# **MITSUBISHI**

# AnS Module Type I/O **User's Manual**

Mitsubishi Programmable Controller

## SAFETY PRECAUTIONS •

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product only. For the safety precautions of the programmable controller system, refer to the user's manual for the CPU module used. In this manual, the safety precautions are classified into two levels: "AWARNING" and "ACAUTION".

WARNING

Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "ACAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety. Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

## [Design Precautions]

# **MARNING**

- Create a safety circuit outside the programmable controller to ensure the whole system will operate safely even if an external power failure or a programmable controller failure occurs. Otherwise, incorrect output or malfunction may cause an accident.
  - (1) When creating an emergency stop circuit, a protection circuit or an interlock circuit for incompatible actions such as forward/reverse rotation or for damage prevention such as the upper/lower limit setting in positioning, create it outside the programmable controller. Install the emergency stop switch outsid the controlpanel so that workers can operate it easily.
  - (2) When the programmable controller detects the following error conditions, it stops the operation and turn off all the outputs.
    - The overcurrent or overvoltage protector of the power supply module is activated.
    - The programmable controller CPU detects an error such as a watchdog timer error by the self-diagnostics function.
    - In the case of an error undetectable by the programmable controller CPU, such as an I/O control part error, all the outputs may turn on. In order to make all machines operate safely in such a case, set up a fail-safe circuit or a specific mechanism outside the programmable controller. For a failsafe circuit example, refer to the user's manual for the CPU module used.
  - (3) Depending on the failure of the output module's relay or transistor, the output status may remain ON or OFF incorrectly. For output signals that may lead to a serious accident, create an external monitoring circuit.

# [Design Precautions]

## **⚠ WARNING**

- If load current more than the rating or overcurrent due to a short circuit in the load has flowed in the output module for a long time, it may cause a fire and smoke. Provide an external safety device such as a fuse.
- Design a circuit so that the external power will be supplied after power-up of the programmable controller.
  - Activating the external power supply prior to the programmable controller may result in an accident due to incorrect output or malfunction.
- For the operation status of each station at a communication error in data link, refer to the respective data link manual.
  - Otherwise, incorrect output or malfunction may cause an accident.
- When controlling a running programmable controller (data modification) by connecting a peripheral device to the CPU module or a PC to a special function module, create an interlock circuit on sequence programs so that the whole system functions safely all the time.
  - Also, before performing any other controls (e.g. program modification, operating status change (status control)), read the manual carefully and ensure the safety.
  - In these controls, especially the one from an external device to a programmable controller in a remote location, some programmable controller side problem may not be resolved immediately due to failure of data communications.
  - To prevent this, create an interlock circuit on sequence programs and establish corrective procedures for communication failure between the external device and the programmable controller CPU.
- When setting up the system, do not allow any empty slot on the base unit.
   If any slot is left empty, be sure to use a blank cover (A1SG60) or a dummy module (A1SG62) for it.
  - When using the extension base unit, A1S52B(S1), A1S55B(S1) or A1S58B(S1), attach the included dustproof cover to the module in slot 0.
  - Otherwise, internal parts of the module may be flied in the short circuit test or when an overcurrent or overvoltage is accidentally applied to the external I/O section.

# **A** CAUTION

- Do not install the control lines or communication cables together with the main circuit or power lines, or bring them close to each other.
  - Keep a distance of 100mm (3.94inch) or more between them.
  - Failure to do so may cause malfunctions due to noise.
- When an output module is used to control the lamp load, heater, solenoid valve, etc., a large current (ten times larger than the normal one) may flow at the time that the output status changes from OFF to ON. Take some preventive measures such as replacing the output module with the one of a suitable current rating.

# [Installation Precautions]

## **↑** CAUTION

- Use the programmable controller under the environment specified in the user's manual for the CPU module used.
  - Otherwise, it may cause electric shocks, fires, malfunctions, product deterioration or damage.
- Install the module after inserting the pegs on the bottom of the module securely into the base unit peg holes.
  - Not doing so could cause a malfunction, failure or fall.
  - Tightening the screw excessively may damage the screw and/or the module, resulting in a drop of the module, a short circuit or malfunctions.
- Be sure to shut off all the phases of the external power supply used by the system before mounting or removing the module.
  - Failure to do so may damage the module.
- Do not directly touch the conductive part or electronic components of the module.

  Doing so may cause malfunctions or a failure of the module.

# [Wiring Precautions]

# **MARNING**

- Be sure to shut off all phases of the external power supply used by the system before wiring. Failure to do so may result in an electric shock or damage of the product.
- Before energizing and operating the system after wiring, be sure to attach the terminal cover supplied with the product.
  - Failure to do so may cause an electric shock.

# [Wiring Precautions]

## **↑** CAUTION

- Always ground the FG and LG terminals to the protective ground conductor. Failure to do so may cause an electric shock or malfunctions.
- Wire the module correctly after confirming the rated voltage and terminal layout.
   Connecting a power supply of a different voltage rating or incorrect wiring may cause a fire or failure.
- Press, crimp or properly solder the connector for external connection with the specified tool. Incomplete connection may cause a short circuit, fire or malfunctions.
- Tighten terminal screws within the specified torque range.
   If the screw is too loose, it may cause a short circuit, fire or malfunctions.
   If too tight, it may damage the screw and/or the module, resulting in a short circuit or malfunctions.
- Carefully prevent foreign matter such as dust or wire chips from entering the module. Failure to do so may cause a fire, failure or malfunctions.
- Install our programmable controller in a control panel for use.
   Wire the main power supply to the power supply module installed in a control panel through a distribution terminal block.

Furthermore, the wiring and replacement of a power supply module have to be performed by a maintenance worker who acquainted with shock protection.

(For the wiring methods, refer to user's manual for the CPU module used.)

# [Startup and Maintenance Precautions]

# **⚠ WARNING**

- Do not touch any terminal during power distribution.

  Doing so may cause an electric shock.
- Be sure to shut off all phases of the external power supply used by the system before cleaning or retightening the terminal screws or module mounting screws.

Failure to do so may result in an electric shock.

If they are too loose, it may cause a short circuit or malfunctions.

Tightening the screw excessively may damage the screw and/or the module, resulting in a drop of the module, a short circuit or malfunctions.

# [Startup and Maintenance Precautions]

## **↑** CAUTION

• When performing online operations (especially, program modification, forced output or operating status change) by connecting a peripheral device to the running CPU module, read the manual carefully and ensure the safety.

Incorrect operation will cause mechanical damage or accidents.

- Do not disassemble or modify each of modules.
   Doing so may cause failure, malfunctions, personal injuries and/or a fire.
- When using a wireless communication device such as a mobile phone, keep a distance of 25cm (9.84inch) or more from the programmable controller in all directions.

  Failure to do so may cause malfunctions.
- Be sure to shut off all the phases of the external power supply used by the system before
  - Failure to do so may result in failure or malfunctions of the module.
- Do not install/remove the terminal block more than 50 times after the first use of the product. (IEC 61131-2 compliant)
- Before handling modules, touch a grounded metal object to discharge the static electricity from the human body.

Failure to do so may cause failure or malfunctions of the module.

# [Disposal Precautions]

mounting or removing the module.

# **↑** CAUTION

• When disposing of the product, treat it as an industrial waste.

## • CONDITIONS OF USE FOR THE PRODUCT •

- (1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
  - i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
  - ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.
- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

#### **REVISIONS**

\* The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision	
Feb.,1995	IB (NA) 66541-A	First edition	
Nov.,1995	IB (NA) 66541-B	Addition of models	
		A1SX10EU, A1SX20EU, A1SY10EU, A1SY14EU, A1SY18AEU, A1SY28EU	
		Correction	
		INTRODUCTION, CONTENTS, Manuals, Page 1-2, 1-3, 1-4, 4-7, 4-8	
Jul.,1996	IB (NA) 66541-C	Correction	
		Section 4.2	
Sep.,1996	IB (NA) 66541-D	Correction	
		Section 3.2, 4.1.1, 4.1.2, 4.1.3	
Mar.,1997	IB (NA) 66541-E	Addition	
		A6TB[]36[], A6TB[]54[],A6TBX70[], Chapter 5	
		Correction	
		Section 4.2.1, 4.2.2	
Sep.,1997	IB (NA) 66541-F	Addition	
		SAFETY PRECAUTIONS, Section 1.1, 1.2	
ł		Correction	
		CONTENTS, Section 1.2, 2.1 to 2.4, 2.8, 3.1 to 3.5, 3.8 to 3.11, 3.13, 4.1.2 to 4.1.5, 4.2.2, 5.1, 6.1, 6.2, Chapter 7, APPENDICES	
Dec.,1997	IB (NA) 66541-G	Addition	
		Section 1.2, 3.15 (A1SY81EP)	
		Correction	
		SAFETY PRECAUTIONS, CONTENTS, APPENDICES	
May.,1999	IB (NA) 66541-H	Addition of models	
		A1SX82-S1, A1SY82, A1SH42-S1	
Oct., 2002	IB (NA) 66541-I	Equivalent to Japanese version I	
		Partial correction	
		CONTENTS, Manuals, Section 1.2, 2.1 to 2.4, 2.6, 2.8, 3.1 to 3.5, 3.8 to 3.11, 3.13, 4.1.3 to 4.1.6, 5.1, 8.1, 8.2, APPENDICES	
		Partial addition	
		Section 2.1 to 2.2.1, APPENDICES	
		Addition	
		Section 1.1, WARRANTY	

\* The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision
May., 2003	IB (NA) 66541-J	Partial correction Section 1.2
Dec., 2003	IB (NA) 66541-K	Addition of models A1SY42P Partial correction SAFETY PRECAUTIONS, Section 1.2, 5.1 Addition Section 3.11.1
Nov., 2004	IB (NA) 66541-L	Partial correction SAFETY PRECAUTIONS, Section 1.2, 3.7.1, 3.8, 3.15, 5.2.1, 5.2.2
Sep., 2005	IB (NA) 66541-M	Partial correction  Chapter 1, Section 1.1, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.10, 2.11, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.10, 3.11, 3.11.1, 3.19, 4.1.1, 4.1.2, 4.1.3, 4.1.6, 5.1, Chapter 7, Appendix 1.2, 1.5.1, 1.5.2, 1.5.3, 1.6.2  Chapter 2 through 4 have been changed for the external connection diagrams.  Addition  Appendix 1.5.4
Jul., 2006	IB (NA) 66541-N	Addition of models A1SY40P, A1SY41P Partial correction SAFETY PRECAUTIONS, Section 1.2, 3.7, 3.7.1, 5.1, 6.1 Addition Section 3.9.1, 3.10.1
Apr., 2008	IB (NA) 66541-O	Addition of models A1SH42P, A1SH42P-S1  Partial correction  Section 1.2, 3.6, 3.7, 3.8, 3.9.1, 3.10.1, 3.11.1, 3.19, 4.1.1, 4.1.3, 5.1, 5.2.1, 5.2.2, 8.1, Appendix 1.6.1, 1.6.3, 1.7.1  Chapter 2 through 4 have been changed for the external connection diagrams.  Addition  Section 4.1.2, 4.1.4

\* The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision
Jan., 2009	IB (NA) 66541-P	Partial correction Section 1.1, 1.2, 8.2 Addition Section 1.2.1, 1.2.2, 1.2.3, 1.2.4
Sep., 2010	IB (NA) 66541-Q	External connections are reviewed according to IEC 60617.  Partial correction  SAFETY PRECAUTIONS, Section 1.2.1, 1.2.2, Chapter 2 to 4, Chapter 5, Section 8.1  Addition  CONDITIONS OF USE FOR THE PRODUCT
Dec., 2013	IB (NA)-66541-R	Partial correction  Section 1.2.2, 1.2.4, 2.7, 2.8, 2.9, 2.11, 2.12, 3.11, 3.12, 3.13, 3.14, 3.19, 3.21, 3.22, 3.23, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 8.1, Appendix 1.7.1
Oct., 2014	IB (NA)-66541-S	Partial correction Section 3.14, 4.1.2, 4.1.4  Addition COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

#### **INTRODUCTION**

Thank you for purchasing the MELSEC-A series programmable controller. Before using the equipment, please read this manual carefully to develop full familiarity with the functions and performance of the A-series programmable controller you have purchased, so as to ensure correct use. Please forward a copy of this manual to the end user.

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#### **MANUALS**

The following manuals are also relevant to this product.

#### Related Manuals

Manual name	Manual number (model code)
Type A1S/A1SC24-R2/A2SCPU(S1) User's Manual  Specifications, functions, and handling of the A1SCPU, A1SC24-R2CPU, and A2SCPU(S1), and specifications and handling of memory cassettes	IB-66320 (13J672)
Type A2USCPU(S1) User's Manual Specifications, functions, and handling of the A2USCPU(S1), and specifications and handling of memory cassettes	IB-66536 (13JE78)
Type A2USHCPU-S1/A2USCPU(S1)/A2ASCPU(S1/S30) User's Manual Specifications, functions, and handling of the A2USHCPU-S1, and specifications and handling of memory cassettes	IB-66789 (13JL30)
Type A1SJH(S8)/A1SH/A2SHCPU(S1) User's Manual Specifications, functions, and handling of the A1SJH(S8)CPU, A1SHCPU, and A2SHCPU(S1)CPU, and specifications and handling of memory cassettes	IB-66779 (13JL22)
Model Q2AS(H)CPU(S1) User's Manual Specifications, functions, and handling of the Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU, and Q2ASHCPU-S1CPU, and specifications and handling of power supply modules, memory cards, and base units	SH-3599 (13J858)

#### COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

#### (1) Method of ensuring compliance

To ensure that Mitsubishi programmable controllers maintain EMC and Low Voltage Directives when incorporated into other machinery or equipment, certain measures may be necessary. Please refer to one of the following manuals.

- User's manual for the CPU module used
- User's manual (hardware) for the CPU module or base unit used

#### (2) Additional measures

No additional measures are necessary for the compliance of this product with EMC and Low Voltage Directives.

MELSEC-A

# 1. GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSRUCTIONS FOR SELECTING THEM

This chapter describes the general specifications of I/O modules and instructions for selecting them.

#### 1.1 General Specifications

Refer to the CPU module user's manual for the general specifications of the I/O modules

#### 1.2 Precaution for Use

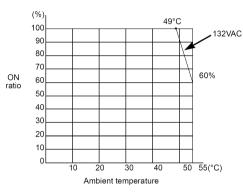
#### 1.2.1 Input module

#### (1) Simultaneous ON points

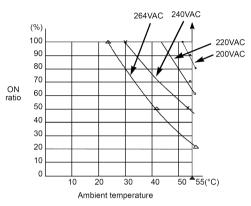
The number of simultaneous on points of input module depends on the input voltage and ambient temperature.

Refer to the derating chart of the input module specifications.

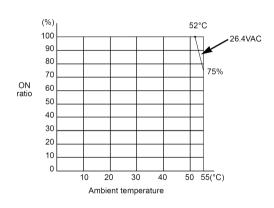
#### A1SX10



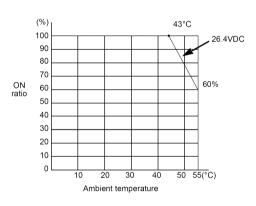
#### A1SX20, A1SX20EU



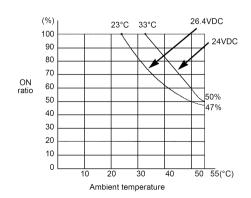
#### A1SX30



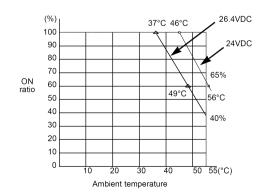
A1SX41(S1/S2), A1SX81(S2)



#### A1SX42(S1/S2)

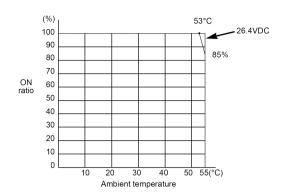


A1SX71

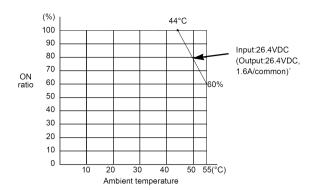


**MELSEC-A** 

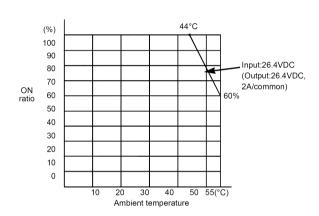
A1SX80-S1



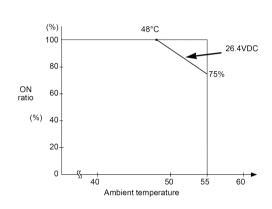
A1SH42. A1SH42-S1



A1SH42P, A1SH42P-S1



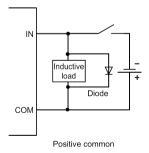
A1SJ-56DT

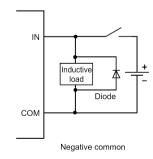


- (2) Precautions for using the DC input module
  - (a) Measures against back EMF

When an inductive load is connected, connect a diode to the load in parallel. Use a diode that meets the following conditions.

- Reverse breakdown voltage is equal to or more than 10 times as large as the circuit voltage.
- Forward current is equal to or more than 2 times as large as the load current.





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#### 1.2.2 Output module

(1) Load and connectable output module

When the relays of the connected load is frequently switched or a coil load (e.g. electromagnet) of large capacity and low power factor is connected, use a triac output module.

(2) Maximum switching frequency when the module drives inductive load

The output must be on for one second or longer and off for one second or longer.

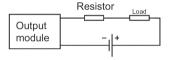
#### (3) Load for connection

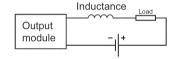
For the A1SY40, A1SY40P, A1SY41, A1SY41P, A1SY42, and A1SY42P, when employing a counter or timer using a DC/DC converter as a load, select an output module whose maximum load current is greater than the inrush current of the connected load.

Depending on the connected load, inrush current may flow at constant period while the output module is on or operating.

Therefore, when an output module is selected according to the average current of the connected load, the module may fail.

When selecting an output module in the manner, take either of the following actions to reduce the effect of inrush current or use the A1SY50, whose maximum load current is great.



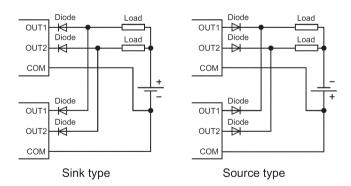


- (4) Precautions for using the transistor output module
  - (a) Action against reverse current

If a transistor output module is wired as shown below, reverse current flows in an output element, causing a failure of the element.

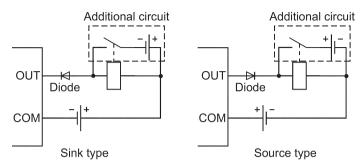
When wiring a transistor output module, connect a diode as shown below.

· When connecting transistor output modules in parallel



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 When incorporating an additional circuit parallel to a transistor output module



#### (5) Built-in fuses

Built-in fuses works to prevent the external cables from being burned when a short circuit occurs in the internal output circuit.

For this reason, the output module may not be protected if the fuses blow any other reasons except for a short circuit.

#### (6) Simultaneous ON points

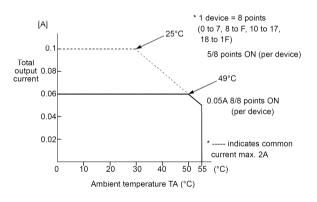
The simultaneous on points depends on the input voltage and ambient temperature.

Select simultaneous on points with referring to the following.

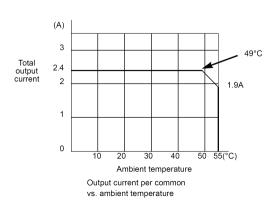
#### A1SY28A

#### (A) 8 Load voltage 132VAC Total output current 6 264VAC 4 2 0 10 20 30 40 50 55(°C) Ambient temperature

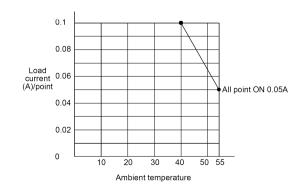
#### A1SY81EP



#### A1SY28EU



A1S42Y



- (7) Precautions for using the contact output module
  When using the contact output module, consider the following.
  - · Relay life (contact switching life)
  - · Effects to relay life due to connected load
  - · Measures against back EMF

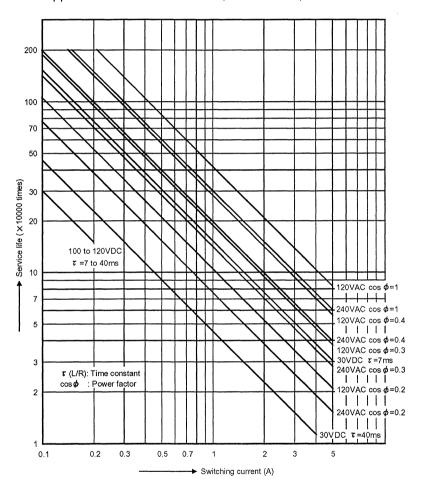
#### (a) Relay life

The relay life depends on the operating environment.

Select a module according to the operating environment.

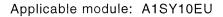
The relay lives shown below are the actual service values, not the guaranteed values. Replace the module well in advance since the actual switching life may be shorter than the one shown below.

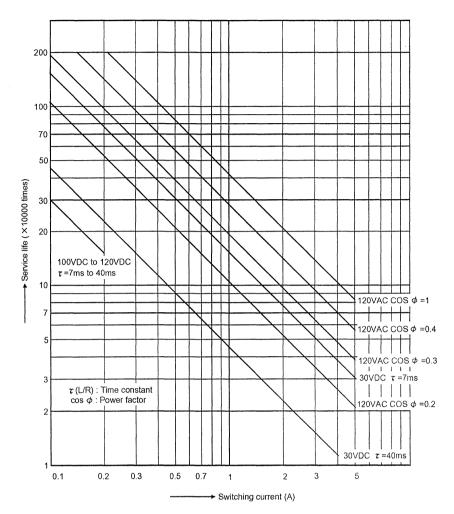
Applicable module.....A1SY10, A1SJ-56DR, A1SX48Y18



Operating environment	Switching life
Rated switching voltage/current load	100 thousand times
200VAC 1.5A, 240VAC 1A (COS $\phi$ =0.7)	100 thousand times
200VAC 1A, 240VAC 0.5A (COS $\phi$ =0.35)	100 thousand times
24VDC 1A, 100VDC 0.1A (L/R=7ms)	100 thousand times

#### **Point**

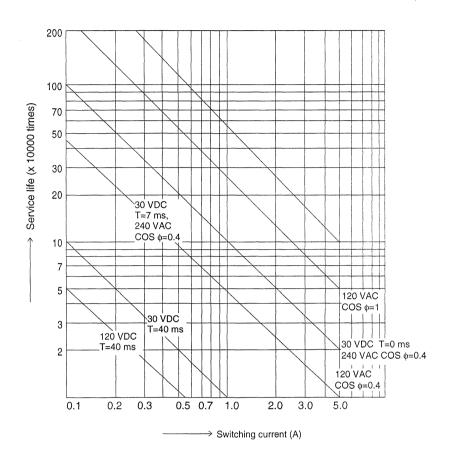




Operating environment	Switching life
Rated switching voltage/current load	200 thousand times
100VAC 2A, 120VAC 2A (COS $\phi$ =0.7)	200 thousand times
100VAC 2A, 120VAC 2A (COS $\phi$ =0.35)	100 thousand times
24VDC 1.5A, 100VDC 0.1A (L/R=7ms)	100 thousand times

#### **Point**

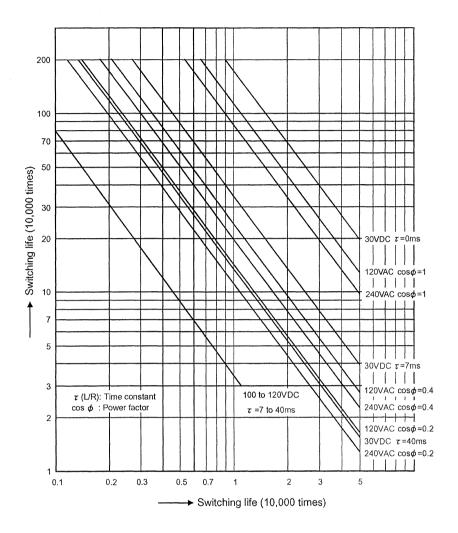
Applicable module: A1SY14AEU



Operating environment	Switching life
Rated switching voltage/current load	200 thousand times
200VAC 2A, 240VAC 1.8A (COS $\phi$ =0.7)	200 thousand times
200VAC 1.1A, 240VAC 0.9A (COS $\phi$ =0.35)	200 thousand times
24VDC 1.1A, 100VDC 0.1A (L/R=7ms)	200 thousand times

#### Point

Aplicable module: A1SY18A, A1SY18AEU



Operating environment	Switching life
Rated switching voltage/current load	200 thousand times
200VAC 1.5A, 240VAC 1A (COS $\phi$ =0.7)	200 thousand times
200VAC 0.75A, 240VAC 0.5A (COS $\phi$ =0.35)	200 thousand times
24VDC 1A, 100VDC 0.1A (L/R=7ms)	200 thousand times

#### Point

(b) Effects to relay life due to connected load

The actual relay life may be significantly shortened compared to the one shown in (7)(a), depending on the type of a load connected and the characteristics of inrush current.

Also, the inrush current may cause contact welding.

Take the following measures to prevent shortening of the relay life and the contact welding.

- Select a load so that the inrush current will be within the rated current of the module.
- Connect an external relay that can withstand the inrush current.

The following table shows the relation between the road and the inrush current. Select a load so that the inrush current (i) and the rated current (io) will be within the rated switching current specified for the output module used.

The inrush current may flow for a longer time depending on the load.

Load type	Signal waveform diagram	Inrush current(i)/rated current (io)	Signal waveform diagram	Inrush current(i)/rated current (io)
Inductive load	Load of a solenoid  i i i Inrush current io: Rated current 0.07 to 0.1 seconds	Approx. 10 to 20 times	Load of an electromagnetic contactor  i: Inrush current io: Rated current 0.017 to 0.033 seconds (1 to 2 cycles)	Approx. 3 to 10 times
Lamp load	Load of an incandescent bulb  i io i: Inrush current io: Rated current Approx. 0.33 seconds	Approx. 3 to 10 times	Load of a mercury lamp  i i ii Inrush current io: Rated current 180 to 300 seconds (3 to 5 minutes)	Approx. 3 times <sup>*1</sup>
Lamp load	Load of a fluorescent  i i io  i: Inrush current io: Rated current	Approx. 5 to 10 times	_	_

(To the next page)

<sup>\*1:</sup> Typical electric-discharge lamp circuit includes discharge tubes, transformers, choke coils, and capacitors. Therefore, note that the inrush current may flow 20 to 40 times as large as the rated current in the case of high power factor and low power impedance.

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Load type	Signal waveform diagram	Inrush current(i)/rated current (io)	Signal waveform diagram	Inrush current(i)/rated current (io)
Capacitive load	Capacitive load*2  i ic i: Inrush current io: Rated current  0.008 to 0.33 seconds (0.5 to 2 cycles)	Approx. 20 to 40 times	_	_

<sup>\*2:</sup> When the wiring of the circuit is long, take care of the wire capacity.

#### (c) Measures against back EMF

Configure a contact protection circuit for extending the contact life, preventing noise when the contact is cut off, and suppressing the generation of carbide and nitric acid due to arc discharge.

An Incorrect contact protection circuit may cause contact welding.

Also, when using the contact protection circuit, the recovery time may be long. The following table shows the representative examples of the contact protection circuit.

	Circuit example	Method for selecting elements	Remarks
Capacitor + Resistor method (CR method)	Capacitor Inductive load  Capacitor Inductive load  Capacitor Inductive load	Refer to the following for constants of the capacitor and resistor. Note that the following values may differ depending on a nature of the load and a variation of characteristics of it.  • Capacitor 0.5 to 1 (μF) against contact current of 1A  • Resistor 0.5 to 1 (Ω)against contact voltage of 1V  Use a capacitor whose withstand voltage is 200 to 300V. In AC circuit, use a capacitor having no polarity.	If a load is from a relay or solenoid, the recovery time delays. A capacitor suppresses electric discharge while a contact is off, and a resistor restricts a flow of current while a contact is on.
Diode method	Diode A Inductive load	Use a diode that meets both conditions shown below.  Reverse breakdown voltage is equal to or more than 10 times as large as the circuit voltage.  The forward current is equal to or more than 2 times as large as the load current.	The recovery time is later than the CR method.
Diode + Zener diode method	Diode Z Inductive load	Use zener voltage for the zener diode equal to or more than the power supply voltage.	The diode method is effective when the recovery time is too late.

<sup>\*1:</sup> When using AC power, impedance of CR must be larger enough than that of the load. (prevention of a malfunction due to leak current from the CR)

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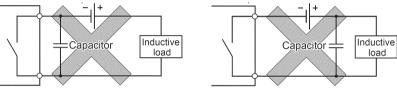
	Circuit example	Method for selecting elements	Remarks
Varistor method	Varistor Inductive load	Select a cut voltage (Vc) for the varistor to meet the following condition.  • Vc > power voltage×1.5(V)  • Vc > power voltage×1.5(V)  ×√2 (When using AC power)  This method is not effective when the Vc is too high.	The recovery time delays slightly.

#### **POINT**

(1) Avoid providing contact protection circuits shown below.

These circuits are effective for preventing an arc at shut-off. However, the contact welding may occur because the charge current flows to capacitor when the contact turns on or off.

A DC inductive load is usually harder for switching than a resistor load, but if a proper protection circuit is configured, the performance will be similar to the resistor load.

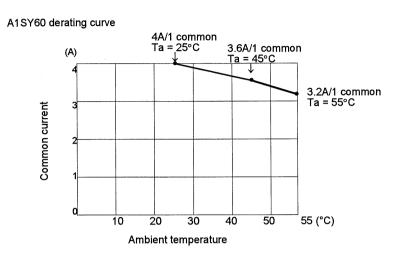


(2) A protection circuit must be provided closely to a load or contact (module). If their distance is far, the protection circuit may not be effective. Appropriate distance is within 50cm.

(8) Precautions for using the A1SY60

The common current of the A1SY60 varies according to ambient temperature.

Select a common current referring to the chart shown below.



#### 1.2.3 Module with protection function

The overload protection function and overheat protection function of the following modules will be explained below.

#### (1) A1SY40P, A1SY41P, A1SY42P, A1SH42P, A1SH42P-S1

Function	Description
Common (Overload and overheat protection functions)	<ul> <li>If an overcurrent keeps flowing due to overload, heat is generated to activate the overheat protective function.</li> <li>Each protection function is designed to protect the internal elements of the module, not the external equipment.</li> </ul>
Overload protection function	<ul> <li>The overload protection function is activated in 1 point increments in terms of 1A to 3A/point.</li> <li>The overload protection function returns operation to normal when the load becomes a rated load.</li> </ul>
Overheat protection function	<ul> <li>The overheat protection function is activated in 1 point increments.</li> <li>The overheat protection function automatically returns operation to normal when heat reduces.</li> </ul>

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#### 1.2.4 Installation and woring

#### (1) 40-pin connector

The A1SX41, A1SX42, A1SY41, A1SY41P, A1SY42 and A1SY42P supplied with soldering-type 40-pin connectors. 40-pin connectors of the pressure-displacement type and crimp contact type are also available. Tools for the pressure displacement and crimp contact type connectors must be procured from the following suppliers:

#### (a) 40-pin connectors

Туре	Model name	Applicable wire size
Soldering connector (straight out type)	A6CON1*1	0.088 to 0.3mm <sup>2</sup> (28 to 22 AWG) (stranded wire)
Crimp connector (straight out type)	A6CON2	28 to 24 AWG (stranded wire)
Pressure-displacement connector (straight out type)	A6CON3	28 AWG (stranded wire) 30 AWG (single wire) Flat cable of 1.27mm pitch
Soldering connector (both for straight out and 45-degree types)	A6CON4*1	0.088 to 0.3mm <sup>2</sup> (28 to 22 AWG) (stranded wire)

<sup>\*1</sup> Use cables with outside diameter of 1.3mm or shorter to connect 40 cables to the connector. In addition, consider the amount of current to be used and select appropriate cables.

#### (b) 40-pin connector crimp-contact and pressure-displacement tools

Type	Model name	Contact
Crimp-contact tool	FCN-363T-T005/H	
	FCN-367T-T012/H	
	(locator plate)	FILLITCH COMPONENT
Dragoure displacement to a	FCN-707T-T001/H	FUJITSU COMPONENT
Pressure-displacement tool	(cable cutter)	
	FCN-707T-T101/H	
	(hand press)	

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#### (2) 37-pin D sub-connector

The 37-pin D sub-connector for the A1SX81 and A1SY81 is a soldering-type connector. Crimp-contact-type and pressure-displacement type 37-pin D sub-connectors are also available.

Tools for the crimp-contact-type connectors must be procured by the user.

#### (a) 37-pin D-sub connectors

Туре	Model name	Applicable wire size
Soldering connector (straight out type)	A6CON1E <sup>*1</sup>	0.088 to 0.3mm <sup>2</sup> (28 to 22 AWG) (stranded wire)
Crimp connector (straight out type)	A6CON2E	24 to 20 AWG (stranded wire)
Pressure-displacement connector (straight out type)	A6CON3E	28 AWG (stranded wire) 30 AWG (single wire)

<sup>\*1</sup> Use cables with outside diameter of 1.3mm or shorter to connect 37 cables to the connector. In addition, consider the amount of current to be used and select appropriate cables.

#### (b) 37-pin D-sub connector crimp-contact and pressure-displacement tools

Туре	Model name	Contact
Crimp-contact tool	91503-1	
	768349-1 (die set)	
	768338-1	Type Flectronics AMD K K
Pressure-displacement tool	91220-1 (cable cutter)	Tyco Electronics AMP K.K.
	91085-2 (hand mini-	
	press)	

#### (3) Tightening torque

The fixing screw tightening torque should be within the following range. Module fixing screw (M4 screw) ..... 78.4 to 117.6N • cm

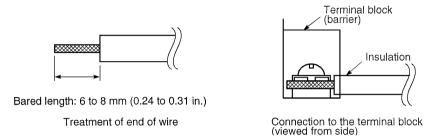
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(4) Precautions for handling the I/O modules compatible with A1SX □□ EU, A1SY □□ EU type marked CE.

When connecting electric cable to the terminal block without using solderless terminals.

(a) Bare the end of insulated wires to expose about 6 to 8 mm of naked wire.

When making connections, ensure that bared wire does not project from the terminal block. If it does, it may close the gap to a distance shorter than that required for insulation between the terminals



- (b) If twisted wire is used, make sure that is does not unravel.
- (5) Terminal block protective cover When the terminal block cover cannot be closed due to wire gauge treatment, etc., replace the terminal block cover with the following product. This protects the charging section.

Type: A1STEC-S

#### Applicable module

	Туре
Input module	A1SX10, A1SX20, A1SX30, A1SX40(S1/S2), A1SX80(S1/S2)
Output module	A1SY10, A1SY18A, A1SY22, A1SY28A, A1SY40, A1SY41P, A1SY50, A1SY60(E), A1SY68A, A1SY80, A1SY81EP
Input/output composite module	A1SX48Y18, A1SX48Y58
Special function module	A1SI61, A1S64AD, A1S62DA, A1S63ADA, A1S62RD3/4, A1SD61, A1SP60

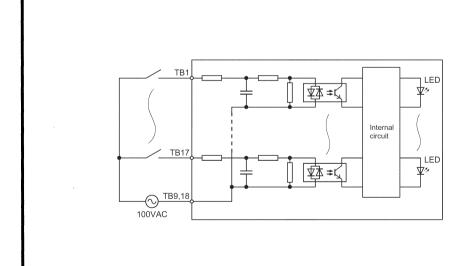
(6) Precaution when Connecting the Uninterruptive Power Supply (UPS)
Use a UPS which employs the constant inverter power supply method with 5 % or less voltage fluctuation.

Do not use a UPS with the constant commercial power supply method.

## 2. INPUT MODULE SPECIFICATIONS

## 2.1 A1SX10 AC Input Module

	Model	AC Input Module		
Specification	s	A1SX10	Appearance	
Number of inpu	t points	16 points		
Isolation metho	d	Photocoupler	A1SX10	
Rated input vol	tage	100 to 120 VAC 50/60 Hz		
Input voltage di	istortion factor	5% or less (See section 1.2.4(6))		
Rated input cur	rent	Approx. 6 mA (100 VAC 60 Hz)	<u> </u>	
Operating volta	ge range	85 to 132 VAC (50/60 Hz ±5%)		司
Max. simultane points	ous input	100% simultaneously ON (at 110 VAC) 60% simultaneously ON (at 132 VAC)	0	_
Inrush current		Max. 200 mA, within 1 ms (132 VAC)	1	$\dashv$
ON voltage/ON	current	80 VAC or higher/5 mA or higher	2	$-\parallel$
OFF voltage/Of	FF current	30 VAC or lower/1.4 mA or lower	3	$-\parallel$
Input impedanc	е	Approx. 18 kΩ (60 Hz), Approx. 21 kΩ (50 Hz)	4	$-\parallel$
Response	$OFF \rightarrow ON$	20 ms or less (100 VAC 60 Hz)	5	$-\parallel$
time	$ON \rightarrow OFF$	35 ms or less (100 VAC 60 Hz)	6	$\dashv$
Common termir arrangement	nal	16 points/common (common terminals: TB9, TB18)	7	
Operating indic	ator	ON state is indicated (LEDs)	8	
External conne	ctions	20-point terminal block connector (M3.5 x 7 screws)	9	
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)	Α	
Applicable solderless terminals		R1.25-3.5, R2-3 RAV1.25-3.5, RAV2-3.5	B C	$-\parallel$
Accessories		None	D	
Internal current consumption (5 VDC)		50 mA (TYP, all points ON)	E	
Weight kg		0.21		
		External Connections		



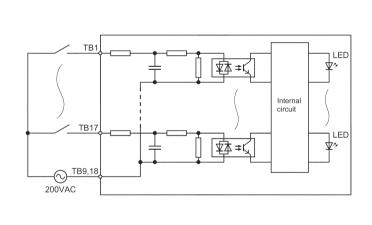
Terminal No.	Signal Name
TB1	X00
TB2	X01
TB3	X02
TB4	X03
TB5	X04
TB6	X05
TB7	X06
TB8	X07
TB9	СОМ
TB10	X08
TB11	X09
TB12	X0A
TB13	X0B
TB14	X0C
TB15	X0D
TB16	X0E
TB17	X0F
TB18	СОМ
TB19	Vacant
TB20	Vacant

#### 2.2 A1SX10EU AC Input Module

Model		AC Input Module			
Specification	S	A1SX10EU	Appearance		
Number of input points		16 points	Арре	arance	
Insulation method		Photocoupler			
Rated input voltage		100 to 120 VAC 50/60 Hz	- A1SX10E	U 🗆 :	
Input voltage distortion factor		5% or less (See section 1.2.4(6))			
Rated input cur	rent	Approx. 7 mA (120 VAC 60 Hz)		# • A B C D E F	
Operating voltage range		85 to 132 VAC (50/60 Hz ±5%)			
Max. simultaneous input points		100% simultaneously ON			
Inrudh current		Max. 200 mA, within 1 ms (132 VAC)	0		
ON voltage/ON current		80 VAC or higher/5 mA or higher			
OFF voltage/OI	FF current	30 VAC or lower/1.4 mA or lower	2		
Input impedance	e	Approx. 18 kΩ (60 Hz), Approx. 21 kΩ (50 Hz)	3		
	OFF → ON	20 ms or less (100 VAC 60 Hz)	1 14		
Response time	ON → OFF	35 ms or less (100 VAC 60 Hz)	5		
Common termir			- 6		
arrangement	iul	16 points/common (common terminals: TB9, TB18)	]		
Operating indic	ator	ON state is indicated (LEDs)			
External conne	ctions	20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	9 A		
Applicable crim	p terminals	RAV1.25-3.5	В		
Accessories		None	С		
Insulation withs	stand	1780 VAC rms/3 cycle (altitude 2,000 m)	D E		
Insulation resis	tor	10 M $\Omega$ or higher at insulation resistance tester	F		
Noise immunity		IEC801-4:1 kV			
Internal current consumption (5 VDC) 50 mA (TYP, all points ON)					
Weight kg		0.21			
		External Connections			
			Terminal No.	Signal Name	
			TB1	X00	
			TB2	X01	
			TB3	X02	
			TB4	X03	
	/ ТВ		TB5	X04	
	/	↑ LED	TB6	X05	
		+ [ • • • • • • • • • • • • • • • • • •	TB7	X06	
	TB8	X07			
	)	Internal circuit		COM	
		circuit )	TB9	СОМ	
		circuit )	TB9 TB10	COM X08	
		circuit )	TB9 TB10 TB11	COM X08 X09	
		circuit	TB9 TB10 TB11 TB12	X08 X09 X0A	
		circuit	TB9 TB10 TB11	COM X08 X09	
	TR9 1:	circuit	TB9 TB10 TB11 TB12	X08 X09 X0A	
		circuit	TB9 TB10 TB11 TB12 TB13	X08 X09 X0A X0B	
		circuit	TB9 TB10 TB11 TB12 TB13 TB14 TB15	X08 X09 X0A X0B X0C X0D	
		circuit	TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16	X08 X09 X0A X0B X0C X0D X0E	
		circuit	TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16 TB17	COM X08 X09 X0A X0B X0C X0D X0E X0F	
		circuit	TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16 TB17 TB18	COM X08 X09 X0A X0B X0C X0D X0E X0F COM	
		circuit	TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16 TB17	COM X08 X09 X0A X0B X0C X0D X0E X0F	

## 2.3 A1SX20 AC Input Module

Model		AC Input Module			
Specifications		A1SX20	Appearance		
Number of input points		16 points	A1SX20		
Isolation method		Photocoupler			
Rated input voltage		200 to 240 VAC 50/60 Hz			
Input voltage distortion factor		5% or less (See section 1.2.4(6))			
Rated input cur	rent	Approx. 9 mA (200 VAC 60 Hz)			
Operating voltage range		170 to 264 VAC (50/60 Hz ±5%)			
Max. simultaneous input points		60% simultaneously ON (at 220 VAC)	0		
Inrush current		Max. 500 mA, within 1 ms (264 VAC)	1		
ON voltage/ON	current	80 VAC or higher/4 mA or higher	2		
OFF voltage/OF	F current	30 VAC or lower/1 mA or lower	3		
Input impedanc	е	Approx. 22 k $\Omega$ (60 Hz), Approx. 27 k $\Omega$ (50 Hz)	4		
Response	$OFF \rightarrow ON$	30 ms or less (200 VAC 60 Hz)	5		
time	$ON \rightarrow OFF$	55 ms or less (200 VAC 60 Hz)	6		
Common terminal arrangement		16 points/common (common terminals: TB9, TB18)	7 8		
Operating indica	ator	ON state is indicated (LEDs)	9		
External connec	ctions	20-point terminal block connector (M3.5 x 7 screws)	A		
Applicable wire size		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)	В		
Applicable solderless terminals		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	C		
Accessories		None	D		
Internal current consumption (5 VDC)		50 mA (TYP, all points ON)	F		
Weight kg		0.23			
		External Connections			



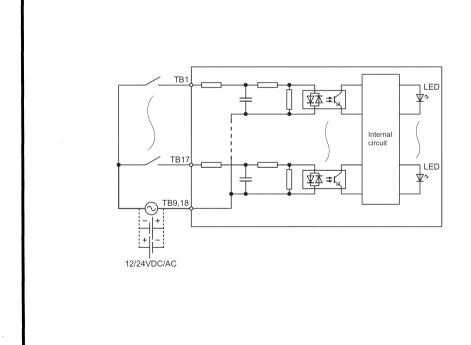
Terminal No.	Signal Name	
TB1	X00	
TB2	X01	
TB3	X02	
TB4	X03	
TB5	X04	
TB6	X05	
TB7	X06	
TB8	X07	
TB9	СОМ	
TB10	X08	
TB11	X09	
TB12	X0A	
TB13	X0B	
TB14	X0C	
TB15	X0D	
TB16	X0E	
TB17	X0F	
TB18	СОМ	
TB19	Vacant	
TB20	Vacant	

## 2.4 A1SX20EU AC Input Module

Model AC Input Module					
Specifications		A1SX20EU	Appearance		
Number of input points		16 points			
Insulation method		Photocoupler	A1SX20E		
Rated input voltage		200 to 240 VAC 50/60 Hz			
Input voltage distortion factor		5% or less (See section 1.2.4(6) )		8 9 A B C O E F	
Rated input current		Approx. 11 mA (240 VAC 60 Hz)			
Operating voltage range		170 to 264 VAC (50/60 Hz ±5%)			
Max. simultaneous input points		60% simultaneously ON (at 220 VAC)			
Inrush current		Max. 500 mA, within 1 ms (264 VAC)			
ON voltage/ON current		80 VAC or higher/4 mA or higher	2		
OFF voltage/OF		30 VAC or lower/1 mA or lower	3		
Input impedance		Approx. 22 k $\Omega$ (60 Hz), Approx. 27 k $\Omega$ (50 Hz)	4		
Response	$OFF \rightarrow ON$	30 ms or less (200 VAC 60 Hz)	5		
time	$ON \rightarrow OFF$	55 ms or less (200 VAC 60 Hz)	6		
Common termir arrangement	nal	16 points/common (common terminals: TB9, TB18)	7		
Operating indic	ator	ON state is indicated (LEDs)	8		
External conne	ctions	20-point terminal block connector (M3.5 x 7 screws)	9		
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	A		
Applicable crim	p terminals	RAV1.25-3.5	B		
Accessories		None			
Insulation withs	stand	2830 VAC rms/3 cycle (altitude 2,000 m)	E		
Insulation resis	tor	10 M $\Omega$ or higher at insulation resistance tester	F		
Noise immunity	,	IEC801-4:1 kV			
Internal current consumption (5 VDC)		50 mA (TYP, all points ON)			
Weight kg		0.23		<u>.</u>	
		External Connections			
			Terminal No.	Signal Name	
			TB1	X00	
			TB2	X01	
			TB3	X02	
			TB4	X03	
	TE	31	TB5	X04	
	/		TB6	X05	
	(		TB7	X06	
		( Internal (	TB8	X07	
	TB9	COM			
	TB10	X08			
		X09			
	TB11				
	TB12	XOA			
	TB13	X0B			
	TB14	X0C			
1	TB15	XOD			
	TB16	X0E			
	TB17	X0F			
	TB18	СОМ			
	TB19	Vacant			
	TB20	Vacant			

### 2.5 A1SX30 DC/AC Input Module

Specifications	3		A1SX30	Appearance
Number of inpu	t points	16 points		A1SX30
Isolation metho	d	Photocoupler		
Rated input volt	age	12/24 VDC	12/24 VAC 50/60 Hz	1 0 0 0 A B B B B B B B B B B B B B B B B
Rated input cur	rent	4 mA (12 VDC/AC), 8.5 mA (24	VDC/AC)	;
Operating volta	ge range	10.2 to 26.4 VDC (ripple: less than 5%)	10.2 to 26.4 VAC (50/60 Hz ±5%)	
Max. simultaned points	ous input	75% simultaneously ON (at 26.4	4 VDC)	0
ON voltage/ON	current	7 VDC/AC or higher/2 mA or high	her	1
OFF voltage/OF	F current	2.7 VDC/AC or lower/0.7 mA or	lower	2
Input impedanc	е	Approx. 2.7 kΩ		3
Response	$OFF \to ON$	20 ms or less (12/24 VDC )	25 ms or less (12/24 VAC 60Hz)	4
time	$ON \rightarrow OFF$	20 ms or less (12/24 VDC)	20 ms or less (12/24 VAC 60Hz)	6
Common termin arrangement	al	16 points/common (common terminals: TB9, TB18)		7
Operating indica	ator	ON state is indicated (LEDs)	8	
External connec	ctions	20-point terminal block connect	or (M3.5 x 7 screws)	9
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG	19)(Applicable tightening torque 78.4 N•cm)	A
Applicable solde terminals	erless	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5		C
Accessories	Accessories None		D	
Internal current consumption (5 VDC) 50 mA (TYP, all points ON)			E	
Weight kg		0.2		
		Externa	l Connections	



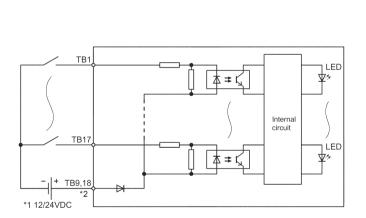
Terminal No.	Signal Name		
TB1	X00		
TB2	X01		
TB3	X02		
TB4	X03		
TB5	X04		
TB6	X05		
TB7	X06		
TB8	X07		
TB9	СОМ		
TB10	X08		
TB11	X09		
TB12	X0A		
TB13	X0B		
TB14	X0C		
TB15	XOD		
TB16	X0E		
TB17	XOF		
TB18	COM		
TB19	Vacant		
TB20	Vacant		

### 2.6 A1SX40(S1/S2) DC Input Module (Sink Type)

	Model			DC Input Modu	le (Sink Tyne)		
Specifi	cations	A1S	¥40	A1SX40-S1	A1SX40-S2	Anne	arance
<u> </u>	of input points	16 points	<del>X+0</del>	A10X40-01	A10X40-02	Арре	arance
	method	Photocoupler				A1SX40	
	put voltage	12 VDC	24 VDC	24 VDC			
Rated in	put current	Approx. 3 mA	Approx. 7 mA	Approx. 7 mA		0 0 0 1 2 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8 • A B C D E F
Operatir	ng voltage range	10.2 to 26.4 VD than 5%)	C (ripple: less	19.2 to 26.4 VDC (ripple	e: less than 5%)		
Max. sin input po	nultaneous ints	100% simultane	ously ON (at 26.	4 VDC)			
	age/ON current	8 VDC or higher	/2 mA or higher	14 VDC or higher/4 mA or higher	14 VDC or higher/3.5 mA or higher	0	
OFF vol	tage/OFF	4 VDC or lower/	1 mA or lower	6.5 VDC or lower/1.7 m/	A or lower	2	
Input res	sistance	Approx. 3.3 $k\Omega$				3	
Re- sponse	OFF → ON	10 ms or less (2	4 VDC)	0.1 ms or less (24 VDC)	10 ms or less (24 VDC)	4 5	
time	$ON \to OFF$	10 ms or less (2	4 VDC)	0.2 ms or less (24 VDC)	10 ms or less (24 VDC)	6 7	
arranger		<del></del>	· · · · · · · · · · · · · · · · · · ·	ninals: TB9, TB18)		8	
_ <del></del>	ng indicator	ON state is indi				9	
	l connections			or (M3.5 x 7 screws)		A	
	ole wire size			G19)(Applicable tightening to	orque 78.4 N•cm)	В	
Applicab terminal	ole solderless s	R1.25-3.5, R2-3 RAV1.25-3.5, R				С	
Accesso		None				D	
Internal	current ption (5 VDC)	50 mA (TYP, all	points ON)			-   E   F	
Weight k	kg	0.2					
				External Connections			
						Terminal No.	Signal Name
ł						TB1	X00
l						TB2	X01
						TB3	X02
						TB4	X03
						TB5	X04
		✓ TB1				TB6	X05
l		,			T LED	TB7	X06
İ			<u>U</u>	<u></u>	Ť l	TB8	X07
	\	,		/	/	ТВ9	COM
		)	i	Internal		TB10	X08
	/	/ TD17	į	circuit	)	TB11	X09
	+	TB17	<del>  - +</del>		TLED	TB12	XOA
				<b>★</b> ≠ [5]	₹*	TB13	X0B
l		+ TB9,18	+		_	TB14	XOC
	$\vdash$			<u> </u>		TB15	XOD
	*1 12/2	4VDC L				TB16	X0E
l						TB17	X0F
]						TB18	COM
						TB19	Vacant
						TB20	Vacant
	*1: A	1SX40-S1/S2 is	24 VDC only.				

### A1SX41(S1/S2) DC Input Module (Sink Type)

	Model		DC Input Module (Sink Type)						
Specifications		A1SX41		A1SX41-S1	A1SX41-S2	Appearance			
Number of input	points	32 points							
Isolation metho	d	Photocouple	er			A1SX41			
Rated input volt	age	12 VDC	24 VDC	24 VDC		A 0 0 8 0 0 0 0 8 8 10 90 0 10 9 9 20 A 0 0 2 0 A 0 3 0 8			
Rated input cur	rent	Approx. 3 mA	Approx. 7 mA	Approx. 7 mA		40 c0 040 c 50 00 050 0 60 00 07 0 F			
Operating voltage	ge range	10.2 to 26.4 (ripple: less		19.2 to 26.4 VDC (ripple	: less than 5%				
Max. simultaned	ous input points	60% (20 poi	nts/common	) simultaneously ON (at 2	26.4 VDC)				
ON voltage/ON	current	8 VDC or high 2 mA or high		17 VDC or higher/ 4.5 mA or higher	14 VDC or higher/ 3.5 mA or higher				
OFF voltage/OF	F current	4 VDC or lower/ 1 mA or lower		3.5 VDC or lower/ 0.8 mA or lower	6.5 VDC or lower/ 1.7 mA or lower	A · B			
Input resistance		Approx. $3.3 \text{ k}\Omega$			3 3 4 4				
D	$OFF \rightarrow ON$	10 ms or less (24 VDC)		0.3 ms or less (24 VDC) 10 ms or less (24 VD		5 5 -			
Response time	$ON \rightarrow OFF$	10 ms or less (24 VDC)		0.3 ms or less (24 VDC)	10 ms or less (24 VDC)	7 7 - 8 8 - 9 9 - 9			
Common termin arrangement	al	32 points/co	mmon (com	, B B C C					
Operating indica	ator	ON state is	indicated (LI	EDs)		- D D - E E			
External connections		40-pin conn	ector			NC NC NC			
Applicable wire size		0.088 to 0.3m	nm <sup>2</sup> (for the A	NC NC					
Accessories		Connector (1 pce.) for external wiring (soldering type)			ype)				
Internal current consumption (5 VDC)		80 mA (TYP, all po	ints ON)	120 mA (TYP, all points ON)	80 mA (TYP, all points ON)	DC12/24V 3/7mA A1SX41			
Weight kg		0.21				3012/24V 3/7HA A13A41			

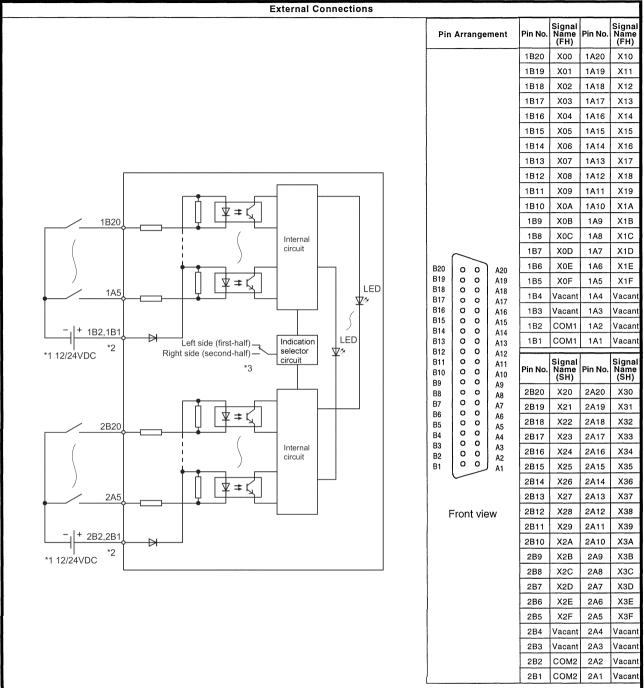


<b>External Connections</b>							
	Arr	Pin angem	ent	Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)
				B20	X00	A20	X10
				B19	X01	A19	X11
				B18	X02	A18	X12
	B20 B19	0 0	A20	B17	X03	A17	X13
LED	B19	0 0	A19 A18	B16	X04	A16	X14
Y*	B17	0 0	A17	B15	X05	A15	X15
	B16 B15	0 0	A16 A15	B14	X06	A14	X16
Internal	B14	0 0	A14	B13	X07	A13	X17
circuit	B13 B12	0 0	A13 A12	B12	X08	A12	X18
- LED	B11	0 0	A11	B11	X09	A11	X19
\\psi^*	B10 B9	0 0	A10	B10	X0A	A10	X1A
_	B8	0 0	A9 A8	B9	X0B	A9	X1B
	В7	0 0	A7	B8	X0C	A8	X1C
	B6 B5	0 0	A6 A5	B7	XOD	A7	X1D
	B4	0 0	A4	В6	X0E	A6	X1E
	B3 B2	0 0	A3 A2	B5	X0F	A5	X1F
	B1	0 0	A2 A1	B4	Vacant	A4	Vacant
			•	B3	Vacant	А3	Vacant
	F	ront vie	w	B2	СОМ	A2	Vacant
				B1	СОМ	A1	Vacant

- \*1: A1SX41-S1/S2 is 24 VDC only.
- \*2: The arrangement of pins A and B shown above is the opposite of the arrangement of pins of the connector on the module.
  \*3: When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

### 2.8 A1SX42(S1/S2) DC Input Module (Sink Type)

	Model			DC Input M	odule (Sink Type)		
Specifications		A1SX42		A1SX42-S1	A1SX42-S2		Appearance
Number of input	points	64 points				7	1SX42
Isolation method	d	Photocouple	er			′	A • □ 8 □ □ • □ 8 B
Rated input volt	age	12 VDC	24 VDC	24 VDC			1
Rated input cur	rent	Approx. 2 mA	Approx. 5 mA	Approx. 5 mA			4   C
Operating voltage	ge range	10.2 to 26.4 (ripple: less		19.2 to 26.4 VDC (ripple	: less than 5%)		
Max. simultaneo	ous input points	50% (16 po	ints/common	) simultaneously ON (at 2	24 VDC)		
ON voltage/ON	current	8 VDC or hi 2 mA or hig		18.5 VDC or higher/ 3.5 mA or higher	17.5 VDC or higher/ 3.5 mA or higher		DIS. F C
OFF voltage/OF	F current	4 VDC or lower/ 0.6 mA or lower		3 VDC or lower/ 0.45 mA or lower	7 VDC or lower/ 1.7 mA or lower		
Input resistance	}	Approx. 5 kΩ		Approx. 4.7 kΩ			
Response time	OFF → ON	10 ms or les	ss (24 VDC)	0.3 mA or less (24 VDC)	10 ms or less (24 VDC)		
Response time	$ON \rightarrow OFF$	10 ms or les	ss (24 VDC)	0.3 mA or less (24 VDC) 10 ms or less (24 VDC)			
Common termin arrangement	al	32 points/co	ommon (com	mon terminals: 1B1, 1B2,	2B1, 2B2)	Œ	
Operating indica	ator	ON state is	indicated (L	EDs), 32-bit indication by	switch		
External connections		40-pin conn	40-pin connector				
Applicable wire size		0.088 to 0.3r	mm <sup>2</sup> (for the A	A6CON1 and A6CON4)*4			
Accessories		Connectors	(2 pces.) for	r external wiring (solderin	g type)		
Internal current consumption (5 VDC)		90 mA (TYP, all po			90 mA (TYP, all points ON)		O O O O O O O O O O O O O O O O O O O
Weight kg		0.28					C12/24V 2/5mA A1SX42



<sup>\*1:</sup> A1SX42-S1/S2 is 24 VDC only.

<sup>\*2:</sup> In the pin number column, the pins beginning with "1[][]" are left connector pins and those beginning with "2[][]" are right connector pins.

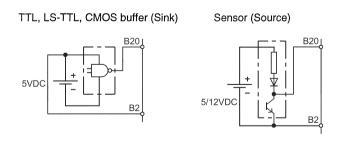
<sup>\*3:</sup> When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (X20 to X3F) is displayed by the LEDs.

<sup>\*4:</sup> When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

### 2.9 A1SX71 DC Input Module (Sink/Source Common Type)

	Model		DC Input Mod	lule (Sink/Source Common	Туре)
Specifications			A1SX71		Appearance
Number of input	points	32 points			A1SX71
Isolation method		Photocoupler			1000000
Rated input volta	age	5 VDC	12 VDC	24 VDC *1	, 00 00 00 00 00 00 00 00 00 00 00 00 00
Rated input curr	ent	1.2 mA	3.3 mA	7 mA	\$8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
Operating voltag	je range	4.5 to 26.4 VDC (ripple:	less than 5%)		
Max. simultaneo	us input points	65% (20 points/common	ı) simultaneously O	N (at 24 VDC)	
ON voltage/ON	current	3.5 VDC or higher/1 mA	or higher		
OFF voltage/OF	F current	1.0 VDC or lower/0.1 mA or lower			
Input resistance		Approx. 3.5 kΩ			0 0 0 0
Response time	$OFF \to ON$	1.5 ms or less			22 2 3 3 4
nesponse time	$ON \rightarrow OFF$	3 ms or less			
Common termina arrangement	al	32 points/common (com	32 points/common (common terminals: B1, B2)		
Operating indica	tor	ON state is indicated (LEDs)			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
External connec	tions	40-pin connector			
Applicable wire	size	0.088 to 0.3mm <sup>2</sup> (for the A	6CON1 and A6CON	(4) <sup>*3</sup>	
Accessories Conne		Connector (1 pce.) for e	Connector (1 pce.) for external wiring (soldering type)		
Internal current consumption (5	Internal current 75 mA (TYP, all points ON) consumption (5 VDC) (0.08A is shown on the rating plate of the module.)				
Weight kg		0.19			DC4.5/13.2V A1SX71
			External Connect	tions	

## Open collector (Sink) B20 Internal circuit A5 - | + B2,B1 \*2 - 1 + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - - | + - | + - - | + - - | + - - | + - | + - - | + - - | + - | + - | + - | + - | + - | + - | + - | +



Arr	Pin angen	nent	Pin No.	Signal Name	Pin No.	Signal Name
				X00	A20	X10
			B19	X01	A19	X11
			B18	X02	A18	X12
B20 B19	0 0	A20	B17	X03	A17	X13
B19 B18	0 0	A19 A18	B16	X04	A16	X14
B17 B16	0 0	A17 A16	B15	X05	A15	X15
B15	0 0	A15	B14	X06	A14	X16
B14 B13	0 0	A14 A13	B13	X07	A13	X17
B12 B11	0 0	A12	B12	X08	A12	X18
B10	0 0	A11 A10	B11	X09	A11	X19
B9 B8	0 0	A9 A8	B10	X0A	A10	X1A
B7	0 0	A7	B9	X0B	A9	X1B
B6 B5	0 0	A6 A5	B8	X0C	A8	X1C
B4 B3	0 0	A4	B7	X0D	A7	X1D
B2	0 0	A3 A2	B6	X0E	A6	X1E
B1	0 0	J A1	B5	X0F	A5	X1F
			B4	Vacant	A4	Vacant
	Front vi	ew	В3	Vacant	А3	Vacant
			B2	СОМ	A2	Vacant
			B1	СОМ	A1	Vacant

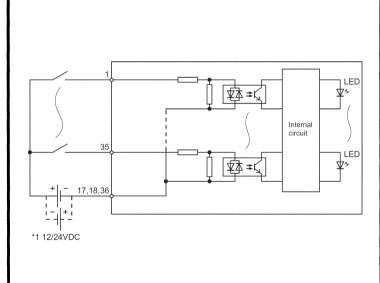
- \*1: 24 VDC can be used with hardware version B and later versions.
- \*2: The arrangement of pins A and B shown above is the opposite of the arrangement of pins of the connector on the module.
- \*3: When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

### 2.10 A1SX80(S1/S2) DC Input Module (Sink/Source Common Type)

Model DC Input Module (Sink/Source Common T						oe)	
Specifications		A1S)		A1SX80-S1	A1SX80-S2	<del></del>	arance
Number of input	t points	16 points		_	1		
Isolation method	d	Photocoupler				A1SX80	
Rated input volt		12 VDC	24 VDC	24 VDC			
Rated input curr	Rated input current Approx. 3 mA Approx. 7 mA Approx. 7 mA					0	
Operating voltag	ge range	10.2 to 26.4 VDC than 5%)		19.2 to 26.4 VDC (r	ipple: less than 5%)		
Max. simultaned	ous input points	100% simultaneou (at 26.4 VDC)	NO ylat	85% simultaneously ON (at 26.4 VDC)	100% simultaneously ON (at 26.4 VDC)	0	
ON voltage/ON	current	8 VDC or higher/2	2 mA or higher	17 VDC or higher/5 mA or higher	13 VDC or higher/3.5 mA or higher	1 2	
OFF voltage/OF	Fcurrent	4 VDC or lower/1	mA or lower	5 VDC or lower/1.7 mA or lower	6 VDC or lower/1.7 mA or lower	3 4	
Input resistance		Approx. 3.3 kΩ				5	
Response time	$OFF \to ON$	10 ms or less (24	VDC)	0.4 ms or less (24 VDC)	10 ms or less (24 VDC)	6 7	
Response time	$ON \rightarrow OFF$	10 ms or less (24	VDC)	0.5 ms or less (24 VDC)	10 ms or less (24 VDC)	8	
Common termin arrangement		<u>'</u>		inals: TB9, TB18)		9 A	
Operating indica		ON state is indica				В	
External connec		L '		(M3.5 x 7 screws)	ng torque 70 4 N - \	С	
	Applicable wire size 0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19)(Applicable tightening torque 78.4 N•cm					D	
termials	Applicable solderless R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5						
Accessories						F	
Internal current consumption (5	VDC)	50 mA (TYP, all p	oints ON)				
Weight kg		0.2					
			External	Connections			
						Terminal No.	Signal Name
						TB1	X00
						TB2	X01
						TB3	X02
					_	TB4	X03
		1	<b>□</b> •		ED	TB5	X04
						TB6	X05
				"		TB7	X06
				Internal circuit		TB8	X07
		7	_ )	/		TB9	СОМ
		†		1	ED	TB10	X08
						TB11	X09
+ TB9,18						TB12	X0A
1+1-1						TB13	X0B
<u>-</u>						TB14	X0C
	*1 12/24VDC					TB15	X0D
						TB16	X0E
						TB17	X0F
						TB18	COM
	*4. 440000	)-S1/S2 is 24 VDC	· anh.			TB19	Vacant

### 2.11 A1SX81(S2) DC Input Module (Sink/Source Common Type)

	e) .				
Specifications		A1SX81 A1SX81-S2		Appearance	
Number of input	points	32 points			A1SX81
Isolation method	d	Photocoupler			A 0.0 8.0 0.0 8.6 1.0 90 1.0 9 2.0 A 0.0 2.0 A 3.0 80 0.3 0.8 40 c0 0.4 0.6 5.0 0.0 0.5 0.0 6.0 0.0 0.5 0.0 7.0 F.0 0.7 0.7
Rated input volt	age	12 VDC	24 VDC	24 VDC	30 80 03 08 40 c0 04 0c 50 00 05 00
Rated input curr	rent	Approx. 3 mA	Approx. 7 mA	Approx. 7 mA	500000500 60000000000000000000000000000
Operating voltag	ge range	10.2 to 26.4 VDC 5%)	(ripple: less than	19.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultaneo	ous input points	60% simultaneou	ısly ON (at 26.4 VD	C)	
ON voltage/ON	current	8 VDC or higher/2 mA or higher 1		13 VDC or higher/3.5 mA or higher	
OFF voltage/OF	F current	4 VDC or lower/1 mA or lower		6 VDC or lower/1.7 mA or lower	
Input resistance	!	Approx. 3.3 kΩ			
D	OFF → ON	10 ms or less (24 VDC)			
Response time	$ON \rightarrow OFF$	10 ms or less (24 VDC)			
Common termin arrangement	al	32 points/commo	n (common termina	ıls: 17, 18, 36)	
Operating indica	ator	ON state is indicated (LEDs)			5 7 7
External connec	tions	37-pin D sub-connector			5
Applicable wire size 0		0.088 to 0.3mm <sup>2</sup> (t	for the A6CON1E)*2		B
Accessories		Connector (1 pce.) for external wiring (soldering type)			
Internal current consumption (5	nternal current 80 mA (TYP, all points ON)			ME NC	
Weight kg		0.24			DC12/24V 3/7mA A1SX81

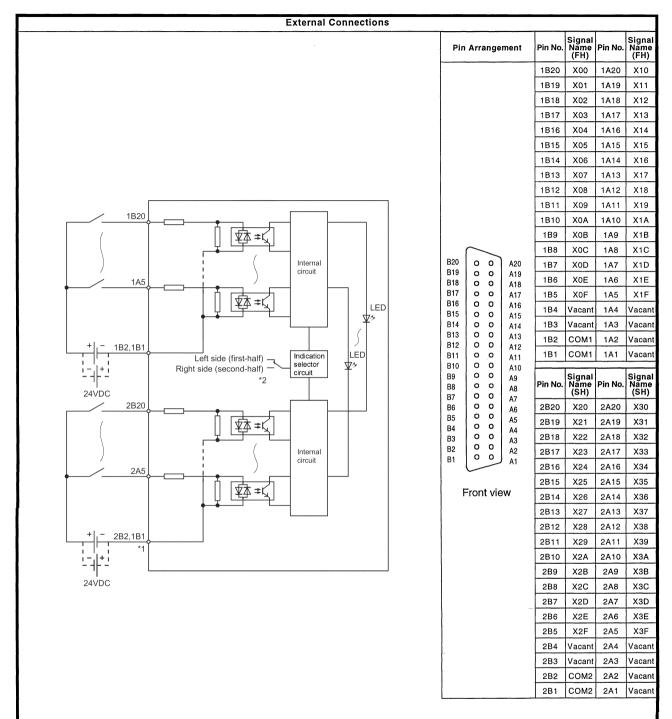


Pin Arrangement	Pin No.	Signal Name	Pin No.	Signal Name
	1	X00	9	X10
	20	X01	28	X11
	2	X02	10	X12
20 0 1	21	X03	29	X13
21 0 0 2	3	X04	11	X14
22 O O 3 23 O O 4	22	X05	30	X15
24 0 0 5	4	X06	12	X16
25 O O 6 7 26 O O 7	23	X07	31	X17
27 0 0 8	5	X08	13	X18
28 0 0 10	24	X09	32	X19
30 0 0 11	6	XOA	14	X1A
31 O O 13	25	X0B	33	X1B
33 0 0 14	7	X0C	15	X1C
34 O 0 16	26	X0D	34	X1D
36 O O 17 37 O O 18	8	X0E	16	X1E
37 0 0 19	27	XOF	35	X1F
<u> </u>	17	СОМ	37	Vacant
Front view	36	СОМ	19	Vacant
( <del>-</del> ·	18	СОМ		

- \*1: A1SX81-S2 is 24 VDC only.
- \*2: When the A6CON2E or A6CON3E is used, refer to Section 1.2.4.

## 2.12 A1SX82-S1 DC Input Module (Sink/Source Common Type)

	Model	DC Input Module (Sink/Source Common Type)				
Specifications		A1SX82-S1	Appearance			
Number of input	t points	64 points	A1SX82-S1			
Isolation metho	d	Photocoupler	A 0 0 8 0 0 0 8 B			
Rated input volt	tage	24 VDC	3 0 6 0 0 3 0 6 4 0 0 0 0 4 0 0 5 0 0 0 0 0 0 0			
Rated input cur	rent	Approx. 5 mA	70 F0 07 0 F			
Operating voltage	ge range	19.2 to 26.4 VDC (ripple: less than 5%)				
Max. simultaneo	ous input points	50% (16 points/common) simultaneously ON (at 24 VDC)				
ON voltage/ON	current	18.5 VDC or higher/3.5 mA or higher				
OFF voltage/OF	F current	3 VDC or lower/0.45 mA or lower	DIS. F			
Input resistance	)	Approx. 4.7 kΩ				
Response time	OFF → ON	0.3 ms or less (24 VDC)				
Hesponse time	$ON \rightarrow OFF$	0.3 ms or less (24 VDC)				
Common termin arrangement	al	32 points/common (common terminals: 1B1, 1B2, 2B1, 2B2)				
Operating indica	ator	ON state is indicated (LEDs), 32-bit indication by switch				
External connec	ctions	40-pin connector				
Applicable wire size		0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*3				
Accessories		Connectors (2 pces.) for external wiring (soldering type)				
Internal current consumption (5 VDC)		160 mA (TYP, all points ON)				
Weight kg		0.28	DC24V 5mA A1SX82-S1			



<sup>\*1:</sup> In the pin number column, the pins beginning with "1[][]" are left connector pins and those beginning with "2[][]" are right connector pins.

<sup>\*2:</sup> When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (X20 to X3F) is displayed by the LEDs.

<sup>\*3:</sup> When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

### 3. OUTPUT MODULE SPECIFICATIONS

### 3.1 A1SY10 Contact Output Module

	Model	Contact Output Module		
Specifications		A1SY10	Appearance	
Number of outp	out points	16 points		
Isolation metho	od .	Photocoupler		
Switching rated voltage/current		24 VDC 2 A (load resistance) 240 VAC 2 A (COSφ = 1) /1 point, 8 A/common	A1SY10	
Min. switching		5 VDC 1 mA	000	
Max. switching	voltage	264 VAC 125 VDC	0 1 2 3 3 4 5 6	8 9 A B C C C E E E E E E E E E E E E E E E E
Response	$OFF \rightarrow ON$	10 ms or less		
time	ON → OFF	12 ms or less		
	Mechanical More than 20 million times or more			
		Switching rated voltage/current More than 100000 times or more	0	
Service life	:	200 VAC 1.5 A, 240 VAC 1 A (COS $\phi$ = 0.7) More than 100000 times or more	1 2	
ocivice inc	Electrical	200 VAC 1 A, 240 VAC 0.5 A (COSφ = 0.35) More than 100000 times or more	3	
i		24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) More than 100000 times or more	5	
Max. switching		3600 times per hour	6	
Surge absorber	r	None	7	
Fuse		None	8	
Common termin arrangement		8 points/common (common terminals: TB9, TB18)		
Operating indic		ON state is indicated (LEDs)	A	
External conne		20-point terminal block connector (M3.5 x 7 screws)	В	
Applicable wire		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)	1	
Applicable sold terminals	eriess	R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	D	
Accessories		None		
External	Voltage	24 VDC ±10%, Ripple voltage: 4VP-P or less	F	
power supply	Current	90 mA (TYP 24 VDC all points ON)		
Internal current consumption (5		120 mA (TYP, all points ON)		
Weight kg		0.25		
		External Connections		
			Terminal No.	Signal Name
		TB1 Load	TB1	Y00
	LED To		TB2 TB3	Y01 Y02
			TB4	Y03
		TB8 Load	TB5	Y04
			TB6	Y05
		TB9 O	TB7	Y06
!	Internal circuit	100 to 200VAC or 24VDC	TB8	Y07
	\		TB9	COM1
		TB10 Load	TB10	Y08
			TB11	Y09
		TB17 Load	TB12	YOA
	₩%	\(\psi\) \(	TB13	Y0B
		TB18	TB14	YOC
		-,1+	TB15	YOD
		100 to 200VAC ++ - or 24VDC	TB16	Y0E
		TB19 Fetoral cours	TB17	Y0F
		TB20 - + supply	TB18	COM2
		24VDC	TB19	24 VDC
			TB20	l ov

### 3.2 A1SY10EU Contact Output Module

	Model	С	ontact Out	put Module		
Specification	s	A1SY10EU	J		Appea	arance
Number of outp	out points	16 points				
Insulation meth	od	Photocoupler				
Switching rated voltage/current		120 VAO 2 A (COSQ = 1)	oint, 8 A/cor	nmon		
Min. switching		5 VDC 1 mA		***************************************	A1SY10EU	,
Max. switching		132 VAC 125 VDC				8 9 A B C D D E F
Response time	OFF → ON	10 ms or less				
unic	ON → OFF	12 ms or less			<u> </u>	3 f
	Mechanical	More than 20 million times or more	000000 1:			
		Switching rated voltage/current More than 100 VAC 2A, 120 VAC 2 A ( $COS\phi = 0.7$ )				
Service life	Electrical	more 100 VAC 2A, 120 VAC 2 A (COSφ = 0.35 more	i) More than	n 100000 times or	0	
		24 VDC 1 .5A, 100 VDC 0.1 A (L/R = 7 m more	ns) More th	an 100000 times or	3	
Max. switching	frequency	3600 times per hour			4	
Surge absorber	r	None			5	
Fuse		None			6	
Common termir arrangement		8 points/common (common terminals: TB	9, TB18)		7	
Operating indic		ON state is indicated (LEDs)			8	
External conne	ctions	20-point terminal block connector (M3.5)			9	
Applicable wire		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			В	
Applicable crim	p terminals	RAV1.25-3.5			С	
Accessories		None 1780 VAC rms/3 cycle			D .	
Insulation withs	stand	AC terminals-Relay coil, 5 VAC (altitude 2,000 m)  Relay coil, 5 VAC 500 VAC rms/3 cycle (altitude		E		
		2,000 m)		F		
Insulation resis		10 MΩ or higher at insulation resistance	tester			
Noise immunity		IEC801-4:1 kV	•			
External power supply	Voltage Current	24 VDC ±10%, Ripple voltage: 4VP-P or 90 mA (TYP 24 VDC all points ON)	less	Must be a SELV power supply		
Internal current consumption (5	t 5 VDC)	120 mA (TYP, all points ON)				
Weight kg		0.25				
		External Connec	ctions	·		
					Terminal No.	Signal Name
		TB1 Load			TB1	Y00 Y01
	LED .	¥ ‡ 【 V — - \ ( )			TB3	Y02
					TB4	Y03
			•		TB5	Y04
		TB9			TB6	Y05
		- L+ 100VAC			TB7	Y06
	Internal circuit	100VAC or 24VD			TB8	Y07
					TB9	COM1
		¥ #			TB10	Y08
	/				TB11 TB12	Y09 Y0A
	LED	TB17 Load	1		TB12	YOB
		<b>▼ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓</b>			TB13	YOC
		TB18 O			TB15	YOD
		100VAC	>_		TB16	Y0E
		+   -   or 24VD	OC .		TB17	Y0F
			External power su		TB18	COM2
		1B20 - 24VDC	(SELV power supp	ory is required)	TB19	24 VDC
					TB20	٥V

### 3.3 A1SY14EU Contact Output Module

	Model		Contact Ou	tput Module		
Specifications		A1SY14EU			Appe	arance
Number of outp	out points	12 points (number of occupied I/O points : 16 points)				
Insulation method		Photocoupler				
Switching rated voltage/current		240 V/10 2 A (000	oint, 8 A/co	mmon		
Min. switching		5 VDC 10 mA			A1SY14E	U _
Max. switching		264VAC 125 VDC			0 0 0 0 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Response time	OFF → ON	10 ms or less				
time	ON → OFF	12 ms or less			<u> </u>	
	Mechanical	More than 20 million times or more	200000 tim	an or more		
		Switching rated voltage/current More than 200 VAC 2A, 240VAC 1.8 A (COS\$\phi\$ = 0.3		<del></del>		
Service life	Electrical	more 200 VAC 1.1A, 240VAC 0.9 A (COSφ = or more	0.35) More	than 200000 times	0	
		24 VDC 1.1A, 100 VDC 0.1 A (L/R = 7 m more	s) More th	an 200000 times or	3	
Max. switching	frequency	3600 times per hour			4	
Surge absorber		None			5	
Fuse		None			6	
Common termir arrangement	nal	4 points/common (common terminals: TE	35, TB10, T	B15)	7	
Operating indic	ator	ON state is indicated (LEDs)			8	
External conne	ctions	20-point terminal block connector (M3.5			9	
Applicable wire		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (A 78.4 N•cm)	Applicable ti	ghtening torque	В	
Applicable crim	p terminals	RAV1.25-3.5			С	
Accessories		None  AC terminala Balay sail EVAC 2830VAC rms/3 cycle (altitude		D		
Insulation withs	stand	AC terminals-Relay coil, 5VAC  2,000 m)  Solva crit 5VAC  500VAC rms/3 cycle (altitude 2,000 m)		E		
		Relay coll, 5VAC 2,000 m)				
Insulation resis Noise immunity		10 MΩ or higher at insulation resistance IEC801-4:1 kV	tester			
	Voltage		loop	14 0511/		
External power supply	Current	24 VDC ±10%, Ripple voltage: 4VP-P or 100 mA (TYP 24 VDC all points ON)	iess	Must be a SELV power supply		
Internal current consumption (5		120 mA (TYP, all points ON)				
Weight kg		0.25				
		External Conne	ctions			
					Terminal No.	Signal Name
	LED	TB1 Load			TB1	Y00 Y01
	¥*	¥=\$			TB3	Y02
		TB4 Load			TB4	Y03
		¥ ≠ Ç		Í	TB5	COM1
		TB5 O			TB6	Y04
	Internal circuit	100 to 2 or 24VD	00VAC C		TB7	Y05
					TB8	Y06
					TB9	Y07
		TB11 Load			TB10	COM2
		¥ ≠ Ç     ¥ 🖵 \   (			TB11 TB12	Y08 Y09
		TB14 Load			TB13	YOA
	LED Y	¥ ± Ç   ¥ C \			TB14	YOB
		THIS OF			TB15	СОМЗ
		100 to 2	00VAC		TB16	Vacant
		+   - or 24VD			TB17	Vacant
			External power sup		TB18	Vacant
l			(SELV power suppl		TB19	24 VDC
					TB20	

### 3.4 A1SY18A Contact Output Module (All Points Independent)

	Model	Contact Output Module		
Specifications		A1SY18A	Appearance	
Number of outp	ut points	8 points (number of occupied I/O points : 16 points)		
Isolation method	d	Photocoupler		
Switching rated voltage/current		24 VDC 2 A/point (load resistance) 24 VDC 8A/module 240 VAC 2 A/point (COSφ = 1) 240 VAC 8A/module	A1SY18/	<b>\</b>
Min. switching le		5 VDC 1 mA	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Max. switching			;	İ
Response time	OFF → ON	10 ms or less		
ume	ON → OFF	12 ms or less		
-	Mechanical	More than 20 million times or more	0	
		Switching rated voltage/current More than 200000 times or more  200 VAC 1.5 A, 240 VAC 1 A (COS¢ = 0.7) More than 200000 times		
Service life		200 VAC 1.5 A, 240 VAC 1 A (COSφ ≈ 0.7) More than 200000 times or more	2	
	Electrical	200 VAC 0.75 A, 240 VAC 0.5 A (COSφ = 0.35) More than 200000 times or more	3	
		24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) More than 200000 times or more	5	
Max. switching		3600 times per hour	6	
Surge absorber		None	7	
Fuse		None	8	
Common termin arrangement	ıaı	None (all points independent)	9	
Operating indica	ator	ON state is indicated (LEDs)	A	
External connec	ctions	20-point terminal block connector (M3.5 × 7 screws)	В	
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)	С	
Applicable solde terminals	erless	R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	D	
Accessories		None	E	
External	Voltage	24 VDC ±10%, Ripple voltage: 4VP-P or less	F	
power supply	Current	75 mA (TYP, 24 VDC all points ON)		
Internal current consumption (5		240 mA (TYP, all points ON)		
Weight kg		0.25		
		External Connections		
			Terminal No.	Signal Name
			TB1	Y00
LED		TB1 Load	TB3	
	₩	<b>▼ - '                    </b>	TB4	Y01
		TB2 O	TB5	Y02
	(	- + 100 to 200VAC	TB6	102
	Internal	+   - or 24VDC	TB7	Y03
	circuit		TB8	
	/		TB9 TB10	Y04
LEC		TB15 Load	TB10	
	¥*     [	¥ ≠ Ç	TB12	Y05
		TB16 O	TB13	Y06
		100 to 200VAC	TB14	100
		+   -   or 24VDC	TB15	Y07
		TB19   External power	TB16	Vact
		TB20 - + supply	TB17 TB18	Vacant Vacant
		24VDC	TB19	24 VDC
			TB20	0 V

### 3.5 A1SY18AEU Contact Output Modules (All Points Independent)

	Model		Contact Ou	tput Module		
Specification	s	A1SY18AE		The control of the co	Appe	arance
Number of outp	out points	8 points (number of occupied I/O points	: 16 points)			
Insulation method		Photocoupler				
Switching rated voltage/current	l	24 VDC 2 A (load resistance) 240 VAC 2 A (COSφ = 1) /1 point				
Min. switching I	load	5 VDC 1 mA			A1SY18A	EU
Max. switching	voltage	264VAC 125 VDC			1000 1000 1000 1000 1000	
Response	$OFF \to ON$	10 ms or less				
time	$ON \rightarrow OFF$	12 ms or less				
	Mechanical	More than 20 million times or more				
		Switching rated voltage/current More than	n 200000 tim	es or more		
Service life		200 VAC 1.5 A, 240VAC 1 A (COSφ = 0 more	.7) More th	an 200000 times or	0	
0011100 1110	Electrical	200 VAC 0.75 A, 240VAC 0.5 A (COSφ times or more	= 0.35) Mo	re than 200000	1	
		24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms more	s) More tha	n 200 <b>0</b> 00 times or	3	
Max. switching	frequency	3600 times per hour			4	
Surge absorber	•	None			5	
Fuse		None			6	
Common termir arrangement	nal	None (all points independent)			7	
Operating indic	ator	ON state is indicated (LEDs)			8	
External conne	ctions	20-point terminal block connector (M3.5			9	
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) ( 78.4 N•cm)	Applicable ti	ghtening torque	A B	
Applicable crim	p terminals	RAV1.25-3.5			C	
Accessories		None			D	
Insulation withs	stand	AC terminals-Relay coil, 5VAC 2830VAC rms/3 cycle (altitude 2,000 m)		E		
voltage		Relay coil, 5VAC	500VAC ri 2,000 m)	ms/3 cycle (altitude	F	
Insulation resis		10 M $\Omega$ or higher at insulation resistance	tester			
Noise immunity		IEC801-4:1 kV				
External power supply	Voltage Current	24 VDC ±10%, Ripple voltage: 4VP-P or 75 mA (TYP 24 VDC all points ON)	rless	Must be a SELV power supply		
Internal current consumption (5		240 mA (TYP, all points ON)				
Weight kg		0.25				
		External Conne	ctions			
			·		Terminal No.	Signal Name
					TB1	Y00
LEDC		TB1 Load			TB2	100
₩.	▼ ≠ €	₩			TB3	Y01
		TB2			TB4	***
		100	) to 200VAC		TB5	Y02
			24VDC		TB6	
Inte	ernal cuit				TB8	Y03
					TB9	
					TB10	Y04
LED		TB15 Load			TB11	
₩,	▼ ⇒ €	1   -   -			TB12	Y05
		TB16			TB13	Voc
					TB14	Y06
			to 200VAC 24VDC		TB15	Y07
			100		TB16	107
		TB19	- Evternal -	ower supply	TB17	Vacant
		TB20 - +		ower supply wer supply is required)	TB18	Vacant
		24VDC		,	TB19	24 VDC
l					TB20	٥٧

### 3.6 A1SY22 Triac Output Module

Model		Triac Output Module	
Specification	S	A1SY22	Appearance
Number of output points		16 points	
Isolation metho	d	Photocoupler	
Rated load volt	age	100 to 240 VAC 50/60 Hz ±3 Hz	A1SY22
Max. load volta	ge	264 VAC	A1SY22
Max. load curre	ent	0.6 A/point, 2.4 A/common	3 D C C
Min. load voltag	ge/current	24 VAC 100 mA, 100 VAC 10 mA, 240 VAC 20 mA	7
Max. allowed ru	ish current	20 A 10 ms or less, 8 A 100 ms or less	
Leakage curren	t at OFF circuit	1.5 mA (120 VAC 60 Hz), 3mA (240 VAC 60 Hz)	
Max. voltage dr	op at ON circuit	1.5 VAC or less (0.1 to 0.6 A), 1.8 VAC or less (50 to 100 mA), 2 VAC or less (10 to 50 mA)	0
Response	$OFF \to ON$	1 ms or less	1
time	$ON \rightarrow OFF$	1 ms + 0.5 cycles or less	2
Surge absorber	•	CR absorber (0.01 $\mu$ F + 47 $\Omega$ )	3
Fuse rating		5 A (1 piece/common), not replaceable *1	4
Fuse capacity		70 A	5
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	6
Common termir arrangement	nal	8 points/common (common terminals: TB9, TB19)	7
Operating indic	ator	ON state is indicated (LEDs)	8
External connec	ctions	20-point terminal block connector (M3.5 x 7 screws)	9
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N∙cm)	A B
Applicable sold terminals	erless	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	С
Accessories		None	D
External	Voltage	100 to 240 VAC (85 to 264 VAC)	E
power supply	Current	2 mA (TYP 200 VAC/common)	F
Internal current consumption (5		270 mA (TYP, all points ON)	
Weight kg		0.24	
		External Connections	

# Surge suppressor TB1 Load TB8 Load TBB Load TFIBC TFIBC TFIBC TFIBC TFIBC TFIBC TFIBC TRIB Load TB10 100 to 200VAC TB10 TB18 Load TB19 TFIBC TFIBC TFIBC TFIBC TFIBC TFIBC TFIBC TRIB TB19 TFIBC T

*1 : The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to pro-
tect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.

<sup>\*2:</sup> The ERR. indicating LED will also light when the external power supply is shut OFF.

Terminal No.	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	COM1
TB10	100/200 VAC
TB11	Y08
TB12	Y09
TB13	Y0A
TB14	Y0B
TB15	Y0C
TB16	YOD
TB17	Y0E
TB18	Y0F
TB19	COM2
TB20	100/200 VAC

### 3.7 A1SY28A Triac Output Module (All Points Independent)

	Model	Triac Output Module		
Specifications	s	A1SY28A	Appe	arance
Number of outp		8 points (number of occupied I/O points : 16 points)		
Isolation method		Photocoupler	A1SY28	۹
Rated load volt	tage	100 to 240 VAC 50/60 Hz ±3 Hz	100	
Max. load volta	ige	264 VAC	0000000	
Max. load curre		1A/point, 8A/module (132VAC, 46 °C ), 8A/module (264VAC, 40 °C ), 4A/module (132VAC, 55 °C ), 2A/module (264VAC, 55 °C )	7 🗆	
Min. load voltag		24 VAC 100 mA, 100 VAC 55 mA, 240 VAC 55 mA		
Max. allowed ru		25 A 10 ms or less, 10 A 100 ms or less		
Leakage curren	nt at OFF circuit	1.5 mA (120 VAC 60 Hz), 3mA (240 VAC 60 Hz)	0	
Max. voltage dr	rop at ON circuit	1.5 VAC or less (0.2 to 1 A), 1.8 VAC or less (0.1 to 0.2 A), 3 VAC or less (55 to 100 mA)	1	
Response	$OFF \rightarrow ON$	1 ms or less	2	
time	ON → OFF	1 ms + 0.5 cycles or less	3	
Surge absorber	r	CR absorber (0.01 $\mu$ F + 47 $\Omega$ ), Varistor (387 to 473 V)	4	
Fuse rating		None	5	
Common termir arrangement	nal	None (all points independent)	6 7	
Operating indic	ator	ON state is indicated (LEDs)	8	
External conne	ections	20-point terminal block connector (M3.5 $ imes$ 7 screws)	9	
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	A	
Applicable sold terminals	lerless	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	В	
Accessories		None	D	
External power		None	E	
Internal current consumption (5		130 mA (TYP, all points ON)	F	
Weight kg		0.25		
		External Connections		1
			Terminal No.	Signal Name
			TB1	Y00
			TB2	100
			TB3	Y01
		Surge suppressor TB1 Load	TB4	101
			TB5	V00
	LED .		TB6	Y02
		TB2	TB7	1400
		Triac Varistor 100 to 200VAC	TB8	Y03
			TB9	
	Interr		TB10	Y04
		Surge suppressor TB15 Load	TB11	
			TB12	Y05
	LED		TB13	
}	₹*	<del>                                    </del>	TB13	Y06
		Triac Varistor 100 to 200VAC	TB15	
				Y07
			TB16	Vacant
			TB17	Vacant
			TB18	Vacant
			TB19	Vacant
1			TB20	Vacant

### 3.8 A1SY28EU Triac Output Module

Specifications	Triac Output Module		
·	Specifications A1SY28EU		
Number of output points	8 points (number of occupied I/O points : 16 points)		arance
Insulation method	Photocoupler	A1SY28I	EU
Rated load voltage	100 to 240 VAC 50/60 Hz ±3 Hz		
Max. load voltage	264 VAC		j.
Max. load current	0.6A/point, 2.4A/common (49°C), 1.9A/common (55°C)	77,0	
Min. load voltage/current	24 VAC 15 mA, 120 VAC 15 mA, 240 VAC 15 mA		
Max. input current	30 A 10 ms or less, 15 A 100 ms or less	-	
Leakage current at OFF circuit	1.5 mA (240 VAC 60 Hz)		
Max. voltage drop at ON circuit	1.5 VAC or less (15mA to 1 A)		
Response OFF → ON	1 ms or less		
time ON → OFF	1 ms + 0.5 cycles or less	3	
Surge absorber	Built-in CR absorber (0.1 $\mu$ F + 47 $\Omega$ )	7 11-1	
Fuse rating	None	4	
Common terminal		5	
arrangement	4 points/common (common terminals: TB8, TB16)	6	
Operating indicator	ON state is indicated (LEDs)	7	
External connections	20-point terminal block connector (M3.5 × 7 screws)	8	
Applicable wire size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	9	
Applicable crimp terminals	RAV1.25-3.5	-   A	
Accessories	None	В	
Insulation withstand voltage	2830VAC rms/3 cycle (altitude 2,000 m)	C	
Insulation resistor	10 MΩ or higher at insulation resistance tester	E	
Noise immunity	IEC801-4:1 kV	F	
Internal current consumption (5 VDC)	270 mA (TYP, all points ON)		
Weight kg	0.24		
	External Connections		
		Terminal No.	Signal Name
	Surge suppressor TB1 Load	TB1	Y00
		TB2	Vacant
LED V		TB3	Y01
<u> </u>		TB4	Vacant
	TB7 Load	TB5	Y02
		TB6	Vacant
		TB7	Y03
1   1		101	
		TRR	COM1
	TB8	TB8	COM1
Internal	V 100 1 000 110	TB9	Y04
Internal circuit	100 to 200VAC	TB9 TB10	Y04 Vacant
		TB9 TB10 TB11	Y04 Vacant Y05
	100 to 200VAC Surge suppressor TB9 Load	TB9 TB10 TB11 TB12	Y04 Vacant Y05 Vacant
	100 to 200VAC	TB9 TB10 TB11	Y04 Vacant Y05
	100 to 200VAC  Surge suppressor TB9  Load	TB9 TB10 TB11 TB12	Y04 Vacant Y05 Vacant
	100 to 200VAC Surge suppressor TB9 Load	TB9 TB10 TB11 TB12 TB13	Y04 Vacant Y05 Vacant Y06
	100 to 200VAC  Surge suppressor TB9  Load	TB9 TB10 TB11 TB12 TB13 TB14	Y04 Vacant Y05 Vacant Y06 Vacant
circuit	100 to 200VAC  Surge suppressor TB9  Load	TB9 TB10 TB11 TB12 TB13 TB14 TB15	Y04 Vacant Y05 Vacant Y06 Vacant Y07
LED	Surge suppressor TB9 Load  TB15 Load	TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16	Y04 Vacant Y05 Vacant Y06 Vacant Y07 COM2
LED	TB15 Load	TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16 TB17	Y04 Vacant Y05 Vacant Y06 Vacant Y07 COM2 Vacant

### A1SY40 Transistor Output Module (Sink Type) 3.9

Model		Transistor Output Module (Sink Type)	
Specification	s	A1SY40	Appearance
Number of outp	ut points	16 points	
Isolation method		Photocoupler	A1SY40 □ ERR
Rated load volt	age	12/24 VDC	
Operating volta	ge range	10.2 to 30 VDC (peak voltage 30 VDC)	A19Y40 DERM
Max. load curre	ent	0.1 A/point, 0.8 A/common	6 G G F
Max. allowed ru	ısh current	0.4 A 10 ms or less	
Leakage curren	nt at OFF circuit	0.1 mA or less	
Max. voltage dr	op at ON circuit	1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A	
Response	$OFF \to ON$	2 ms or less	0
time	$ON \rightarrow OFF$	2 ms or less (resistive load)	1
Surge absorber	-	Zener diode	2
Fuse rating		Fuse 1.6 A (1 piece/common), not replaceable *1	3
Fuse capacity		50 A	4
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	5
Common termir arrangement	nal	8 points/common (common terminals: TB10, TB20)	6
Operating indic	ator	ON state is indicated (LEDs)	7
External conne	ctions	20-point terminal block connector (M3.5 x 7 screws)	8
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	9 A
Applicable sold terminals	erless	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	В
Accessories		None	C
External	Voltage	12/24 VDC (10.2 to 30 VDC)	D
power supply	Current	8 mA (TYP 24 VDC/common)	E
Internal current consumption (5		270 mA (TYP, all points ON)	F
Weight kg		0.19	]

**External Connections** 

		1	20000000	TB1	Load
LED 7%		₩ # 🔛			
1 , 1				ТВ8	Load
		₩ \$ ₩	1		
		♦		TB9	
	Internal circuit	<b>*</b>	— <u> </u>	TB10	- +
		*	Fuse 1.6A		12/24VDC
				TB11	Load
		¥ <b>*</b>			
		L , , i		TB18	Load
LED		₩ # 🐰			
		J ~		TB19	
		) <b>=</b> ¥		TB20	-  +
	Ь		Fuse 1.6A		12/24VDC

Terminal No.	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	12/24 VDC
TB10	COM1
TB11	Y08
TB12	Y09
TB13	Y0A
TB14	Y0B
TB15	Y0C
TB16	Y0D
TB17	Y0E
TB18	Y0F
TB19	12/24 VDC
TB20	COM2

- \*1: The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.

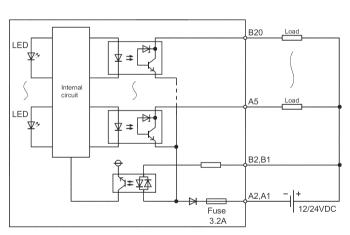
  If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*2: The ERR. indicating LED will also light when the external power supply is shut OFF.

### 3.9.1 A1SY40P Transistor Output Module (Sink Type)

	Model	Transistor Output Module (Sink Type	)	
Specification	s	A1SY40P	Appea	arance
Number of outp	out points	16 points		
Isolation metho	od	Photocoupler	A1SY40F	
Rated load volt	age.	12/24 VDC		R:
Operating volta	ige range	10.2 to 30 VDC (peak voltage 30 VDC)	00000000000000000000000000000000000000	9 9 A B C C D D F F
Max. load curre	ent	0.1 A/point, 0.8 A/common	5   6   7	
Max. allowed ru		0.7 A 10 ms or less		
	nt at OFF circuit	0.1 mA or less		
Max. voltage dr	rop at ON circuit	0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	_	
Response	OFF → ON	1 ms or less	0	
time	ON → OFF	1 ms or less (resistive load)	1 1	
Surge absorber	ſ	Zener diode	2	
Fuse		None	_ 3	
Dratastian funa	.tion	Yes (overload protection function, overheat protection function)	4	
Protection func	tion	Overheat protection function is activated in increments of 1 point.     Overload protection function is activated in increments of 1 point.	5	
Common termin	nal		6	
arrangement	iai	8 points/common (common terminals: TB10, TB20)	7	
Operating indic	ator	ON state is indicated (LEDs)	8	
External conne	ctions	20-point terminal block connector (M3.5 x 7 screws)		
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque	9	
		78.4 N•cm)	_   A	
Applicable sold terminals	eriess	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	В	
Accessories		None	C	
External	Voltage	12/24 VDC (10.2 to 30 VDC)	D	
power supply	Current	11 mA (TYP 24 VDC/common)	E	
Internal current	į	79 mA (TYP, all points ON)	F	
consumption (5	VDC)	(0.08A is shown on the rating plate of the module.)		
Weight kg		0.13		
		External Connections		
			Terminal No.	Signal Name
			TB1	Y00
	LED	TB1 Load	TB2	Y01
	**	▼ ≠ €		
			TB3	Y02
				Y02
			TB4	Y02 Y03
		TB8 Load	TB4 TB5	Y02 Y03 Y04
		TB8 Load	TB4 TB5 TB6	Y02 Y03 Y04 Y05
			TB4 TB5 TB6 TB7	Y02 Y03 Y04 Y05 Y06
		***	TB4 TB5 TB6	Y02 Y03 Y04 Y05
		nternal iricuit  Constant voltage circuit	TB4 TB5 TB6 TB7	Y02 Y03 Y04 Y05 Y06
		nternal ircuit TB9  Constant voltage circuit TB10 - +	TB4 TB5 TB6 TB7 TB8	Y02 Y03 Y04 Y05 Y06 Y07
		Constant voltage circuit  TB10 - + 12/24VDC	TB4 TB5 TB6 TB7 TB8 TB9	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC
		nternal ircuit TB9  Constant voltage circuit TB10 - +	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08
		Constant voltage circuit  TB10 - + 12/24VDC	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09
		Constant voltage circuit  TB10 - + 12/24VDC	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09
	ci	Constant voltage circuit  TB10 — + 12/24VDC  TB11 Load  TB18 Load	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13 TB14	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09 Y0A Y0B
	ci	TB10 — †  12/24VDC  TB11 Load	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13 TB14 TB15	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09 Y0A Y0B Y0C
		Constant voltage circuit  TB10 — + 12/24VDC  TB11 Load  TB18 Load	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09 Y0A Y0B Y0C Y0D
	ci	Constant voltage circuit  TB10 — + 12/24VDC  TB11 Load  TB18 Load	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13 TB14 TB15	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09 Y0A Y0B Y0C Y0D Y0E
	ci	TB10 — TB10 — TB11 Load  TB11 Load  TB18 Load  TB19	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09 Y0A Y0B Y0C Y0D
	ci	TB10 — + 12/24VDC TB11 Load  TB18 Load	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16 TB17	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09 Y0A Y0B Y0C Y0D Y0E
	ci	TB10 TB11 Load  TB11 Load  TB18 Load  TB19  TB19  TB19	TB4 TB5 TB6 TB7 TB8 TB9 TB10 TB11 TB12 TB13 TB14 TB15 TB16 TB17 TB18	Y02 Y03 Y04 Y05 Y06 Y07 12/24 VDC COM1 Y08 Y09 Y0A Y0B Y0C Y0D Y0E Y0F

### 3.10 A1SY41 Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink type	e)
Specifications		A1SY41	Appearance
Number of outp	ut points	32 points	
Isolation metho	d	Photocoupler	A1SY41
Rated load volt	age	12/24 VDC	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Operating volta	ge range	10.2 to 30 VDC (peak voltage 30 VDC)	10000000000000000000000000000000000000
Max. load curre	ent	0.1 A/point, 2 A/common	60 ž 0 0 ž
Max. allowed ru	ush current	0.4 A 10 ms or less	
Leakage currer	t at OFF circuit	0.1 mA or less	
Max. voltage di	op at ON circuit	1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A	
Response	$OFF \to ON$	2 ms or less	
time	$ON \rightarrow OFF$	2 ms or less (resistive load)	
Surge absorber	•	Zener diode	
Fuse rating		Fuse 3.2 A (1 piece/common), not replaceable *3	
Fuse capacity		50 A	
Error display		LED goes ON when fuse blows: signal output to PC CPU *4	
Common terminarrangement	nal	32 points/common (common terminals: A1, A2)	
Operating indic	ator	ON state is indicated (LEDs)	
External conne	ctions	40-pin connector	• •     † † <u>D</u> <u>D</u> † †
Applicable wire size		0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*5	NC - NC
Accessories		Connector (1 pce.) for external wiring (soldering type)	NC - NC
External Voltage		12/24 VDC (10.2 to 30 VDC)	
power supply Current		8 mA (TYP 24 VDC/common)	
Internal current consumption (5 VDC)		500 mA (TYP, all points ON)	DC12/24V 0.1A A15Y41
Weight kg		0.21	
		External Connections	

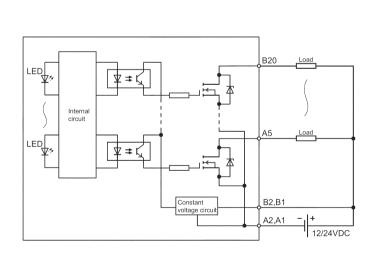


- \*1 : The arrangement of pins A and B shown right is the opposite of the arrangement of pins of the connector on the module.
- \*2 : A1SY41 has one connector jack soldering type (A6CON1) included.
- \*3 :The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*4 :The ERR. indicating LED will also light when the external power supply is shut OFF.
- \*5 : When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

Arı	Pin range	n ement	Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)
			B20	Y00	A20	Y10
			B19	Y01	A19	Y11
			B18	Y02	A18	Y12
B20		<b>\</b>	B17	Y03	A17	Y13
B19	0 0		B16	Y04	A16	Y14
B18 B17	0 0		B15	Y05	A15	Y15
B16	0 0		B14	Y06	A14	Y16
B15 B14	0 0		B13	Y07	A13	Y17
B13	0 0	A13	B12	Y08	A12	Y18
B12 B11	0 0	]	B11	Y09	A11	Y19
B10	0 0	A10	B10	Y0A	A10	Y1A
B9 B8	0 0	1	B9	Y0B	A9	Y1B
B7	0 0	D A7	B8	Y0C	A8	Y1C
B6 B5	0 0	1	B7	YOD	A7	Y1D
B4 B3	0 0	1,14	B6	Y0E	A6	Y1E
B2	0 0	1 /10	B5	YOF	A5	Y1F
B1	0 0	) A1	B4	Vacant	A4	Vacant
_	<u> </u>	_	В3	Vacant	А3	Vacant
Fi	ront vi	iew	B2	12/24 VDC	A2	сом
			B1	12/24 VDC	A1	сом

### 3.10.1 A1SY41P Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink type	9)
Specifications		A1SY41P	Appearance
Number of outp	ut points	32 points	
Isolation metho	d	Photocoupler	
Rated load volt	age	12/24 VDC	A1SY41P
Operating volta	ge range	10.2 to 30 VDC (peak voltage 30 VDC)	10000000000000000000000000000000000000
Max. load curre	nt	0.1 A/point, 2 A/common	
Max. allowed ru	ish current	0.7 A 10 ms or less	5 D D U5 D D 6 D B 7 D D C D D D D D D D D D D D D D D D D
Leakage curren	t at OFF circuit	0.1 mA or less	
Max. voltage dr	op at ON circuit	0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	
Response	$OFF \to ON$	1 ms or less	
time	$ON \rightarrow OFF$	1 ms or less (resistive load)	
Surge absorber		Zener diode	
Fuse		None	
Protection func	tion	Yes (overload protection function, overheat protection function)  Overheat protection function is activated in increments of 1 point.  Overload protection function is activated in increments of 1 point.	111 122 132 144 153
Common termir arrangement	nal	32 points/common (common terminals: A1, A2)	• •     • •     • •     • •     • •     • •     • •     • •     • •     • •     • •     • •     • •     • •     • •     • •   •   • •   • •   • •   • •   • •   • •   • •   • •   • •   • •   •   • •   •   • •   •   • •   •   • •   •   • •   •   • •   •
Operating indic	ator	ON state is indicated (LEDs)	
External connec	ctions	40-pin connector	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Applicable wire	size	0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*3	
Accessories		Connector (1 pce.) for external wiring (soldering type)	NC P F
Applicable connector/terminal block converter unit		A6TBXY36, A6TBXY54	
External	Voltage	12/24 VDC (10.2 to 30 VDC)	
power supply Current		12 mA (TYP 24 VDC/common)	
Internal current consumption (5 VDC)		141 mA (TYP, all points ON) (0.15A is shown on the rating plate of the module.)	DC12/24V 0.1A A1SY41P
Weight kg		0.15	
		External Connections	



Pin Arrangement				Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)
				B20	Y00	A20	Y10
				B19	Y01	A19	Y11
				B18	Y02	A18	Y12
B20			A20	B17	Y03	A17	Y13
B19	0	0	A19	B16	Y04	A16	Y14
B18 B17	0	0	A18 A17	B15	Y05	A15	Y15
B16	0	0	A16	B14	Y06	A14	Y16
B15 B14	0	0	A15 A14	B13	Y07	A13	Y17
B13	0	0	A13	B12	Y08	A12	Y18
B12 B11	0	0	A12 A11	B11	Y09	A11	Y19
B10	0	0	A10	B10	Y0A	A10	Y1A
B9 B8	0	0	A9 A8	В9	Y0B	A9	Y1B
B7 B6	0	0	A7	В8	Y0C	A8	Y1C
B5	0	0	A6 A5	В7	YOD	Α7	Y1D
B4   B3	0	0	A4 A3	В6	Y0E	A6	Y1E
B2	0	0	A3 A2	B5	Y0F	A5	Y1F
B1	0		) A1	В4	Vacant	Α4	Vacant
			ВЗ	Vacant	А3	Vacant	
Fr	ont	vie	N	B2	12/24 VDC	A2	сом
				В1	12/24 VDC	A1	сом

- \*1 :The arrangement of pins A and B shown right is the opposite of the arrangement of pins of the connector on the module.
- \*2 : A1SY41 has one connector jack soldering type (A6CON1) included.
- \*3 : When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

### 3.11 A1SY42 Transistor Output Module (Sink Type)

Specifications   64 points   64 points   12/24 VDC	Model	Transistor Output Module (Sink Type)				
Number of output points    Solation method			Appearance			
Isolation method		64 points				
Max. allowed rush current Leakage current at OFF circuit Max. voltage drop at OFF → ON 2 ms or less  Max. voltage drop at ON circuit 1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A  Response OFF → ON 2 ms or less Conscience ON → OFF 2 ms or less (resistive load)  Surge absorber Zener diode Fuse rating Fuse apacity 50 A Error display LED goes ON when fuse blows: signal output to PC CPU*4 Common terminal arrangement 32 points/common (common terminals: 141, 1A2, 2A1, 2A2) Operating indicator ON state is indicated (LEDs), 32-bit indication by switch External connections 40-pin connector Applicable wire size 0.088 to 0.3mm² (for the A6CON1 and A6CON4)*5 Accessories Connectors (2 poes.) for external wiring (soldering type)  External current consumption (5 VDC) 930 mA (TYP, all points ON)  External Connections  External Connections  External Connections  External Connections  External Connections			A1SY42			
Max. allowed rush current  Leakage current at OFF circuit  Max. voltage drop at OFF → ON  2 ms or less  Max. voltage drop at ON circuit  1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A  Response  OFF → ON  2 ms or less  Consider a service of the servic		12/24 VDC	10900000			
Max. allowed rush current Leakage current at OFF circuit Max. voltage drop at OFF → ON 2 ms or less  Max. voltage drop at ON circuit 1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A  Response OFF → ON 2 ms or less Conscience ON → OFF 2 ms or less (resistive load)  Surge absorber Zener diode Fuse rating Fuse apacity 50 A Error display LED goes ON when fuse blows: signal output to PC CPU*4 Common terminal arrangement 32 points/common (common terminals: 141, 1A2, 2A1, 2A2) Operating indicator ON state is indicated (LEDs), 32-bit indication by switch External connections 40-pin connector Applicable wire size 0.088 to 0.3mm² (for the A6CON1 and A6CON4)*5 Accessories Connectors (2 poes.) for external wiring (soldering type)  External current consumption (5 VDC) 930 mA (TYP, all points ON)  External Connections  External Connections  External Connections  External Connections  External Connections	Operating voltage range		4 C C C C C C C C C C C C C C C C C C C			
Leakage current at OFF circuit  Max. voltage drop at ON circuit  1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A  Response  OFF → ON → OFF 2 ms or less (resistive load)  Surge absorber  Zener diode  Fuse rating  Fuse 3.2 A (1 piece/common), not replaceable "3  Fuse capacity  50 A  Error display  LED goes ON when fuse blows: signal output to PC CPU "4  Common terminal arrangement  32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator  ON state is indicated (LEDs), 32-bit indication by switch  External connections  Applicable wire size  0.088 to 0.3mm² (for the A6CON1 and A6CON4)"5  Accessories  Connectors (2 poes), for external wiring (soldering type)  External voltage  Dower supply  Internal current consumption (5 VDC)  930 mA (TYP, all points ON)  External Connections  External Connections  External Connections  External Connections  External Connections	Max. load current	0.1 A/point, 1.6 A/common	78F8 868F			
Max. voltage drop at ON circuit  Response OFF → ON 2 ms or less ON → OFF 2 ms or less (resistive load)  Surge absorber  Zener diode Fuse rating Fuse 3.2 A (1 piece/common), not replaceable "3  Fuse capacity 50 A  Error display LED goes ON when fuse blows: signal output to PC CPU "4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator ON state is indicated (LEDs), 32-bit indication by switch  External connections 40-pin connector  Applicable wire size  Connectors (2 pces.) for external wiring (soldering type)  External power supply  Voltage Current 8 mA (TYP 24 VDC/common)  (5 VDC)  Weight kg  0.27  External Connections  External Connections  External Connections  External Connections  External Connections  Tibel 2 min for the Ascondary of th	Max. allowed rush current	0.4 A 10 ms or less				
Response time ON → OFF → ON 2 ms or less (resistive load)  Surge absorber Zener diode Fuse a3.2 A (1 piece/common), not replaceable *3  Fuse cating Fuse 3.2 A (1 piece/common), not replaceable *3  Fuse capacity 50 A  Error display LED goes ON when fuse blows: signal output to PC CPU *4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator ON state is indicated (LEDs), 32-bit indication by switch  External connections 40-pin connector  Applicable wire size 0.088 to 0.3mm² (for the A6CON1 and A6CON4)*  Accessories  External Voltage 12/24 VDC (10.2 to 30 VDC)  Dower supply Current 8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg 0.27  External Connections  External Connections  External Connections	Leakage current at OFF circuit	0.1 mA or less	1			
time ON → OFF 2 ms or less (resistive load)  Surge absorber Zener diode  Fuse rating Fuse 3.2 A (1 piece/common), not replaceable '3  Fuse capacity 50 A  Error display LED goes ON when fuse blows: signal output to PC CPU '4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator ON state is indicated (LEDs), 32-bit indication by switch  External connections 40-pin connector  Applicable wire size 0.088 to 0.3mm² (for the A6CON1 and A6CON4)'5  Accessories Connectors (2 pces.) for external wiring (soldering type)  External power supply Current 8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg 0.27  External Connections  External Connections  External Connections  External Connections	Max. voltage drop at ON circuit	1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A				
time ON → OFF 2 ms or less (resistive load)  Surge absorber Zener diode Fuse rating Fuse 3.2 A (1 piece/common), not replaceable *3 Fuse capacity 50 A  Error display LED goes ON when fuse blows: signal output to PC CPU *4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator ON state is indicated (LEDs), 32-bit indication by switch  External connections 40-pin connector  Applicable wire size 0.088 to 0.3mm² (for the A6CON1 and A6CON4)*3  Accessories Connectors (2 poes.) for external wirring (soldering type)  External power supply Current 8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg  External Connections  External Connections  External Connections  External Connections	Response OFF → ON	2 ms or less	DIS. FICTURE			
Surge absorber  Zener diode Fuse rating Fuse a 3.2 A (1 piece/common), not replaceable "3  Fuse capacity 50 A  Error display LED goes ON when fuse blows: signal output to PC CPU "4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator ON state is indicated (LEDs), 32-bit indication by switch External connections Applicable wire size 0.088 to 0.3mm² (for the A6CON1 and A6CON4) "5  Accessories Connectors (2 pces.) for external wirring (soldering type)  External power supply Current B mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg 0.27  External Connections  External Connections	timo	2 ms or less (resistive load)				
Fuse capacity  Fuse capacity  Fuse capacity  Error display  LED goes ON when fuse blows: signal output to PC CPU *4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator  External connections  Applicable wire size  O.088 to 0.3mm² (for the A6CON1 and A6CON4)*5  Accessories  Connectors (2 pces.) for external wiring (soldering type)  External voltage  External voltage  External voltage  12/24 VDC (10.2 to 30 VDC)  power supply  Current  8 mA (TYP 24 VDC/common)  Internal current consumption  (5 VDC)  Weight kg  0.27  External Connections  External Connections  External course (1820 Load  182181  182181  Left side (frest-half)  Right side (second-half)  2 2820 Load	Surge absorber	Zener diode				
Fuse capacity  Error display  LED goes ON when fuse blows: signal output to PC CPU '4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator  ON state is indicated (LEDs), 32-bit indication by switch  External connections  Applicable wire size  Accessories  Connectors (2 pces.) for external wiring (soldering type)  External power supply  Current  8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  930 mA (TYP, all points ON)  Weight kg  Current  External connections  External current consumption (5 VDC)  External current consumption (5 VDC)  Page 1/24 VDC (10.2 to 30 VDC)  poor supply  External current consumption (5 VDC)  Page 1/24 VDC/common)  10 DC12/24V 0.1A A1SY42  External connections		Fuse 3.2 A (1 piece/common), not replaceable *3				
Error display  LED goes ON when fuse blows: signal output to PC CPU *4  Common terminal arrangement 32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)  Operating indicator  ON state is indicated (LEDs), 32-bit indication by switch  External connections  40-pin connector  Applicable wire size  0.088 to 0.3mm² (for the A6CON1 and A6CON4)*5  Accessories  Connectors (2 pces.) for external wiring (soldering type)  External power supply  Current  8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg  0.27  External Connections   1820  Left side (first-half)  Fuse 3.2A  Left side (first-half)  Right side (second-half)  2 2820  Load  L			1      <b> ::</b>    <b> </b>			
Operating indicator ON state is indicated (LEDs), 32-bit indication by switch  External connections Applicable wire size Accessories Connectors (2 pces.) for external wiring (soldering type)  External power supply Current 8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg  O.27  External Connections  External Connections  External Connections		LED goes ON when fuse blows: signal output to PC CPU *4	┪╶┈┈┆┈╢╏┇╏┋═╬┇╏╢┈╎			
External connections  40-pin connector  Applicable wire size  0.088 to 0.3mm² (for the A6CON1 and A6CON4)¹5  Accessories  Connectors (2 pces.) for external wiring (soldering type)  External voltage power supply Current  8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg  0.27  External Connections  External Connections  External Connections						
External connections Applicable wire size  0.088 to 0.3mm² (for the A6CON1 and A6CON4)*5  Accessories  Connectors (2 pces.) for external wiring (soldering type)  External power supply Current  8 mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg  0.27  External Connections  External Connections  External Connections	Operating indicator	ON state is indicated (LEDs), 32-bit indication by switch				
Applicable wire size  Accessories  Connectors (2 pces.) for external wiring (soldering type)  External power supply  Current  B mA (TYP 24 VDC/common)  Internal current consumption (5 VDC)  Weight kg  Dc12/24V 0.11A AISY42  External Connections  External Connections		40-pin connector				
Accessories    Connectors (2 pces.) for external wiring (soldering type)	Applicable wire size	0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*5				
External power supply	Accessories	Connectors (2 pces.) for external wiring (soldering type)	1       <b>::</b>    <u> </u>   ::			
Internal current consumption (5 VDC)  930 mA (TYP, all points ON)  External Connections  External Connections    1820 Load   182, 181   182, 182, 182, 182, 182, 182, 182, 182,	External Voltage	12/24 VDC (10.2 to 30 VDC)				
Weight kg  0.27  External Connections    B20   Load	power supply Current	8 mA (TYP 24 VDC/common)				
Weight kg  External Connections  External Connections    1820   Load   L		930 mA (TYP, all points ON)				
External Connections    1820		0.27	DC12/24V 0.1A A1SY42			
Indication selector circuit    As   Long   Indication   I	Worght Ng					
Indication selector circuit    As   Long   Indication   I						
Internal circuit		Indication selector Right side (second-half)  2B2.2B1  Indication selector 2B2.2B1				

	Pin Arrangement		ent	Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)
				1B20	Y00	1A20	Y10	2B20	Y20	2A20	Y30
				1B19	Y01	1A19	Y11	2B19	Y21	2A19	Y31
İ	B20	• • •	A20	1B18	Y02	1A18	Y12	2B18	Y22	2A18	Y32
		0 0	A19	1B17	Y03	1A17	Y13	2B17	Y23	2A17	Y33
		0 0	A18 A17	1B16	Y04	1A16	Y14	2B16	Y24	2A16	Y34
	B16	0 0	A16	1B15	Y05	1A15	Y15	2B15	Y25	2A15	Y35
		0 0	A15 A14	1B14	Y06	1A14	Y16	2B14	Y26	2A14	Y36
	B13	0 0	A13	1B13	Y07	1A13	Y17	2B13	Y27	2A13	Y37
		0 0	A12 A11	1B12	Y08	1A12	Y18	2B12	Y28	2A12	Y38
	J. J	0 0	A10	1B11	Y09	1A11	Y19	2B11	Y29	2A11	Y39
	D0	0 0	A9 A8	1B10	Y0A	1A10	Y1A	2B10	Y2A	2A10	Y3A
	٠, ١	0 0	A7 A6	1B9	Y0B	1A9	Y1B	2B9	Y2B	2A9	Y3B
	1	0 0	A5	1B8	Y0C	1A8	Y1C	2B8	Y2C	2A8	Y3C
	D-4	0 0	A4 A3	1B7	Y0D	1A7	Y1D	2B7	Y2D	2A7	Y3D
	B2	0 0	A2	1B6	Y0E	1A6	Y1E	2B6	Y2E	2A6	Y3E
ı	B1 0 0 A1  Front view		A1	1B5	Y0F	1A5	Y1F	2B5	Y2F	2A5	Y3F
			1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant	
			1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant	
	Fron	ı view	Ì	1B2	12/24 VDC	1A2	COM1	2B2	12/24 VDC	2A2	COM2
				1B1	12/24 VDC	1A1	COM1	2B1	12/24 VDC	2A1	COM2

<sup>\*1 :</sup> In the pin number column, the pins beginning with "1[ ][ ]" are left connector pins and those beginning with "2[ ][ ]" are right connector pins.

<sup>\*2:</sup> When the switch is set to the left side position, the status of the first-half devices (Y00 to Y1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (Y20 to Y3F) is displayed by the LEDs.

<sup>\*3 :</sup> The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.

If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.

<sup>\*4 :</sup> The ERR. indicating LED will also light when the external power supply is shut OFF.

<sup>\*5 :</sup> When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

### 3.11.1 A1SY42P Transistor Output Module (Sink Type)

	Model	Transistor Output Module (Sink Type)	
Specification	ns	A1SY42P	Appearance
Number of out		64 points	Δ
Isolation meth	·	Photocoupler	A1SY42P
Rated load vol	Itage	12/24 VDC	A 0 8 8 B 1 9 1 9 2 A 2 A 3 8 3 8
Operating volt		10.2 to 30 VDC (peak voltage 30 VDC)	A 0   8         0     8   8         1   0   9   9   9   9   9   9   9   9   9
Max. load curr		0.1 A/point, 2 A/common	7878 8787
Max. allowed i	rush current	0.7 A 10 ms or less	
Leakage curre	nt at OFF circuit	0.1 mA or less	
Max. voltage o	Irop at ON circuit	0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	14 MAY AV
Response	OFF → ON	1 ms or less	DIS. FOL
time	ON → OFF	1 ms or less (rated load, resistance load)	
Surge absorbe		Zener diode	
Fuse		No	
	inal arrangement	32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)	
		Yes (overload protection function, overheat protection function)	
Protection fund	ction	Overheat protection function is activated in increments of 1 point.     Overload protection function is activated in increments of 1 point.	
Operating indi	cator	ON state is indicated (LEDs), 32-bit indication by switch	
External conne	ections	40-pin connector	
Applicable wire	e size	0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*3	
Accessories		Connectors (2 pces.) for external wiring (soldering type)	
External	Voltage	12/24 VDC (10.2 to 30 VDC)	
power supply	Current	14 mA (TYP 24 VDC/common)	
Internal curren (5 VDC)	it consumption	170 mA (TYP, all points ON)	DC12/24V 0.1A A1SY42P
Weight kg		0.17	
		External Connections	
		Internal circuit  LED Indication Selector Right side (first-half) voltage circuit  1B2, 1B1  1A2, 1A1 - + 12/24VDC  2B20 Load	
		Constant 2B2,2B1 voltage circuit 2A2,2A1 -   +	

	Arra	Pin		nt	Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)
Ī					1B20	Y00	1A20	Y10	2B20	Y20	2A20	Y30
l				İ	1B19	Y01	1A19	Y11	2B19	Y21	2A19	Y31
İ	B20			A20	1B18	Y02	1A18	Y12	2B18	Y22	2A18	Y32
	B19	_	٠,	A19	1B17	Y03	1A17	Y13	2B17	Y23	2A17	Y33
	B18 B17	_	-	A18 A17	1B16	Y04	1A16	Y14	2B16	Y24	2A16	Y34
	B16	_	- 1	A16	1B15	Y05	1A15	Y15	2B15	Y25	2A15	Y35
	B15 B14	-		A15 A14	1B14	Y06	1A14	Y16	2B14	Y26	2A14	Y36
	B13	ō	0	A13	1B13	Y07	1A13	Y17	2B13	Y27	2A13	Y37
	B12 B11	-	- 1	A12 A11	1B12	Y08	1A12	Y18	2B12	Y28	2A12	Y38
	B10	0	0	A10	1B11	Y09	1A11	Y19	2B11	Y29	2A11	Y39
	B9 B8		- 1	A9 A8	1B10	YOA	1A10	Y1A	2B10	Y2A	2A10	Y3A
	B7	-	0	A7	1B9	Y0B	1A9	Y1B	2B9	Y2B	2A9	Y3B
	B6 B5		- 1	A6 A5	1B8	Y0C	1A8	Y1C	2B8	Y2C	2A8	Y3C
	B4	-		A4	1B7	Y0D	1A7	Y1D	2B7	Y2D	2A7	Y3D
	B3 B2			A3 A2	1B6	Y0E	1A6	Y1E	2B6	Y2E	2A6	Y3E
	B1			A1	1B5	Y0F	1A5	Y1F	2B5	Y2F	2A5	· Y3F
	Front view		ı	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant	
			1B3	Vacant	1 A 3	Vacant	2B3	Vacant	2A3	Vacant		
	ror	ıı vie	·W	Ī	1B2	12/24 VDC	1A2	COM1	2B2	12/24 VDC	2A2	COM2
				Ī	1B1	12/24 VDC	1A1	COM1	2B1	12/24 VDC	2A1	COM2

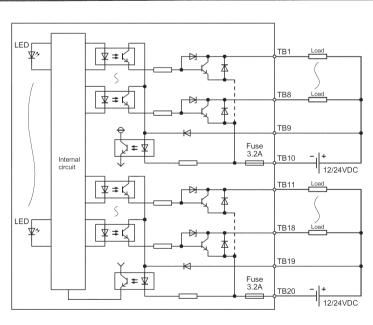
<sup>\*1 :</sup> In the pin number column, the pins beginning with "1[ ][ ]" are left connector pins and those beginning with "2[ ][ ]" are right connector pins.

<sup>\*2:</sup> When the switch is set to the left side position, the status of the first-half devices (Y00 to Y1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (Y20 to Y3F) is displayed by the LEDs.

<sup>\*3 :</sup> When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

### 3.12 A1SY50 Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink T	ype)
Specifications		A1SY50	Appearance
Number of output point	s	16 points	A1SY50
Isolation method		Photocoupler	
Rated load voltage		12/24 VDC	A1SY50
Operating voltage rang	е	10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current		0.5 A/point, 2 A/common	7 0 0 1
Max. allowed rush curre	ent	4 A 10 ms or less	
Leakage current at OFF	- circuit	0.1 mA or less	
Max. voltage drop at O	N circuit	0.9 VDC (TYP) 0.5 A, 1.5 VDC (MAX) 0.5 A	0
Response time	$OFF \rightarrow ON$	2 ms or less	1
Response time	$ON \rightarrow OFF$	2 ms or less (resistive load)	2
Surge absorber		Zener diode	3
Fuse rating		Fuse 3.2 A (1 piece/common), not replaceable *1	4
Fuse capacity		50 A	5
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	
Common terminal arran	ngement	8 points/common (common terminals: TB10, TB20)	
Operating indicator		ON state is indicated (LEDs)	8
External connections		20-point terminal block connector (M3.5 x 7 screws)	
Applicable wire size		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	9 A
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	В
Accessories		None	
External newer cumply	Voltage	12/24 VDC (10.2 to 30 VDC)	D
External power supply  Current		60 mA (TYP 24 VDC/common)	
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)	F
Weight kg		0.2	
		External Connections	



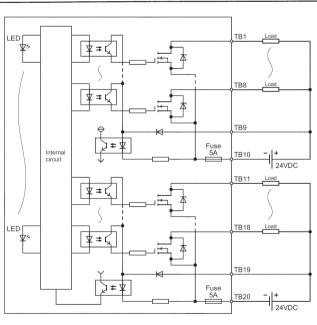
Terminal No.	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	12/24 VDC
TB10	COM1
TB11	Y08
TB12	Y09
TB13	Y0A
TB14	Y0B
TB15	Y0C
TB16	Y0D
TB17	Y0E
TB18	Y0F
TB19	12/24 VDC
TB20	COM2

<sup>\*1 :</sup> The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.

<sup>\*2:</sup> The ERR. indicating LED will also light when the external power supply is shut OFF.

### 3.13 A1SY60 Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink Type)		
Specifications		A1SY60	Appearance	
Number of output points		16 points		
Isolation method		Photocoupler	A1SY60	
Rated load voltage		24 VDC		
Operating voltage rang	е	21.6 to 26.4 VDC (peak voltage 26.4 VDC)	1	
Max. load current		2 A/point, 4 A/common (Ta=25°C), 1.8 A/point, 3.6 A/common (Ta=45°C), 1.6 A/point, 3.2 A/common (Ta=55°C)	5	
Max. allowed rush curre	ent	8 A 10 ms or less		
Leakage current at OFF	F circuit	0.1 mA or less		
Max. voltage drop at O	N circuit	0.9 VDC (TYP) 2 A, 1.5 VDC (MAX) 0.5 A	0	
D	OFF → ON	2 ms or less	1	
Response time	ON → OFF	2 ms or less (resistive load)	2	
Surge absorber	L	Zener diode	3	
Fuse rating		Fuse 5 A (1 piece/common), not replaceable *1	4	
Fuse capacity		50 A	5	
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	6	
Common terminal arrar	ngement	8 points/common (common terminals: TB10, TB20)	7	
Operating indicator		ON state is indicated (LEDs)	8	
External connections		20-point terminal block connector (M3.5 x 7 screws)	9	
Applicable wire size		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	A	
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	B	
Accessories		None	D	
External newer arrate	Voltage	24 VDC (21.6 to 26.4 VDC)	E	
External power supply	Current	15 mA (TYP 24 VDC/common)	F	
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)		
Weight kg		0.25	A All States and Mark 1	
		External Connections		



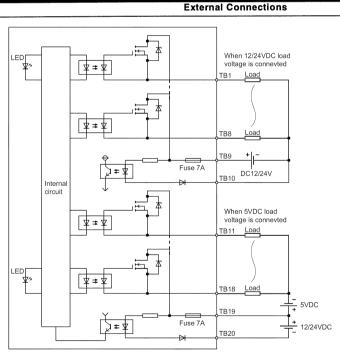
Terminal No.	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	24 VDC
TB10	COM1
TB11	Y08
TB12	Y09
TB13	Y0A
TB14	Y0B
TB15	Y0C
TB16	Y0D
TB17	Y0E
TB18	Y0F
TB19	24 VDC
TB20	COM2

<sup>\*1:</sup> The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow

<sup>\*2 :</sup> The ERR. indicating LED will also light when the external power supply is shut OFF.

### 3.14 A1SY60E Transistor Output Module (Source Type)

	Model	Transistor Output Module (Source Type)		
Specifications		A1SY60E	Appearance	
Number of output point	s	16 points	A1SY60E	
Isolation method		Photocoupler	AISY60E DE	
Rated load voltage		5/12/24 VDC		
Operating voltage rang	е	4.5 to 26.4 VDC (peak voltage 26.4 VDC)	A1SY60E	
Max. load current		2 A/point (condition:τ = L/R ≤ 2.5 ms), 4 A/common	/ 0 0 5	
Max. allowed rush curre	ent	8 A 10 ms or less		
Leakage current at OFF	circuit	0.1 mA or less		
Max. voltage drop at O	N circuit	0.2 VDC (MAX) 1 A, 0.4 VDC (MAX) 2 A	0	
D	$OFF \rightarrow ON$	3 ms or less	1	
Response time	ON → OFF	10 ms or less (resistive load)	2	
Surge absorber	L	Zener diode	3	
Fuse rating		Fuse 7 A (1 piece/common), not replaceable *1	4	
Fuse capacity		300 A	5	
Error display		LED goes ON when fuse blows: signal output to PC CPU *2		
Common terminal arrar	gement	8 points/common (common terminals: TB9, TB19)	7	
Operating indicator		ON state is indicated (LEDs)		
External connections		20-point terminal block connector (M3.5 x 7 screws)	9	
Applicable wire size		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	A	
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	В	
Accessories		None		
F. 4 1	Voltage	12/24 VDC (10.2 to 26.4 VDC)*3		
External power supply	Current	10 mA (TYP 24 VDC/common)		
Internal current consur	nption (5 VDC)	200 mA (TYP, all points ON)		
Weight kg		0.2		

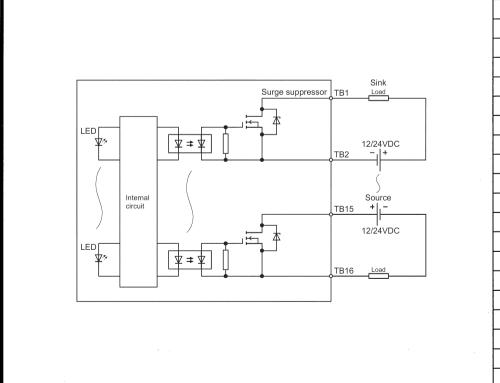


Terminal No.	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	COM1
TB10	٥V
TB11	Y08
TB12	Y09
TB13	Y0A
TB14	Y0B
TB15	Y0C
TB16	Y0D
TB17	Y0E
TB18	Y0F
TB19	COM2
TB20	٥V

- \*1 The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*2 The ERR. indicating LED will also light when the external power supply is shut OFF.
- \*3 When 5 VDC operating load voltage is used, another 12/24 VDC power supply is required for external power supply.

## 3.15 A1SY68A Transistor Output Module (Sink/Source Common Type (All Points Independent))

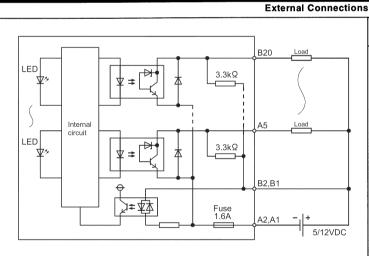
Model		Transistor Output Module		
Specifications		A1SY68A	Appearance	
Number of output point	ts	8 points (number of occupied I/O points : 16 points)	A1SY68A	
Isolation method		Photocoupler	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Rated load voltage		5/12/24/48 VDC		
Operating voltage rang	e	4.5 to 52.8 VDC	7 🗔	
Max. load current		2 A/point		
Max. allowed rush curr	ent	8 A 10 ms or less		
Leakage current at OF	F circuit	0.1 mA or less		
Max. voltage drop at O	N circuit	0.4 VDC (MAX) 2 A	2	
Response time	$OFF \rightarrow ON$	3 ms or less	3	
Hesponse time	$ON \rightarrow OFF$	10 ms or less (resistive load)	4	
Surge absorber		Zener diode	5 6	
Common terminal arrar	ngement	None (all points independent)	7	
Operating indicator		ON state is indicated (LEDs)	8	
External connections		20-point terminal block connector (M3.5 x 7 screws)	9	
Applicable wire size		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	A B	
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	С	
External power supply		None	D E	
Internal current consumption (5 VDC)		110 mA		
Weight kg		0.2		
External Connections				



Terminal No.	Signal Name		
TB1	Y00		
TB2	100		
TB3	Y01		
TB4	101		
TB5	Y02		
TB6	102		
TB7	Y03		
TB8	103		
TB9	Y04		
TB10	104		
TB11	Y05		
TB12	103		
TB13	Y06		
TB14	100		
TB15	Y07		
TB16	107		
TB17	Vacant		
TB18	Vacant		
TB19	Vacant		
TB20	Vacant		

### 3.16 A1SY71 Transistor Output Module (Sink Type)

	Model	Transistor Output Module (for TTL, CMOS	: Sink Type)
Specifications		A1SY71	Appearance
Number of output points		32 points	A1SY71
Isolation method		Photocoupler	1 0 0 0 0 0 1
Rated load voltage		5/12 VDC	
Operating voltage rang	e	4.5 to 15 VDC	10 c
Max. load current		16 mA/point, 256 mA/common	70 0 0 0 0 0
Max. allowed rush curr	ent	40 mA 10 ms or less	
Leakage current at OFI	circuit	Voh: 3.5 VDC (Vcc = 5 VDC, Ioh = 0.4 mA)	
Max. voltage drop at O	N circuit	Vol : 0.3 VDC	
D	$OFF \rightarrow ON$	1 ms or less	
Response time	$ON \rightarrow OFF$	1 ms or less (resistive load)	
Surge absorber		None	11 22 3 3 3 3
Fuse rating		Fuse 1.6 A (1 piece/common), not replaceable *2	
Fuse capacity		50 A	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Error display		LED goes ON when fuse blows: signal output to PC CPU *3	-
Common terminal arrar	gement	32 points/common (common terminals: A1, A2)	
Operating indicator		ON state is indicated (LEDs)	0 0 B B C C C D D D
External connections		40-pin connector	• •
Applicable wire size		0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*4	● ● BC - BC
Accessories		Connector (1 pcs.) for external wiring (soldering type)	
External power supply	Voltage	5/12 VDC (4.5 to 15 VDC)	
External power supply	Current	150 mA (TYP 12 VDC/common)	
Internal current consumption (5 VDC)		400 mA (TYP, all points ON)	DC5/12V 16mATTL A1SY71
Weight kg		0.19	



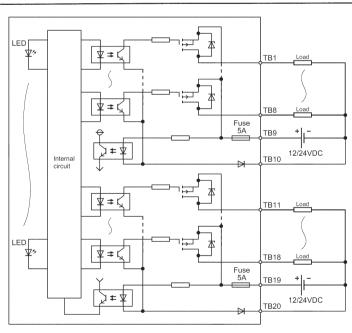
- \*1 : The arrangement of pins A and B shown right is the opposite of the arrangement of pins of the connector on the module.
- \*2 : The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.

  If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*3 : The ERR. indicating LED will also light when the external power supply is shut OFF.
- \*4: When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

Pin Arrangement			ent	Pin No.	Signal Name	Pin No.	Signal Name
ungomont				B20	Y00	A20	Y10
				B19	Y01	A19	Y11
B20	$\frown$	_		B18	Y02	A18	Y12
B19	0 0	0	A20 A19	B17	Y03	A17	Y13
B18 B17	0	0	A18 A17	B16	Y04	A16	Y14
B16	0	0	A17	B15	Y05	A15	Y15
B15 B14	0	0	A15 A14	B14	Y06	A14	Y16
B13	0	0	A13	B13	Y07	A13	Y17
B12 B11	0 0	0	A12 A11	B12	Y08	A12	Y18
B10	0	0	A10	B11	Y09	A11	Y19
B9 B8	0 0	0	A9 A8	B10	Y0A	A10	Y1A
B7 B6	0	0	A7	B9	Y0B	A9	Y1B
B5	0	0	A6 A5	B8	Y0C	A8	Y1C
B4 B3	0	0	A4 A3	B7	Y0D	A7	Y1D
B2	ō	0	A3 A2	B6	Y0E	A6	Y1E
B1	0	_	A1	B5	Y0F	<b>A</b> 5	Y1F
				B4	Vacant	A4	Vacant
1	Front view			В3	Vacant	А3	Vacant
				B2	5/12 VDC	A2	СОМ
				B1	5/12 VDC	A1	СОМ

### 3.17 A1SY80 Transistor Output Module (Source Type)

Model		Transistor Output Module (Source Type)		
Specifications		A1SY80	Appearance	
Number of output points		16 points		
Isolation metho	od	Photocoupler	A1SY80	
Rated load volt	age	12/24 VDC	A1SY80	
Operating volta	ige range	10.2 to 30 VDC (peak voltage 30 VDC)		
Max. load curre	ent	0.8 A/point, 3.2 A/common	7 6 6	
Max. allowed ru	ush current	8 A 10 ms or less		
Leakage currer	nt at OFF circuit	0.1 mA or less		
Max. voltage d	rop at ON circuit	1.5 VDC (MAX) 0.8 A		
Response	$OFF \rightarrow ON$	2 ms or less		
time	$ON \rightarrow OFF$	2 ms or less (resistive load)	2	
Surge absorber	r	Zener diode	3	
Fuse rating		Fuse 5 A (1 piece/common), not replaceable *1		
Fuse capacity		50 A	4	
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	5	
Common termin	nal arrangement	8 points/common (common terminals: TB9, TB19)	6	
Operating indic	ator	ON state is indicated (LEDs)	7	
External conne	ctions	20-point terminal block connector (M3.5 x 7 screws)	8	
Applicable wire	size	0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	9 A	
Applicable sold terminals	erless	R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	В	
Accessories		None	С	
External	Voltage	12/24 VDC (10.2 to 30 VDC)	D	
power supply	Current	20 mA (TYP 24 VDC/common)	E	
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)	F	
Weight kg		0.2		
		External Connections		

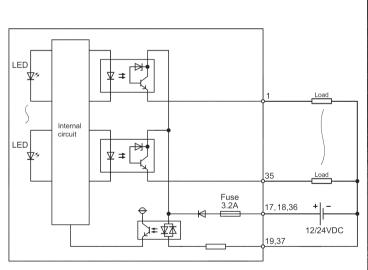


*1 : The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
if all output device is damaged in a lattice mode office than a short should, the lace might not slow.
*2 : The ERR. indicating LED will also light when the external power supply is shut OFF.

Terminal No.	Signal Name	
TB1	Y00	
TB2	Y01	
TB3	Y02	
TB4	Y03	
TB5	Y04	
TB6	Y05	
TB7	Y06	
TB8	Y07	
TB9	COM1	
TB10	0V	
TB11	Y08	
TB12	Y09	
TB13	Y0A	
TB14	Y0B	
TB15	Y0C	
TB16	Y0D	
TB17	Y0E	
TB18	Y0F	
TB19	COM2	
TB20	0V	
TB18	Y0F	
TB19	COM2	
TB20	0V	

### 3.18 A1SY81 Transistor Output Module (Source Type)

Model		Transistor Output Module (Source Typ	pe)	
Specifications		A1SY81	Appearance	
Number of output points		32 points	A1SY81	
Isolation metho	d	Photocoupler	A 0   8	
Rated load volta	age	12/24 VDC	2	
Operating volta	ge range	10.2 to 30 VDC (peak voltage 30 VDC)	5 D D D D D D D D D D D D D D D D D D D	
Max. load curre	nt	0.1 A/point, 2 A/common	7010 0701	
Max. allowed ru	ish current	0.4 A 10 ms or less		
Leakage curren	t at OFF circuit	0.1 mA or less		
Max. voltage dr	op at ON circuit	1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A		
Response	$OFF \to ON$	2 ms or less		
time	$ON \rightarrow OFF$	2 ms or less (resistive load)		
Surge absorber		Zener diode		
Fuse rating		Fuse 3.2 A (1 piece/common), not replaceable *1		
Fuse breaking o	capacity	50 A		
Error display		LED goes ON when fuse blows: signal output to PC CPU *2		
Common termin	al arrangement	32 points/common (common terminals: 17, 18, 36)		
Operating indicate	ator	ON state is indicated (LEDs)	3 -	
External connec	ctions	37-pin D sub-connector		
Applicable wire	size	0.088 to 0.3mm <sup>2</sup> (for the A6CON1E)*3	9 A	
Accessories		Connector (1 pce.) for external wiring (soldering type)		
External	Voltage	12/24 VDC (10.2 to 30 VDC)		
power supply	Current	8 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)		500 mA (TYP, all points ON)	DC12/24V 0.1A A1SY81	
Weight kg		0.23		
External Connections				

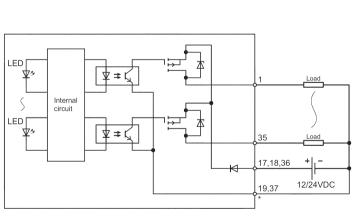


	Pin Arrangemen	Pin No.	Signal Name	Pin No.	Signal Name					
			1	Y00	9	Y10				
			20	Y01	28	Y11				
			2	Y02	10	Y12				
	20 0 0 1		21	Y03	29	Y13				
	21 0 0 2 22 0 0 3		3	Y04	11	Y14				
	23 0 0 4		22	Y05	30	Y15				
l	24 0 0 5 25 0 0 6	ſ	4	Y06	12	Y16				
	26 0 0 7	[	23	Y07	31	Y17				
l	27 0 0	[	5	Y08	13	Y18				
	28 0 0 10 29 0 0 11		24	Y09	32	Y19				
	30 0 0	[	6	Y0A	14	Y1A				
	$\begin{bmatrix} 31 & 0 & 0 & 13 \\ 32 & 0 & 0 & 13 \end{bmatrix}$		25	Y0B	33	Y1B				
	33 O O 14	- 1	7	Y0C	15	Y1C				
	35 0 0 16	- 1	26	Y0D	34	Y1D				
	36 O O 17		8	Y0E	16	Y1E				
	37 0 0 19		27	Y0F	35	Y1F				
			17	СОМ	37	0V				
	Front view		36	СОМ	19	0V				
	in total violation	Ī	18	сом						

- \*1 : The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*2 : The ERR. indicating LED will also light when the external power supply is shut OFF.
- \*3: When the A6CON2E or A6CON3E is used, refer to Section 1.2.4.

### 3.19 A1SY81EP Circuit Protection Provided Transistor Output Module (Source Type)

	Model	Transistor Output Module (Source Type)	•		
Specifications	3	A1SY81EP	Appearance		
Number of outp	ut points	32 points			
Isolation metho	d	Photocoupler	A1SY81EP		
Rated load volta	age	12/24 VDC	A 0 6 6 70 76 B		
Operating load voltage range		10.2 to 26.4 VDC	2 A 2 A 3 B 3 B 4 C		
Max. load curre	nt	0.1 A/point, 2 A/common (25 °C), 0.05 A/point, 1.6 A/common (55 °C)	4   C   4   C   5   C   6   C   6   C   7   C		
Max. inrush cur	rent	No limit (short protect)			
Leakage curren	t at OFF circuit	0.1 mA or lower			
Max. voltage dr	op at ON circuit	3.5 VDC (0.1 A Max.), 2.5 VDC (0.1 A Min.)	No. of the second section of the second section of the second section of the second second section second section section second section second section section section section section section section section section sec		
Response	$OFF \to ON$	0.5 ms or less	Marie V. Andrea A. C. Marie Commission V. Commission Co		
time	$ON \rightarrow OFF$	1.5 ms or less (resistive load)	0		
Surge absorber		Clamping diode	^		
Protect		Provided (overload protection function, overheat protection function)  Overheat protection function is detected in 8 points module (Y0 to 7, 8, to F, 10 to 17, 18 to 1F).  When overheat protection function occurs at an 8 points of 1 common, output of all points for corresponded common terminal is turned OFF.			
Protect detectio	n indication	None (signal not output to a PLC CPU.)			
Protect reset		Automatic reset (reset by canceling thermal protect)			
Common metho	bd	32 points/common (common terminals: 17, 18, 36)			
Operating indica	ator	ON state is indicated (LEDs)	5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -		
External connec	ctions	37-pin D sub-connector	8 9 A		
Applicable wire	size	0.088 to 0.3mm <sup>2</sup> (for the A6CON1E) <sup>*1</sup>			
Accessories		Connector (1 pcs.) for external wiring (soldering type)			
External	Voltage	12/24 VDC (10.2 to 26.4 VDC)			
power supply	Current	80 mA (TYP. 24 VDC/common)			
Internal current consumption (5 VDC)		500 mA (TYP. all points ON)	DC12/24V 0.1A A1SY81EP		
Weight kg		0.25			
		External Connections			



Arra	Pin Arrangement			Signal Name	Pin No.	Signal Name
			1	Y00	9	Y10
	20 0 0 1 21 0 0 2	20	Y01	28	Y11	
		2 3 3 4 5 5 6 6 7 8 9 9 10 11 12 13 13 14 15 15 16 17 18 15 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18	2	Y02	10	Y12
			21	Y03	29	Y13
22	0 0		3	Y04	11	Y14
23 24	0 0		22	Y05	30	Y15
25	0 0		4	Y06	12	Y16
26 27	00		23	Y07	31	Y17
28	0 0		5	Y08	13	Y18
29 30	0 0		24	Y09	32	Y19
31	31 0 0 32 0 0 33 0 0 34 0 0		6	Y0A	14	Y1A
			25	Y0B	33	Y1B
1			7	Y0C	15	Y1C
35			26	Y0D	34	Y1D
37	00		8	Y0E	16	Y1E
'			27	Y0F	35	Y1F
_			17	СОМ	37	ΟV
F	ront vie	W	36	СОМ	19	0V
			18	СОМ		

Make sure that output short-circuits do not occur at more than three outputs simultaneously.
 If output short-circuits occur in three or outputs at the same time,

the output element may be deteriorated or corrupted.

\*1 When the A6CON2E or A6CON3E is used, refer to Section 1.2.4.

### 3.20 A1SY82 Transistor Output Module (Source Type)

Model	Transistor Output Module (Source Type)			
Specifications	A1SY82	Appearance		
Number of output points	64 points			
Isolation method	Photocoupler	A1SY82		
Rated load voltage	12/24 VDC	A 15 162   168   168   169   1		
Operating voltage range	10.2 to 30 VDC (peak voltage 30 VDC)	10 C		
Max. load current	0.1 A/point, 1.6 A/common	6		
Max. allowed rush current	0.4 A 10 ms or less			
Leakage current at OFF circuit	0.1 mA or less			
Max. voltage drop at ON circui	t 1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A			
Response OFF → ON	2 ms or less	DIS. F O L		
time ON → OFF	2 ms or less (resistive load)			
Surge absorber	Zener diode			
Fuse rating	Fuse 3.2 A (1 piece/common), not replaceable *3			
Fuse capacity	50 A			
Error display	LED goes ON when fuse blows: signal output to PC CPU *4			
Common terminal arrangemen				
Operating indicator	ON state is indicated (LEDs), 32-bit indication by switch	F B B B B B		
External connections	40-pin connector			
Applicable wire size	0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*5			
Accessories	Connectors (2 pces.) for external wiring (soldering type)			
External Voltage	12/24 VDC (10.2 to 30 VDC)			
power supply Current	8 mA (TYP 24 VDC/common)			
Internal current consumption (5 VDC)	930 mA (TYP, all points ON)	DC12/24V 0.1A A1SY82		
Weight kg	0.27			
	External Connections			
	Internal circuit  LED  Indication selector circuit  Right side (second-half)  *2  2B20  Load  Load  1B2,1B1 +  1A5  Load  1B2,1B1 +  2B20  Load  2B2,2B1 +			
	Fuse 3.2A 2A2,2A1 12/24VDC			

Arra	Pin Arrangement		Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)
			1B20	Y00	1A20	Y10	2B20	Y20	2A20	Y30
			1B19	Y01	1A19	Y11	2B19	Y21	2A19	Y31
D00		\	1B18	Y02	1A18	Y12	2B18	Y22	2A18	Y32
B20 B19	0 0	A20 A19	1B17	Y03	1A17	Y13	2B17	Y23	2A17	Y33
B18 B17	0 0	A18	1B16	Y04	1A16	Y14	2B16	Y24	2A16	Y34
B17	0 0	A17 A16	1B15	Y05	1A15	Y15	2B15	Y25	2A15	Y35
B15 B14	0 0	A15 A14	1B14	Y06	1A14	Y16	2B14	Y26	2A14	Y36
B13	0 0	A13	1B13	Y07	1A13	Y17	2B13	Y27	2A13	Y37
B12 B11	0 0	A12 A11 A10	1B12	Y08	1A12	Y18	2B12	Y28	2A12	Y38
B10	0 0		A10	1B11	Y09	1A11	Y19	2B11	Y29	2A11
B9 B8	B9 0 0 A9	A9 A8	1B10	YOA	1A10	Y1A	2B10	Y2A	2A10	Y3A
B7	0 0	A7	1B9	Y0B	1A9	Y1B	2B9	Y2B	2A9	Y3B
B6 B5	0 0	A6 A5	1B8	YOC	1A8	Y1C	2B8	Y2C	2A8	Y3C
B4	0 0	A4	1B7	YOD	1A7	Y1D	2B7	Y2D	2A7	Y3D
B3 B2	0 0	A3 A2	1B6	Y0E	1A6	Y1E	2B6	Y2E	2A6	Y3E
B1	0 0)	A1	1B5	Y0F	1A5	Y1F	2B5	Y2F	2A5	Y3F
	Front view		1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant
_			1B3	Vacant	1A3	Vacant	2B3 ·-	Vacant	2A3	Vacant
Fror			1B2	12/24 VDC	1A2	COM1	2B2	12/24 VDC	2A2	COM2
			1B1	12/24 VDC	1A1	COM1	2B1	12/24 VDC	2A1	COM2

<sup>\*1:</sup> In the pin number column, the pins beginning with "1[ ][ ]" are left connector pins and those beginning with "2[ ][ ]" are right connector pins.

<sup>\*2:</sup> When the switch is set to the left side position, the status of the first-half devices (Y00 to Y1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (Y20 to Y3F) is displayed by the LEDs.

<sup>\*3 :</sup> The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.

If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.

<sup>\*4 :</sup> The ERR. indicating LED will also light when the external power supply is shut OFF.

<sup>\*5 :</sup> When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

# 4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

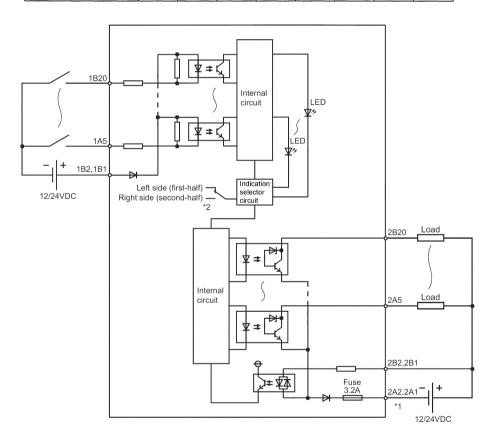
## 4.1 Input/Output Composite Module Specifications

## 4.1.1 A1SH42 input/output module

Model			Input/Output Composite Module	e
Specification	s	Inpu	t Specifications	Appearance
Number of inpu	it points	32 points		
Isolation method		Photocoupler		
Rated input vol	tage	12 VDC	24 VDC	
Rated input cui	rrent	Approx. 2 mA	Approx. 5 mA	
Operating volta	ige range	10.2 to 26.4 VDC (ripple: less		
Max. simultane points	ous input	60% (20 points/common) simu	ıltaneously ON (at 24 VDC)	
ON voltage/ON	current	8 VDC or higher/2 mA or high	er	
OFF voltage/O	FF current	4 VDC or lower/0.6 mA or low	er	A1SH42
Input resistanc	е	Approx. 5 kΩ		A ; 8 8 8 8
Response	$OFF \rightarrow ON$	10 ms or less (24 VDC)		2 Of O O O
time	$ON \rightarrow OFF$	10 ms or less (24 VDC)		A 0 0 0 0 0 0 8 B 1 1 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Common metho	od	32 points/common (common to	erminals: 1B1, 1B2)	7 0 0 0 0 0 0
		Outpo	ut Specifications	
Number of outp	out points	32 points		
Isolation metho	d	Photocoupler		
Rated input vol	tage	12/24 VDC	DIS. X O Y	
Operating voltage range		10.2 to 30 VDC (peak voltage	30 VDC)	
Max. load curre	ent	0.1 A/point, 1.6 A/common		
Max. allowed ru	ush current	0.4 A 10 ms or less		
Leakage currer circuit	nt at OFF	0.1 mA or less		
Max. voltage di circuit	rop at ON	1.0 VDC (TYP) 0.1 A, 2.5 VDC		
Response	$OFF \rightarrow ON$	2 ms or less		
time	$ON \rightarrow OFF$	2 ms or less (resistive load)		
Surge absorbe		Zener diode		
Fuse rating		Fuse 3.2 A (1 piece/common),	not replaceable *3	
Fuse capacity		50 A		
Error display		LED goes ON when fuse blow	s: signal output to PC CPU *4	
Common metho	od	32 points/common (common to	erminals: 2A1, 2A2)	
External power	Voltage	12/24 VDC (10.2 to 30 VDC)		
supply	Current	8 mA (TYP 24 VDC/common)		DC12/24V 2/5 mA 0.1 A A1SH42
		Comm	on Specifications	
Number of I/O	points	32 (I/O allocation is set as a 3	2-point output module)	
Operating indic	ator	ON state is indicated (LEDs),	32-bit indication by switch	
External connections		40-pin connector		
Applicable wire size		0.088 to 0.3mm <sup>2</sup> (for the A6CON	1 and A6CON4) <sup>*5</sup>	
Accessories		Connector (2 cps.) for externa	l wiring (soldering type)	
Internal current consumption (5 VDC)		500 mA (TYP, all points ON)		
Weight kg		0.27		

#### **External Connections**

Pin A	Arrangeme	nt	Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)								
	$\sim$		1B20	X00	1A20	X10	2B20	Y00	2A20	Y10								
B20	00	A20	1B19	X01	1A19	X11	2B19	Y01	2A19	Y11								
B19	0 0	A19	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12								
B18	0 0	A18	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13								
B17	0 0	A17	1B16 -	X04	1A16	X14	2B16	Y04	2A16	Y14								
B16 B15	0 0	A16 A15	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15								
B14	0 0	A14	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16								
B13	0 0	A13 A12 A11 A10 A9 A8 A7	A13 A12 A11 A10 A9 A8	A13 A12 A11 A10		1B13	X07	1A13	X17	2B13	Y07	2A13	Y17					
B12	0 0				1B12	X08	1A12	X18	2B12	Y08	2A12	Y18						
B11	0 0				1B11	X09	1A11	X19	2B11	Y09	2A11	Y19						
B10 B9	0 0						1B10	XOA	1A10	X1A	2B10	Y0A	2A10	Y1A				
B8	0 0			1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B							
B7	0 0			A7	A7	A7	A7	A7	A7	A7	A7		1B8	XOC	1A8	X1C	2B8	Y0C
B6	0 0	A6	1B7	XOD	1A7	X1D	2B7	Y0D	2A7	Y1D								
B5 B4	0 0	A5 A4	1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E								
B3	0 0	A3	1B5	X0F	1A5	X1F	2B5	Y0F	2A5	Y1F								
B2	0 0	A2	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant								
B1	رون	A1	1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant								
,			1B2	12/24 VDC	1A2	Vacant	2B2	12/24 VDC	2A2	COM2								
F	ront vie	w	1B1	12/24 VDC	1A1	Vacant	2B1	12/24 VDC	2A1	COM2								



- In the pin number column, the pins beginning with "1[ ][ ]" are left connector pins and those beginning with "2[ ][ ]" \*1: are right connector pins.
- When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the \*2: LEDs.
  When it is set to the right side, the status of the second-half devices (Y00 to Y1F) is displayed by the LEDs.
- The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.

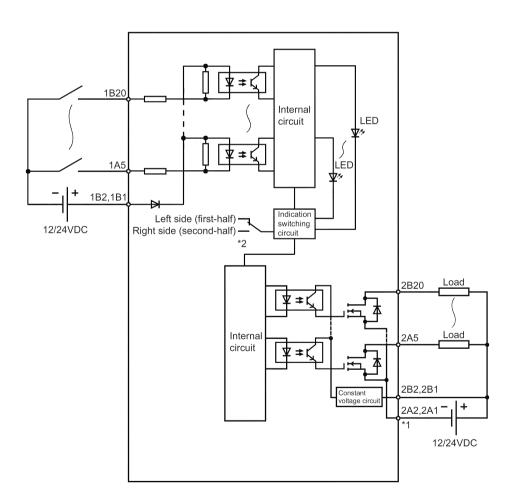
  If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*4: The ERR. indicating LED will also light when the external power supply is shut OFF.
- When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

## 4.1.2 A1SH42P input / output module

	Model	Input / Output Composite Module		
Specifications		Input Specifications	Appearance	
Number of input po	oints	32 points		
Isolation method		Photocoupler	1	
Rated input voltage	е	12VDC 24VDC		
Rated input curren	t	Approx. 2 mA Approx. 5 mA		
Operating voltage		10.2 to 26.4 VDC (ripple: less than 5%)		
Max. simultaneous	s input points	60% (20 points / common) simultaneously ON (at 24 VDC)	A 18H42P	
ON voltage/ON cu		8 VDC or higher/2mA or higher	A 0 🗆 8 🗀 0 🗀 8 B	
OFF voltage/OFF	current	4 V or lower / 0.6 mA or lower	1	
Input resistance		Approx. 5k Ω	3	
Deenenee time	OFF→ON	10 ms or less (24 VDC)	5 🗆 D 🗀 6 🗆 D	
Response time	ON→OFF	10 ms or less (24 VDC)	6	
Common method	I	32 points / common (common terminal: 1B1, 1B2)		
		Output Specifications	11 1	
Number of Output	points	32 points	1	
Isolation method		Photocoupler	1	
Rated input voltage	e	12 / 24 VDC	1	
Operating voltage	range	10.2 to 30 VDC (peak voltage 30 VDC)	DIS. 🗵 🗖 🖂	
Max. load current		0.1 A / points, 2 A / common	11	
Max. allowed rush	current	0.7 A 10 ms or less		
Leakage current a	t OFF circuit	0.1 mA of less		
Max. voltage drop	at ON circuit	0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	1     ::	
Dooponoo timo	OFF→ON	1 ms or less	1     :: ⊞ ::	
Response time	ON→OFF	1 ms or less (resistive load)	1     :: ⊞ ::	
Surge absorber	•	Zener diode	1     ::	
Fuse rating		None		
Common method		32 points / common (common terminals: 2A1, 2A2)		
External power	Voltage	12 / 24 VDC (10.2 to 30 VDC)		
supply	Current	12 mA (TYP 24 VDC / common)		
Protection function		Zener diode  None  32 points / common (common terminals: 2A1, 2A2)  12 / 24 VDC (10.2 to 30 VDC)  12 mA (TYP 24 VDC / common)  Yes (overload protection function, overheat protection function)  • Overheat protection function is activated in increments of 1 point.  • Overload protection function is activated in increments of 1 point.		
		Common Specifications	11 ([all all)	
Number of I/O points		32 (I/O allocation is set as a 32-point output module)	DC12/24 2/5mA DC12/24V 0.1A A1SH42P	
Operating indicator		ON state is indicated (LEDs), 32-bit indication by switch	DG12224 2/9/IIA DG12/24V U.IA A1SH42P	
External connections		40-pin connector	]	
Applicable wire size		0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*3	]	
Accessories		Connector (2 cps.) for external wiring (soldering type)	]	
	nsumption (5 VDC)	130 mA (TYP, all points ON)	]	
Weight Kg		0.17		

Extern		

Pin A	Pin Arrangement		Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)									
1	$\overline{}$		1B20	X00	1A20	X10	2B20	Y00	2A20	Y10									
B20	0 0	A20	1B19	X01	1A19	X11	2B19	Y01	2A19	Y11									
B19	0 0	A19	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12									
B18	0 0	A18	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13									
B17	0 0	A17	1B16 -	X04	1A16	X14	2B16	Y04	2A16	Y14									
B16 B15	0 0	A16 A15	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15									
B13	0 0	A14	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16									
B13	0 0	A13	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17									
B12	0 0 A12	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18										
B11 B10	0 0	O A11	1B11	X09	1A11	X19	2B11	Y09	2A11	Y19									
B10 B9	0 0				1	1	1	1	1	1	1	A9	1B10	X0A	1A10	X1A	2B10	Y0A	2A10
B8	0 0	A8	1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B									
В7	0 0	A7	1B8	XOC	1A8	X1C	2B8	Y0C	2A8	Y1C									
B6	0 0	A6	1B7	XOD	1A7	X1D	2B7	Y0D	2A7	Y1D									
B5 B4	O O A5 O O A3 O O A2		1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E									
B3			1B5	X0F	1A5	X1F	2B5	Y0F	2A5	Y1F									
B2		A2	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant									
B1	رون	J A1	1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant									
			1B2	12/24 VDC	1A2	Vacant	2B2	12/24 VDC	2A2	COM2									
F	ront vie	w	1B1	12/24 VDC	1A1	Vacant	2B1	12/24 VDC	2A1	COM2									



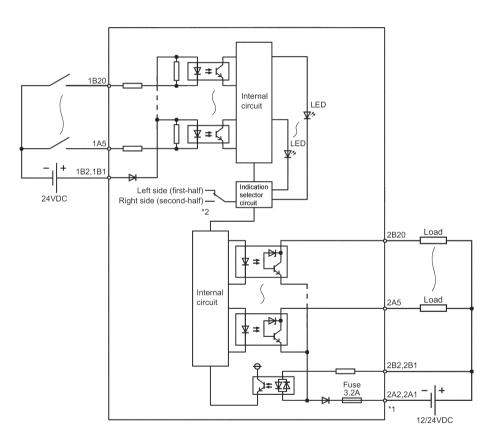
- In the pin number column, the pins beginning with "1[ ][ ]" are left connector pins and those beginning with "2[ ][ ]" are right connector pins.
- \*2: When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the When it is set to the right side, the status of the second-half devices (Y00 to Y1F) is displayed by the LEDs.
- \*3: When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

## 4.1.3 A1SH42-S1 input/output module

	Model	Input/Output Composite Module	
Specification	s	Input Specifications	Appearance
Number of input points		32 points	
Isolation metho	od	Photocoupler	
Rated input vol	tage	24 VDC	
Rated input cur	rrent	Approx. 5 mA	
Operating volta	ige range	19.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultane points	ous input	60% (20 points/common) simultaneously ON (at 24 VDC)	
ON voltage/ON	current	15 VDC or higher/3 mA or higher	A1SH42-S1 = ERR
OFF voltage/O	FF current	3 VDC or lower/0.5 mA or lower	A 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Input resistanc	e	Approx. 5 kΩ	2 A C C A A B C C A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A A B C C A
Response	$OFF \rightarrow ON$	0.3 ms or less (24 VDC)	\$ 000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
time	ON → OFF	0.3 ms or less (24 VDC)	7 🕒   7 🗆 F
Common metho	od	32 points/common (common terminals: 1B1, 1B2)	
		Output Specifications	
Number of outp	out points	32 points	
Isolation metho	od	Photocoupler	DIS. X O Y
Rated input vol	tage	12/24 VDC	
Operating volta	ige range	10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load curre	ent	0.1 A/point, 1.6 A/common	
Max. allowed re	ush current	0.4 A 10 ms or less	
Leakage currer circuit	nt at OFF	0.1 mA or less	
Max. voltage d circuit	rop at ON	1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A	
Response	$OFF \rightarrow ON$	2 ms or less	
time	$ON \rightarrow OFF$	2 ms or less (resistive load)	
Surge absorbe	r	Zener diode	
Fuse rating		Fuse 3.2 A (1 piece/common), not replaceable *3	
Fuse capacity		50 A	
Error display		LED goes ON when fuse blows: signal output to PC CPU *4	
Common metho	od	32 points/common (common terminals: 2A1, 2A2)	
External power	Voltage	12/24 VDC (10.2 to 30 VDC)	DC24V6 mA DC24V0.1 A A1SH42-S1
supply	Current	8 mA (TYP 24 VDC/common)	DESTRINGUES AND ALCOHOLOGICAL PROPERTY AND ALCOHOLOGICA PROPERTY AND ALCOHOLOGICAL PROPERTY AND ALCOHOLOGICAL PROPERTY AND ALCOHOLOGICA PROPERTY AND ALCOHOLOGICA PROPERTY AND ALCOHOLO
		Common Specifications	
Number of I/O	points	32 (I/O allocation is set as a 32-point output module)	_
Operating indic		ON state is indicated (LEDs), 32-bit indication by switch	_
External connections		40-pin connector	_
Applicable wire size		0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4)*5	
Accessories		Connector (2 cps.) for external wiring (soldering type)	
Internal current consumption (5		500 mA (TYP, all points ON)	
Weight kg		0.27	·

#### **External Connections**

Pin Arrangement	Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)
	1B20	X00	1A20	X10	2B20	Y00	2A20	Y10
	1B19	X01	1A19	X11	2B19	Y01	2A19	Y11
0 0	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12
0 0	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13
0 0	1B16	X04	1A16	X14	2B16	Y04	2A16	Y14
	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15
0 0	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16
0 0	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17
0 0	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18
	1B11	X09	1A11	X19	2B11	Y09	2A11	Y19
0 0	1B10	XOA	1A10	X1A	2B10	Y0A	2A10	Y1A
00	1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B
0 0	1B8	XOC	1A8	X1C	2B8	Y0C	2A8	Y1C
	1B7	X0D	1A7	X1D	2B7	YOD	2A7	Y1D
0 0	1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E
0 0	1B5	X0F	1A5 · ·	X1F	2B5	Y0F	2A5	Y1F
0 0	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant
	1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant
	1B2	24 VDC	1A2	Vacant	2B2	12/24 VDC	2A2	COM2
Front view	1B1	24 VDC	1A1	Vacant	2B1	12/24 VDC	2A1	COM2



- \*1: In the pin number column, the pins beginning with "1[][]" are left connector pins and those beginning with "2[][]" are right connector pins.
- \*2: When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the LEDs.

  When it is set to the right side, the status of the second-half devices (Y00 to Y1F) is displayed by the LEDs.
- \*3: The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.

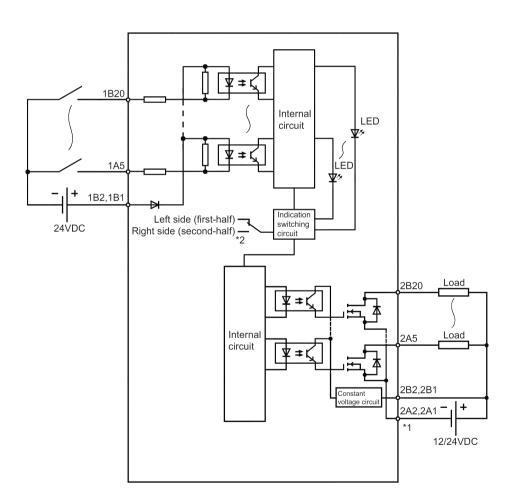
  If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*4: The ERR. indicating LED will also light when the external power supply is shut OFF.
- \*5: When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

## 4.1.4 A1SH42P-S1 input / output module

	Model	Input / Output Composite Module	
Specifications		Input Specifications	Appearance
Number of input pe	oints	32 points	
Isolation method		Photocoupler	
Rated input voltag	e	24VDC	
Rated input curren	nt	Approx. 5 mA	
Operating voltage	range	10.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultaneous	s input points	60% (20 points / common) simultaneously ON (at 24 VDC)	A 18H42P-81
ON voltage/ON cu	rrent	15 VDC or higher / 3 mA or higher	A 0 B B B
OFF voltage/OFF	current	3 V or lower / 0.5 mA or lower	1
Input resistance		Approx. 5k Ω	3 🗆 B 🗀 🗀 B
	OFF→ON	0.3 ms or less (24 VDC)	4 C C 4 C C 5 D D D
Response time	ON→OFF	0.3 ms or less (24 VDC)	6
Common method	1 0.1.	32 points / common (common terminal: 1B1, 1B2)	1
		Output Specifications	
Number of Output	points	32 points	
Isolation method	p =te	Photocoupler	1
Rated input voltag	e	12 / 24 VDC	1
Operating voltage		10.2 to 30 VDC (peak voltage 30 VDC)	DIS. XI O Y
Max. load current		0.1 A / points, 2 A / common	
Max. allowed rush	current	0.7 A 10 ms or less	
Leakage current a	t OFF circuit	0.1 mA of less	
Max. voltage drop		0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	1      <u>:: </u>   ::
	OFF→ON	1 ms or less	
Response time	ON→OFF	1 ms or less (resistive load)	1     ::
Surge absorber		Zener diode	X 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Fuse rating		None	
Common method		32 points / common (common terminals: 2A1, 2A2)	
External power	Voltage	12 / 24 VDC (10.2 to 30 VDC)	
supply	Current	12 mA (TYP 24 VDC / common)	1     •••
Protection function		Yes (overload protection function, overheat protection function)  Overheat protection function is activated in increments of 1 point.  Overload protection function is activated in increments of 1 point.	
		Common Specifications	11 (
Number of I/O points		32 (I/O allocation is set as a 32-point output module)	DC24V 2/5mA DC12/24V 0.1A A1SH42P-S1
Operating indicator		ON state is indicated (LEDs), 32-bit indication by switch	TELL BOIL BOILE WITCH WITCH
External connections		40-pin connector	1
Applicable wire size		0.088 to 0.3mm <sup>2</sup> (for the A6CON1 and A6CON4) <sup>*3</sup>	1
Accessories		Connector (2 cps.) for external wiring (soldering type)	1
	nsumption (5 VDC)	130 mA (TYP, all points ON)	1
Weight Kg		0.17	

		_		
Fyte	arnal	Coni	nection	91

Pin A	Pin Arrangement		Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)										
1	$\overline{}$		1B20	X00	1A20	X10	2B20	Y00	2A20	Y10										
B20	0 0	A20	1B19	X01	1A19	X11	2B19	Y01	2A19	Y11										
B19	0 0	A19	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12										
B18	0 0	A18	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13										
B17	0 0	A17	1B16 -	X04	1A16	X14	2B16	Y04	2A16	Y14										
B16 B15	0 0	A16 A15	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15										
B13	0 0	A14	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16										
B13	0 0	O A13 O A12 O A11 O A10 A9 O A8	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17										
B12			A12 A11 A10 A9 A8	AIZ	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18								
B11				1B11	X09	1A11	X19	2B11	Y09	2A11	Y19									
B10 B9	0 0			A9	1	1	1	1	. 1	. 1	1	1	1B10	XOA	1A10	X1A	2B10	Y0A	2A10	Y1A
B8					1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B								
В7	O O A7	1B8	XOC	1A8	X1C	2B8	Y0C	2A8	Y1C											
B6		1B7	X0D	1A7	X1D	2B7	Y0D	2A7	Y1D											
B5 B4	0 0	A5 A4	1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E										
B3	0 0 A3 A2		1B5	X0F	1A5	X1F	2B5	Y0F	2A5	Y1F										
B2		A2	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant										
B1		J A1	1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant										
,			1B2	24 VDC	1A2	Vacant	2B2	12/24 VDC	2A2	COM2										
F	ront vie	W	1B1	24 VDC	1A1	Vacant	2B1	12/24 VDC	2A1	COM2										



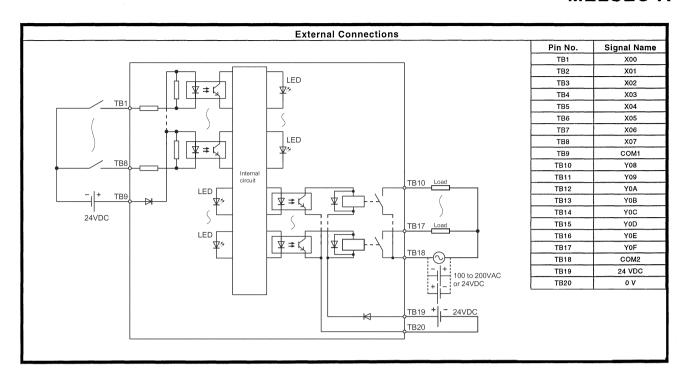
- In the pin number column, the pins beginning with "1[ ][ ]" are left connector pins and those beginning with "2[ ][ ]" are right connector pins.
- When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the \*2: When it is set to the right side, the status of the second-half devices (Y00 to Y1F) is displayed by the LEDs.
- \*3: When the A6CON2 or A6CON3 is used, refer to Section 1.2.4.

# 4.1.5 A1SX48Y18 I/O module (24 VDC input (sink type), relay contact output)

	Model	Input/Output Composite Module	
Specifications	s	Input Specifications	Appearance
Number of inpu	t points	8 points	
Isolation method		Photocoupler	
Rated input vol		24 VDC	
Rated input cur		Approx. 7 mA	
Operating volta		19.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultane points	ous input	100% simultaneously ON (at 26.4 VDC)	
ON voltage/ON		14 VDC or higher/3.5 mA or higher	
OFF voltage/OF		6.5 VDC or lower/1.7 mA or lower	
Input resistance		Approx. 3.3 kΩ	
Response	$OFF \rightarrow ON$	10 ms or less (24 VDC)	
time	$ON \rightarrow OFF$	10 ms or less (24 VDC)	
Input method		Sink input	
Common metho	od	8 points/common (common terminals: TB9)	A1SX48Y 18
<u> </u>		Output Specifications	
Number of outp		8 points	
Isolation metho		Photocoupler	, B B F
Rated switching current	y voitage and	24 VDC 2 A (resistive load) 240 VAC 2A (COSφ=1)/point, 8 A/common	
Minimum switch	ning load	5 VDC 1mA	
Maximum switc	hing voltage	264 VAC 125 VDC	0
Response	OFF → ON	10 ms or less	1
time	$ON \rightarrow OFF$	12 ms or less (resistive load)	2
	Mechanical	20,000,000 times of switching or over	3
		At rated switching voltage and current loads 100,000 times of switching or over	4
Service life	Electrical	At 200 VAC 1.5 A, 240 VAC 1 A (COSφ=0.7) 100,000 times of switching or over	6
	Electrical	At 200 VAC 1 A, 240 VAC 0.5 A (COSφ=0.35) 100,000 times of switching or over	7 8
		At 24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) 100,000 times of switching or over	9
Maximum switc	hing frequency	3600 times/hour	A
Surge absorber		Not provided	В
Fuse		None	C
External power supply (relay	Voltage	24 VDC ±10%, ripple voltage: 4 V <sub>P-P</sub> or less	D
coil drive)	Current	45 mA (TYP. 24 VDC all points ON)	E
Common metho	od	8 points/common (common terminal: TB18)	F
		Common Specifications	
Operation indica		Provided (The LED lights when the input/output is ON.)	
External wiring connection method		20-point terminal block connector (M3.5 x 7 screw)	
Applicable cable size		0.75 to 1.25 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	
Applicable solderless terminal		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	
Accessories		None	
Internal current consumption (5 VDC)		85 mA (TYP. all points ON) (0.09A is shown on the rating plate of the module.)	
Weight kg		0.225	
Number of I/O p	ooints	16 points (Make I/O allocation as a 16-point output module.)	

# 4. INPUT/OUTPUT CONPOSITE MODULE SPECIFICATIONS

# MELSEC-A

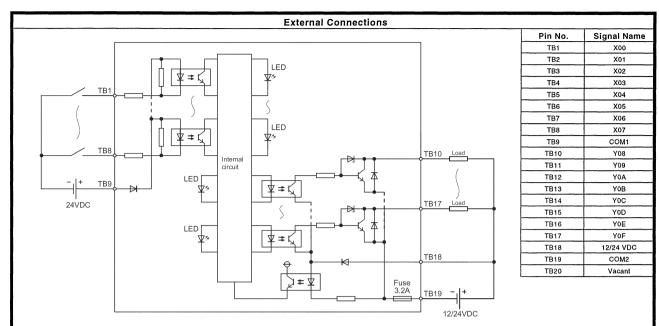


# 4.1.6 A1SX48Y58 I/O module (24 VDC input (sink type), 12/24 VDC transistor output)

Specifications   Specifications   Number of input points   8 points	Model		Input/Output Composite Module		
Solation method	Specification	s	Input Specifications	Appearance	
Rated input voltage	Number of inpu	t points	8 points		
Rated input current   Approx. 7 mA	Isolation metho	d	Photocoupler		
Departing voltage range   19.2 to 26.4 VDC (ripple: less than 5%)	Rated input voltage		24 VDC		
Max. simultaneous input points  ON voltage/ON current  14 VDC or higher/3.5 mA or higher  OFF voltage/OFF current  6.5 VDC or lower/1.7 mA or lower  Input resistance  Approx. 3.3 kΩ  Response  OFF → ON  10 ms or less (24 VDC)  Input method  Sink input  Common method  8 points/common (common terminals: TB9)  Output Specifications  Number of output points  8 points  Solation method  Photocoupler  Rated load voltage  10.2 to 30 VDC (peak voltage 30 VDC)  Maximum load current  4 A 10 ms or less  Leakage current at OFF olicult  Maximum voltage drop at ON circult  Response  OFF → ON  2 ms or less  10.9 VDC (TYP.) 0.5 A 1.5 VDC (MAX.) 0.5 A circult  Response  Fuse rating  Fuse breaking capacity  5.0 A  External power south of the signal output to PC CPU '2  External power south of the signal output to PC CPU '2  External wiring connection  Common method  Applicable solderless terminal  Applicable solderless terminal  Applicable solderless terminal  112 VDC or higher/3.5 mA or higher  Applicable solderless terminal  14 VDC or higher/3.5 mA or higher  Overating voltage and content of the signal output to PC CPU '2  External wiring connection  Response  Or Hord Voltage  112 Sol A Necm)  Or Hord Voltage  Or Hord Voltage  Or Fold (Type 4 VDC per common)  Common method  Or Hord (Type 4 VDC per common)  Common method  Applicable solderless terminal  Applicable solderless terminal	Rated input cur	rent	Approx. 7 mA		
Doints		<del></del>	19.2 to 26.4 VDC (ripple: less than 5%)		
OFF voltage/OFF current		ous input	100% simultaneously ON (at 26.4 VDC)		
Approx. 3.3 kΩ   Approx. 3.3 kΩ   OFF → ON   10 ms or less (24 VDC)   ON → OFF   10 ms or less (24 VDC)   ON → OFF   10 ms or less (24 VDC)   ON → OFF   Spoints/common (common terminals: TB9)   Output Specifications			14 VDC or higher/3.5 mA or higher		
Response   OFF → ON   10 ms or less (24 VDC)	OFF voltage/OF	F current	6.5 VDC or lower/1.7 mA or lower		
OFF → ON   10 ms or less (24 VDC)   10 ms o	Input resistance	9	Approx. 3.3 kΩ	A1SX48Y 58 - FRE	
Common method   S points/common (common terminals: TB9)		$OFF \to ON$	10 ms or less (24 VDC)		
Common method   S points/common (common terminals: TB9)	time	$ON \to OFF$	10 ms or less (24 VDC)		
Number of output points 8 points  Isolation method Photocoupler  Rated load voltage 12/24 VDC  Operating voltage range 10.2 to 30 VDC (peak voltage 30 VDC)  Maximum load current 0.5 A/point, 2 A/common  Maximum inrush current 4 A 10 ms or less  Leakage current at OFF circuit 0.1 mA or less  Oricuit 0.9 VDC (TYP.) 0.5 A 1.5 VDC (MAX.) 0.5 A  irroit of circuit 0.9 or or less  ON → OFF 2 ms or less (resistive load)  Surge absorber Zener diode  Fuse a 3.2 A (1 per common) Not replaceable *1  Fuse rating Fuse breaking capacity 5.0 A  Error display LED goes ON when fuse blows: signal output to PC CPU *2  External power voltage 12/24 VDC (10.2 to 30 VDC)  Current 60 mA (TYP. 24 VDC per common)  Operation indicator Provided (The LED lights when the input/output is ON.)  External wiring connection 20-point terminal block connector (M3.5 x 7 screw)  Applicable solderless terminal RAY. 2.5 -3.5, RAV1.2.5 -3.5, RAV1.2.5 -3.5, RAV2.3.5	Input method		Sink input		
Number of output points 8 points  Isolation method Photocoupler  Rated load voltage 12/24 VDC  Operating voltage range 10.2 to 30 VDC (peak voltage 30 VDC)  Maximum load current 0.5 A/point, 2 A/common  Maximum inrush current 4 A 10 ms or less  Leakage current at OFF circuit 0.1 mA or less  Maximum voltage drop at ON oricuit 0.9 VDC (TYP.) 0.5 A 1.5 VDC (MAX.) 0.5 A  Response OFF → ON 2 ms or less (resistive load)  Surge absorber Zener diode  Fuse rating Fuse 3.2 A (1 per common) Not replaceable *1  Fuse breaking capacity 5.0 A  Error display LED goes ON when fuse blows: signal output to PC CPU *2  External power Voltage 12/24 VDC (10.2 to 30 VDC)  Common method 8 points/common (common terminal: TB19)  Common Specifications  Operation indicator Provided (The LED lights when the input/output is ON.)  External wiring connection method 20-point terminal block connector (M3.5 x 7 screw)  Applicable solderless terminal RAV1.25-3.5, RAV2.3.5  RAV1.25-3.5, RAV2.3.5	Common metho	od	8 points/common (common terminals: TB9)		
Rated load voltage			Output Specifications		
Solation method	Number of outp	ut points	8 points		
Departing voltage   12/24 VDC   10.2 to 30 VDC (peak voltage 30 VDC)   3   3   4   4   4   4   4   4   4   4	Isolation metho	d	Photocoupler		
Maximum load current   0.5 A/point, 2 A/common	Rated load volt	age	12/24 VDC		
Maximum ioad current   0.5 A/point, 2 A/common   4 A 10 ms or less   5   6   6   6   6   6   6   6   6   6	Operating volta	ge range	10.2 to 30 VDC (peak voltage 30 VDC)		
Leakage current at OFF circuit  Maximum voltage drop at ON circuit  Response Time Town of the String Town of	Maximum load	current	0.5 A/point, 2 A/common		
Care to the first of the fir	Maximum inrus	h current	4 A 10 ms or less		
Circuit  Response time  OFF → ON  ON → OFF  Zener diode  Fuse rating  Fuse 3.2 A (1 per common) Not replaceable *1  Fuse breaking capacity  External power supply (relay coil drive)  Common method  S points/common (common terminal: TB19)  Common Specifications  Operation indicator  Provided (The LED lights when the input/output is ON.)  External wiring connection method  Applicable solderless terminal  Provided (R1.25-3.5, R2-3.5, RAV1-3.5)  RAV1.25-3.5, RAV2-3.5  RAV1.25-3.5, RAV2-3.5		t at OFF	0.1 mA or less		
Response time   OFF → ON   2 ms or less		ge drop at ON	0.9 VDC (TYP.) 0.5 A 1.5 VDC (MAX.) 0.5 A	I II	
time ON → OFF 2 ms or less (resistive load)  Surge absorber Zener diode  Fuse rating Fuse 3.2 A (1 per common) Not replaceable *1  Fuse breaking capacity 5.0 A  Error display LED goes ON when fuse blows: signal output to PC CPU *2  External power supply (relay coil drive) Current 60 mA (TYP. 24 VDC per common)  Common method 8 points/common (common terminal: TB19)  Common Specifications  Operation indicator Provided (The LED lights when the input/output is ON.)  External wiring connection method 20-point terminal block connector (M3.5 x 7 screw)  Applicable cable size 0.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N • cm)  R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	Response	$OFF \to ON$	2 ms or less		
Surge absorber  Fuse rating  Fuse 3.2 A (1 per common) Not replaceable *1  Fuse breaking capacity  Error display  External power supply (relay coil drive)  Common method  8 points/common (common terminal: TB19)  Common Specifications  Operation indicator  Provided (The LED lights when the input/output is ON.)  External wiring connection method  Applicable cable size  Applicable solderless terminal  Fuse 3.2 A (1 per common) Not replaceable *1  Common Not replaceable *1  Common Not replaceable *1  Common PC CPU *2  E  Common Not CPU *2  E  Common Specifications  Common Specifications  Operation indicator  Provided (The LED lights when the input/output is ON.)  External wiring connection 20-point terminal block connector (M3.5 x 7 screw)  Applicable solderless terminal  R1.25-3.5, R2-3.5  RAV1.25-3.5, RAV2-3.5		$ON \rightarrow OFF$	2 ms or less (resistive load)		
Fuse rating Fuse 3.2 A (1 per common) Not replaceable *1  Fuse breaking capacity  Error display  External power supply (relay coil drive)  Current  Common Method  8 points/common (common terminal: TB19)  Common Specifications  Operation indicator  Provided (The LED lights when the input/output is ON.)  External wiring connection method  Applicable cable size  R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	Surge absorber		Zener diode		
Fuse breaking capacity  Error display  External power supply (relay coil drive)  Common method  Seponts/common (common terminal: TB19)  Common Specifications  Operation indicator  External wiring connection method  Applicable cable size  Applicable solderless terminal  Fuse breaking capacity  5.0 A  LED goes ON when fuse blows: signal output to PC CPU *2  External output to PC CPU *2  External output (10.2 to 30 VDC)  External wiring connection method  Operation indicator  Provided (The LED lights when the input/output is ON.)  External wiring connection  (Applicable cable size  O.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)  R1.25-3.5, R2-3.5  RAV1.25-3.5, RAV2-3.5	Fuse rating		Fuse 3.2 A (1 per common) Not replaceable *1		
External power supply (relay coil drive)  Current  Common Method  Operation indicator  External wiring connection method  Applicable cable size  Applicable solderless terminal  LED goes ON when fuse blows: signal output to PC CPU *2  E   E   F    E   F    E   F    Common Specifications  Common Specifications  Operation indicator  Provided (The LED lights when the input/output is ON.)  External wiring connection method  Applicable solderless terminal  R1.25-3.5, R2-3.5  RAV1.25-3.5, RAV2-3.5	Fuse breaking (	capacity	5.0 A		
External power supply (relay coil drive)  Current  60 mA (TYP. 24 VDC per common)  Common method  8 points/common (common terminal: TB19)  Common Specifications  Operation indicator  External wiring connection method  20-point terminal block connector (M3.5 x 7 screw)  Applicable cable size  0.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N ⋅ cm)  R1.25-3.5, R2-3.5  RAV1.25-3.5, RAV2-3.5	Error display		LED goes ON when fuse blows: signal output to PC CPU *2	1 11-1	
Colidrive) Current 60 mA (TYP. 24 VDC per common)  Common method 8 points/common (common terminal: TB19)  Common Specifications  Operation indicator Provided (The LED lights when the input/output is ON.)  External wiring connection method 20-point terminal block connector (M3.5 x 7 screw)  Applicable cable size 0.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N ⋅ cm)  Applicable solderless terminal R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5		Voltage	12/24 VDC (10.2 to 30 VDC)		
Common Specifications  Operation indicator Provided (The LED lights when the input/output is ON.)  External wiring connection method 20-point terminal block connector (M3.5 x 7 screw)  Applicable cable size 0.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N ⋅ cm)  Applicable solderless terminal R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	supply (relay coil drive)	Current	60 mA (TYP. 24 VDC per common)	F	
Operation indicator       Provided (The LED lights when the input/output is ON.)         External wiring connection method       20-point terminal block connector (M3.5 x 7 screw)         Applicable cable size       0.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N ⋅ cm)         Applicable solderless terminal       R1.25-3.5, R2-3.5 RAV1-25-3.5, RAV2-3.5	Common metho	od	8 points/common (common terminal: TB19)		
External wiring connection method  20-point terminal block connector (M3.5 x 7 screw)  Applicable cable size  0.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N ⋅ cm)  Applicable solderless terminal  R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5			Common Specifications		
method  Applicable cable size  O.75 to 1.25 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N ⋅ cm)  Applicable solderless terminal  R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5			Provided (The LED lights when the input/output is ON.)		
Applicable solderless terminal R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5					
RAV1.25-3.5, RAV2-3.5	Applicable cable size		0.75 to 1.25 $\text{mm}^2$ (AWG16 to AWG19) (Applicable tightening torque 78.4 N+cm)		
Accessories None	Applicable solderless terminal		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5		
	Accessories		None	]	
Internal current consumption (5 VDC) 60 mA (TYP. all points ON)	Internal current consumption (5 VDC)		60 mA (TYP. all points ON)		
Weight kg 0.2	Weight kg		0.2		
Number of I/O points 16 points (Make I/O allocation as a 16-point output module.)	Number of I/O	points	16 points (Make I/O allocation as a 16-point output module.)		

# 4. INPUT/OUTPUT CONPOSITE MODULE SPECIFICATIONS

# MELSEC-A



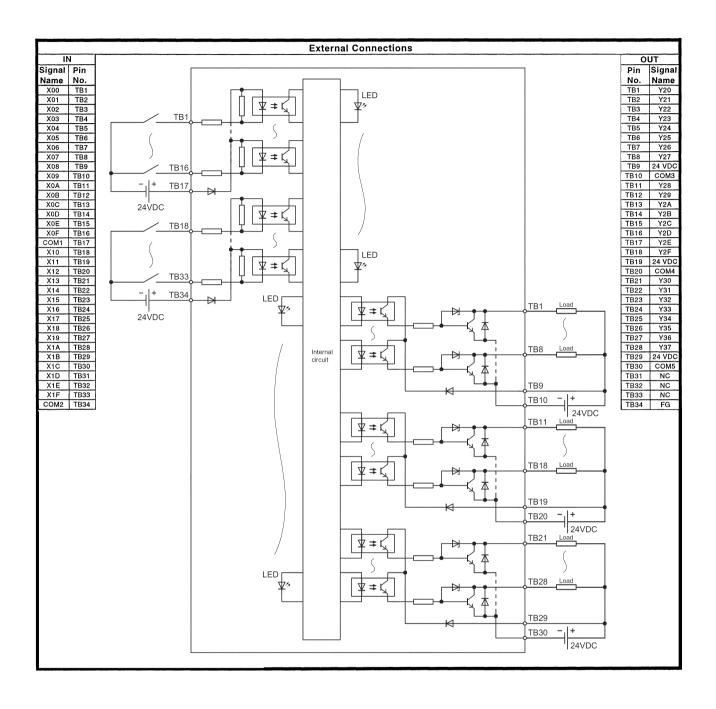
\*1: The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.
 If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.

\*2: The ERR. indicating LED will also light when the external power supply is shut OFF.

## 4.1.7 A1SJ-56DT I/O module

Can only be installed on an A1SJ(H)CPU. Cannot be installed on an A1S3 (S1) (main base unit), or an A1S6 (S1) (extension base unit).

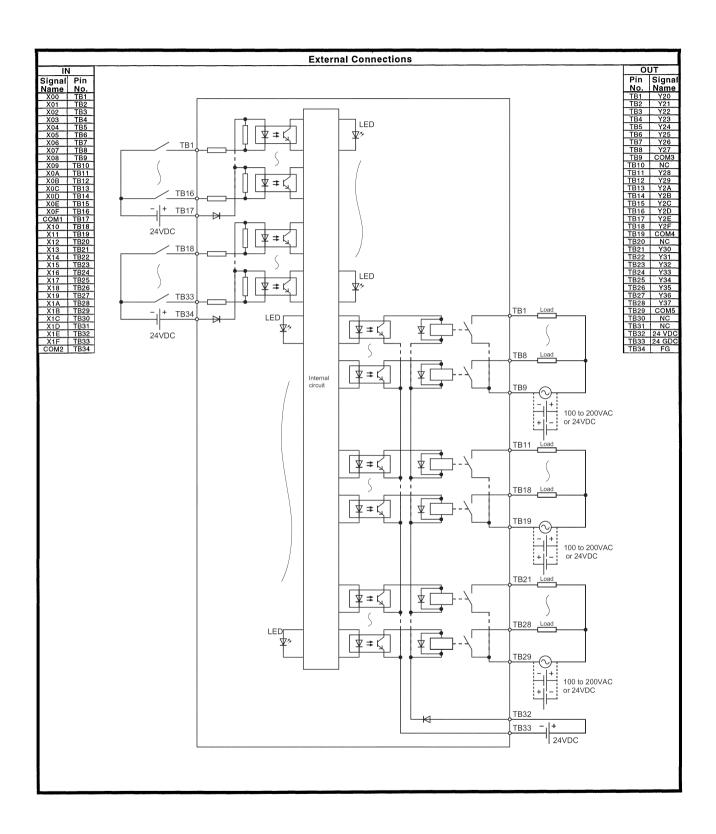
Output Specifications				Input Specifications		
Number of outpu	ıt points	24 points	Number of inp	ut points	32 points	
Isolation method Photocoupler		Isolation meth	od	Photocoupler		
Rated load volta	ge	24 VDC	Rated input vo	Itage	24 VDC	
Operating load v	roltage range	19.2 to 30 VDC (peak voltage: 30 VDC)	Rated input cu	rrent	Approx. 7 mA	
Operating load v	onage range	13.2 to do vbo (peak voltage, do vbo)	Operating volt	age range	19.2 to 26.4 VDC (ripple: less than 5%)	
Maximum load c	urrent	0.5 A/point, 4 A/common	ON voltage/ON	N current	14 VDC or higher/3.5 mA or higher	
Maximum inrush	current	4 A 10 ms or less	OFF voltage/C	FF current	6.5 VDC or lower/1.7 mA or lower	
Leakage current circuit	at OFF	0.1mA or less	Input resistance	e	Approx. 3.3 KΩ	
Maximum voltag circuit	e drop at OFF	0.9 V (TYP.) 0.5 A 1.5 V (MAX.) 0.5 A	Input method		Sink input (method by which the input current flows out)	
Response time	OFF → ON	2 ms or less	Response	$OFF \rightarrow ON$	10 ms or less (24 VDC)	
	$ON \rightarrow OFF$	2 ms or less (resistive load)	ume	$ON \rightarrow OFF$	10 ms or less (24 VDC)	
External power	Voltage	24 VDC (19.2 to 30 VDC)	Common meth	od	16 points/common (common terminal: TB17,	
supply	Current	60 mA (TYP. 24 VDC/common)	- Common mean		TB34)	
Surge absorber		Zener diode	Operating indi	cator	Provided (the LED lights when the input is ON.)	
Common method	d	8 points/common (common terminal: TB10, TB20, TB30)	Maximum simu points	ıltaneous input	60 % (10 points/common)simultaneously ON	
Operating indica	tor	Provided (the LED lights when the output is ON.)				
Number of I/O po	oints	128 points (slot 0: output, 64 points; slots 1 to 4	: vacant, 16 points)			
Internal current consumption (5 VDC) 220 mA (TYP. all points ON)			·			
External wiring connection method 34-point terminal block connector (M3.5 x 6 screw			ew), 2 connectors			
Applicable cable size 0.75 to 2 mm² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)						
Applicable solde	rless terminal	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5				
Weight kg		0.7				



## 4.1.8 A1SJ-56DR I/O module

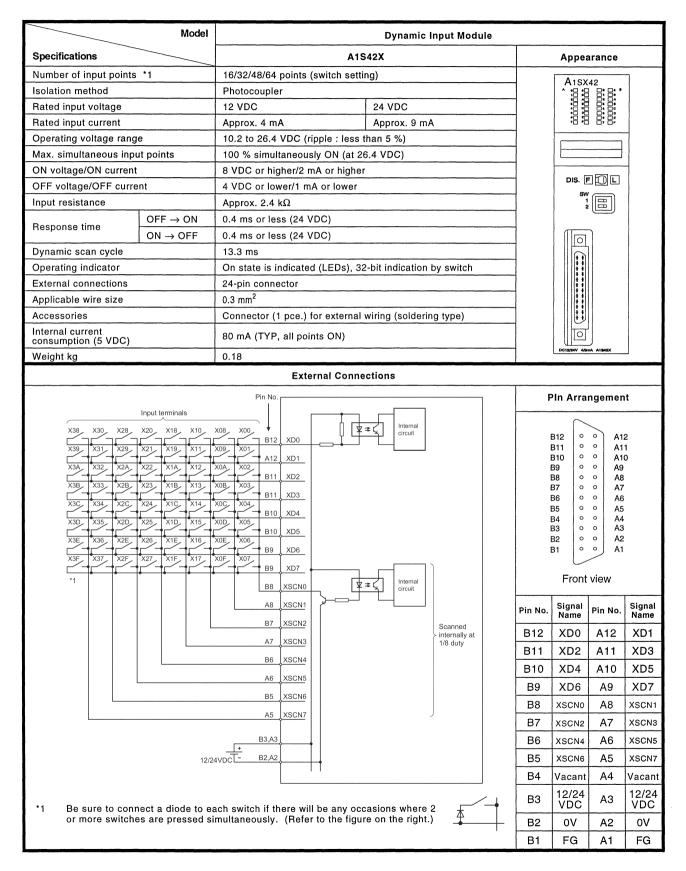
Can only be installed on an A1SJ(H)CPU. Cannot be installed on an A1S3\(\text{A1S}\) (S1) (main base unit), or an A1S6\(\text{B}\) (S1) (extension base unit).

Output Specifications		Input Specifications			
Number of outp	out points	24 points	Number of it	nput points	32 points
Isolation method		Photocoupler	Isolation method		Photocoupler
Rated switchin	g voltage	24 VDC 2 A (resistive load) 240 VAC 2A	Rated input	voltage	24 VDC
and current		(COSφ=1)/point, 5 A/common	Rated input	current	Approx. 7 mA
Minimum swith	cing load	5 VDC 1 mA	Operating v	oltage range	19.2 to 26.4 VDC (ripple: less than 5%)
Max. switching	voltage	264 VAC 125 VDC	ON voltage/	ON current	14 VDC or higher/3.5 mA or higher
Max. switching	frequency	3600 times/hour	OFF voltage	OFF current	6.5 VDC or lower/1.7 mA or lower
	Mechanical	20,000,000 times of switching or over	Input resista	ince	Approx. 3.3 KΩ
		At rated switching voltage and current loads 100,000 times of switching or over	Input metho	d	Sink input (method by which the input current flows out)
Service life		At 200 VAC 1.5 A, 240 VAC 1 A (COS <sub>0</sub> =0.7) 100,000	Response	$OFF \rightarrow ON$	10 ms or less (24 VDC)
GETVICE IIIC	Electrical	times of switching or over	time	$ON \rightarrow OFF$	10 ms or less (24 VDC)
		At 200 VAC 1 A, 240 VAC 0.5 A (COSφ=0.35) 100,000 times of switching or over	Common method		16 points/common (common terminal: TB17, TB34)
		At 24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) 100,000 times of switching or over	Operating indicator		Provided (the LED lights when the input is ON.)
Response	$OFF \rightarrow ON$	10 ms or less	Maximum simultaneous		60 % (10 points/common)simultaneously ON
time	$ON \rightarrow OFF$	12 ms or less	input points		00 % (10 points/common/simulaneously CN
External power		24 VDC ±10%, ripple voltage: 4 V <sub>P-P</sub> or less			
supply (relay c drive)	Current	140 mA (TYP. 24 VDC all points ON)			
Surge absorbe	r	None	1		
Common meth	od	8 points/common (common terminal: TB9, TB18, TB27)			
Operating indic	ator	Provided (the LED lights when the output is ON.)			
Number of I/O	points	128 points (slot 0: output, 64 points; slots 1 to 4: vacar	nt, 16 points)		
Internal current consumption (5 VDC) 220 mA (TYP. all points ON)					
External wiring connection 34-point terminal block connector (M3.5 x 6 screw), 2 c method		connectors			
Applicable cable size 0.75 to 2 mm <sup>2</sup> (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			4 N•cm)		
Applicable solo	derless	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5			
Weight kg		0.8			



#### 4.2 Dynamic Input/Output Module Specifications

## 4.2.1 A1S42X dynamic input module



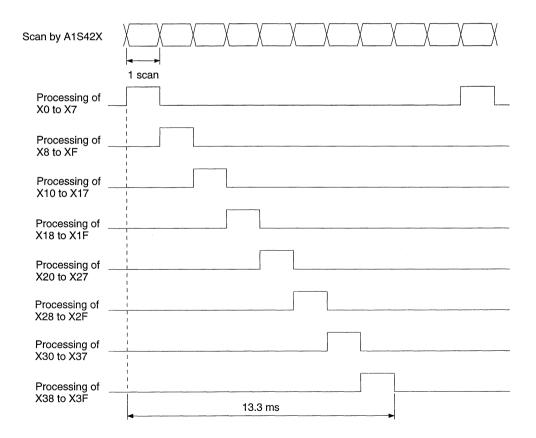
## (1) Number of occupied I/O points setting

The Number of occupied I/O points is set by the DIP switches on the front face of the module. It is factory-set to 64 points.

Number of occupied I/O points	16 points	32 points	48 points	64 points
Switch setting	SW 1 2 2 N 8 0	SW 1 □ □ 2 □ → Z 0	SW 1 □ □ 2 □ → Z	SW 1 2 2 2 2 2 2 2 3 2 3 2 3 2 3 2 3 2 3 2

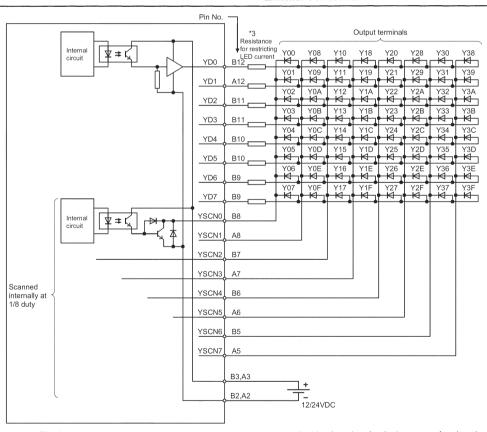
#### (2) Dynamic scan method

In the dynamic scan method, the whole number of occupied I/O points is divided into several groups of a specified number of points, and processed in several scans. 64 input points are divided into 8 groups of 8 points, and processed group by group as shown in the figure below. Regardless of whether the number of occupied I/O points is set at 16, 32, or 48 points, the dynamic scan cycle is fixed at 13.3 ms.



## 4.2.2 A1S42Y dynamic output module

	Model	Dynamic Output Module			
Specifications		A1S42Y	Appearance		
Number of output point	:s	16/32/48/64 points (switch setting)	1000		
Isolation method		Photocoupler	A1S42Y		
Rated load voltage		12/24 VDC			
Operating voltage rang	е	10.2 to 26.4 VDC (ripple : less than 5 %)			
Max. load current		0.1 A/point (40 °C), 0.05A/point (55 °C)			
Leakage current at OF	F circuit	0.1 mA or less			
Max. voltage drop at O	N circuit	Source 2.0 VDC (MAX) 0.1 A Sink 2.0 VDC (MAX) 0.1 A			
D	OFF → ON	2 ms or less (resistive load)	DIS. F DL		
Response time	$ON \rightarrow OFF$	2 ms or less (resistive load)	SW C		
Fuse rating		Fuse 1.6 A, not replaceable *1			
Fuse capacity		50 A			
Error display		LED goes ON when fuse blows : signal output to PC CPU *2			
Operating indicator		On state is indicated (LEDs), 32-bit indication by switch			
External connections		4-pin connector			
Applicable wire size		0.3 mm <sup>2</sup>	1 1 1		
Accessories		Connector (1 pce.) for external wiring (soldering type)	1 1 1		
External power	Voltage	12/24 VDC (10.2 to 26.4 VDC)			
supply Current		55 mA (TYP, 24 VDC/common)			
Internal current consumption (5 VDC)		180 mA (TYP, all points ON)			
Weight kg		0.19	DC12/24V 4/9mA A1S42Y		
		External Connections			



PIn Arrangement					
B12 B11 B10 B9 B8 B7 B6 B5 B4 B3 B2 B1	( 0 0 0 0 0 0 0 0 0 0 0	00000000000	A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1		
Front view					

Pin No.	Signal Name (FH)	Pin No.	Signal Nane (FH)
B12	YD0	A12	YD1
B11	YD2	A11	YD3
B10	YD4	A10	YD5
B9	YD6	A9	YD7
B8	YSCN0	A8	YSCN1
B7	YSCN2	A7	YSCN3
B6	YSCN4	A6	YSCN5
B5	YSCN6	<b>A</b> 5	YSCN7
В4	Vacant	A4	Vacant
ВЗ	12/24 VDC	А3	12/24 VDC
B2	ΟV	A2	0V
B1	Vacant	A 1	Vacant

- \*1 The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices. If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.
- \*2 The ERR. indicating LED will also light when the external power supply is shut OFF.
- \*3 Install the resistance for restricting LED current outside the A1S42Y module.
- \*4 The power supply voltage(24/12 VDC) is applied to the reverse direction of the LED. If the opposite voltage resistance is not sufficient, connect a diode for serial protection to each LED.



### (1) Number of occupied I/O points setting

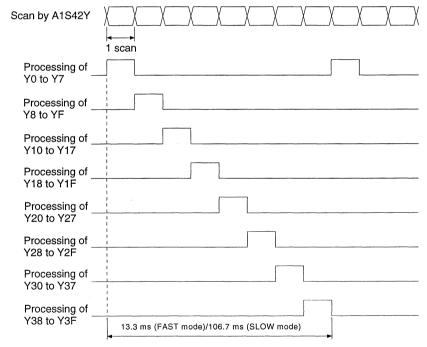
The number of occupied I/O points is set using the DIP switches on the front face of the module. It is factory-set to 64 points.

Number of occupied I/O points	16 points	32 points	48 points	64 points	
Switch setting	SW 1 □ 2 □ → Z	SW 1 □ □ 2 □ → ₹	1	SW 1 □ □ 2 □ □ → Z 0	

#### (2) Dynamic scan method and dynamic scan cycle setting

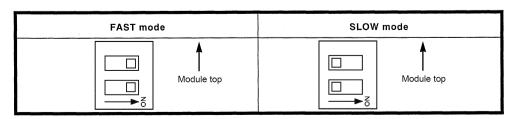
### (a) Dynamic scan method

In the dynamic scan method, the whole number of occupied I/O points is divided into several groups of a specified number of points, and processed in several scans. 64 input points are divided into 8 groups of 8 points, and processed group by group as shown in the figure below. Regardless of whether the number of occupied I/O points is set at 16, 32, or 48 points, the dynamic scan cycle is fixed at 13.3/106.7 ms.



#### (b) Dynamic scan cycle setting

The dynamic scan cycle is set using the DIP switches on the rear face of the module. It is factory-set to FAST mode.



## 5. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTER MODULES

## 5.1 Specifications of Connector/Terminal Block Converter Modules

1) Connector/terminal block converter module specifications

Type	Details	Weight	Applicable Wire Size	Applicable Crimping Terminal		Applicable Models		
A6TBXY36	For positive common type input modules and sink type output modules (standard type)	0.4kg			Q series: AnS series:	QX41, QX41-S1, QX42, QX42-S1, QY41P, QY42P, QY82P, QH42P, QX41Y41P A1SX41, A1SX41-S1, A1SX41-S2, A1SX42, A1SX42-S1, A1SX42-S2,		
A6TBXY54	For positive common type input modules and sink type output modules (2-wire type)	0.5kg		1.25-3.5 (JIS) 1.25-YS3A (J.S.T.) Spade tongue	A series: CC-Link: MELSECNET-MINI	A1SX82-S1, A1SY41, A1SY41P, A1SY42, A1SY42P, A1SY82, A1SH42, A1SH42P, A1SH42-S1, A1SH42P-S1 AX42, AX42-S1, AY42, AY42-S1, AY42-S3, AY42-S4, AH42 AJ65BTCF1-32D, AJ65BTCF1-32T, AJ65BTC1-32D, AJ65BTC1-32T AJ35TC1-32D, AJ35TC1-32T		
A6TBX70	For positive common type input modules (3-wire type)	0.6kg	0.75 to 2mm <sup>2</sup>	V1.25-M3 (J.S.T.) Insulated V1.25-YS3A (J.S.T.) Spade tongue 2-3.5 (JIS) 2-YS3A (J.S.T.)	Q series: AnS series: A series: CC-Link: MELSECNET-MINI	QX41, QX41-S1, QX42, QX42-S1, QH42P, QX41Y41P A1SX41, A1SX41-S1, A1SX41-S2, A1SX42, A1SX42-S1, A1SX42-S2, A1SX82-S1, A1SH42, A1SH42P, A1SH42-S1, A1SH42P-S1 AX42, AX42-S1, AH42 AJ65SBTCF1-32D, AJ65BTC1-32D		
A6TBX36-E	For negative common type input modules (standard type)	0.4kg		Spade tongue V2-S3 (J.S.T.) Insulated		0.004		
A6TBX54-E	For negative common type input modules (2-wire type)	0.5kg				V2-YS3A (J.S.T.) Spade tongue	Q series: AnS series: A series:	QX81 A1SX81, A1SX81-S2 AX82
A6TBX70-E	For negative common type input modules (3-wire type)	0.6kg						
A6TBY36-E	For source type output modules (standard type)	0.4kg			Q series: AnS series:	QY81P A1SY81		
A6TBY54-E	For source type output modules (2-wire type)	0.5kg			A series:	AY82EP		

#### **POINT**

- (1) The number of connectable I/O points is 32 for all connector/terminal block converter modules.
  - Two connector/terminal block converter modules and two cables for connector/terminal block converter modules are required for 64-point I/O modules.
- (2) Though the A1SX81(S2) is used either as a sink or source type, use the A6TBX36-E, A6TBX54-E or A6TBX70-E. The A6TBXY36, A6TBXY54 or A6TBX70 cannot be used.
- (3) Though the A1SX82-S1 is used either as a sink or source type, the A6TBXY36/XY54/X70 may be used only when the A1SX82-S1 is used as a sink type.

When it is used as a source type, the A6TBXY36/XY54/X70 cannot be used.

- (4) Though the A1SY82 and QY82P are source type output modules, use the A6TBXY36 or A6TBXY54. The A6TBY36-E, A6TBY54-E cannot be used.
- (5) In the A series, the plus common input module is separately labeled as a sink type input module, and the minus common input module is separately labeled as a source type input module.
- (6) When using the A6TBXY70 as a mixed input/output module, use at the input side.
- (7) Tighten the module terminal screws to the following torque.

  Supply line connecting terminal screw (M3.5 screw): Tightening torque
  78.4N●cm

# 5. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTER MODULES

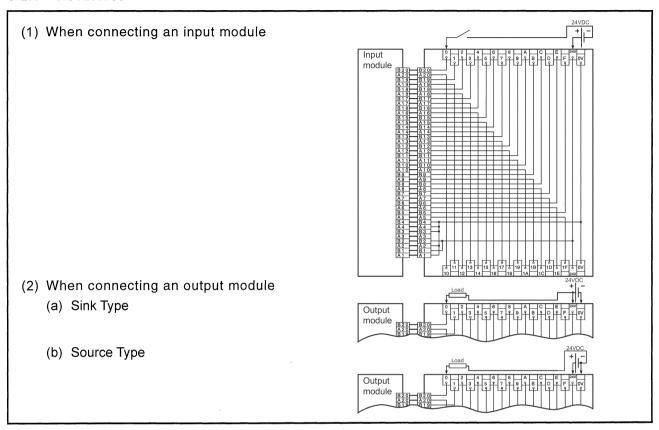
MELSEC-A

## 2) Cable

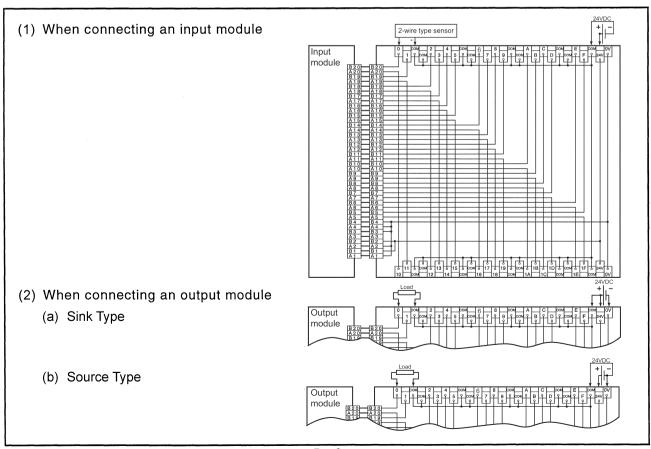
Туре	Details	Weight	Applicable Models
AC05TB	0.5 m (19.69 in.), for sink modules	0.17kg	
AC10TB	1 m (39.37 in.), for sink modules	0.23kg	
AC20TB	2 m (78.74 in.), for sink modules	0.37kg	
AC30TB	3 m (118.11 in.), for sink modules	0.51kg	A6TBXY36
AC50TB	5 m (196.85 in.), for sink modules	0.76kg	A6TBXY54 A6TBX70
AC80TB	8 m (314.96 in.), for sink modules (common current not exceeding 0.5 A)	1.2kg	
AC100TB	10 m (393.7 in.), for sink modules (common current not exceeding 0.5 A)	1.5kg	
AC05TB-E	0.5 m (19.69 in.), for source modules	0.17kg	
AC10TB-E	1 m (39.37 in.), for source modules	0.23kg	A6TBX36-E A6TBY36-E
AC20TB-E	2 m (78.74 in.), for source modules	0.37kg	A6TBX54-E
AC30TB-E	3 m (118.11 in.), for source modules	0.51kg	A6TBY54-E A6TBX70-E
AC50TB-E	5 m (196.85 in.), for source modules	0.76kg	AOTDA/U-E

## 5.2 Connector/Terminal Block Converter Module Connection Diagrams

#### 5.2.1 A6TBXY36

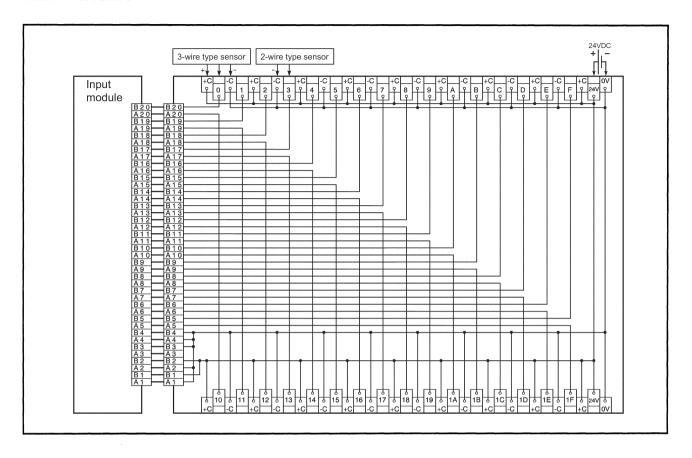


## 5.2.2 A6TBXY54

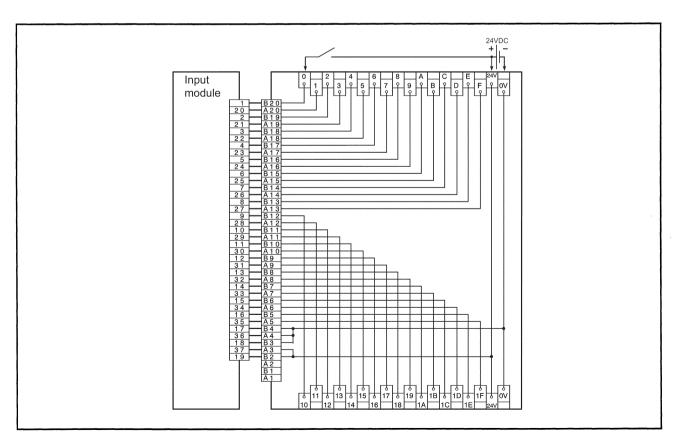


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#### 5.2.3 A6TBX70

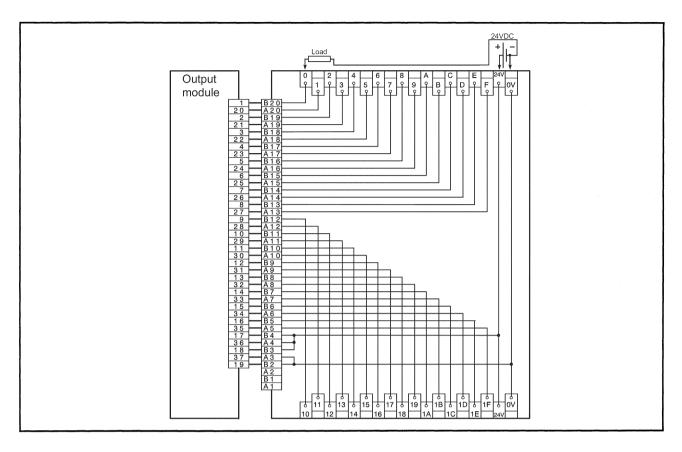


#### 5.2.4 A6TBX36-E

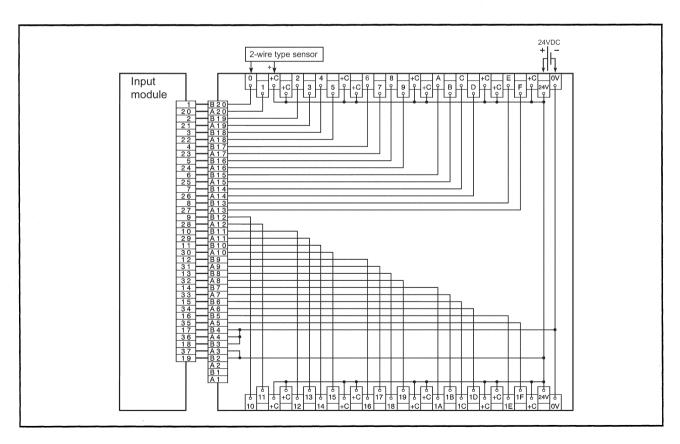


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#### 5.2.5 A6TBY36-E

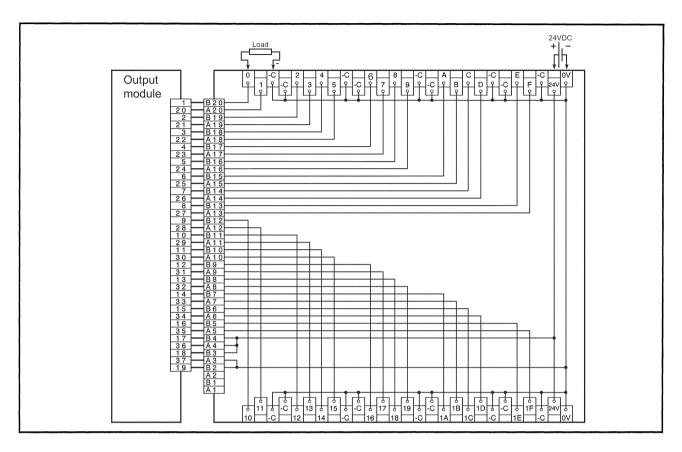


#### 5.2.6 A6TBX54-E

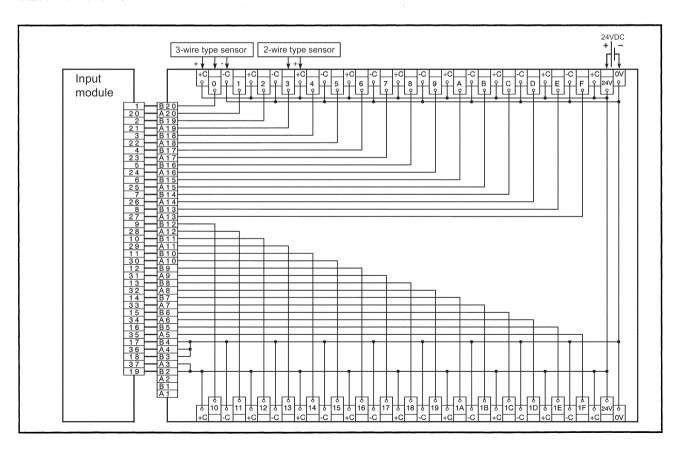


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#### 5.2.7 A6TBY54-E



#### 5.2.8 A6TBX70-E



## 6. BLANK COVER, DUMMY MODULE SPECIFICATIONS

## 6.1 Blank Cover (A1SG60), Dummy Module (A1SG62) Specifications

The A1SG60 blank cover is used to protect base unit vacant slots against dust etc.

The A1SG62 dummy module is used to reserve a specified number of I/O points at any base unit slot.

Table 6.1 Dummy Module, Blank Cover Specifications

Model Item	A1SG60	A1SG62
Occupied I/O points	16 points	Max. 64 (16, 32, 48, or 64 points can be selected by using a select switch on the front of the module.)
I/O allocation specification	Empety [] points 0, 16, 32, 48, or 64 points can be specified to [].	input (X) points Designate the number of points set with the select switch in the i
Purpose	Used as a dust preventive cover for an unused slot where no input/output module is installed (e. g., a vacant slot between modules).	A module used to reserve 16, 32, 48, or 64 points for an I/O module to be installed in the future.
Other functions	_	Equipped with simulation switches for 16 points beginning with the head I/O number: inputs can be turned ON/OFF without using any external switch.
Internal current consumption (5 VDC)	_	60 mA
Outside dimen- sions (mm)(in)	130(H) x 34.5(W) x 93.6 (D) (5.12 x 1.36 x 3.69)	130(H) x 34.5(W) x 93.6 (D) (5.12 x 1.36 x 3.69)
Weight (kg)	0.08	0.13

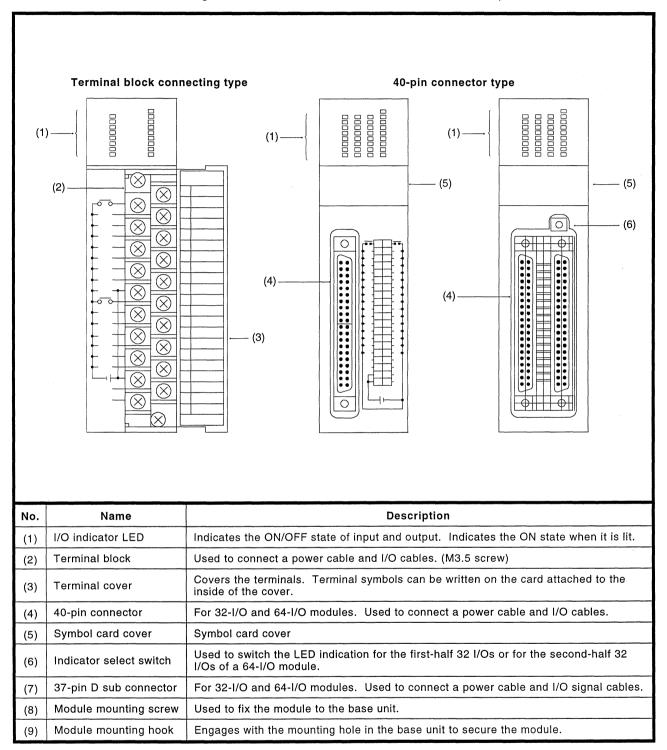
## 6.2 Setting the Occupying Number of Inputs/Outputs for A1SG62

Set the switches for setting the occupying number inputs/outputs (DIP switches) on the front of the module. The factory setting is 16 points.

Occupying number of inputs/outputs	16 points	32 points	48 points	64 points
Switch settings	SW1 SW2	SW1 SW2	SW1 □ SW2 □ ⇒ ĕ	SW1 SW2

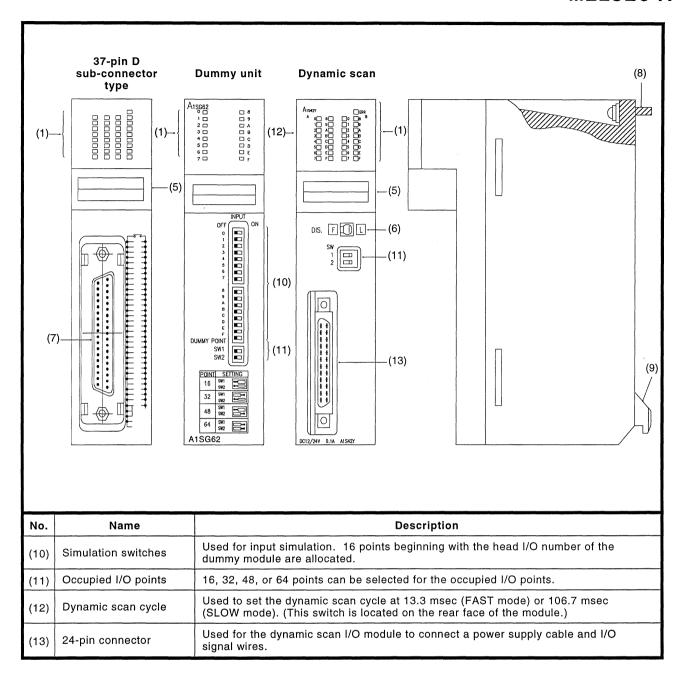
#### 7. NAMES OF PARTS AND SETTINGS

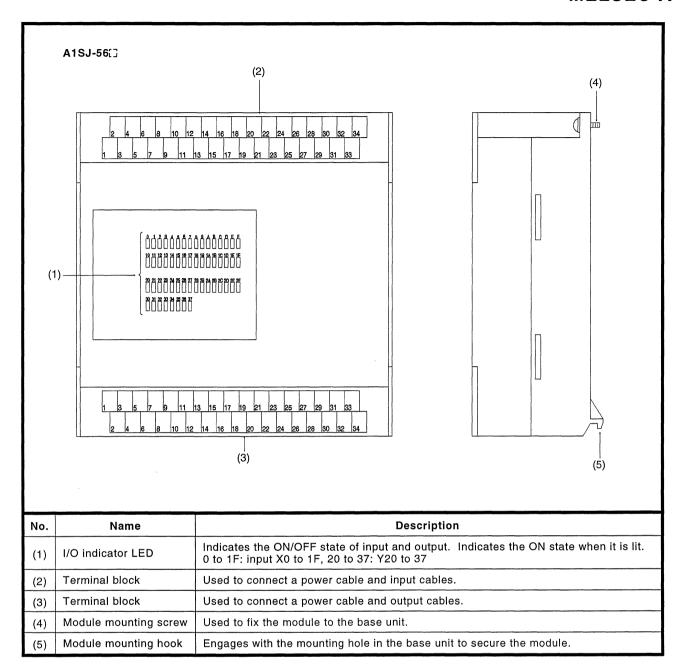
The figures and table below show the names of the parts of I/O modules.

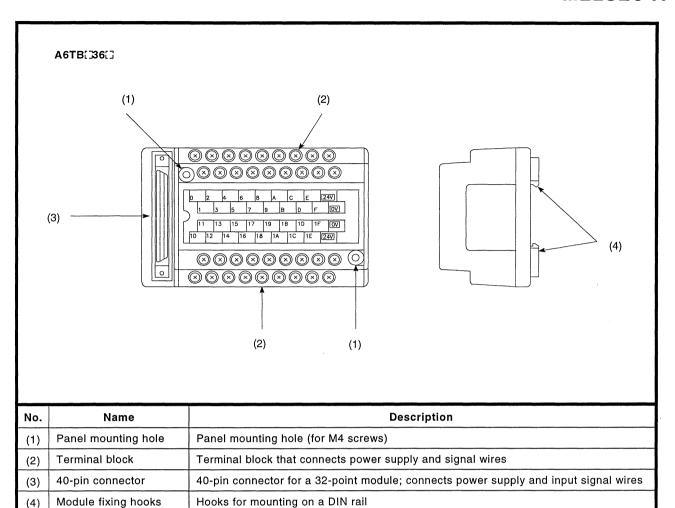


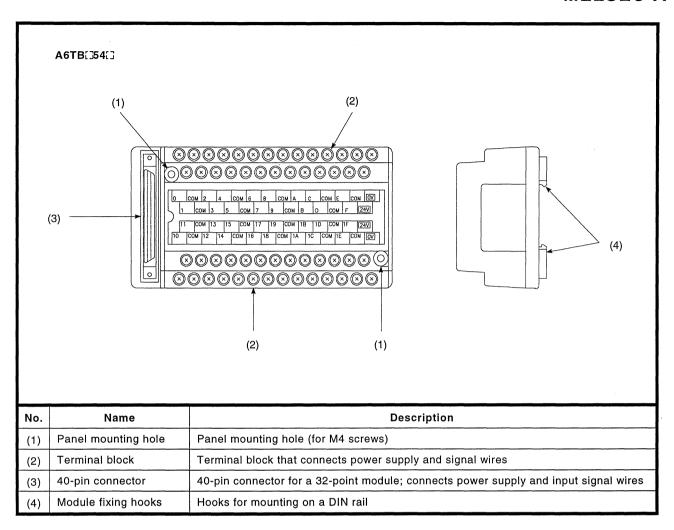
## REMARK

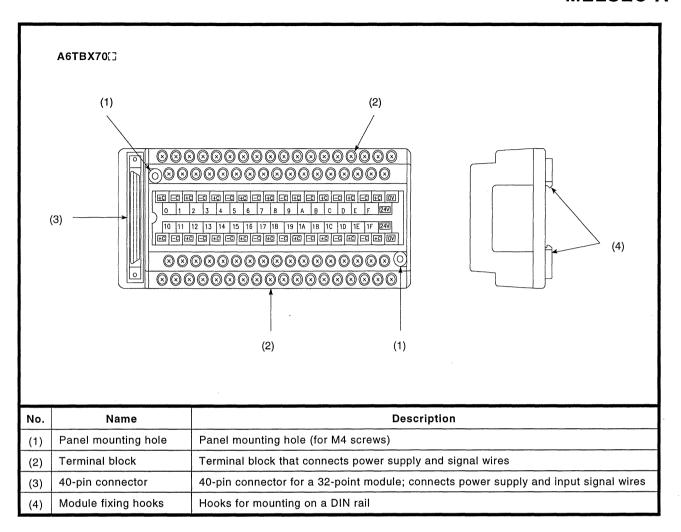
When removing the terminal symbol card, lift up the edge of the card a little to pull it out of the terminal cover smoothly.











## 8. I/O CONNECTION TROUBLESHOOTING

This section explains possible problems with I/O circuits.

## 8.1 Input Circuit Troubleshooting

This section describes possible problems with input circuits, and corrective action.

Table 8.1 Input Circuit Problems and Corrective Action

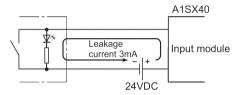
		Table 8.1 Input Circuit Problems and	Corrective Action
	Condition	Cause	Corrective Action
Example 1	Input signal does not turn OFF.	Leakage current of input switch (e.g. drive by non-contact switch).  AC input  Leakage current  Input module  Power supply	Connect an appropriate resistor so that the voltage across the terminals of the input module will be less than the off voltage.  AC input Input module  Power supply  It is recommended to use 0.1 to 0.47 μF + 47 to 120 Ω (1/2 W) for the CR constant.
		Drive by a limit switch with neon lamp.	Same as Example 1.
Example 2	Input signal does not turn OFF.	Leakage current Input module	Or make up another independent display circuit.
Example 3	Input signal does not turn OFF.	Leakage current due to line capacity of wiring cable. (Line capacity C of twisted pair wire is approx. 100 PF/m).  AC input    Leakage current   Input module	Same as Example 1.      However, leakage current is not generated when the power supply is located in the input equipment side as shown below.  AC input Input module  Power supply
Example 4	Input signal does not turn OFF.	Drive by switch with LED indicator.    DC input (sink)	Connect an appropriate resistor so that the current flowing through the input module will be less than the off current.  DC input (sink)  Resistor Input module  * An example calculation of a value for a connected resistor is given on the following page.

Condition Cause **Corrective Action** • Use only one power supply. Sneak path due to the use of two power supplies. To prevent sneak current, connect DC input diodes as shown below. Input DC input signal --Diode Example 5 does not **♦Lam**p Input turn OFF. module Input module E1>E2

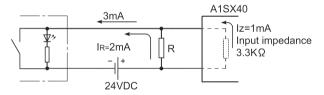
Table 8.1 Input Circuit Problems and Corrective Action (Continued)

<Sample calculation for Example 4>

When a switch with LED indicator, giving leakage current of 3mA at maximum when 24VDC power is supplied to the A1SX40



(1) 1 mA or less OFF current of the A1SX40 is not satisfied. Hence, connect a resistor as shown below.



(2) Calculate the resistance value R as shown below.

To satisfy 1 mA or less OFF current of the A1SX40, connect a resistor which flows 2 mA or more.

IR: Iz=Z (Input impedance): R

$$R \le \frac{Iz}{IR} \times Z$$
 (Input impedance) =  $\frac{1.0}{2.0} \times 3.3 = 1.65[k \Omega]$ 

Supposing that the resistance R is  $1.5k\Omega$ , the power capacity W of resistor R is: W = (Input voltage)  $^2 \div$  R =  $26.4^2 \div 1500 = 0.465$  (W)

- (3) Connect a resistor of 1.5 ( $k\Omega$ ) and 2 to 3 (W) to a terminal which may cause an error, since the power capacity of a resistor is selected so that it will be 3 to 5 times greater than the actual power consumption.
- (4) Also, OFF voltage when resistor R is connected will be as follows.

$$\frac{1}{\frac{1}{1.5[k\Omega]} + \frac{1}{3.3[k\Omega]}} \times 3[mA] = 3.09[V]$$

This satisfies 4V or less OFF voltage of A1SX40.

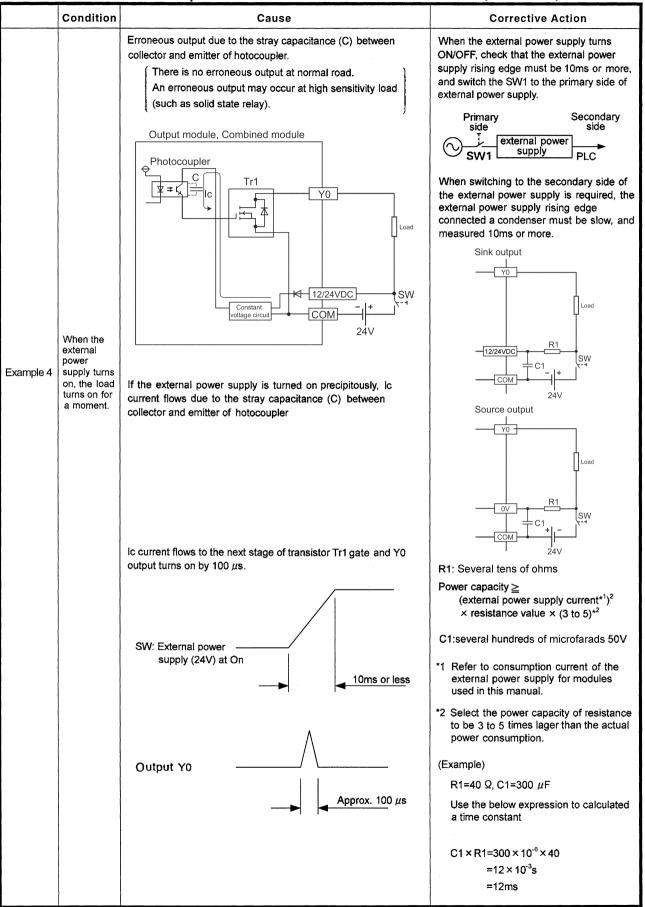
## 8.2 Output Circuit Failures and Corrective Action

This section describes possible problems with output circuits, and corrective action.

Table 8.2 Output Circuit Failures and Corrective Action

	Condition	Cause	
	Condition	Cause	Corrective Action
Example 1	When the output is OFF, excessive voltage is applied to the load.	Load is half-wave rectified inside (in some cases, this is true of a solenoid).  A1SY22 Output module  Load  Output module  Load  Output module  (1)  (2)  When the polarity of the power supply is as shown in (1), C is charged. When the polarity is as shown in (2), the voltage charged in C plus the line voltage are applied across D1. Max. voltage is approx. 2.2E.	Connect a resistor several tens to hundreds of kΩ across the load.   (If a resistor is used in this way, it does not pose a problem to the output element. But it may cause the diode, which is built into the load, to deteriorate, resulting in a fire, etc.)    Resistor   Load
Example 2	The load does not turn OFF (triac output).	Leakage current due to built-in noise suppression  A1SY22 Output module Load Leakage current  Leakage current	Connect the resistors to both ends of the load.  When the wiring distance from the output module to the load is long, there may be a leakage current due to the line capacity.  Resistor  Load
Example 3	When the load is a CR type timer, time constant fluctuates (triac output).	A1SY22 Output module CR timer Leakage current	Connect the resistors to both ends of the CR timer.  When the wiring distance from the output module to the load is long, there may be a leakage current due to the line capacity.  Resistor  CR  timer  Calculate the CR constant depending on the load.

Table 8.2 Output Circuit Failures and Corrective Action (Continued)



Condition Cause **Corrective Action** The load [2] which was turned OFF may be Take action in the following (1) or (2). turned ON due to back electromotive force (1) To prevent the generation of the back at the time of power-off [1] if an inductive electromotive force, connect diode in load is used. parallel with load where the back electromotive force has been generated. Back electromotive Source output Source output [3] Back electromotive force Load The load which was turned OFF Sink output is turned ON for [3] Example 5 a moment at ck electromotive power-off. (Transistor Output module, ombined module output) Back electromotive force Sink output Load [2] The polarity of the external power supply is Connect the polarity correctly. connected in reverse. Transistor output module Load The load Correct Incorrect operates due to External power supply powering on the Example 6 external power supply. COM (transistor Output element protection diode output) When the polarity is connected in reverse,

Table 8.2 Output Circuit Failures and Corrective Action (Continued)

current may flow across an output element

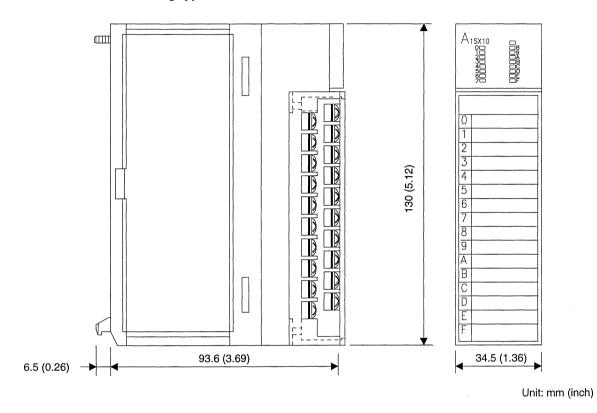
protection diode.

#### **APPENDICES**

#### **APPENDIX 1 OUTSIDE DIMENSIONS**

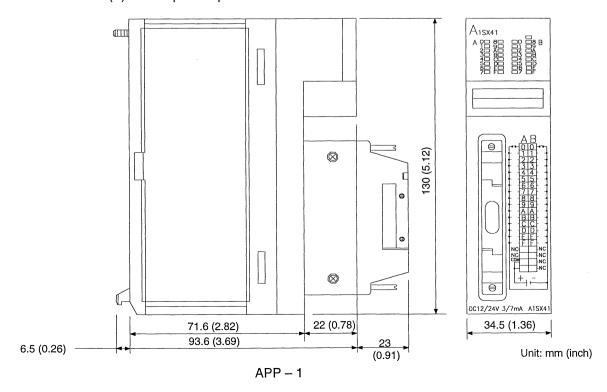
#### 1.1 Input/Output Modules

#### 1.1.1 Terminal base connecting type

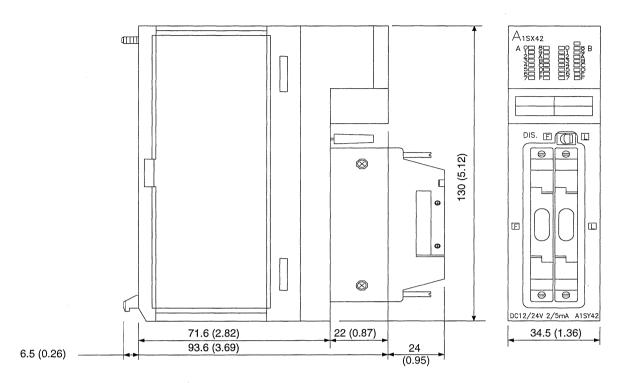


#### 1.1.2 40-pin connector type

#### (1) 32-input/output module

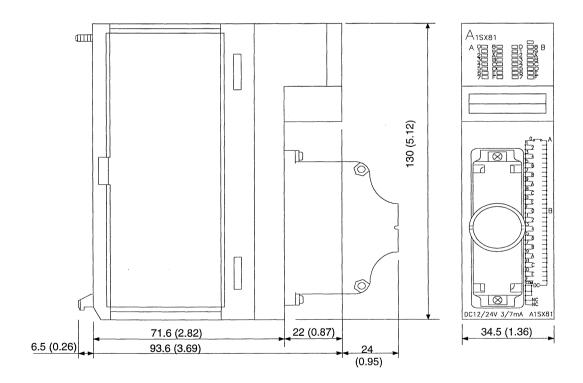


#### (2) 64-input/output module

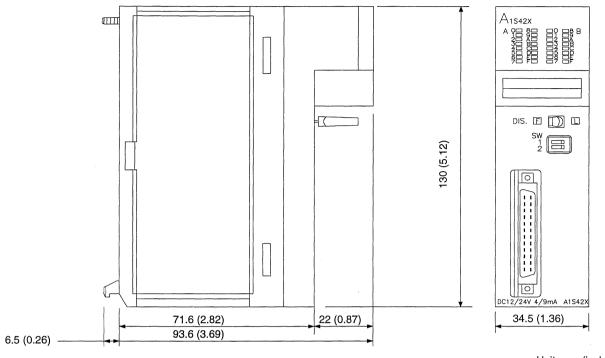


Unit: mm (inch)

#### 1.1.3 37-pin D sub-connector type 32-input/output module

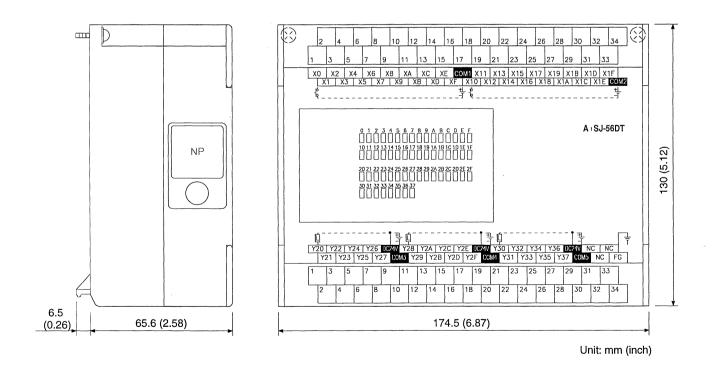


#### 1.2 Dynamic I/O Module



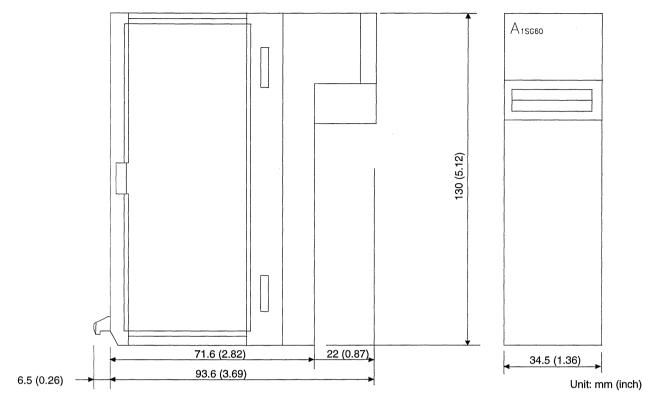
#### Unit: mm (inch)

#### 1.3 A1SJ-56 Input/Output Combination Module

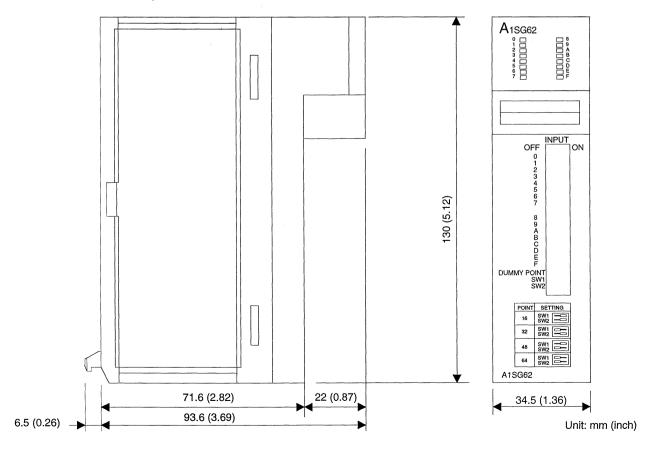


#### 1.4 Dummy Module, Blank Cover

#### 1.4.1 A1SG60 blank cover

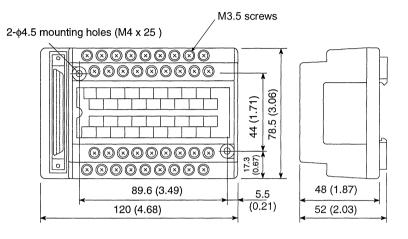


#### 1.4.2 A1SG62 dummy module



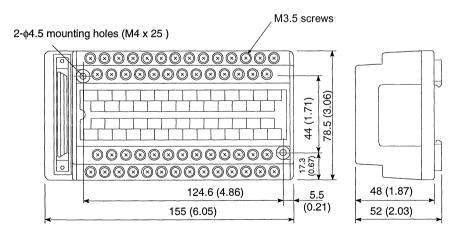
#### 1.5 Connector/Terminal Block Convertor Modules

#### 1.5.1 A6TB[[36[]] type connector/terminal block convertor module

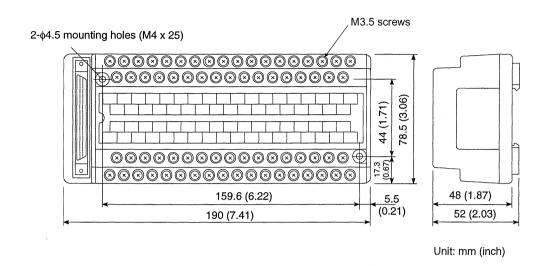


Unit: mm (inch)

#### 1.5.2 A6TB[[]54[]] type connector/terminal block convertor module



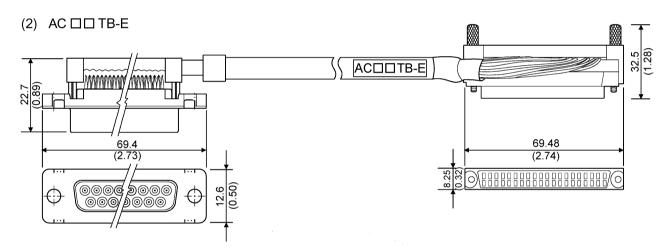
#### 1.5.3 A6TBX70 type connector/terminal block convertor module



#### 1.5.4 Connector/terminal block converter module cable

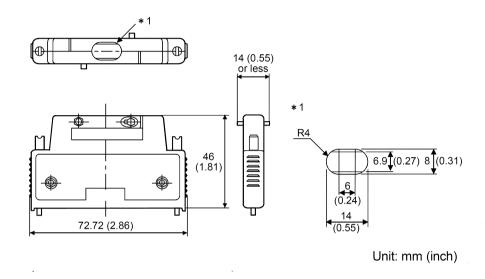
## 

Unit: mm (inch)

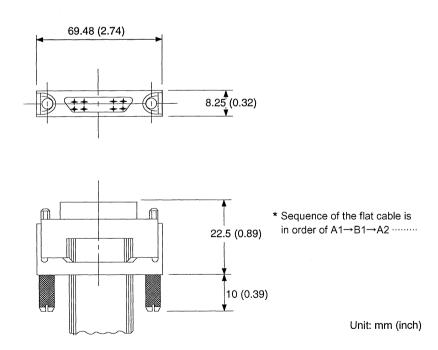


#### 1.6 40-Pin Connectors

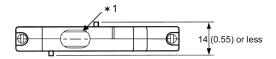
# 1.6.1 A6CON1 soldering-type 40-pin connector (straight out type), A6CON2 crimp-contact-type 40-pin connector (straight out type)

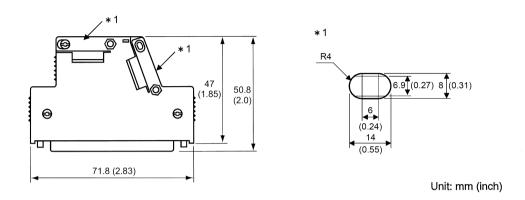


#### 1.6.2 A6CON3 pressure-displacement-type 40-pin connector (flat cable type)



#### 1.6.3 A6CON4 soldering type 40-pin connector (straight/diagonal out type)

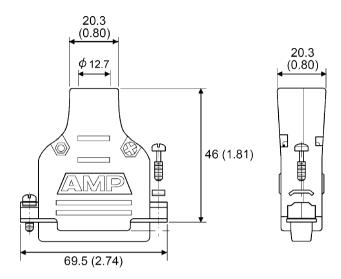




If the cable diameter is thinner than the clamp portion, wind tape, etc. to secure the cable so that it will not come off the cable clamp portion. If the cable is made of slippery material, it is recommended to take anti-slip measures by winding rubber-based tape, etc.

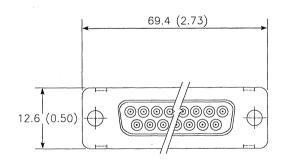
#### 1.7 Pin D Sub-Connectors

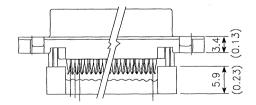
## 1.7.1 A6CON1E soldering type 37-pin D sub-connector (straight out type) A6CON2E crimp-contact-type 37-pin D sub-connector (straight out type)



Unit: mm (inch)

#### 1.7.2 A6CON3E pressure-displacement-type 37-pin D sub-connector (flat cable type)





### WARRANTY

Please confirm the following product warranty details before using this product.

#### 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 sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

#### [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 that admitted not to be so by 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 available 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 loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

#### 5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

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# AnS Module Type I/O

## **User's Manual**

MODEL	ANS-TYPE-I/O-U-E	
MODEL CODE	13JE81	
IB(NA)-66541-S(1410)MEE		



HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN NAGOYA WORKS : 1-14 , YADA-MINAMI 5-CHOME , HIGASHI-KU, NAGOYA , JAPAN

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