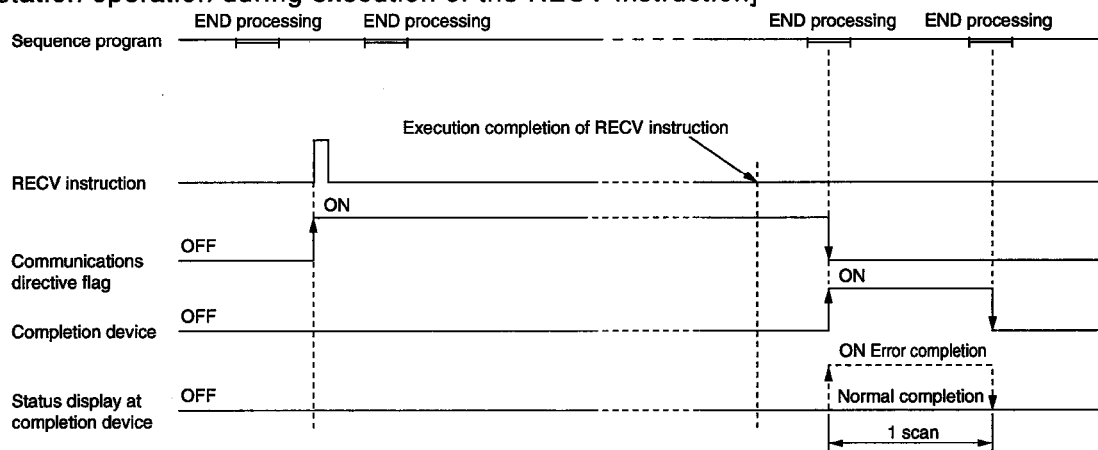
(4) When executed by J.RECV/G.RECV, the next write processing is performed when the first write processing is completed while the write command is ON.
When executing by JP.RECV/GP.RECV, only the first write processing is performed when the write command goes from OFF to ON.

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- The contents of the control data are not inside the setting range.
(Error code: 4100)

- The network number specified by Jn is not connected to the host station. (Error code: 4102)

- The module whose head I/O number is specified by Un is not an Ethernet interface module. (Error code: 2111)

14.8 Transient Request to Other Station (REQ)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Z☐	Constant K, H	Other
	Bit	Word		Bit	Word				
(S1)	—	O					—		
(S2)	—	O					—		
(D1)	—	O					—		
(D2)	O						—		

[Instruction symbol]   [Execution condition]

REQ   Command
| J.REQ | Jn | (S1) | (S2) | (D1) | (D2) |

REQ   Command
| JP.REQ | Jn | (S1) | (S2) | (D1) | (D2) |

REQ   Command
| G.REQ | Un | (S1) | (S2) | (D1) | (D2) |

REQ   Command
| GP.REQ | Un | (S1) | (S2) | (D1) | (D2) |

Set Data

Set Data	Description	Data Type
Jn	Host station network number (1 to 239, 254) 254: Network specified by a valid module at the time of other station	16-bit binary
Un	Head I/O number of the Ethernet interface module of the host station (00 to FE: Upper two digits when the I/O number is expressed using three digits.)	
(S1)	Head device of the host station which stores the control data	Device name
(S2)	Head device of the host station which stores the request data	
(D1)	Head device of the host station which stores the response data	
(D2)	Host station device which turns ON 1 scan at the completion of the instruction.(D2)+1 is also turned ON at an error completion.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

POINTS

(1) The REQ instruction can only be executed for the QnACPU of the object station.(The REQ instruction cannot be executed for the ACPU connected to MELSECNET/10 or Ethernet.)

REMARKS

1) The number of steps of the REQ instruction is 9 steps.

Control Data

Device	Content	Set Data	Setting Range	Set by
(S1)+0	Error completion type	• Stores the setting status of the clock data on error completion. Do not set clock data: Bit 7 (b7) is set to 0. Set clock data: Bit 7 (b7) is set to 1. [Stored to (S1)+11 on]	0001H 0081H	User
(S1)+1	Completion status	• Stores the status at the completion of the instruction. 0: No errors (normal completion) Other than 0: Error code *1	—	System
(S1)+2	Channel used by host station	• Sets the channel used by the host station.	1 to 8	User
(S1)+3	Dummy	• Unused	0	—
(S1)+4	Network number of target station	• Specifies the network number of the station from which the device data is read.	1 to 239, 254	User
(S1)+5	Target station number	• Specifies the station number of the station from which the device data is read.	1 to 64	User
(S1)+6	Dummy	• Unused	0	User
(S1)+7	Number of transmission retries	• Sets the number of transmission retries for when reading by the READ instruction is not completed within the monitored time specified by (S1)+8.	0 to 15	User
(S1)+7	Results of retries	• Stores the number of transmission retries performed.	0 to 15	System
(S1)+8	Response monitoring time	• Sets the monitoring time of the READ instruction in units of TCP re-transmitting timer value or more. (unit: sec.) If reading is not completed within the set time, transmission will be retried the number of times specified by (S1)+7.	1 to 16383 0 to TCP re-transmitting timer value	User
(S1)+9	Receive data length	• Sets the number of data to be read.(unit: word)	1 to 480	User
(S1)+10	Unused	—	—	—
(S1)+11	Clock data set flag (set only on error)	• Stores whether clock data is valid/invalid. Invalid clock data: 0 Valid clock data: 1	—	System
(S1)+12	Clock data (Set only on error)*2	Upper 8 bits: Month (01H to 12H),Lower 8 bits:Year (D0H to 99H)	—	System
(S1)+13		Upper 8 bits: Hour (00H to 23H),Lower 8 bits:Date (D1H to 31H)		
(S1)+14		Upper 8 bits: Sec. (00H to 59H),Lower 8 bits:Minute (D0H to 59H)		
(S1)+15		Upper 8 bits: 00H, Lower 8 bits:Day (D0H to 6H)		
(S1)+16	Error detection network number	• Network numbers of the station are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 239	System
(S1)+17	Reception data length	• Network numbers of the stations are stored for which an error was detected. However, the numbers are not stored, if the completed status for (S1)+1 displays "Channel in use (C085H)."	1 to 64	

POINTS

The read-data storage device (D1) requires a continuous area (the maximum 480 words) for the read data length (S1+9).

REMARKS

1) *1: Refer to the following manual for error codes when an error occurs.
   • Model AJ71QE71 (B5) Ethernet Interface Module User's Manual

2) *2: The following data is stored for a day of the week.

Day of the Week Data	0	1	2	3	4	5	6
Day of the Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat

Control Data (Clock data read/write)

Device	Item	Description	Read Clock Data	Write Clock Data
(S2)+0	Request type	• 0001H: Clock data read • 0011H: Clock data write	O	O
(S2)+1	Sub request type	• 0002H: Clock data read • 0001H: Clock data write	O	O

(S2)+2	Update pattern and year	• Specifies which items of the clock data of (S2)+2 to (S2)+5 to write in bit 0 (b0) to bit 7 (b7),
		        0: No change
		        1: Change
		• Stores the year (two-digit year) using BCD code in bit 8 (b8) to bit 15 (b15)
		
		B15 to b7 b6 b5 b4 b3 b2 b1 b0
		Year (00H to 99H) 0
		            → Year
		            → month
		            → day
		            → hour
		            → minite
		            → second
		            → day of the week
			—	O

(S2)+3	Update month and day	• Stores the month and day in BCD code. B15 to b8 b7 to b0 Day (01H to 31H) Month (01H to 12H)	—	O
(S2)+4	Update hour and minute	• Stores the hour and minute in BCD code. B15 to b8 b7 to b0 Minutes (00H to 59H) Hour (00H to 23H)	—	O
(S2)+5	Update second and day of the week	• Stores the update second and day of the week. B15 to b8 b7 to b0 Day of the week (00H to 06H) Second (01H to 59H) • 00H: Sunday • 04H: Thursday • 01H: Monday • 05H: Friday • 02H: Tuesday • 06H: Saturday • 03H: Wednesday	—	O

Response Data

| Device	Item	Description	Read Clock Data	Write Clock Data
(D1)	Request type	0081H: Clock data read 0091H: Clock data write	O	O
(D1)+1	Sub request type	0002H: Clock data read 0001H: Clock data write	O	O
(D1)+2	Month and year that were read	• Stores the year (A. D.lower two digits) and month in BCD code. B15　　　　to　　　　b8 b7　　　　to　　　　b0 | Month (01H to 12H) | Year (00H to 99H) |	O	—
(D1)+3	Hour and day that were read	• Stores the hour and minute in BCD code. B15　　　　to　　　　b8 b7　　　　to　　　　b0 | Hour (00H to 23H) | Day (01H to 31H) |	O	—
(D1)+4	Second and minute that were read	• Stores the update second and day of the week B15　　　　to　　　　b8 b7　　　　to　　　　b0 | Second (00H to 59H) | Minute (00H to 59H) |	O	—
(D1)+5	Day of the week that was read	• Stores the day of the week in BCD code. B15　　　　to　　　　b8 b7　　　　to　　　　b0 | 00H | Day of the week (00H to 06H) | • 00H: Sunday　　• 04H: Thursday • 01H: Monday　　• 05H: Friday • 02H: Tuesday　　• 06H: Saturday • 03H: Wednesday	O	—

POINTS

(1) When the system protect is rendered on the QnACPU of an applicable station (system protect switch SW5 is on), the clock data cannot be read or written.

(2) When reading the clock data, a continuous area of six words is required for the response data storage device (D1).

Function

(1) Sends the request data specified by the host station (S2) connected to the MELSECNET/10 or Ethernet station that is specified by the network number or station number in the control data, and then conducts the service request.
When the request to the object station is finished, the completion device specified by (D2) goes ON.

[Host station]   [Response station]
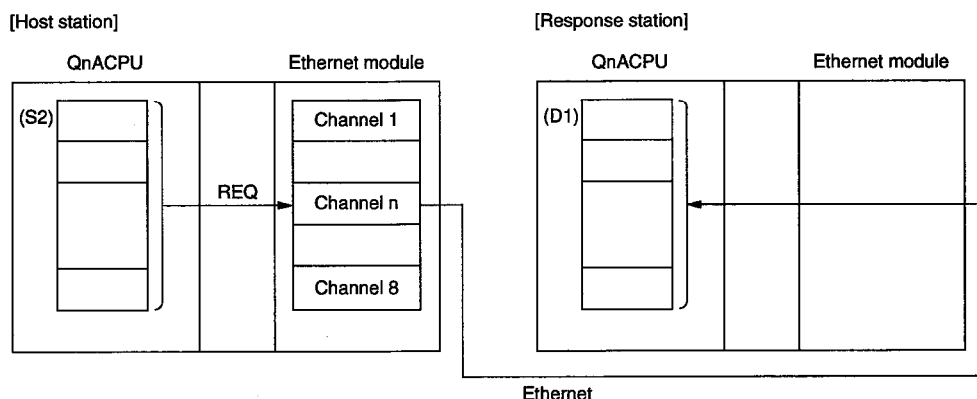
Ethernet

(2) Besides sending device data to a station connected to the host station network, it is possible to send data to a station connected to the network number specified by MELSECNET/10 or Ethernet.
See the following manual, and set the necessary parameters prior to receiving data.
• QnA corresponding Ethernet Interface Module User's Manual (Products IC-66661-C and later)

(3) It is not possible to execute two or more data-link instructions or Ethernet module instructions for the same channel.
If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(4) It is possible to check the status during execution of the REQ instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data using the completion status display flag [(D2)+1].

(a) Completion device(D2):
Goes ON at the END processing of the scan when the REQ instruction is completed, and goes OFF at the next END processing.

(b) Status display at completion device [(D2)+1]:
Goes ON/OFF depending on the status when the REQ instruction is completed
• Normal completion: Remains OFF with no change.
• Error completion: Goes ON at the END processing of the scan of the completed REQ instruction, and goes OFF at the next END processing.

[Host station operation during execution of the REQ instruction]
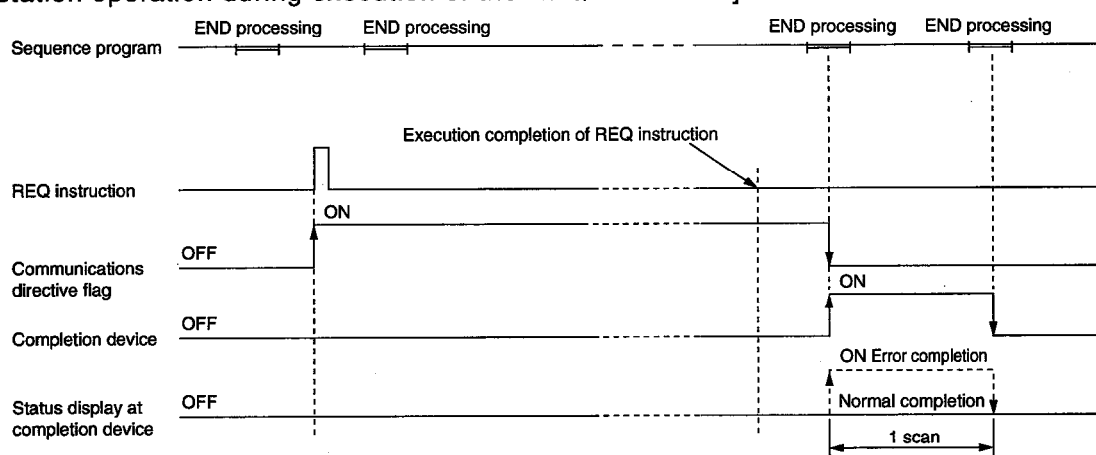
(5) When executed by J.REQ/G.REQ, the next write processing is performed when the first write processing is completed while the write command is ON.
When executing by JP.REQ/GP.REQ, only the first write processing is performed when the write command goes from OFF to ON.

Operation Error

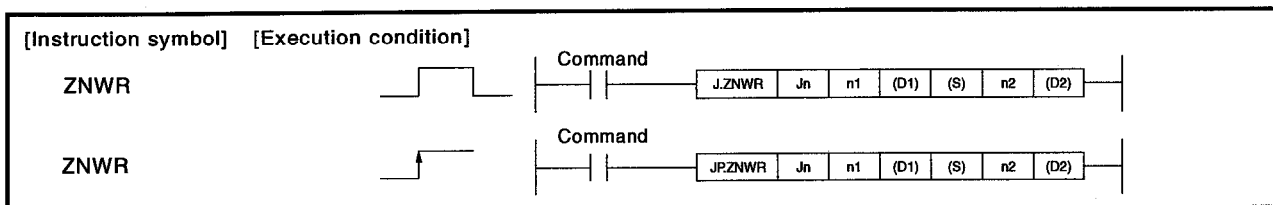(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD1.

- The contents of the control data are not inside the setting range.
  (Error code: 4100)

- The network number specified by Jn is not connected to the host station.
  (Error code: 4102)

- The module whose head I/O number is specified by Un is not an Ethernet interface module.
  (Error code: 2111)

14.9 Writing Device Data to Other Station (ZNWR)

Set Data	Usable Devices								
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J□\□		Special Function Module U□\G□	Index Register Zn	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	—	O		—					
(D1)	—	O*	—	—					
(S)	—	O		—					
n2	O			—					
(D2)	O			—					

* Only T, C, D, and W can be used.

[Instruction symbol]   [Execution condition]

ZNWR

Command
┤├── | J.ZNWR | Jn | n1 | (D1) | (S) | n2 | (D2) |

ZNWR

Command
┤├── | JP.ZNWR | Jn | n1 | (D1) | (S) | n2 | (D2) |

Set Data

Set Data	Description	Data Type
Jn	Network number of object station *1	16-bit binary
n1	Station number to write	
(D1)	Head device of the other station which stores the data to be written	Device name
(S)	Head device of the host station which stores the data to be written	
(n2)	Number of write data (unit: word) *2 Specify the numbers of data to write.	16-bit binary
(D2)	Host station device which turns ON 1 scan at the completion of the instruction. (D2)........OFF: Incomplete, ON: Complete (D2)+1....OFF: Normal, ON: Abnormal	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

```
POINTS

(1) The ZNWR instruction can be executed only to QnACPU target
    station.
    In case of AnUCPU target station, you can access only via
    MELSECNET/10.

(2) Give identical parameter device settings at the source and
    destination stations.
```

REMARKS

1)*1: The network number of the object station should be specified between 1 to 239.
If 0 is specified as the network number, a station connected to MELSECNET(/II)
becomes the object

2)*2: It is possible to set 1 to 230.
However, when using MELSECNET(/II), 1 to 32 can be set.

Function

(1) In the Ethernet system, this stores the n2 amount of data from the word device specified by (S) of the host station to the device specified by (D1) of a station connected to the network number specified by Jn and n1 onward.
When the device data has been written to the object station, the completion device specified by (D2) goes ON.

[Host station]   [Response station]
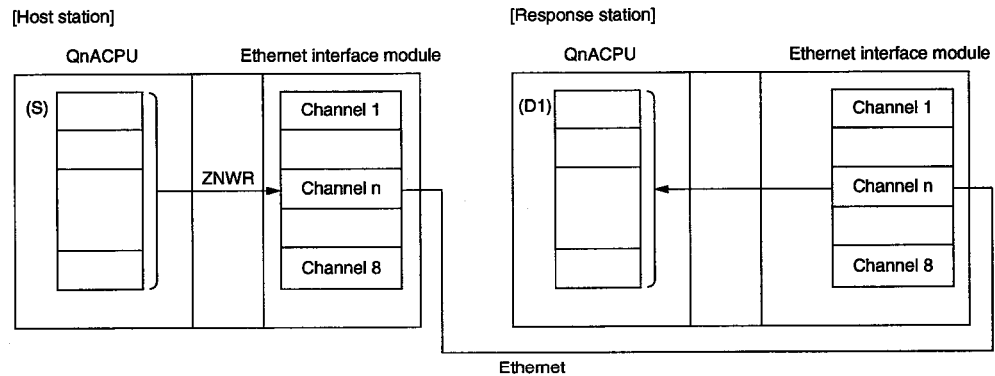
(2) It is not possible to execute two or more ZNWR instructions for the same channel.
If execution conditions are met at the same time for two or more ocations, a handshake is automatically performed and the later instruction waits until the channel can be used.
• QnA corresponding Ethernet interface module user's manual (Products IC-6661-C and later)

(3) It is possible to check the status during execution of the ZNWR instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data.
(a) Completion device(D2):
Goes ON during execution of the ZNWR instruction, and goes OFF at the END processing of the scan when writing is finished

(b) Status display at completion device [(D2)+1]:
Goes ON at the END processing of the scan when the ZNWR instruction is completed, and goes OFF at the next END processing.
• Normal completion: Remains OFF with no change.
• Error completion: Goes ON at the END processing of the scan of the completed ZNWR instruction, and goes OFF at the next END processing.

[Host station operation during execution of the SWRITE instruction]
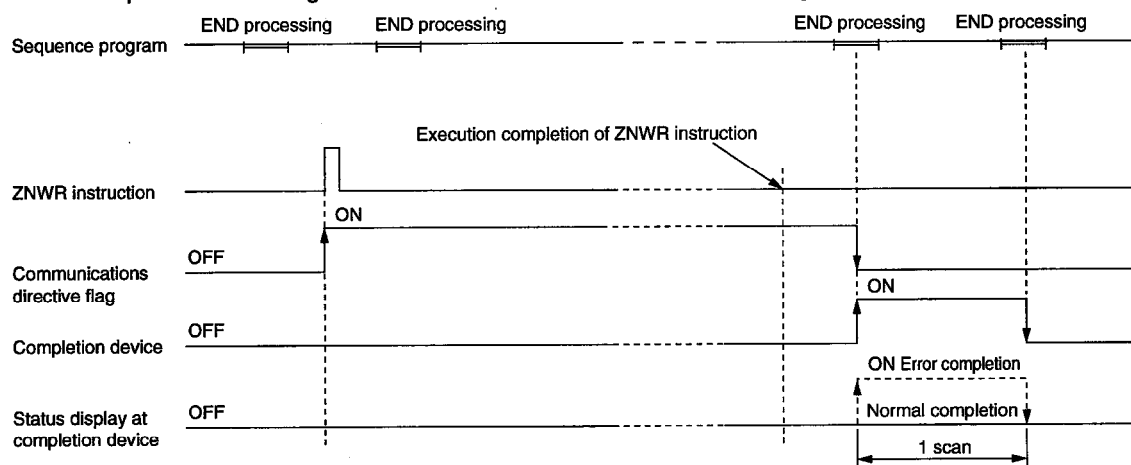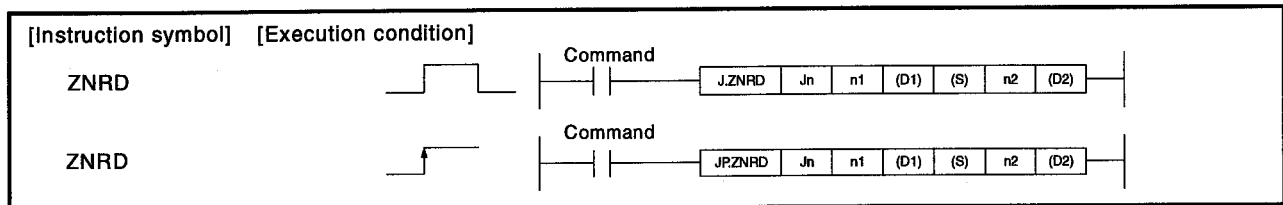

Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- n2 is not 1 to 230. (In case of MELSECNET(/II), n2 is not 1 to 32.)
  (Error code: 4100)

- The setting for n1 is outside the setting range. (Error code: 4100)

- The Ethernet module of the host station is offline. (Error code: 4102)

14.10 Reading Device Data from Other Station (ZNRD)

Set Data	Usable Devices							
	Internal Device (System, User)		File Register	MELSECNET/10 Direct J☐\☐		Special Function Module U☐\G☐	Index Register Z☐	Constant K, H	Other
	Bit	Word		Bit	Word				
n1	—	O		—					
(D1)	—	O*	—	—					
(S)	—	O		—					
n2	O			—					
(D2)	O			—					

* Only T, C, D, and W can be used.

[Instruction symbol]   [Execution condition]

ZNRD

ZNRD

Command

| J.ZNRD | Jn | n1 | (D1) | (S) | n2 | (D2) |

Command

| JP.ZNRD | Jn | n1 | (D1) | (S) | n2 | (D2) |

Set Data

Set Data	Description	Data Type
Jn	Network number of object station *1	16-bit binary
n1	Station number of the target	
(D1)	Head device of the host station which stores the data to be read	Device name
(S)	Head device of the object station which stores the data to be read	
(n2)	Number of read data (unit: word) *2	16-bit binary
(D2)	Host station device which turns ON 1 scan at the completion of the instruction.	Bit

Neither local device nor program-based file register can be used as the data setting device (see Section 1.1).

```
POINTS

(1) The ZNWR instruction can be executed only to QnACPU target
    station.
    In case of AnUCPU target station, you can access only via
    MELSECNET/10.

(2) Give identical parameter device settings at the source and
    destination stations.
```

REMARKS

1)*1: The network number of the object station should be specified between 1 to 239.
If 0 is specified as the network number, a station connected to MELSECNET(/II)
becomes the object

2)*2: It is possible to set between 1 to 230.
However, when using MELSECNET(/II), 1 to 32 can be set.

Function

(1) In the Ethernet system, this reads the n2 amount of data from the word device specified by (S) of the station connected to the network number specified by Jn and n1 to the device specified by (D1) onward.
When the device data has been read from the object station, the completion device specified by (D2) goes ON.

[Host station]   [Response station]
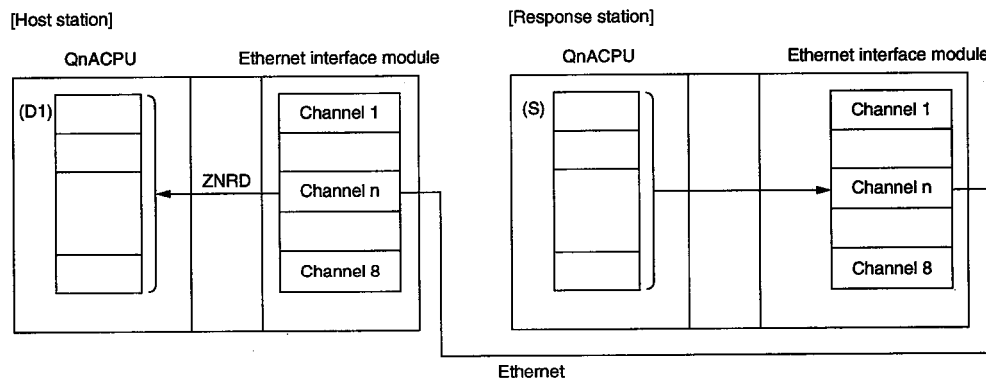
(2) It is not possible to execute two or more ZNRD instructions for the same channel.
If execution conditions are met at the same time for two or more locations, a handshake is automatically performed and the later instruction waits until the channel can be used.

(3) It is possible to check the status during execution of the ZNRD instruction and normal/error completion status using the communication directive flag for the channel used, and it is possible to check the status of the completion device (D2) specified by the setting data.
(a) Completion device(D2):
Goes ON during execution of the ZNRD instruction, and goes OFF at the END processing of the scan when writing is finished

(b) Status display at completion device [(D2)+1]:
Goes ON at the END processing of the scan when the ZNRD instruction is completed, and goes OFF at the next END processing.
• Normal completion: Remains OFF with no change.
• Error completion: Goes ON at the END processing of the scan of the completed ZNRD instruction, and goes OFF at the next END processing.

[Host station operation during execution of the ZNRD instruction]
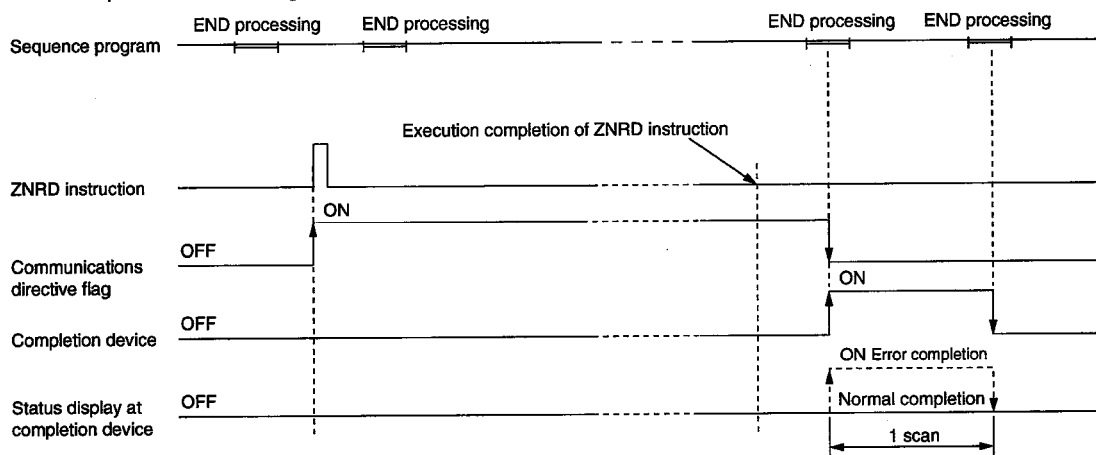
Operation Error

(1) Operation errors occur in the following cases. The error flag (SM0) goes ON, and the error code is stored in SD0.

- n2 is not 1 to 230. (In case of MELSECNET(/II), n2 is not 1 to 32.)

  (Error code: 4100)

- The setting for n1 is outside the setting range.   (Error code: 4100)

- The Ethernet module of the host station is offline. (Error code: 4102)

APPENDIX

APPENDIX 1 LIST OF PROCESSING TIMES

(1) AD61(S1) control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
PVWR1		226	170	85
PVWR2		226	170	85
SVWR1		245	184	92
SVWR2		247	186	93
PVRD1		245	184	92
PVRD2		245	184	92

(2) AD59(S1) control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
PRN	2 characters	136	102	51
	96 characters	136	102	51
PR	2 characters	128	96	48
	96 characters	128	96	48
GET	1 word	277	208	104
	96 words	790	594	297
PUT	1 word	277	208	104
	96 words	790	594	297

(3) AJ71PT32-S3 control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
INPUT		165	124	62
PRN	1 character	144	108	54
	96 characters	144	108	54
PR	1 character	136	102	51
	96 characters	136	102	51
GET	FROM 1 time	128	96	48
	FROM 16 times	1,319	992	496
MINIERR		48	36	18

(4) AJ71C21(S1) control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
PRN2,PRN4	2 characters	136	102	51
	96 characters	136	102	51
PR2,PR4	2 characters	125	94	47
	96 characters	125	94	47
INPUT2,INPUT4		138	104	52
GET	1 word	141	106	53
	96 words	141	106	53
PUT	1 word	144	108	54
	96 words	144	108	54

(5) Computer link module control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
PRN	2 characters	138	104	52
	96 characters	138	104	52
PR	2 characters	128	96	48
	96 characters	128	96	48
INPUT		141	106	53

(6) AJ71QC24 control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
PUTE		303	227	114
GETE		284	213	107
ONDEMAND		312	234	117
OUTPUT		331	248	124
PRR		267	200	100
INPUT		331	248	124
BIDOUT		332	249	125
BIDIN		317	238	119
SPBUSY		57	43	22
READ		761	571	286
SREAD		849	637	319
WRITE		775	581	291
SWRITE		859	644	322
SEND		568	426	213
RECV		391	293	147
REQ		519	389	195

(7) ID interface module instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
IDINIT1/IDINIT2		267	200	100
IDRD1/IDRD2	1 point	351	263	132
	96 points	352	264	132
IDWD1/IDWD2	1 point	648	486	243
	96 points	1205	904	452
IDARD1/IDARD2	1 point	352	264	132
	96 points	352	264	132
IDAWD1/IDAWD2	1 point	723	542	271
	96 points	1251	938	469
IDCMP1/IDCMP2	1 point	653	490	245
	96 points	1176	882	441
IDFILL1/IDFILL2	1 point	635	476	238
	96 points	637	478	239
IDCOPY1/IDCOPY2	1 point	939	704	352
	96 points	939	704	352
IDCRD1/IDCRD2	1 point	397	298	149
	1,000 points	405	304	152
IDCWD1/IDCWD2	1 point	743	557	279
	1,000 points	6320	4740	2370
IDSRD1/IDSRD2	1 point	372	279	140
	1,000 points	375	281	141
IDSWD1/IDSWD2	1 point	791	593	297
	1,000 points	6251	4688	2344
IDFRD1/IDFRD2	1 point	399	299	150
	1,000 points	401	301	151
IDFWD1/IDFWD2	1 point	768	576	288
	1,000 points	6293	4720	2360

(8) CC-Link control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
RIRD		551	413	207
RIWT		684	513	257
RISEND		1059	749	397
RIRCV		1053	790	395
RIFR		639	479	240
RITO		692	519	260
CCL/CCLEND		700	525	263
SPCBUSY		133	100	50
SPCCLR		329	247	124

(9) AD75 control instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
PSTART		349	262	131
PHOSTA		367	275	138
PZPR		328	246	123
PADCH		196	147	74
PJOG+		341	256	128
PJOG-		372	279	140
PMPG		384	288	144
PSPCH		379	284	142
PERRST		291	218	109
PBPSET		571	428	214
PEPSET		705	529	265
POPSET		580	435	218
PPOSET		573	430	215
PSDSET		437	328	164
PSPSET		364	273	137
PCTSET		576	432	216
PERWR		335	251	126
PMDRD		541	406	203
PEFSET		552	414	207

(10) Ethernet module instructions

Instruction	Condition	Q2A(S1), Q2AS	Q3A	Q4A, Q2ASH
EPRSET		0	0	0
READ		883	662	331
SREAD		1043	782	391
WRITE		887	665	333
SWRITE		945	709	355
SEND		661	496	248
RECV		515	386	193
REQ	When clock data reading	563	422	211
ZNRD		765	574	287
ZNWR		1051	788	394

WARRANTY

Please confirm the following product warranty details before starting use.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the dealer or Mitsubishi Service Company. Note that if repairs are required at a site overseas, on a detached island or remote place, expenses to dispatch an engineer shall be charged for.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
2. Failure caused by unapproved modifications, etc., to the product by the user.
3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
7. Any other failure found not to be the responsibility of Mitsubishi or the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Product supply (including repair parts) is not possible after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of chance loss and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, chance losses, lost profits incurred to the user by Failures of Mitsubishi products, damages and secondary damages caused from special reasons regardless of Mitsubishi's expectations, compensation for accidents, and compensation for damages to products other than Mitsubishi products and other duties.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

(1) In using the Mitsubishi MELSEC programmable logic controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable logic controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi general-purpose programmable logic controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or National Defense purposes shall be excluded from the programmable logic controller applications.

Note that even with these applications, if the user approves that the application is to be limited and a special quality is not required, application shall be possible.

When considering use in aircraft, medical applications, railways, incineration and fuel devices, manned transport devices, equipment for recreation and amusement, and safety devices, in which human life or assets could be greatly affected and for which a particularly high reliability is required in terms of safety and control system, please consult with Mitsubishi and discuss the required specifications.

QnACPU
Programming Manual (Special Function Module)

MODEL	QNA-P(TOKU)-E
MODEL CODE	13JF56
SH(NA)-4013-B(0312)MEE	

▲ MITSUBISHI ELECTRIC CORPORATION

When exported from Japan, this manual does not require application to the
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Specifications subject to change without notice.