

MITSUBISHI

PROGRAMMABLE CONTROLLER

MELSEC-A

User's Manual

Pulse catch module type A1SP60 (Hardware)

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.



1. GENERAL DESCRIPTION

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This User's Manual explains the specifications, handling, and how to use the A1SP60 type pulse catch module (hereafter called the A1SP60) that is used with an AnSCPU.

An A1SP60 has a pulse catch function that can catch a short width pulse (a minimum of 0.5 msec width) that cannot be caught by the normal input module.

- (1) An A1SP60 applies to an AnSCPU.
- (2) Number of A1SP60 modules is not limited.

1.1 Features

- (1) An A1SP60 has both a pulse catch function and a normal input function.
Either of the function can be selected at every 4 points by DIP switches.
- (2) An input signal is latched by the pulse catch function.
The method of resetting a latched signal is selected by DIP switches.
 - (a) A latched signal is reset by an output Y which corresponds to the input signal, in case of the direct I/O control mode.
 - (b) A latched signal is reset by sequence refresh processing in the refresh I/O control mode.

2. SPECIFICATIONS

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2.1 General Specifications

Item	Specifications				
Operating ambient temperature	0 to 55 °C (See the important notice described below)				
Storage ambient temperature	-20 to 75 °C				
Operating ambient humidity	10 to 90% RH, non-condensing				
Storage ambient humidity	10 to 90% RH, non-condensing				
Vibration resistance	Conforms to JIS C 0911	Frequency	Acceleration	Amplitude	Sweep Count
		10 to 55 Hz	—	0.075 mm (0.003 in)	10 times (1 octave/minute)
		55 to 150 Hz	9.8 m/s ² (1g)	—	—
Shock resistance	Conforms to JIS C 0912 (98 m/s ² (10g) x 3 times in 3 directions)				
Noise durability	By noise simulator of 1500 Vpp voltage, 1 µsec noise width and 25 to 60 Hz noise frequency				
Dielectric withstand voltage	1500 VAC for 1 minute across AC external terminals and ground 500 VAC for 1 minute across DC external terminals and ground				
Insulation resistance	5 MΩ or greater by 500 VDC insulation resistance tester across AC external terminals and ground				
Grounding	Class 3 grounding; Ground to the panel if proper grounding is not available				
Operating ambience	Free of corrosive gases. Dust should be minimal.				
Cooling method	Self cooling				

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Specifications subject to change without notice.

REMARKS

- (1) One octave marked *1 indicates a change from the initial frequency to double or half frequency. For example, any of the changes from 10 to 20 Hz, from 20 to 40 Hz, or 20 to 10 Hz are referred to as one octave.
- (2) *2JIS: Japanese Industrial Standard

IMPORTANT

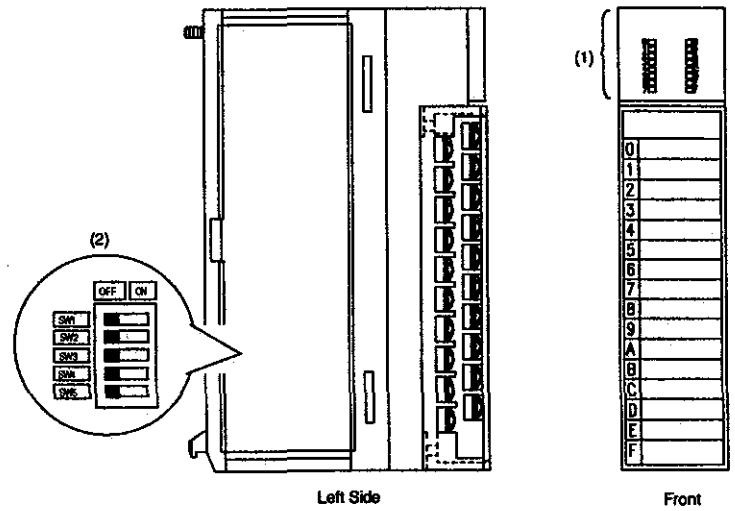
Restriction for UL standard approved products

In order to be recognized as UL listed products, the following restrictions apply;

- (1) Operating ambient temperature is limited from 0 to 50°C
- (2) A class 2 power supply recognized by the UL standard must be used

3. NOMENCLATURE

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Left Side

Front

Number	Contents			
(1)	LED			
	Lit when there is external input. (Voltage is applied)			
(2)	Mode selection switch			
	Set this switch when a CPU is set Factory-set to OFF			
	Switch	Item	OFF	ON
	SW1	X00 to X03	Pulse catch function	Normal input function
	SW2	X04 to X07		
	SW3	X08 to X0B		
SW4	X0C to X0F			
SW5	Resetting method	Reset in the direct mode	Reset in the refresh mode	

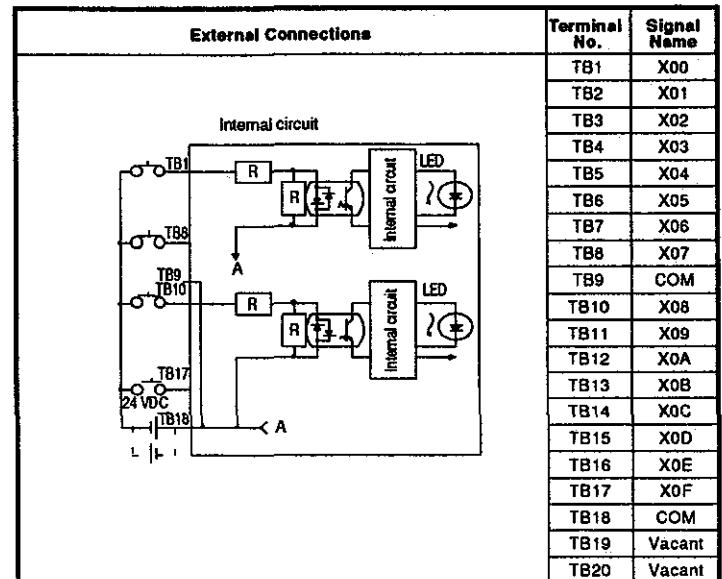
* Corresponds to the I/O control mode of PC CPU

2.2 Performance Specifications

Items	Specifications	
Input type	DC input sink/source common use type	
Number of I/O points	16 points (I/O allocation: output 16 points)	
Isolation method	Photocoupler insulation	
Rated input voltage	24 VDC	
Rated input current	Approx. 7 mA	
Operating voltage range	19.2 to 26.4 VDC	
Number of points of maximum simultaneous input	100% simultaneous ON	
ON voltage/ON current	13 V or more/3.5 mA or more	
OFF voltage/OFF current	6.5 V or less/1.7 mA or less	
Input resistance	Approx. 3.3 kΩ	
Response time	OFF → ON	0.5 msec or less
	ON → OFF	1.0 msec or less
Minimum input pulse width	0.5 msec	
Common method	16 points/common	
Operation display	ON display (LED)	
External connection method	20 points terminal block connectors (M3.5 x 7 screws)	
Applicable wire gauges	0.75 to 1.5 mm ²	
Applicable solderless terminals	1-25-3.5, 2-3.5, 1-25-YS3A, 2-YS3A, V1-25-M3, V2-S3, V1-25-YS3A, V2-YS3A	
Internal current consumption (5 VDC)	55 mA	
Weight (kg (lb))	0.19 (0.42)	

4. EXTERNAL CONNECTIONS

4. EXTERNAL CONNECTIONS



POINT

To prevent improper operation due to noise, use shielded cables

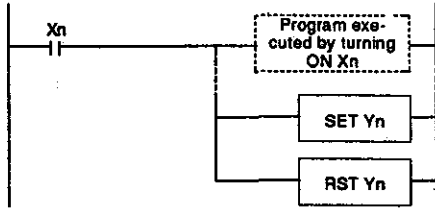
5. PULSE CATCH OPERATIONS

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5.1 Pulse Catch Operations in the Direct Mode

This section explains reset program of a latched signal and the DIP switch settings and timing in case an AnSCPU is set at the direct I/O control mode

[Reset program]



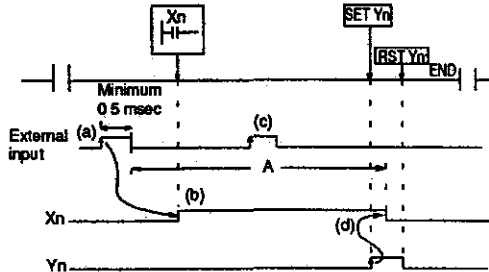
[DIP switch settings]

SW 1 to 4: Set the switches that correspond to the device numbers used for the pulse catch function to OFF

SW5 : Make sure to set it to OFF.

[Timing]

Relationship between the Xn and Yn signals used for resetting is shown below



Operation contents

- (a) A minimum 0.5 msec pulse is given from the external
- (b) Xn is turned ON by the input (leading edge)
- (c) Another input is ignored during A
- (d) When Yn goes ON, Xn goes OFF

This section explains the reset program of a latched signal and DIP switch settings and timing in case an AnSCPU is set at the direct I/O control mode

[Reset program]

Unnecessary.

Reset signals of Y have no meaning

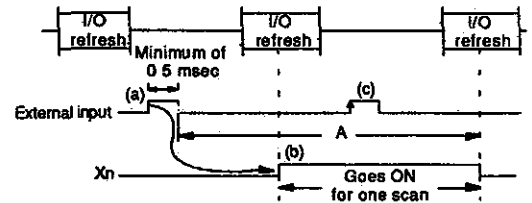
[DIP switch settings]

SW 1 to 4: Set the switches that corresponds to the device numbers that is used for the pulse catch function to OFF

SW5 : Make sure to set it to ON

[Timing]

The relationship between the Xn signal and I/O refresh used for resetting is shown below



Operation contents

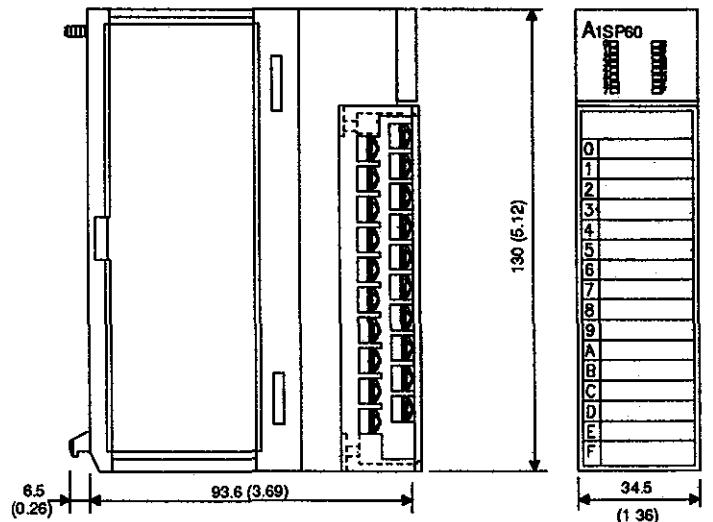
- (a) A minimum 0.5 msec pulse is given from the external
- (b) Xn is turned ON for one scan by the input (leading edge)
- (c) Another input is ignored during A
- (d) Xn is turned OFF by the second refresh processing from the external input

POINT

Do not use the SEG instruction with an A1SP60

6. OUTSIDE DIMENSIONS

6 OUTSIDE DIMENSIONS



Unit mm(inch)

REVISIONS

A	
Apr., 1994	

IMPORTANT

- (1) Design the configuration of a system to provide an external protective or safety interlocking circuit for the CPs
- (2) The components on the printed circuit boards will be damaged by static electricity, so avoid handling them directly. If it is necessary to handle them take the following precautions
 - (a) Ground human body and work bench
 - (b) Do not touch the conductive areas of the printed circuit board and its electrical parts with and non-grounded tools etc

Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment

All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples

Owing to the very great variety in possible applications of this equipment, you must satisfy yourself as to its suitability for your specific application