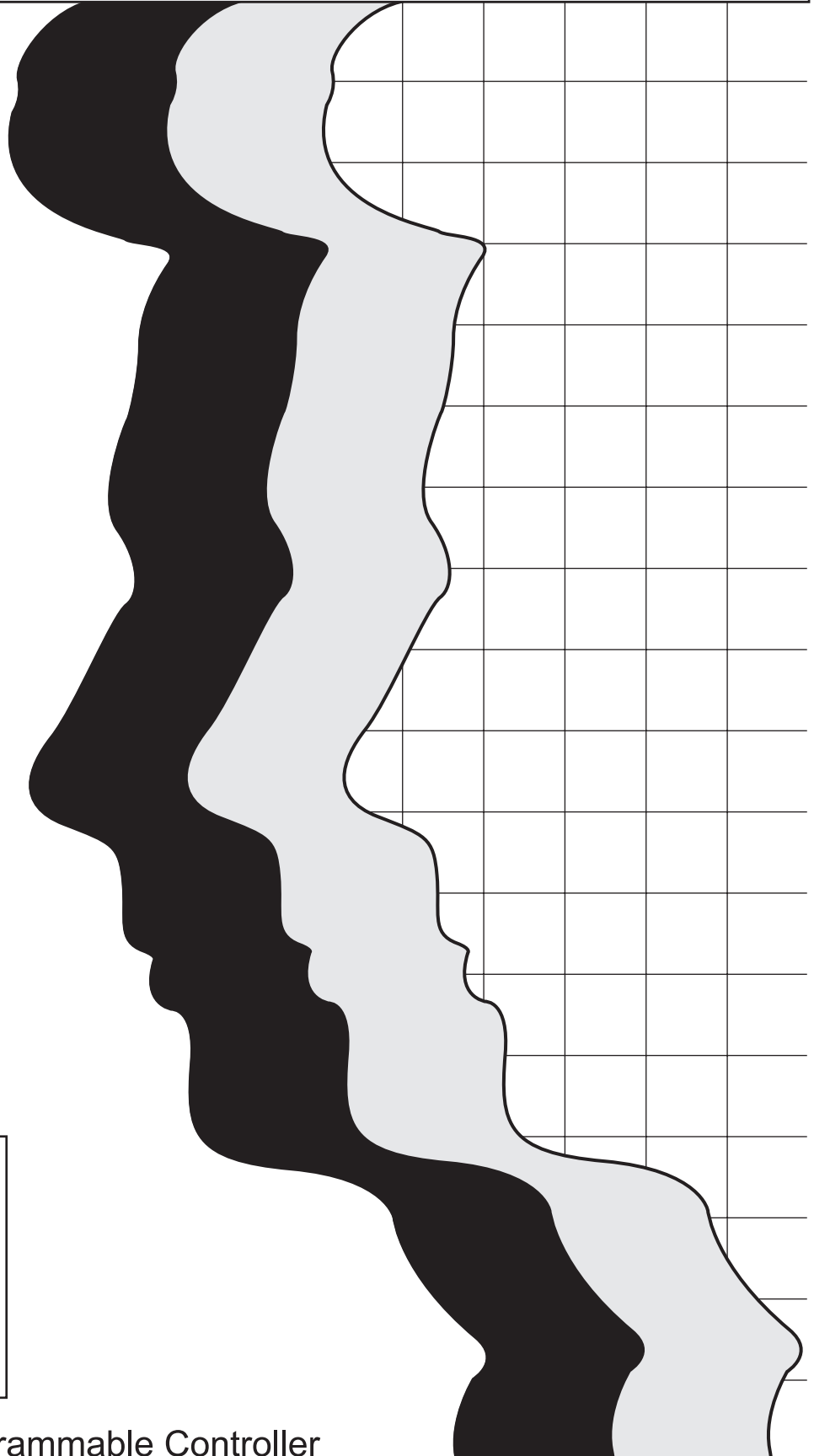


MITSUBISHI

AnS Module Type I/O

User's Manual



Mitsubishi Programmable Controller

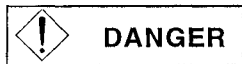
● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

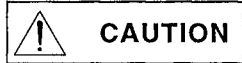
When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual.

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


These ● SAFETY PRECAUTIONS ● classify the safety precautions into two categories: "DANGER" and "CAUTION".



Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.



Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by  CAUTION may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Please save this manual to make it accessible when required and always forward it to the end user.

[DESIGN PRECAUTIONS]



DANGER

- Install a safety circuit external to the PLC that keeps the entire system safe even when there are problems with the external power supply or the PLC module. Otherwise, trouble could result from erroneous output or erroneous operation.
 - (1) Outside the PLC, construct mechanical damage preventing interlock circuits such as emergency stop, protective circuits positioning upper and lower limits switches and interlocking forward/reverse operations.
 - (2) When the PLC detects the following problems, it will stop calculation and turn off all output.
 - The power supply module has and over current protection equipment and over voltage protection equipment.
 - The PLC CPUs self diagnostic functions, such as the watchdog timer error, detect problems. In addition, all output will be turned on when there are problems that the PLC CPU cannot detect, such as in the I/O controller. Build a fail safe circuit exterior to the PC that will make sure the equipment operates safely at such times. Refer to Section 8.1 of this user's manual for example fail safe circuits.

Refer to this user's manual for example fail safe circuits.
 - (3) Output could be left on or off when there is trouble in the output module relay or transistor. So build an external monitoring circuit that will monitor any single output that could cause serious trouble.
- When overcurrent which exceeds the rating or caused by short-circuited load flows in the output module for a long time, it may cause smoke or fire. To prevent this, configure an external safety circuit, such as fuse.
- Build a circuit that turns on the external power supply when the PLC main module power is turned on. If the external power supply is turned on first, it could result in erroneous output or erroneous operation.
- When configuring a system, do not leave any slots vacant on the base. Should there be any vacant slots, always use a blank cover (A1SG60) or dummy module (A1SG62). When the extension base A1S52B, A1S55B or A1S58B is used, attach the dustproof cover supplied with the product to the module installed in slot 0. If the cover is not attached, the module's internal parts may be dispersed when a short-circuit test is performed or overcurrent/overvoltage is accidentally applied to the external I/O area.



CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other. They should be installed 100mm (3.94inch) or more from each other. Not doing so could result in noise that would cause erroneous operation.
- When controlling items like lamp load, heater or solenoid valve using an output module, large current (approximately ten times greater than that present in normal circumstances) may flow when the output is turned OFF → ON. Take measures such as replacing the module with one having sufficient rated current.

[INSTALLATION PRECAUTIONSDANGER]



CAUTION

- Use the PLC in an environment that meets to the general specifications contained in this manual. Using the PLC in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of the product.
- Install so that the pegs on the bottom of the module fit securely into the base unit peg holes and use the specified torque to tighten the module's fixing screws. Not installing the module correctly could result in erroneous operation, damage, or pieces of the product falling. Tightening the screws too far may cause damages to the screws and/or the module, resulting in fallout, short circuits, or malfunctions.
- Do not directly touch the module's conductive parts or electronic components. Doing so could cause erroneous operation or damage of the module.

[WIRING PRECAUTIONS]



DANGER

- Completely turn off the externally supplied power used in the system when installing or placing wiring. Not completely turning off all power could result in electric shock or damage to the product.
- When turning on the power supply or operating the module after installation or wiring work, be sure that the module's terminal covers are correctly attached. Not attaching the terminal cover could result in electric shock.



CAUTION

- Be sure to ground the FG terminals and LG terminals to the protective ground conductor. Not doing so could result in electric shock or erroneous operation.
- When wiring in the PLC, be sure that it is done correctly by checking the product's rated voltage and the terminal layout. Connecting a power supply that is different from the rating or incorrectly wiring the product could result in fire or damage.
- Tighten the terminal screws to with the specified torque. If the terminal screws are loosen, it could result in short circuits, fire or erroneous operation. Tightening the terminal screws too far may cause damages to the screws and /or the module, resulting in fallout, short circuits, or malfunctions.
- Be sure there are no foreign substances such as sawdust or wiring debris inside the module. Such debris could cause fires, damage, or erroneous operation.
- External connections shall be crimped or pressure welded with the specified tools, or correctly soldered. For information regarding the crimping and pressure welding tools, refer to the I/O module's user's manual. Imperfect connections could result in short circuit, fires, or erroneous operation.

[STARTUP AND MAINTENANCE PRECAUTIONS]



DANGER

- Do not touch the terminals while the power is ON.
Doing so could cause shock.
- Switch off all phases of the externally supplied power used in the system when cleaning the module or retightening the terminal or module mounting screws.
Not doing so could result in electric shock.



CAUTION

- Do not disassemble or modify the modules. Doing so could cause trouble, erroneous operation, injury, or fire.
- Use any radio communication device such as a cellular phone or a PHS phone more than 25cm (9.85 inch) away in all direction of the PLC.
Not doing so can cause a malfunction.
- Switch off all phases of the externally supplied power used in the system when mounting or removing the module.
Not doing so could result in failure or malfunction of the module.
- Do not drop or give an impact to the battery installed in the module.
Otherwise the battery will be broken, possibly causing internal leakage of electrolyte.
Do not use but dispose of the battery if it has fallen or an impact is given to it.
- Do not install/remove the terminal block more than 50 times after the first use of the product.
(IEC61131-2-compliant)
- Always make sure to touch the grounded metal to discharge the electricity charged in the electricity charged in the body, etc., before touching the module.
Failure to do say cause a failure or malfunctions of the module.

[DISPOSAL PRECAUTIONS]



CAUTION

- When disposing of this product, treat it as industrial waste

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	<p>Addition of models</p> <p>A1SX10EU, A1SX20EU, A1SY10EU, A1SY14EU, A1SY18AEU, A1SY28EU</p> <p>Correction</p> <p>INTRODUCTION, CONTENTS, Manuals, Page 1-2, 1-3, 1-4, 4-7, 4-8</p>
Jul.,1996	IB (NA) 66541-C	<p>Correction</p> <p>Section 4.2</p>
Sep.,1996	IB (NA) 66541-D	<p>Correction</p> <p>Section 3.2, 4.1.1, 4.1.2, 4.1.3</p>
Mar.,1997	IB (NA) 66541-E	<p>Addition</p> <p>A6TB[36], A6TB[54], A6TBX70, Chapter 5</p> <p>Correction</p> <p>Section 4.2.1, 4.2.2</p>
Sep.,1997	IB (NA) 66541-F	<p>Addition</p> <p>SAFETY PRECAUTIONS, Section 1.1, 1.2</p> <p>Correction</p> <p>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</p>
Dec.,1997	IB (NA) 66541-G	<p>Addition</p> <p>Section 1.2, 3.15 (A1SY81EP)</p> <p>Correction</p> <p>SAFETY PRECAUTIONS, CONTENTS, APPENDICES</p>
May.,1999	IB (NA) 66541-H	<p>Addition of models</p> <p>A1SX82-S1, A1SY82, A1SH42-S1</p>
Oct., 2002	IB (NA) 66541-I	<p>Equivalent to Japanese version I</p> <p>Partial correction</p> <p>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</p> <p>Partial addition</p> <p>Section 2.1 to 2.2.1, APPENDICES</p> <p>Addition</p> <p>Section 1.1, WARRANTY</p>

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

Print Date	*Manual Number	Revision
May., 2003	IB (NA) 66541-J	<p data-bbox="651 280 880 313"><u>Partial correction</u></p> <p data-bbox="651 331 798 365">Section 1.2</p>
Dec., 2003	IB (NA) 66541-K	<p data-bbox="651 385 896 418"><u>Addition of models</u></p> <p data-bbox="651 436 774 470">A1SY42P</p> <p data-bbox="651 488 880 521"><u>Partial correction</u></p> <p data-bbox="651 539 1193 573">SAFETY PRECAUTIONS, Section 1.2, 5.1</p> <p data-bbox="651 591 769 624"><u>Addition</u></p> <p data-bbox="651 642 833 676">Section 3.11.1</p>
Nov., 2004	IB (NA) 66541-L	<p data-bbox="651 692 880 725"><u>Partial correction</u></p> <p data-bbox="651 743 1412 804">SAFETY PRECAUTIONS, Section 1.2, 3.7.1, 3.8, 3.15, 5.2.1, 5.2.2</p>
Sep., 2005	IB (NA) 66541-M	<p data-bbox="651 833 880 866"><u>Partial correction</u></p> <p data-bbox="651 884 1380 1012">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</p> <p data-bbox="651 1016 1353 1077">Chapter 2 through 4 have been changed for the external connection diagrams.</p> <p data-bbox="651 1104 769 1137"><u>Addition</u></p> <p data-bbox="651 1155 842 1189">Appendix 1.5.4</p>
Jul., 2006	IB (NA) 66541-N	<p data-bbox="651 1207 896 1240"><u>Addition of models</u></p> <p data-bbox="651 1258 917 1292">A1SY40P, A1SY41P</p> <p data-bbox="651 1310 880 1344"><u>Partial correction</u></p> <p data-bbox="651 1361 1359 1395">SAFETY PRECAUTIONS, Section 1.2, 3.7, 3.7.1, 5.1, 6.1</p> <p data-bbox="651 1413 769 1447"><u>Addition</u></p> <p data-bbox="651 1464 906 1498">Section 3.9.1, 3.10.1</p>
Apr., 2008	IB (NA) 66541-O	<p data-bbox="651 1498 896 1532"><u>Addition of models</u></p> <p data-bbox="651 1550 957 1583">A1SH42P, A1SH42P-S1</p> <p data-bbox="651 1601 880 1635"><u>Partial correction</u></p> <p data-bbox="651 1653 1420 1713">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</p> <p data-bbox="651 1718 1353 1778">Chapter 2 through 4 have been changed for the external connection diagrams.</p> <p data-bbox="651 1821 769 1854"><u>Addition</u></p> <p data-bbox="651 1872 901 1906">Section 4.1.2, 4.1.4</p>

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

Print Date	*Manual Number	Revision				
Jan., 2009	IB (NA) 66541-P	<table border="0"><tr><td data-bbox="651 282 882 315">Partial correction</td></tr><tr><td data-bbox="651 331 903 365">Section 1.1, 1.2, 8.2</td></tr><tr><td data-bbox="651 387 767 421">Addition</td></tr><tr><td data-bbox="651 436 1059 470">Section 1.2.1, 1.2.2, 1.2.3, 1.2.4</td></tr></table>	Partial correction	Section 1.1, 1.2, 8.2	Addition	Section 1.2.1, 1.2.2, 1.2.3, 1.2.4
Partial correction						
Section 1.1, 1.2, 8.2						
Addition						
Section 1.2.1, 1.2.2, 1.2.3, 1.2.4						

INTRODUCTION

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

CONTENTS

1. GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM	1 – 1 to 1 – 18
1.1 General Specifications	1 – 1
1.2 Precaution for use	1 – 2
1.2.1 Input module	1 – 2
1.2.2 Output module	1 – 4
1.2.3 Module with protection function	1 – 15
1.2.4 Installation and wiring	1 – 16
2. INPUT MODULE SPECIFICATIONS	2 – 1 to 2 – 14
2.1 A1SX10 AC Input Module	2 – 1
2.2 A1SX10EU AC Input Module	2 – 2
2.3 A1SX20 AC Input Module	2 – 3
2.4 A1SX20EU AC Input Module	2 – 4
2.5 A1SX30 DC/AC Input Module	2 – 5
2.6 A1SX40(S1/S2) DC Input Module (Sink Type)	2 – 6
2.7 A1SX41(S1/S2) DC Input Module (Sink Type)	2 – 7
2.8 A1SX42(S1/S2) DC Input Module (Sink Type)	2 – 8
2.9 A1SX71 DC Input Module (Sink/Source Common Type)	2 – 10
2.10 A1SX80(S1/S2) DC Input Module (Sink/Source Common Type)	2 – 11
2.11 A1SX81(S2) DC Input Module (Sink/Source Common Type)	2 – 12
2.12 A1SX82-S1 DC Input Module (Sink/Source Common Type)	2 – 13
3. OUTPUT MODULE SPECIFICATIONS	3 – 1 to 3 – 24
3.1 A1SY10 Contact Output Module	3 – 1
3.2 A1SY10EU Contact Output Module	3 – 2
3.3 A1SY14EU Contact Output Module	3 – 3
3.4 A1SY18A Contact Output Module (All Points Independent)	3 – 4
3.5 A1SY18AEU Contact Output Modules (All Points Independent)	3 – 5
3.6 A1SY22 Triac Output Module	3 – 6
3.7 A1SY28A Triac Output Module (All Points Independent)	3 – 7
3.8 A1SY28EU Triac Output Module	3 – 8
3.9 A1SY40 Transistor Output Module (Sink Type)	3 – 9
3.9.1 A1SY40P Transistor Output Module (Sink Type)	3 – 9 – 1
3.10 A1SY41 Transistor Output Module (Sink Type)	3 – 10
3.10.1 A1SY41P Transistor Output Module (Sink Type)	3 – 10 – 1
3.11 A1SY42 Transistor Output Module (Sink Type)	3 – 11
3.11.1 A1SY42P Transistor Output Module (Sink Type)	3 – 13
3.12 A1SY50 Transistor Output Module (Sink Type)	3 – 15
3.13 A1SY60 Transistor Output Module (Sink Type)	3 – 16
3.14 A1SY60E Transistor Output Module (Source Type)	3 – 17
3.15 A1SY68A Transistor Output Module (Sink/Source Common Type (All Points Independent))	3 – 18
3.16 A1SY71 Transistor Output Module (Sink Type)	3 – 19

3.17	A1SY80 Transistor Output Module (Source Type)	3-20
3.18	A1SY81 Transistor Output Module (Source Type)	3-21
3.19	A1SY81EP Circuit Protection Provided Transistor Output Module (Source Type)	3-22
3.20	A1SY82 Transistor Output Module (Source Type)	3-23
4.	INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS	4-1 to 4-16
4.1	Input/Output Composite Module Specifications	4-1
4.1.1	A1SH42 input/output module	4-1
4.1.2	A1SH42P input/output module	4-2-1
4.1.3	A1SH42-S1 input/output module	4-3
4.1.4	A1SH42P-S1 input / output Module	4-4-1
4.1.5	A1SX48Y18 I/O module (24 VDC input (sink type), relay contact output)	4-5
4.1.6	A1SX48Y58 I/O module (24 VDC input (sink type), 12/24 VDC transistor output)	4-7
4.1.7	A1SJ-56DT I/O module	4-9
4.1.8	A1SJ-56DR I/O module	4-11
4.2	Dynamic Input/Output Module Specifications	4-13
4.2.1	A1S42X dynamic input module	4-13
4.2.2	A1S42Y dynamic output module	4-15
5.	SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTOR MODULES	5-1 to 5-6
5.1	Specifications of Connector/Terminal Block Convertor Modules	5-1
5.2	Connector/Terminal Block Convertor Module Connection Diagrams	5-3
5.2.1	A6TBXY36	5-3
5.2.2	A6TBXY54	5-3
5.2.3	A6TBX70	5-4
5.2.4	A6TBX36-E	5-4
5.2.5	A6TBY36-E	5-5
5.2.6	A6TBX54-E	5-5
5.2.7	A6TBY54-E	5-6
5.2.8	A6TBX70-E	5-6
6.	BLANK COVER, DUMMY MODULE SPECIFICATIONS	6-1
6.1	Blank Cover (A1SG60), Dummy Module (A1SG62) Specifications	6-1
6.2	Setting the Occupying Number of Inputs/Outputs for A1SG62	6-1
7.	NAMES OF PARTS AND SETTINGS	7-1 to 7-6
8.	I/O CONNECTION TROUBLESHOOTING	8-1 to 8-3
8.1	Input Circuit Troubleshooting	8-1
8.2	Output Circuit Failures and Corrective Action	8-3
APPENDICES	APP-1 to APP-10	
APPENDIX1 OUTSIDE DIMENSIONS	APP-1	
1.1	Input/Output Modules	APP-1
1.1.1	Terminal base connecting type	APP-1

1.1.2	40-pin connector type	APP – 1
1.1.3	37-pin D sub-connector type 32-input/output module	APP – 2
1.2	Dynamic I/O Module	APP – 3
1.3	A1SJ-56 Input/Output Combination Module	APP – 3
1.4	Dummy Module, Blank Cover	APP – 4
1.4.1	A1SG60 blank cover	APP – 4
1.4.2	A1SG62 dummy module	APP – 4
1.5	Connector/Terminal Block Converter Modules	APP – 5
1.5.1	A6TB36 type connector/terminal block converter module	APP – 5
1.5.2	A6TB54 type connector/terminal block converter module	APP – 5
1.5.3	A6TBX70 type connector/terminal block converter module	APP – 6
1.5.4	Connector/terminal block converter module cable	APP – 7
1.6	40-Pin Connectors	APP – 8
1.6.1	A6CON1 soldering-type 40-pin connector (straight out type), A6CON2 crimp-contact-type 40-pin connector (straight out type)	APP – 8
1.6.2	A6CON3 pressure-displacement-type 40-pin connector (flat cable type)	APP – 8
1.6.3	A6CON4 soldering type 40-pin connector (straight/diagonal out type)	APP – 9
1.7	Pin D Sub-Connectors	APP –10
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)	APP –10
1.7.2	A6CON3E pressure-displacement-type 37-pin D sub-connector (flat cable type)	APP –10

Manuals

The following manuals are also relevant to this product.

Related manuals

- **A1SCPU/A1SCPUC24-R2/A2SCPU User's Manual (IB-66320)**

This manual describes the specifications and functions of A1S, A1SC24-R2 and A2SCPU (S1), and specifications etc. of the memory cassettes, the power supply module and extension base unit.

(Sold separately)

- **A2ASCPU(S1/S30) User's Manual (IB-66455)**

This manual describes the specifications and functions of A2ASCPU(S1/S30) and the specifications of the memory cassettes, the power supply modules and extension base units that can be used with it.

(Sold separately)

- **A1SJHCPU(S8)/A1SHCPU/A2SHCPU(S1) User's Manual (IB-66779)**

This manual describes the specifications and functions of A1SJHCPU(S8), A1SH, and A2SHCPU(S1) and the specifications of the memory cassettes, the power supply modules and extension base units that can be used with it.

(Sold separately)

- **Q2AS(H)CPU(S1) User's Manual (SH-3599)**

This manual describes the performance, functions and handling-related items of the Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU and Q2ASHCPU-S1 and the specifications and handling of the power supplies, memory cards and base units.

(Sold separately)

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

MELSEC-A

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

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

1.1 General Specifications

The followings are specifications common to modules being used.

General Specifications

Item	Specifications			
Operating ambient temperature	0 to 55 °C			
Storage ambient temperature	-20 to 75 °C			
Operating ambient humidity	10 to 90 % RH, no condensation			
Storage ambient humidity	10 to 90 % RH, no condensation			
Vibration resistance	Intermittent vibrations			
	Frequency	Acceleration	Amplitude	Sweep count
	10 to 57 Hz	—	0.075 mm	10 times each for X, Y, Z directions
	57 to 150 Hz	9.8 m/s ²	—	
	Continuous vibrations			Sweep count
	Frequency	Acceleration	Amplitude	—
	10 to 57 Hz	—	0.035 mm	
57 to 150 Hz	4.9 m/s ²	—		
Shock resistance	Conforms to JIS B 3502 and IEC 61131-2 (147 m/s ² , three times each for three orthogonal directions)			
Operating ambience	No corrosive gas should be present			
Operating altitude *3	2000 m (6562ft.) or less			
Installation position	In the control panel			
Overvoltage category *1	II or less			
Pollution level *2	2 or less			
Dielectric withstand voltage	Between all AC external terminal and grounding: 1500VAC for 1 min. Between all DC external terminal and grounding: 500VAC for 1min.			
Noise immunity	By 1500Vp.p of AC type noise voltage, 500Vp.p of DC type noise voltage and 1 μs noise width and 25 to 60 Hz noise frequency.			
Insulation resistance	Between all AC external terminal and grounding: 500VDC, 5Ω or higher measured with insulation resistance tester.			

REMARK

- *1 Indicating a particular distribution board which this machine is to be connected among many boards, situated between public power supply lines and interior machine equipment. Category II is for machines receiving power supply from stationary facilities. For power rating of 300 V or less, its surge tolerance voltage is 2500 V.
- *2 Index indicating level of conductive material generation in the operating ambience. Pollution level 2 is an ambience which generates only non-conductive pollution, except for temporary conduction due to occasional condensation.
- *3 Do not use or store the PLC in the environment where the pressure is higher than the atmospheric pressure at sea level. Otherwise, malfunction may result. To use the PLC in high-pressure environment, contact your nearest Mitsubishi representative.

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

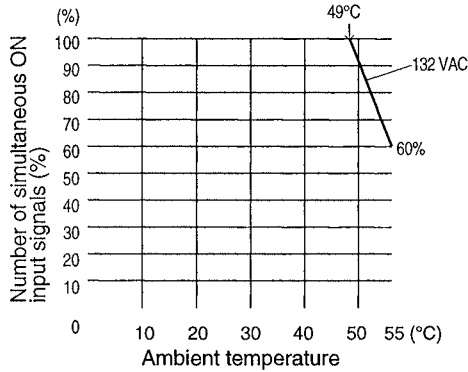
MELSEC-A

1.2 Precaution for Use

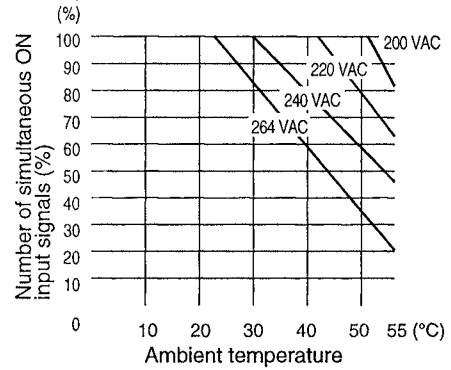
1.2.1 Input module

- (1) The number of signals which can be turned ON simultaneously in an input module varies according to the input voltage and ambient temperature. Select the number of the simultaneous ON signals referring to the following charts.

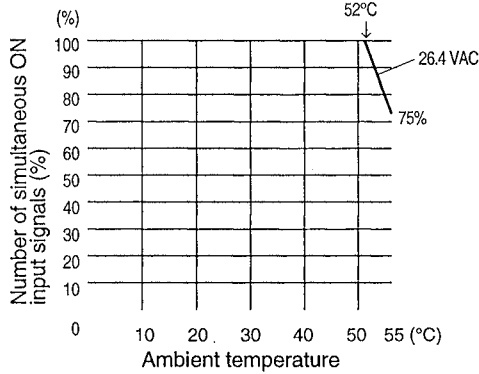
A1SX10, A1SX10EU



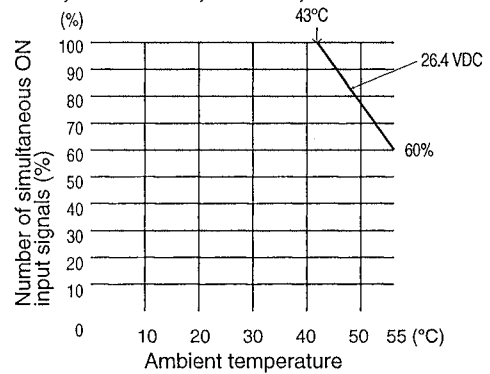
A1SX20, A1SX20EU



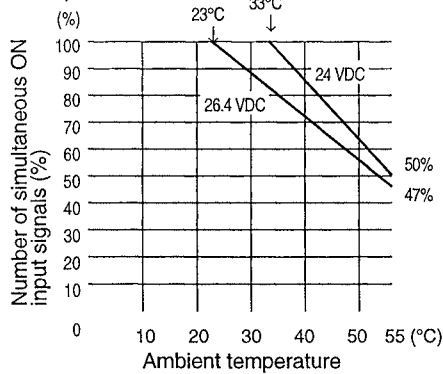
A1SX30



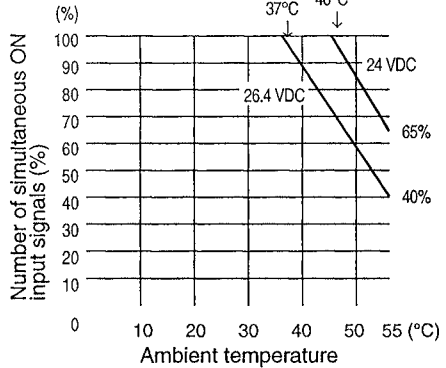
A1SX41, A1SX41-S2, A1SX81, A1SX81-S2



A1SX42, A1SX42-S2



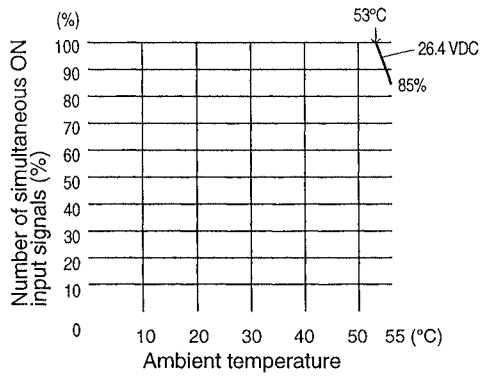
A1SX71



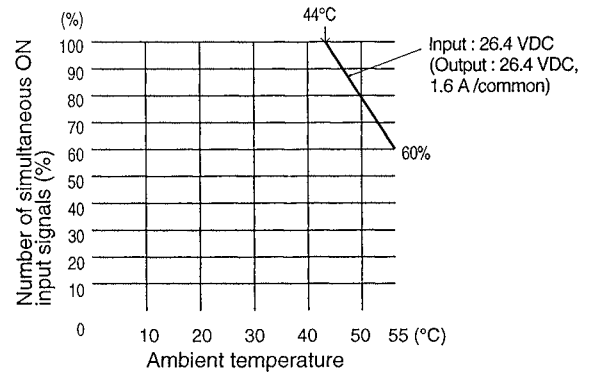
1. GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

MELSEC-A

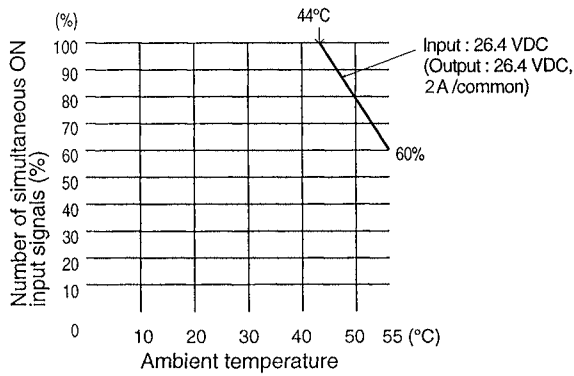
A1SX80-S1



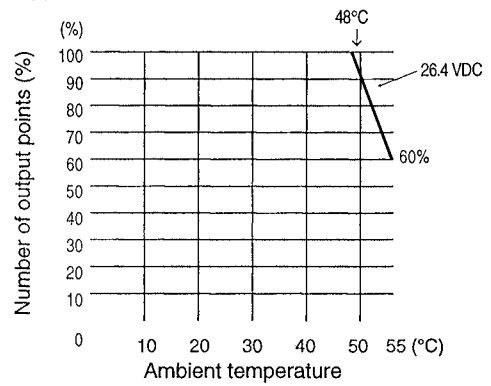
A1SH42, A1SH42-S1



A1SH42P, A1SH42P-S1



A1SJ-56DT



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

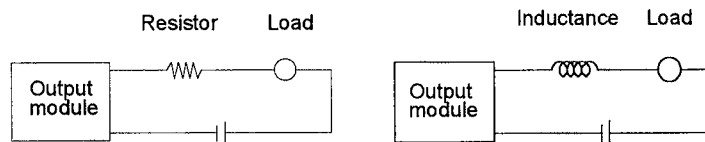
MELSEC-A

1.2.2 Output module

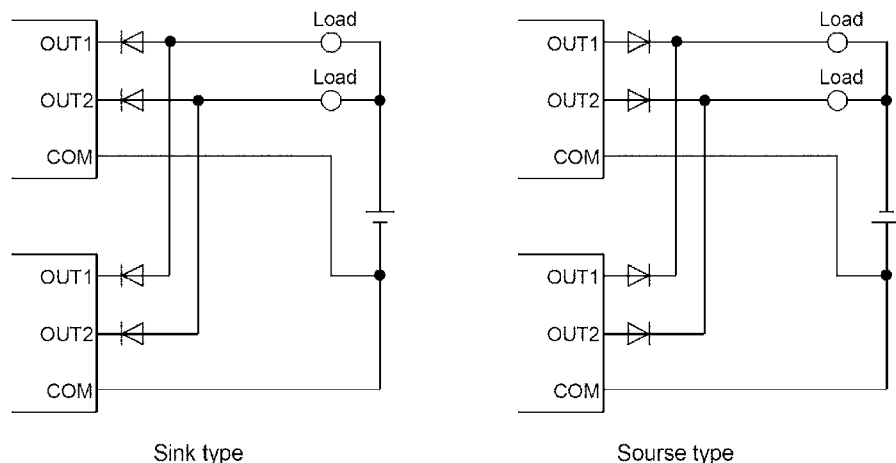
- (1) It is recommended that a triac output module be used with a load that is frequently opened and closed or with a coil load (e.g. an electromagnet) that has a large capacity or a low power factor.

(If a contact output module is used, its service life will be shorter than specified.)
- (2) If an inductive L load is driven by an output module, it must be switched ON for 1 second or longer and switched OFF for 1 second or longer.
- (3) If a counter or timer which has a DC-DC converter as a load is used with an A1SY40, A1SY40P, A1SY41, A1SY41P, A1SY42, or A1SY42P output module, a fault may be caused in the output module due to periodic rush currents when it is turned ON or during operation.

To prevent failure due to rush current, connect a resistor or an inductance to the load in series or use an A1SY50 whose maximum load current is larger.



- (4) Connecting the transistor output modules in parallel may result in failure of the output elements.
If connecting the transistor output modules in parallel, use diodes for the circuit as shown below.



- (5) Fuses installed in output modules cannot be replaced. They are principally designed to protect external wiring if the module outputs are shorted.

Therefore, output modules may not be protected from a short circuit.

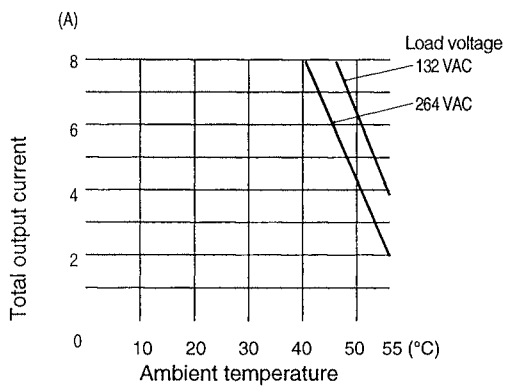
If an output module becomes faulty due to any cause other than a short circuit, its fuse may not function.

- (6) The number of signals which can be turned ON simultaneously in an output module varies according to the output voltage and ambient temperature. Select the number of the simultaneous ON signals by referring to the charts on the next page.

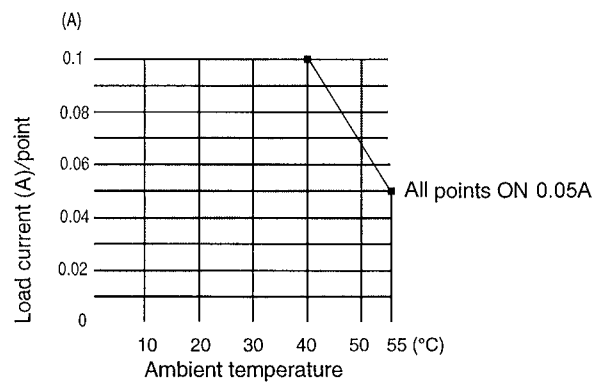
1. GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

MELSEC-A

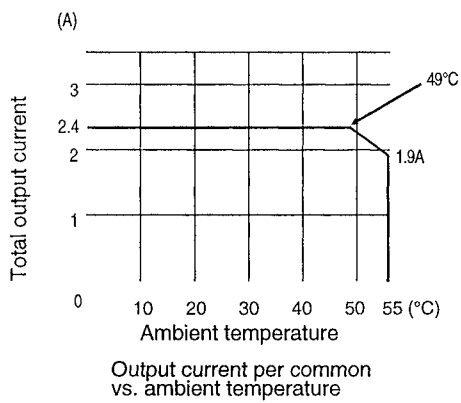
A1SY28A



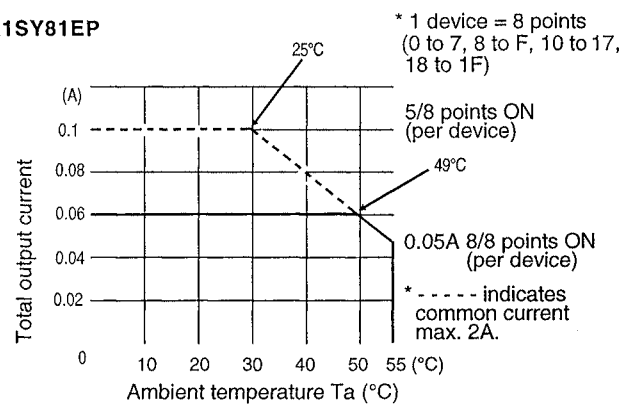
A1S42Y



A1SY28EU



A1SY81EP



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

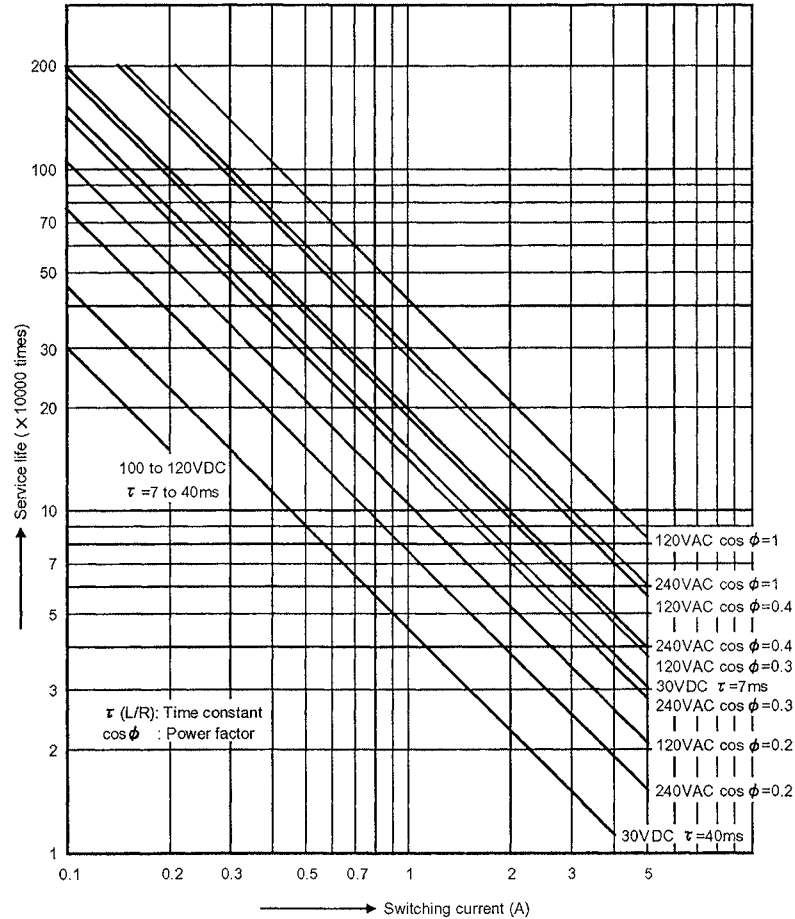
MELSEC-A

(7) Precautions for the use of contact output module.

(a) Relay life of contact output module

Select the appropriate modules, considering the direction given in (1).

Applicable module: A1SY10, A1SJ-56DR, A1SX48Y18



Point

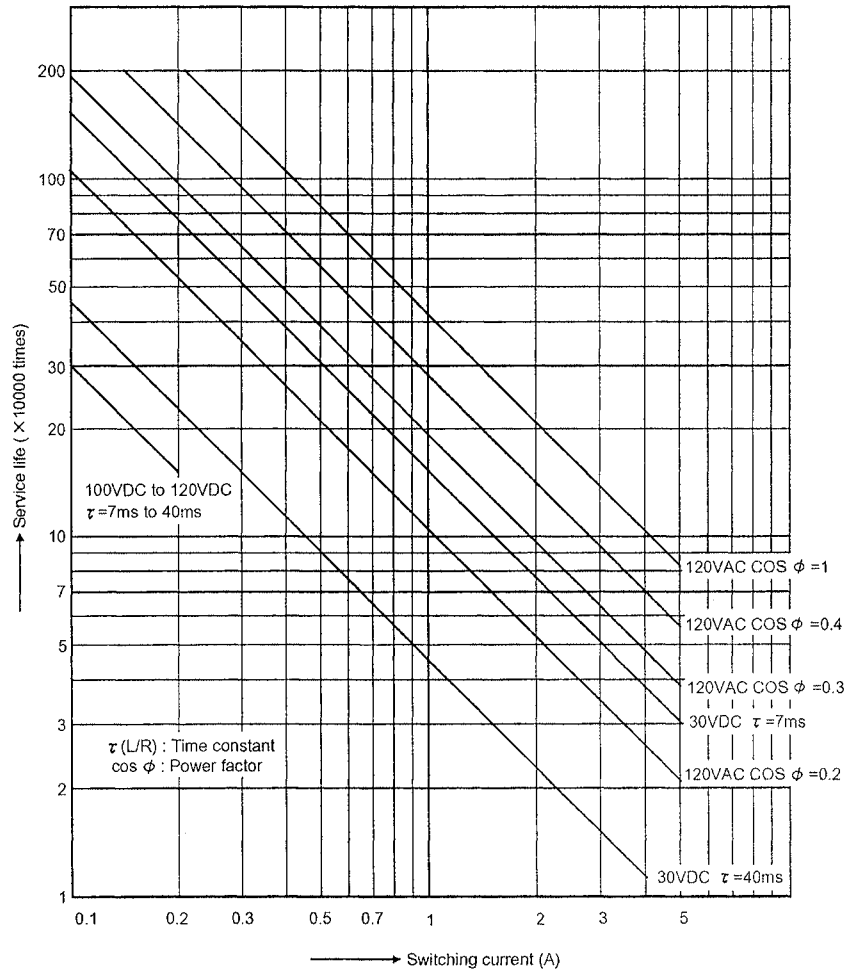
- (1) When using the module for the application in which the relay contact is frequently switched, the relay life span should be considered. Therefore, it is recommended to use a triac output module.
- (2) The relay life curve shows the value based on actual use, which is not guaranteed. Therefore, make sure to allow for a margin of error.
The relay life span differs according to the specifications as follows:

Rated switching voltage, current load	100 thousand operations
200VAC 1.5A, 240VAC 1A (COS ϕ = 0.7)	100 thousand operations
200VAC 1A, 240VAC 0.5A (COS ϕ = 0.35)	100 thousand operations
24VDC 1A, 100VDC 0.1A (L/R=7ms)	100 thousand operations

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

MELSEC-A

Applicable module: A1SY10EU



Point

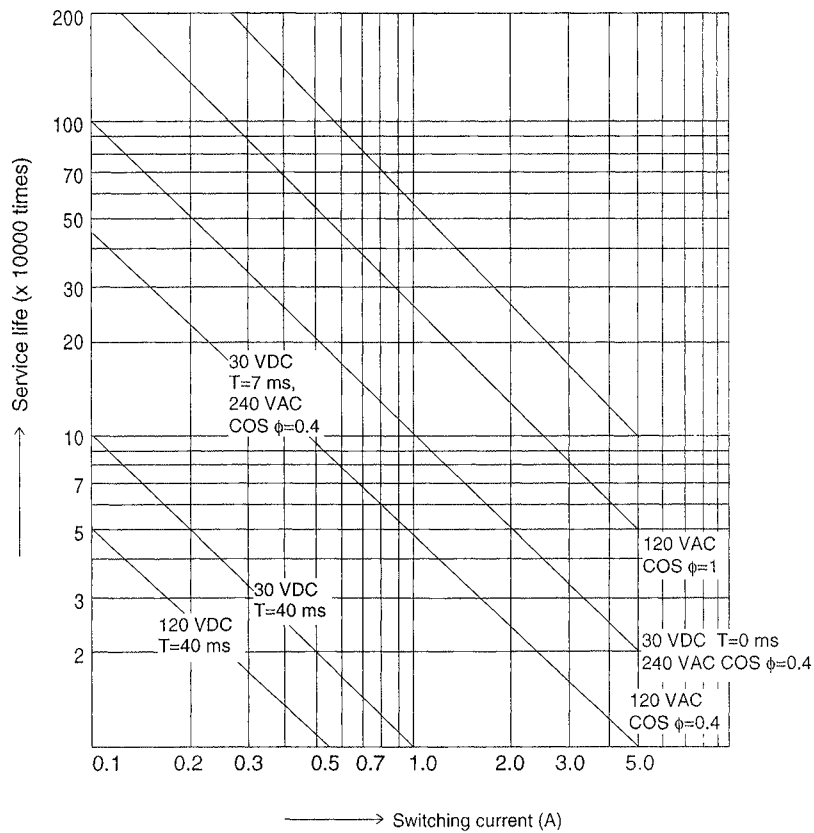
- (1) When using the module for the application in which the relay contact is frequently switched, the relay life span should be considered. Therefore, it is recommended to use a triac output module.
- (2) The relay life curve shows the value based on actual use, which is not guaranteed. Therefore, make sure to allow for a margin of error. The relay life span differs according to the specifications as follows:

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

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

MELSEC-A

Applicable module: A1SY14AEU



Point

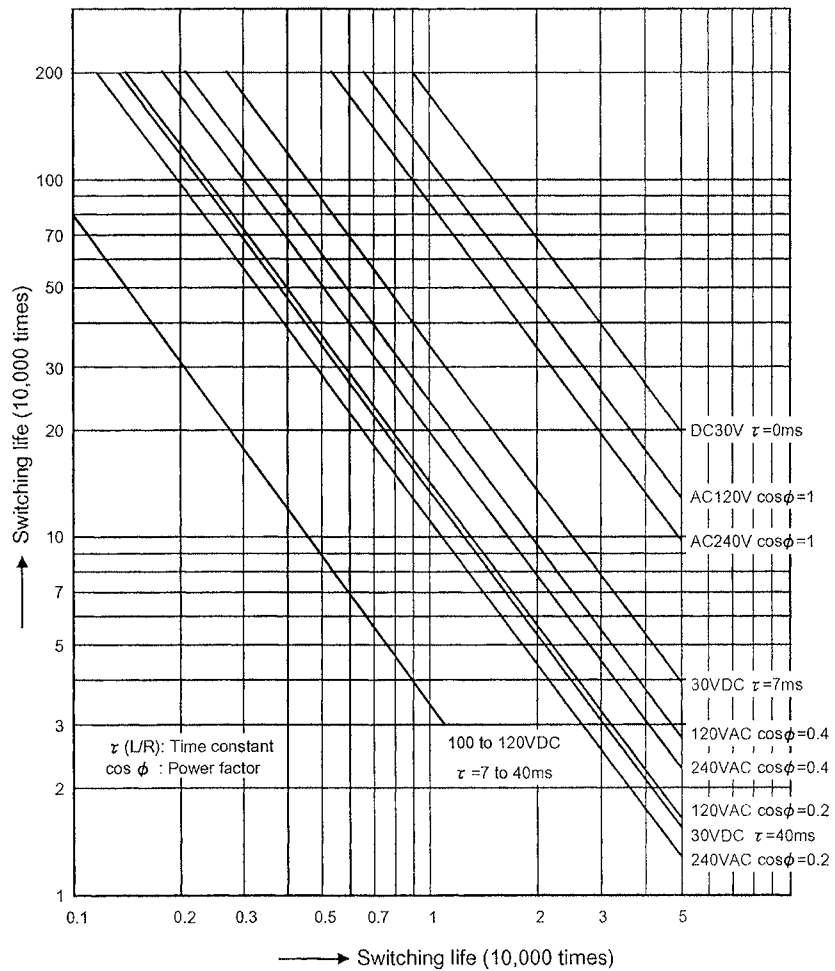
- (1) When using the module for the application in which the relay contact is frequently switched, the relay life span should be considered. Therefore, it is recommended to use a triac output module.
- (2) The relay life curve shows the value based on actual use, which is not guaranteed. Therefore, make sure to allow for a margin of error. The relay life span differs according to the specifications as follows:

Rated switching voltage, current load	200 thousand operations
200VAC 2A, 240VAC 1.8A (COS φ =0.7)	200 thousand operations
200VAC 1.1A, 240VAC 0.9A (COS φ =0.35)	200 thousand operations
24VDC 1.1A, 100VDC 0.1A (L/R=7ms)	200 thousand operations

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

MELSEC-A

Applicable module: A1SY18A, A1SY18AEU



Point

- (1) When using the module for the application in which the relay contact is frequently switched, the relay life span should be considered. Therefore, it is recommended to use a triac output module.
- (2) The relay life curve shows the value based on actual use, which is not guaranteed. Therefore, make sure to allow for a margin of error. The relay life span differs according to the specifications as follows:

Rated switching voltage, current load	200 thousand operations
200VAC 1.5A, 240VAC 1A ($\text{COS } \phi = 0.7$)	200 thousand operations
200VAC 0.75A, 240VAC 0.5A ($\text{COS } \phi = 0.35$)	200 thousand operations
24VDC 1A, 100VDC 0.1A ($L/R=7\text{ms}$)	200 thousand operations

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

(b) Measures against inrush current

Relay life significantly varies depending on its load type the characteristics of its inrush current.

Take following measures since the inrush current may cause contact welding.

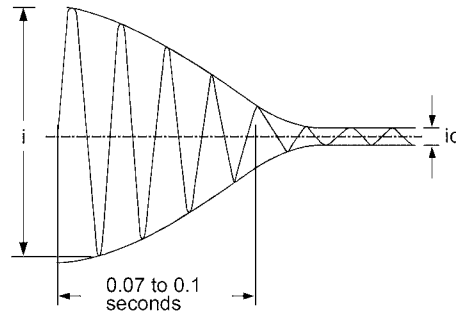
- In case of an increase in inrush current, select a load so that the inrush current will be within the rated current of the module.
- Connect the relay that can sustain inrush current outside the module.

1) Inductive load

Inrush current of inductive load may flow 20 times as large as the rated current depending on a load.

[Load of a solenoid]

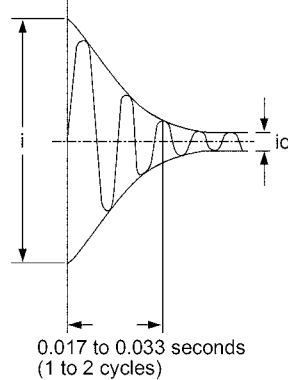
$$i \div i_o \approx 10 \text{ to } 20 \text{ times}$$



i: Inrush current
io: Rated current

[Load of a magnetic contactor]

$$i \div i_o \approx 3 \text{ to } 10 \text{ times}$$



i: Inrush current
io: Rated current

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

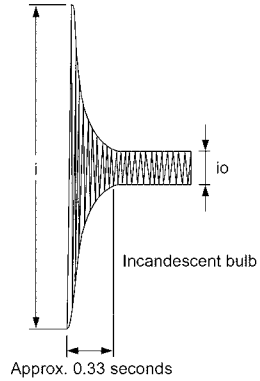
MELSEC-A

2) Load of a lamp

Inrush current 10 times as large as the rated current may flow through the lamp circuit depending on a load.

[Load of an incandescent bulb]

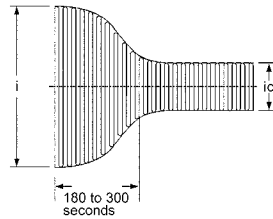
$i \div i_o \cong 3 \text{ to } 10 \text{ times}$



i: Inrush current
io: Rated current

[Load of a mercury lamp]

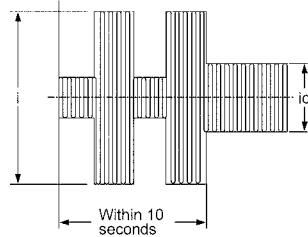
$i \div i_o \cong 3 \text{ times}$



i: Inrush current
io: Rated current

[Load of a fluorescent]

$i \div i_o \cong 5 \text{ to } 10 \text{ times}$



i: Inrush current
io: Rated current

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

MELSEC-A

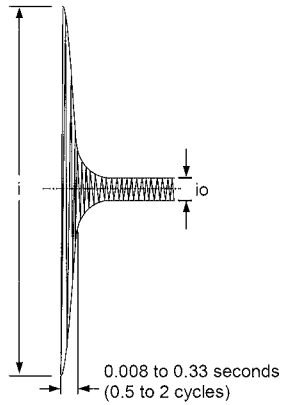
3) Capacitive load

When a load circuit includes such as a capacitor, inrush current 40 times as large as the rated current may flow through the load circuit depending on a load.

Also, pay attention to the wire capacity when the wiring is laid long.

[Capacitive load]

$i \div i_o \approx 20 \text{ to } 40 \text{ times}$



i: Inrush current
i_o: Rated current

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

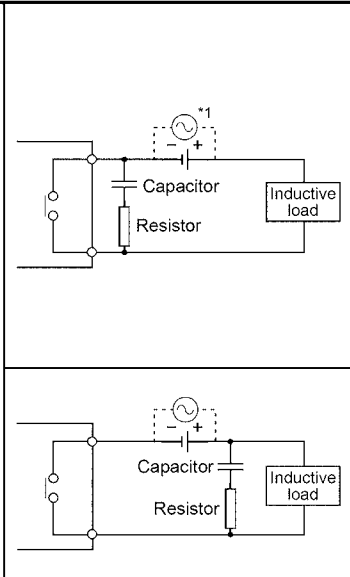
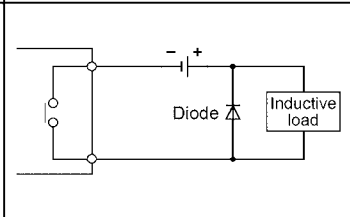
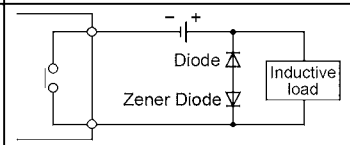
(c) Measures against back EMF

When inductive load such as a magnetic contactor and solenoid is shut off, high back EMF is generated between the contacts and arc discharge occurs.

Especially when the power factor is small, the life shortens due to arc discharge. Therefore, take measures against arc discharge.

The following is four methods to protect a relay contact against back EMF.

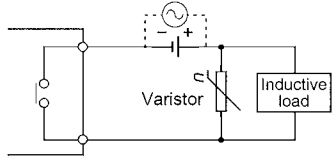
- Capacitor + Resistor method (CR method)
- Diode method
- Diode + Zener diode method
- Varistor method

Circuit example	Method for selecting elements	Remarks
<p>Capacitor + Resistor method (CR method)</p> 	<p>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.</p> <ul style="list-style-type: none"> • Capacitor 0.5 to 1 (μF) against contact current of 1A • Resistor 0.5 to 1 (Ω) against contact voltage of 1V <p>Use a capacitor whose withstanding voltage is 200 to 300V. In AC circuit, use a capacitor having no polarity.</p>	<p>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.</p> <p>*1: 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)</p>
<p>Diode method</p> 	<p>Use a diode whose reverse breakdown voltage is 10 times as large as the circuit voltage or more and whose forward current is equal to or more than the load current.</p>	<p>The recovery time is later than the CR method.</p>
<p>Diode + Zener diode method</p> 	<p>Use zener voltage for the zener diode equal to or more than the power supply voltage.</p>	<p>The diode method is effective when the recovery time is too late.</p>

(To the next page)

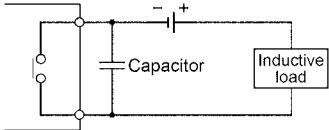
1. GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

MELSEC-A

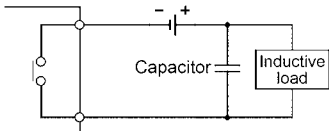
Circuit example	Method for selecting elements	Remarks
<p>Varistor method</p> 	<p>Select a cut voltage (V_c) for the varistor to meet the following condition. Multiply the value by root two for use of AC power.</p> $V_c > \text{Power supply voltage} \times 1.5 \text{ (V)}$ <p>Note that when selecting an element whose V_c is too high, its effect will weaken.</p>	<p>The recovery time delays slightly.</p>

POINT

(1) Avoid providing a protection circuit as shown below.



This circuit is greatly effective to an arc at shut-off. However, since an electric charge has been accumulated in a capacitor while a contact is off, short circuit current of the capacitor flows while the contact is on, which tends to result in contact welding.



This circuit is greatly effective to an arc at shut-off. However, since a charge current of the capacitor flows while the contact is on, which tends to result in contact welding.

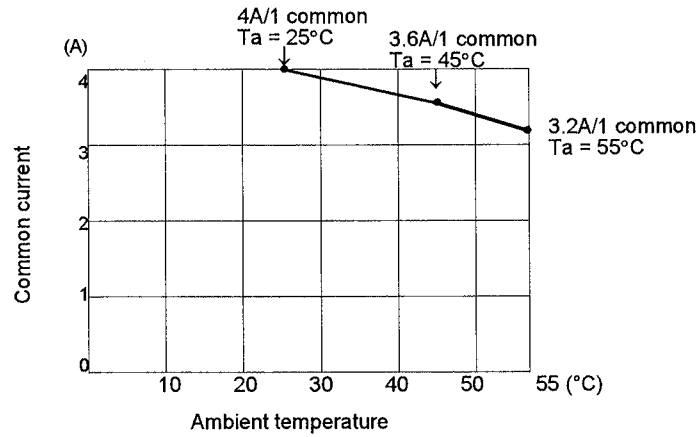
(2) A protection circuit must be provided so that it may be close to a load or contact (module). If their distance is far, the protection circuit cannot show its effect. Provide the circuit so that their distance may be within 50cm (19.69 inch) (rough standard).

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

MELSEC-A

- (8) The common current of the A1SY60 varies according to ambient temperature. Select a common current referring to the chart shown below.

A1SY60 derating curve



1.2.3 Module with protection function

- (1) The overload protection function and overheat protection function of the following modules will be explained below.

(a) A1SY40P, A1SY41P, A1SY42P, A1SH42P, A1SH42P-S1

Function	Description
Common (Overload and overheat protection functions)	<ul style="list-style-type: none"> If an overcurrent keeps flowing due to overload, heat is generated to activate the overheat protective function. Each protection function is designed to protect the internal elements of the module, not the external equipment.
Overload protection function	<ul style="list-style-type: none"> The overload protection function is activated in 1 point increments in terms of 1A to 3A/point The overload protection function returns operation to normal when the load becomes a rated load.
Overheat protection function	<ul style="list-style-type: none"> The overheat protection function is activated in 1 point increments. The overheat protection function automatically returns operation to normal when heat reduces.

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

MELSEC-A

1.2.4 Installation and wiring

- (1) 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) Soldering-type 40-pin connector

Model name : A6CON1 (straight out type),
A6CON4 (straight/diagonal out type)

(b) Crimp-contact-type 40-pin connector

Model name : A6CON2 (straight out type)
Tool : Fujitsu FCN-363T-T005/H
Applicable wire size : AWG #24 to 28

(c) Pressure-displacement-type 40-pin connector

Model name : A6CON3 (flat cable type)
Tool : Fujitsu
FCN-367T-T012/H (locator plate)
FCN-707T-T001/H (cable cutter)
FCN-707T-T101/H (hand press)
Applicable wire size : AWG #28 (twisted)
AWG #30 (single wire)

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

MELSEC-A

- (2) 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 and pressure-displacement connectors must be procured by the user.
- (a) Soldering-type 37-pin D sub-connector
Model name : A6CON1E (straight out type)
- (b) Crimp-contact-type 37-pin D sub-connector
Model name : A6CON2E (straight out type)
Tool : Tyco Electronics AMP
91503-1
Applicable wire size : AWG #20 to 24
- (c) Pressure-displacement-type 37-pin D sub-connector
Model name : A6CON3E (flat cable type)
Tool : Tyco Electronics AMP
768349-1, 768338-1 (die set)
91220-1 (cable cutter)
91085-2 (hand press)
Applicable wire size : AWG #28 (twisted)
AWG #30 (single wire)
- (d) Contact for enquiries about tools for crimp-contact and pressure-displacement-type cables
(The tools cited above are only examples: for more details, enquire at the contact given below Home Page.)
<http://www.tycoelectronics.com/>
- (3) The fixing screw tightening torque should be within the following range.
Module fixing screw (M4 screw) 78.4 to 117.6N•cm

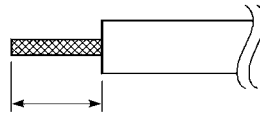
1. GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

MELSEC-A

- (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.

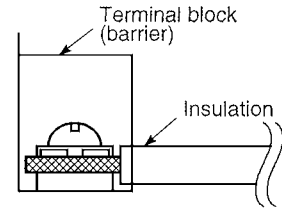
- (a) Bare the end of insulated wires to expose about 6 to 8 mm of naked wire.

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



Bared length: 6 to 8 mm (0.24 to 0.31 in.)

Treatment of end of wire



Connection to the terminal block (viewed from side)

- (b) If twisted wire is used, make sure that it does not unravel.

- (5) 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

	Type
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

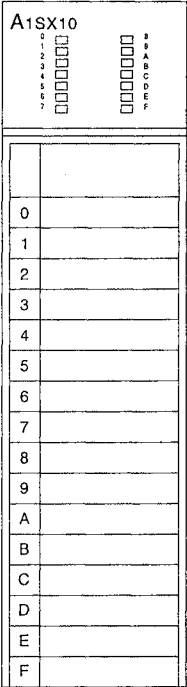
- (6) Precaution when Connecting the Uninterruptible Power Supply (UPS)
Use a UPS which employs the constant inverter power supply method with 5 % or less voltage fluctuation.
Do not use a UPS with the constant commercial power supply method.

2. INPUT MODULE SPECIFICATIONS

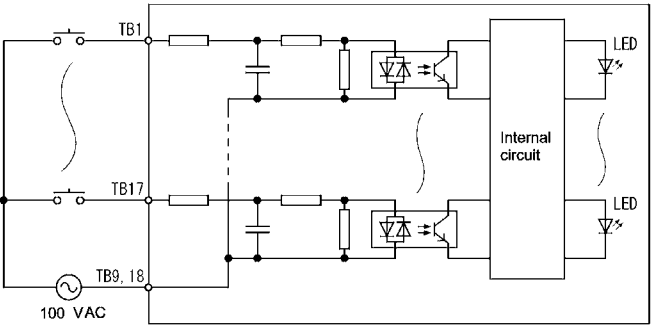
MELSEC-A

2. INPUT MODULE SPECIFICATIONS

2.1 A1SX10 AC Input Module

Model		AC Input Module	
Specifications		A1SX10	Appearance
Number of input points		16 points	
Isolation method		Photocoupler	
Rated input voltage		100 to 120 VAC 50/60 Hz	
Input voltage distortion factor		5% or less (See section 1.2 (13))	
Rated input current		Approx. 6 mA (100 VAC 60 Hz)	
Operating voltage range		85 to 132 VAC (50/60 Hz $\pm 5\%$)	
Max. simultaneous input points		100% simultaneously ON (at 110 VAC) 60% simultaneously ON (at 132 VAC)	
Inrush current		Max. 200 mA, within 1 ms (132 VAC)	
ON voltage/ON current		80 VAC or higher/5 mA or higher	
OFF voltage/OFF current		30 VAC or lower/1.4 mA or lower	
Input impedance		Approx. 18 k Ω (60 Hz), Approx. 21 k Ω (50 Hz)	
Response time	OFF \rightarrow ON	20 ms or less (100 VAC 60 Hz)	
	ON \rightarrow OFF	35 ms or less (100 VAC 60 Hz)	
Common terminal arrangement		16 points/common (common terminals: TB9, TB18)	
Operating indicator		ON state is indicated (LEDs)	
External connections		20-point terminal block connector (M3.5 x 7 screws)	
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)	
Applicable solderless terminals		R1.25-3.5, R2-3 RAV1.25-3.5, RAV2-3.5	
Accessories		None	
Internal current consumption (5 VDC)		50 mA (TYP, all points ON)	
Weight kg		0.21	

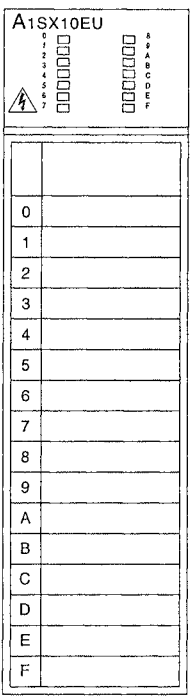
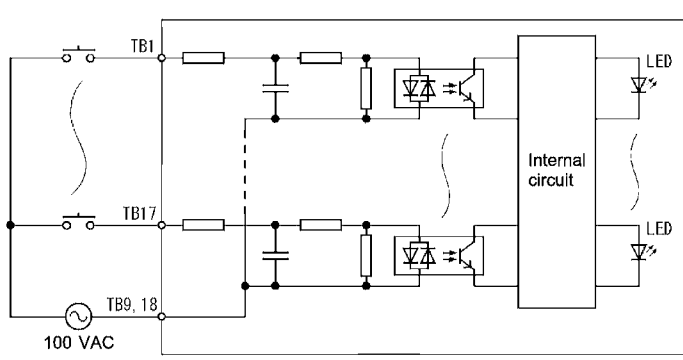
External Connections		
Terminal No.	Signal Name	
TB1	X00	
TB2	X01	
TB3	X02	
TB4	X03	
TB5	X04	
TB6	X05	
TB7	X06	
TB8	X07	
TB9	COM	
TB10	X08	
TB11	X09	
TB12	X0A	
TB13	X0B	
TB14	X0C	
TB15	X0D	
TB16	X0E	
TB17	X0F	
TB18	COM	
TB19	Vacant	
TB20	Vacant	



2. INPUT MODULE SPECIFICATIONS

MELSEC-A

2.2 A1SX10EU AC Input Module

Model		AC Input Module		Appearance
Specifications		A1SX10EU		
Number of input points	16 points			
Insulation method	Photocoupler			
Rated input voltage	100 to 120 VAC 50/60 Hz			
Input voltage distortion factor	5% or less (See section 1.2 (13))			
Rated input current	Approx. 7 mA (120 VAC 60 Hz)			
Operating voltage range	85 to 132 VAC (50/60 Hz ±5%)			
Max. simultaneous input points	100% simultaneously ON			
Inrush current	Max. 200 mA, within 1 ms (132 VAC)			
ON voltage/ON current	80 VAC or higher/5 mA or higher			
OFF voltage/OFF current	30 VAC or lower/1.4 mA or lower			
Input impedance	Approx. 18 kΩ (60 Hz), Approx. 21 kΩ (50 Hz)			
Response time	OFF → ON	20 ms or less (100 VAC 60 Hz)		
	ON → OFF	35 ms or less (100 VAC 60 Hz)		
Common terminal arrangement	16 points/common (common terminals: TB9, TB18)			
Operating indicator	ON state is indicated (LEDs)			
External connections	20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			
Applicable crimp terminals	RAV1.25-3.5			
Accessories	None			
Insulation withstand voltage	1780 VAC rms/3 cycle (altitude 2,000 m)			
Insulation resistor	10 MΩ or higher at insulation resistance tester			
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
			TB5	X04
			TB6	X05
			TB7	X06
			TB8	X07
			TB9	COM
			TB10	X08
			TB11	X09
			TB12	X0A
			TB13	X0B
			TB14	X0C
			TB15	X0D
			TB16	X0E
			TB17	X0F
			TB18	COM
			TB19	Vacant
TB20	Vacant			

2. INPUT MODULE SPECIFICATIONS

MELSEC-A

2.3 A1SX20 AC Input Module

Model		AC Input Module																																	
Specifications		A1SX20																																	
Number of input points	16 points	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>A1SX20</p> </div> <div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>0</td><td></td></tr> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td></td></tr> <tr><td>6</td><td></td></tr> <tr><td>7</td><td></td></tr> <tr><td>8</td><td></td></tr> <tr><td>9</td><td></td></tr> <tr><td>A</td><td></td></tr> <tr><td>B</td><td></td></tr> <tr><td>C</td><td></td></tr> <tr><td>D</td><td></td></tr> <tr><td>E</td><td></td></tr> <tr><td>F</td><td></td></tr> </table> </div> </div>		0		1		2		3		4		5		6		7		8		9		A		B		C		D		E		F	
0																																			
1																																			
2																																			
3																																			
4																																			
5																																			
6																																			
7																																			
8																																			
9																																			
A																																			
B																																			
C																																			
D																																			
E																																			
F																																			
Isolation method	Photocoupler																																		
Rated input voltage	200 to 240 VAC 50/60 Hz																																		
Input voltage distortion factor	5% or less (See section 1.2 (13))																																		
Rated input current	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)																																		
Inrush current	Max. 500 mA, within 1 ms (264 VAC)																																		
ON voltage/ON current	80 VAC or higher/4 mA or higher																																		
OFF voltage/OFF current	30 VAC or lower/1 mA or lower																																		
Input impedance	Approx. 22 kΩ (60 Hz), Approx. 27 kΩ (50 Hz)																																		
Response time	OFF → ON	30 ms or less (200 VAC 60 Hz)																																	
	ON → OFF	55 ms or less (200 VAC 60 Hz)																																	
Common terminal arrangement	16 points/common (common terminals: TB9, TB18)																																		
Operating indicator	ON state is indicated (LEDs)																																		
External connections	20-point terminal block connector (M3.5 x 7 screws)																																		
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)																																		
Applicable solderless terminals	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5																																		
Accessories	None																																		
Internal current consumption (5 VDC)	50 mA (TYP, all points ON)																																		
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	COM	
TB10	X08	
TB11	X09	
TB12	X0A	
TB13	X0B	
TB14	X0C	
TB15	X0D	
TB16	X0E	
TB17	X0F	
TB18	COM	
TB19	Vacant	
TB20	Vacant	

2. INPUT MODULE SPECIFICATIONS

MELSEC-A

2.4 A1SX20EU AC Input Module

Model		AC Input Module		
Specifications		A1SX20EU		
Number of input points	16 points		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>A1SX20EU</p> </div> <div> </div> </div>	
Insulation method	Photocoupler			
Rated input voltage	200 to 240 VAC 50/60 Hz			
Input voltage distortion factor	5% or less (See section 1.2 (13))			
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			
OFF voltage/OFF current	30 VAC or lower/1 mA or lower			
Input impedance	Approx. 22 kΩ (60 Hz), Approx. 27 kΩ (50 Hz)			
Response time	OFF → ON	30 ms or less (200 VAC 60 Hz)		
	ON → OFF	55 ms or less (200 VAC 60 Hz)		
Common terminal arrangement	16 points/common (common terminals: TB9, TB18)			
Operating indicator	ON state is indicated (LEDs)			
External connections	20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			
Applicable crimp terminals	RAV1.25-3.5			
Accessories	None			
Insulation withstand voltage	2830 VAC rms/3 cycle (altitude 2,000 m)			
Insulation resistor	10 MΩ or higher at insulation resistance tester			
Noise immunity	IEC801-4:1 kV			
Internal current consumption (5 VDC)	50 mA (TYP, all points ON)			
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	COM
TB10	X08
TB11	X09
TB12	X0A
TB13	X0B
TB14	X0C
TB15	X0D
TB16	X0E
TB17	X0F
TB18	COM
TB19	Vacant
TB20	Vacant

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

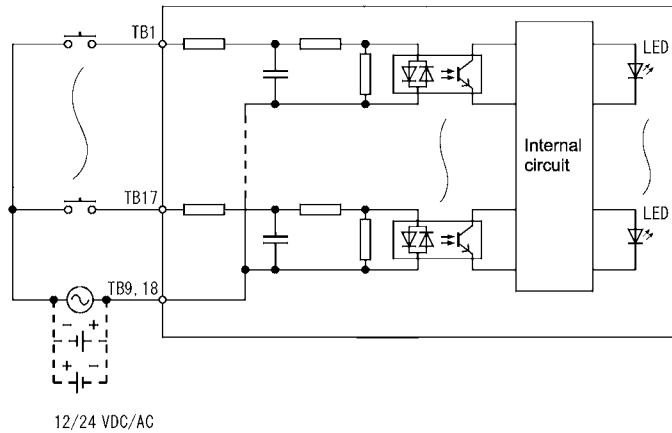
2. INPUT MODULE SPECIFICATIONS

MELSEC-A

2.5 A1SX30 DC/AC Input Module

Specifications		Model		DC/AC Input Module		Appearance
		A1SX30				
Number of input points		16 points				
Isolation method		Photocoupler				
Rated input voltage		12/24 VDC		12/24 VAC 50/60 Hz		
Rated input current		4 mA (12 VDC/VAC), 8.5 mA (24 VDC/VAC)				
Operating voltage range		10.2 to 26.4 VDC (ripple: less than 5%)		10.2 to 26.4 VAC (50/60 Hz ±5%)		
Max. simultaneous input points		75% simultaneously ON (at 26.4 VDC)				
ON voltage/ON current		7 VDC/AC or higher/2 mA or higher				
OFF voltage/OFF current		2.7 VDC/AC or lower/0.7 mA or lower				
Input impedance		Approx. 2.7 kΩ				
Response time	OFF → ON	20 ms or less (12/24 VDC)		25 ms or less (12/24 VAC 60Hz)		
	ON → OFF	20 ms or less (12/24 VDC)		20 ms or less (12/24 VAC 60Hz)		
Common terminal arrangement		16 points/common (common terminals: TB9, TB18)				
Operating indicator		ON state is indicated (LEDs)				
External connections		20-point terminal block connector (M3.5 x 7 screws)				
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)				
Applicable solderless terminals		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5				
Accessories		None				
Internal current consumption (5 VDC)		50 mA (TYP, all points ON)				
Weight kg		0.2				

External Connections

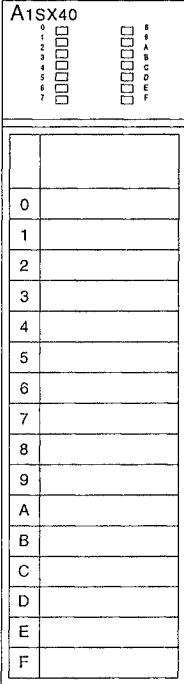


Terminal No.	Signal Name
TB1	X00
TB2	X01
TB3	X02
TB4	X03
TB5	X04
TB6	X05
TB7	X06
TB8	X07
TB9	COM
TB10	X08
TB11	X09
TB12	X0A
TB13	X0B
TB14	X0C
TB15	X0D
TB16	X0E
TB17	X0F
TB18	COM
TB19	Vacant
TB20	Vacant

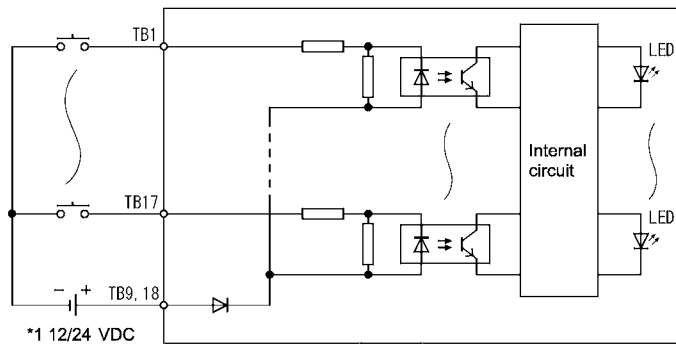
2. INPUT MODULE SPECIFICATIONS

MELSEC-A

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

Model		DC Input Module (Sink Type)			Appearance
		A1SX40	A1SX40-S1	A1SX40-S2	
Specifications					
Number of input points		16 points			
Isolation method		Photocoupler			
Rated input voltage		12 VDC	24 VDC	24 VDC	
Rated input current		Approx. 3 mA	Approx. 7 mA	Approx. 7 mA	
Operating voltage range		10.2 to 26.4 VDC (ripple: less than 5%)		19.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultaneous input points		100% simultaneously ON (at 26.4 VDC)			
ON voltage/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	
OFF voltage/OFF current		4 VDC or lower/1 mA or lower	6.5 VDC or lower/1.7 mA or lower		
Input resistance		Approx. 3.3 kΩ			
Re-sponse time	OFF → ON	10 ms or less (24 VDC)	0.1 ms or less (24 VDC)	10 ms or less (24 VDC)	
	ON → OFF	10 ms or less (24 VDC)	0.2 ms or less (24 VDC)	10 ms or less (24 VDC)	
Common terminal arrangement		16 points/common (common terminals: TB9, TB18)			
Operating indicator		ON state is indicated (LEDs)			
External connections		20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)			
Applicable solderless terminals		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5			
Accessories		None			
Internal current consumption (5 VDC)		50 mA (TYP, all points ON)			
Weight kg		0.2			

External Connections



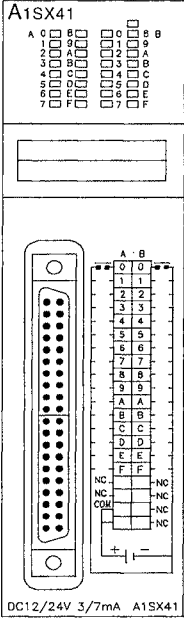
*1: A1SX40-S1/S2 is 24 VDC only.

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

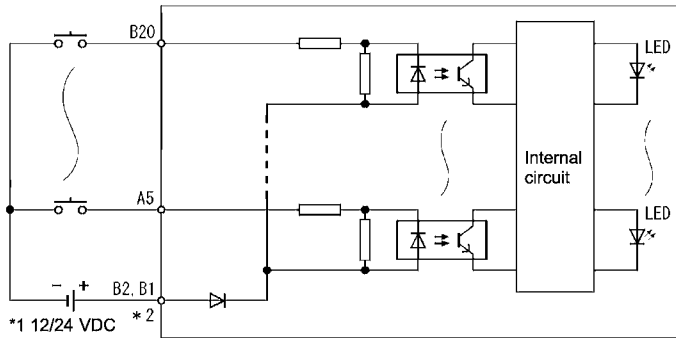
2. INPUT MODULE SPECIFICATIONS

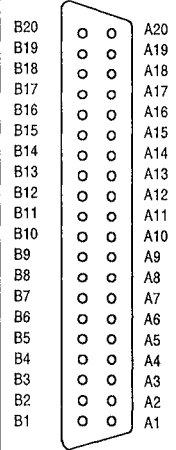
MELSEC-A

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

Model	DC Input Module (Sink Type)			Appearance	
	A1SX41	A1SX41-S1	A1SX41-S2		
Specifications					
Number of input points	32 points				
Isolation method	Photocoupler				
Rated input voltage	12 VDC	24 VDC	24 VDC		
Rated input current	Approx. 3 mA	Approx. 7 mA	Approx. 7 mA		
Operating voltage range	10.2 to 26.4 VDC (ripple: less than 5%)		19.2 to 26.4 VDC (ripple: less than 5%)		
Max. simultaneous input points	60% (20 points/common) simultaneously ON (at 26.4 VDC)				
ON voltage/ON current	8 VDC or higher/ 2 mA or higher	17 VDC or higher/ 4.5 mA or higher	14 VDC or higher/ 3.5 mA or higher		
OFF voltage/OFF 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		
Input resistance	Approx. 3.3 kΩ				
Response time	OFF → ON	10 ms or less (24 VDC)	0.3 ms or less (24 VDC)		10 ms or less (24 VDC)
	ON → OFF	10 ms or less (24 VDC)	0.3 ms or less (24 VDC)		10 ms or less (24 VDC)
Common terminal arrangement	32 points/common (common terminals: B1, B2)				
Operating indicator	ON state is indicated (LEDs)				
External connections	40-pin connector				
Applicable wire size	0.3 mm ²				
Accessories	Connector (1 pce.) for external wiring (soldering type)				
Internal current consumption (5 VDC)	80 mA (TYP, all points ON)	120 mA (TYP, all points ON)	80 mA (TYP, all points ON)		
Weight kg	0.21				

External Connections



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

2. INPUT MODULE SPECIFICATIONS

MELSEC-A

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

Specifications	Model	DC Input Module (Sink Type)			Appearance
		A1SX42	A1SX42-S1	A1SX42-S2	
Number of input points	64 points				
Isolation method	Photocoupler				
Rated input voltage	12 VDC	24 VDC	24 VDC		
Rated input current	Approx. 2 mA	Approx. 5 mA	Approx. 5 mA		
Operating voltage range	10.2 to 26.4 VDC (ripple: less than 5%)		19.2 to 26.4 VDC (ripple: less than 5%)		
Max. simultaneous input points	50% (16 points/common)		simultaneously ON (at 24 VDC)		
ON voltage/ON current	8 VDC or higher/ 2 mA or higher		18.5 VDC or higher/ 3.5 mA or higher	17.5 VDC or higher/ 3.5 mA or higher	
OFF voltage/OFF 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 less (24 VDC)	0.3 mA or less (24 VDC)	10 ms or less (24 VDC)	
	ON → OFF	10 ms or less (24 VDC)	0.3 mA or less (24 VDC)	10 ms or less (24 VDC)	
Common terminal arrangement	32 points/common (common terminals: 1B1, 1B2, 2B1, 2B2)				
Operating indicator	ON state is indicated (LEDs), 32-bit indication by switch				
External connections	40-pin connector				
Applicable wire size	0.3 mm ²				
Accessories	Connectors (2 pces.) for external wiring (soldering type)				
Internal current consumption (5 VDC)	90 mA (TYP, all points ON)	160 mA (TYP, all points ON)	90 mA (TYP, all points ON)	90 mA (TYP, all points ON)	
Weight kg	0.28				

External Connections

Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)
1B20	X00	1A20	X10
1B19	X01	1A19	X11
1B18	X02	1A18	X12
1B17	X03	1A17	X13
1B16	X04	1A16	X14
1B15	X05	1A15	X15
1B14	X06	1A14	X16
1B13	X07	1A13	X17
1B12	X08	1A12	X18
1B11	X09	1A11	X19
1B10	X0A	1A10	X1A
1B9	X0B	1A9	X1B
1B8	X0C	1A8	X1C
1B7	X0D	1A7	X1D
1B6	X0E	1A6	X1E
1B5	X0F	1A5	X1F
1B4	Vacant	1A4	Vacant
1B3	Vacant	1A3	Vacant
1B2	COM1	1A2	Vacant
1B1	COM1	1A1	Vacant

Pin No.	Signal Name (SH)	Pin No.	Signal Name (SH)
2B20	X20	2A20	X30
2B19	X21	2A19	X31
2B18	X22	2A18	X32
2B17	X23	2A17	X33
2B16	X24	2A16	X34
2B15	X25	2A15	X35
2B14	X26	2A14	X36
2B13	X27	2A13	X37
2B12	X28	2A12	X38
2B11	X29	2A11	X39
2B10	X2A	2A10	X3A
2B9	X2B	2A9	X3B
2B8	X2C	2A8	X3C
2B7	X2D	2A7	X3D
2B6	X2E	2A6	X3E
2B5	X2F	2A5	X3F
2B4	Vacant	2A4	Vacant
2B3	Vacant	2A3	Vacant
2B2	COM2	2A2	Vacant
2B1	COM2	2A1	Vacant

Front view

*1: A1SX42-S1/S2 is 24 VDC only.

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

*3: 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.

2. INPUT MODULE SPECIFICATIONS

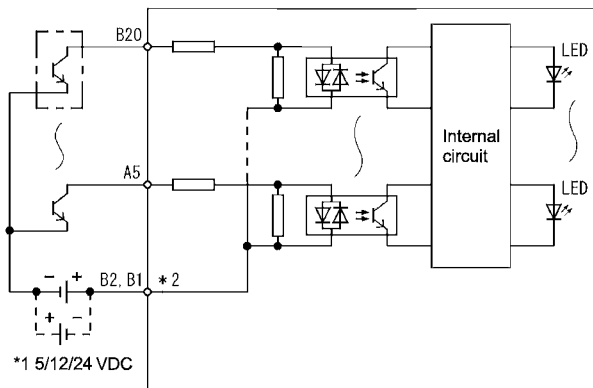
MELSEC-A

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

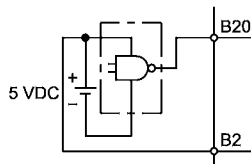
Specifications	DC Input Module (Sink/Source Common Type)			Appearance
	A1SX71			
Number of input points	32 points			<p>A1SX71</p> <p>DC4.5/13.2V A1SX71</p>
Isolation method	Photocoupler			
Rated input voltage	5 VDC	12 VDC	24 VDC *1	
Rated input current	1.2 mA	3.3 mA	7 mA	
Operating voltage range	4.5 to 26.4 VDC (ripple: less than 5%)			
Max. simultaneous input points	65% (20 points/common) simultaneously ON (at 24 VDC)			
ON voltage/ON current	3.5 VDC or higher/1 mA or higher			
OFF voltage/OFF current	1.0 VDC or lower/0.1 mA or lower			
Input resistance	Approx. 3.5 kΩ			
Response time	OFF → ON	1.5 ms or less		
	ON → OFF	3 ms or less		
Common terminal arrangement	32 points/common (common terminals: B1, B2)			
Operating indicator	ON state is indicated (LEDs)			
External connections	40-pin connector			
Applicable wire size	0.3 mm ²			
Accessories	Connector (1 pce.) for external wiring (soldering type)			
Internal current consumption (5 VDC)	75 mA (TYP, all points ON) (0.08A is shown on the rating plate of the module.)			
Weight kg	0.19			

External Connections

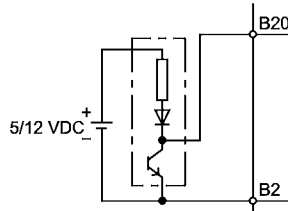
Open collector (Sink)



TTL, LS-TTL, CMOS buffer (Sink)



Sensor (Source)



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

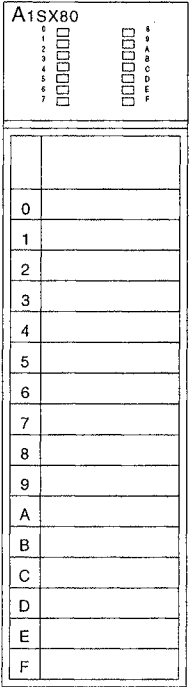
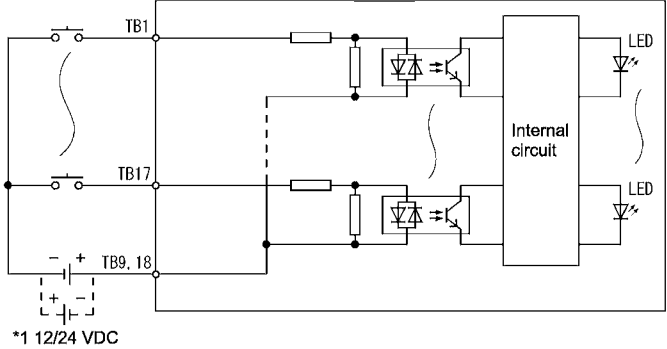
*1: 24 VDC can be used with hardware version B and later versions.

*2: The arrangement of pins A and B shown above is the opposite of the arrangement of pins of the connector on the module.

2. INPUT MODULE SPECIFICATIONS

MELSEC-A

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

Model	DC Input Module (Sink/Source Common Type)			Appearance	
	A1SX80	A1SX80-S1	A1SX80-S2		
Number of input points	16 points				
Isolation method	Photocoupler				
Rated input voltage	12 VDC	24 VDC	24 VDC		
Rated input current	Approx. 3 mA	Approx. 7 mA	Approx. 7 mA		
Operating voltage range	10.2 to 26.4 VDC (ripple: less than 5%)		19.2 to 26.4 VDC (ripple: less than 5%)		
Max. simultaneous input points	100% simultaneously ON (at 26.4 VDC)	85% simultaneously ON (at 26.4 VDC)	100% simultaneously ON (at 26.4 VDC)		
ON voltage/ON current	8 VDC or higher/2 mA or higher	17 VDC or higher/5 mA or higher	13 VDC or higher/3.5 mA or higher		
OFF voltage/OFF current	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		
Input resistance	Approx. 3.3 kΩ				
Response time	OFF → ON	10 ms or less (24 VDC)	0.4 ms or less (24 VDC)		10 ms or less (24 VDC)
	ON → OFF	10 ms or less (24 VDC)	0.5 ms or less (24 VDC)		10 ms or less (24 VDC)
Common terminal arrangement	16 points/common (common terminals: TB9, TB18)				
Operating indicator	ON state is indicated (LEDs)				
External connections	20-point terminal block connector (M3.5 x 7 screws)				
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)				
Applicable solderless terminals	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5				
Accessories	None				
Internal current consumption (5 VDC)	50 mA (TYP, all points ON)				
Weight kg	0.2				
External Connections					
 <p>*1 12/24 VDC</p>				Terminal No.	Signal Name
				TB1	X00
				TB2	X01
				TB3	X02
				TB4	X03
				TB5	X04
				TB6	X05
				TB7	X06
				TB8	X07
				TB9	COM
				TB10	X08
				TB11	X09
				TB12	X0A
				TB13	X0B
				TB14	X0C
				TB15	X0D
				TB16	X0E
				TB17	X0F
				TB18	COM
				TB19	Vacant
TB20	Vacant				
*1: A1SX80-S1/S2 is 24 VDC only.					

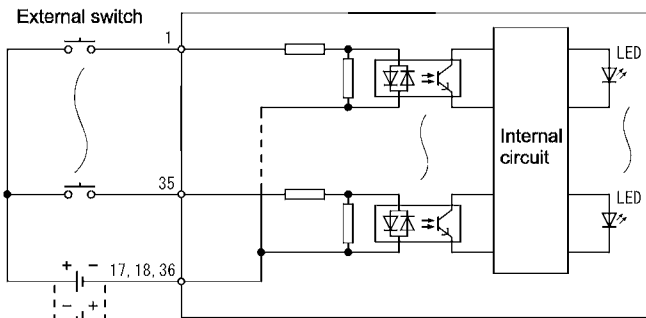
2. INPUT MODULE SPECIFICATIONS

MELSEC-A

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

Specifications	DC Input Module (Sink/Source Common Type)			Appearance
	A1SX81	A1SX81-S2		
Number of input points	32 points			
Isolation method	Photocoupler			
Rated input voltage	12 VDC	24 VDC	24 VDC	
Rated input current	Approx. 3 mA	Approx. 7 mA	Approx. 7 mA	
Operating voltage range	10.2 to 26.4 VDC (ripple: less than 5%)		19.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultaneous input points	60% simultaneously ON (at 26.4 VDC)			
ON voltage/ON current	8 VDC or higher/2 mA or higher		13 VDC or higher/3.5 mA or higher	
OFF voltage/OFF current	4 VDC or lower/1 mA or lower		6 VDC or lower/1.7 mA or lower	
Input resistance	Approx. 3.3 kΩ			
Response time	OFF → ON	10 ms or less (24 VDC)		
	ON → OFF	10 ms or less (24 VDC)		
Common terminal arrangement	32 points/common (common terminals: 17, 18, 36)			
Operating indicator	ON state is indicated (LEDs)			
External connections	37-pin D sub-connector			
Applicable wire size	0.3 mm ²			
Accessories	Connector (1 pce.) for external wiring (soldering type)			
Internal current consumption (5 VDC)	80 mA (TYP, all points ON)			
Weight kg	0.24			

External Connections



*1 12/24 VDC

*1: A1SX81-S2 is 24 VDC only.

Pin Arrangement	Pin No.	Signal Name	Pin No.	Signal Name
	1	X00	9	X10
	20	X01	28	X11
	2	X02	10	X12
	21	X03	29	X13
	3	X04	11	X14
	22	X05	30	X15
	24	X06	12	X16
	23	X07	31	X17
	5	X08	13	X18
	24	X09	32	X19
	6	X0A	14	X1A
	25	X0B	33	X1B
	7	X0C	15	X1C
	26	X0D	34	X1D
	8	X0E	16	X1E
	27	X0F	35	X1F
	17	COM	37	Vacant
	36	COM	19	Vacant
	18	COM		

2. INPUT MODULE SPECIFICATIONS

MELSEC-A

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

Model		DC Input Module (Sink/Source Common Type)	
		A1SX82-S1	Appearance
Specifications			
Number of input points		64 points	
Isolation method		Photocoupler	
Rated input voltage		24 VDC	
Rated input current		Approx. 5 mA	
Operating voltage range		19.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultaneous 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/OFF current		3 VDC or lower/0.45 mA or lower	
Input resistance		Approx. 4.7 kΩ	
Response time	OFF → ON	0.3 ms or less (24 VDC)	
	ON → OFF	0.3 ms or less (24 VDC)	
Common terminal arrangement		32 points/common (common terminals: 1B1, 1B2, 2B1, 2B2)	
Operating indicator		ON state is indicated (LEDs), 32-bit indication by switch	
External connections		40-pin connector	
Applicable wire size		0.3 mm ²	
Accessories		Connectors (2 pcs.) for external wiring (soldering type)	
Internal current consumption (5 VDC)		160 mA (TYP, all points ON)	
Weight kg		0.28	

External Connections

The diagram illustrates the internal wiring of the input module. It features two identical channels, labeled 1 and 2. Each channel has an external switch connected to pins 1B20/2B20 and 1A5/2A5. The switches are connected to internal relays and logic components. A common ground is provided by pins 1B1/2B1 and 1B2/2B2. A 24V DC source is connected to the input lines. An 'Indication switching *2' switch is used to select between the left and right sides of the module, which are connected to LEDs. The internal circuitry includes relays and logic gates.

Pin Arrangement		Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)
		1B20	X00	1A20	X10
		1B19	X01	1A19	X11
		1B18	X02	1A18	X12
		1B17	X03	1A17	X13
		1B16	X04	1A16	X14
		1B15	X05	1A15	X15
		1B14	X06	1A14	X16
		1B13	X07	1A13	X17
		1B12	X08	1A12	X18
		1B11	X09	1A11	X19
		1B10	X0A	1A10	X1A
		1B9	X0B	1A9	X1B
		1B8	X0C	1A8	X1C
		1B7	X0D	1A7	X1D
		1B6	X0E	1A6	X1E
		1B5	X0F	1A5	X1F
		1B4	Vacant	1A4	Vacant
		1B3	Vacant	1A3	Vacant
		1B2	COM1	1A2	Vacant
		1B1	COM1	1A1	Vacant

Pin Arrangement		Pin No.	Signal Name (SH)	Pin No.	Signal Name (SH)
		2B20	X20	2A20	X30
		2B19	X21	2A19	X31
		2B18	X22	2A18	X32
		2B17	X23	2A17	X33
		2B16	X24	2A16	X34
		2B15	X25	2A15	X35
		2B14	X26	2A14	X36
		2B13	X27	2A13	X37
		2B12	X28	2A12	X38
		2B11	X29	2A11	X39
		2B10	X2A	2A10	X3A
		2B9	X2B	2A9	X3B
		2B8	X2C	2A8	X3C
		2B7	X2D	2A7	X3D
		2B6	X2E	2A6	X3E
		2B5	X2F	2A5	X3F
		2B4	Vacant	2A4	Vacant
		2B3	Vacant	2A3	Vacant
		2B2	COM2	2A2	Vacant
		2B1	COM2	2A1	Vacant

Front view

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

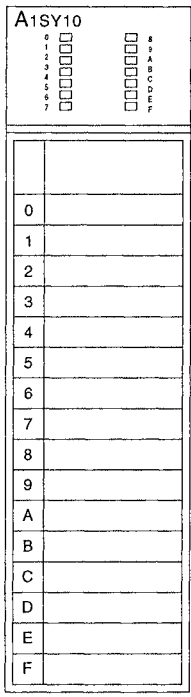
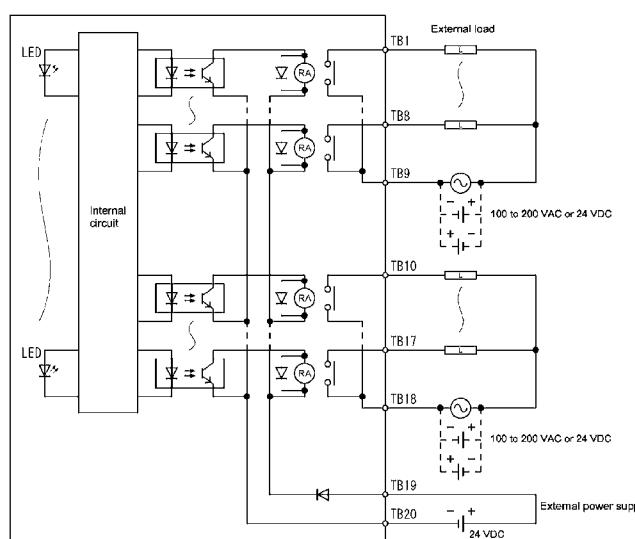
*2: When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (X20 to X3F) is displayed by the LEDs.

3. OUTPUT MODULE SPECIFICATIONS

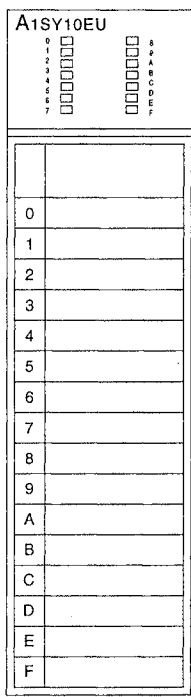
MELSEC-A

3. OUTPUT MODULE SPECIFICATIONS

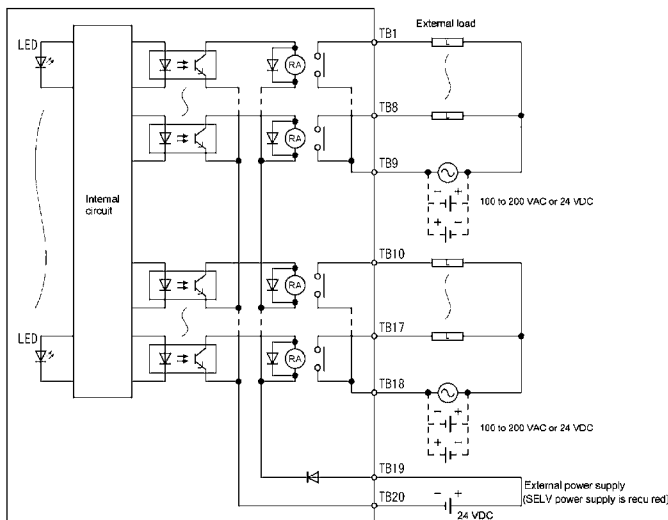
3.1 A1SY10 Contact Output Module

Model		Contact Output Module		Appearance																																										
Specifications		A1SY10																																												
Number of output points		16 points																																												
Isolation method		Photocoupler																																												
Switching rated voltage/current		24 VDC 2 A (load resistance) 240 VAC 2 A (COSφ = 1) /1 point, 8 A/common																																												
Min. switching load		5 VDC 1 mA																																												
Max. switching voltage		264 VAC 125 VDC																																												
Response time	OFF → ON	10 ms or less																																												
	ON → OFF	12 ms or less																																												
Service life	Mechanical	More than 20 million times or more																																												
	Electrical	Switching rated voltage/current More than 100000 times or more																																												
		200 VAC 1.5 A, 240 VAC 1 A (COSφ = 0.7) More than 100000 times or more																																												
		200 VAC 1 A, 240 VAC 0.5 A (COSφ = 0.35) More than 100000 times or more																																												
24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) More than 100000 times or more																																														
Max. switching frequency		3600 times per hour																																												
Surge absorber		None																																												
Fuse		None																																												
Common terminal arrangement		8 points/common (common terminals: TB9, TB18)																																												
Operating indicator		ON state is indicated (LEDs)																																												
External connections		20-point terminal block connector (M3.5 x 7 screws)																																												
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)																																												
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5																																												
Accessories		None																																												
External power supply	Voltage	24 VDC ±10%, Ripple voltage: 4VP-P or less																																												
	Current	90 mA (TYP 24 VDC all points ON)																																												
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)																																												
Weight kg		0.25																																												
External Connections																																														
				<table border="1"> <thead> <tr> <th>Terminal No.</th> <th>Signal Name</th> </tr> </thead> <tbody> <tr><td>TB1</td><td>Y00</td></tr> <tr><td>TB2</td><td>Y01</td></tr> <tr><td>TB3</td><td>Y02</td></tr> <tr><td>TB4</td><td>Y03</td></tr> <tr><td>TB5</td><td>Y04</td></tr> <tr><td>TB6</td><td>Y05</td></tr> <tr><td>TB7</td><td>Y06</td></tr> <tr><td>TB8</td><td>Y07</td></tr> <tr><td>TB9</td><td>COM1</td></tr> <tr><td>TB10</td><td>Y08</td></tr> <tr><td>TB11</td><td>Y09</td></tr> <tr><td>TB12</td><td>Y0A</td></tr> <tr><td>TB13</td><td>Y0B</td></tr> <tr><td>TB14</td><td>Y0C</td></tr> <tr><td>TB15</td><td>Y0D</td></tr> <tr><td>TB16</td><td>Y0E</td></tr> <tr><td>TB17</td><td>Y0F</td></tr> <tr><td>TB18</td><td>COM2</td></tr> <tr><td>TB19</td><td>24 VDC</td></tr> <tr><td>TB20</td><td>0V</td></tr> </tbody> </table>	Terminal No.	Signal Name	TB1	Y00	TB2	Y01	TB3	Y02	TB4	Y03	TB5	Y04	TB6	Y05	TB7	Y06	TB8	Y07	TB9	COM1	TB10	Y08	TB11	Y09	TB12	Y0A	TB13	Y0B	TB14	Y0C	TB15	Y0D	TB16	Y0E	TB17	Y0F	TB18	COM2	TB19	24 VDC	TB20	0V
Terminal No.	Signal Name																																													
TB1	Y00																																													
TB2	Y01																																													
TB3	Y02																																													
TB4	Y03																																													
TB5	Y04																																													
TB6	Y05																																													
TB7	Y06																																													
TB8	Y07																																													
TB9	COM1																																													
TB10	Y08																																													
TB11	Y09																																													
TB12	Y0A																																													
TB13	Y0B																																													
TB14	Y0C																																													
TB15	Y0D																																													
TB16	Y0E																																													
TB17	Y0F																																													
TB18	COM2																																													
TB19	24 VDC																																													
TB20	0V																																													

3.2 A1SY10EU Contact Output Module

Model		Contact Output Module		Appearance
Specifications		A1SY10EU		
Number of output points		16 points		
Insulation method		Photocoupler		
Switching rated voltage/current		24 VDC 2 A (load resistance) /1 point, 8 A/common 120 VAC 2 A (COSφ = 1)		
Min. switching load		5 VDC 1 mA		
Max. switching voltage		132 VAC 125 VDC		
Response time	OFF → ON	10 ms or less		
	ON → OFF	12 ms or less		
Service life	Mechanical	More than 20 million times or more		
	Electrical	Switching rated voltage/current More than 200000 times or more		
		100 VAC 2A, 120 VAC 2 A (COSφ = 0.7) More than 200000 times or more		
		100 VAC 2A, 120 VAC 2 A (COSφ = 0.35) More than 100000 times or more		
		24 VDC 1 .5A, 100 VDC 0.1 A (L/R = 7 ms) More than 100000 times or more		
Max. switching frequency		3600 times per hour		
Surge absorber		None		
Fuse		None		
Common terminal arrangement		8 points/common (common terminals: TB9, TB18)		
Operating indicator		ON state is indicated (LEDs)		
External connections		20-point terminal block connector (M3.5 x 7 screws)		
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)		
Applicable crimp terminals		RAV1.25-3.5		
Accessories		None		
Insulation withstand voltage	AC terminals-Relay coil, 5 VAC	1780 VAC rms/3 cycle (altitude 2,000 m)		
	Relay coil, 5 VAC	500 VAC rms/3 cycle (altitude 2,000 m)		
Insulation resistor		10 MΩ or higher at insulation resistance tester		
Noise immunity		IEC801-4:1 kV		
External power supply	Voltage	24 VDC ±10%, Ripple voltage: 4VP-P or less		
	Current	90 mA (TYP 24 VDC all points ON)		
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)		
Weight kg		0.25		

External Connections

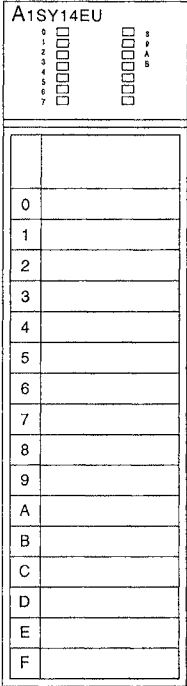
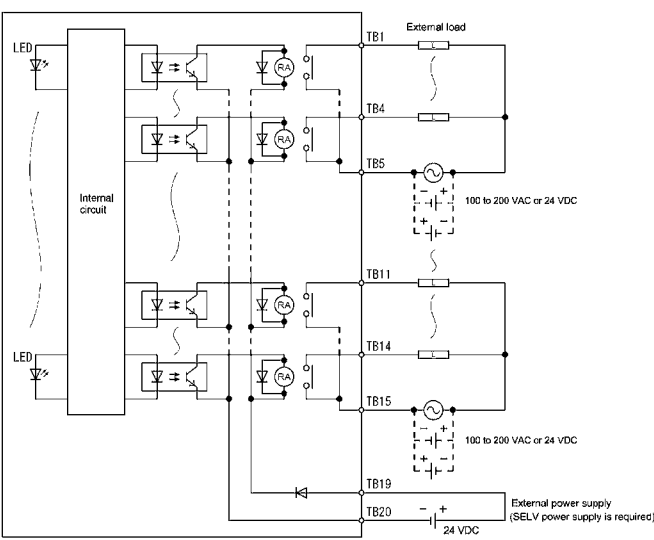


Terminal No.	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	COM1
TB10	Y08
TB11	Y09
TB12	Y0A
TB13	Y0B
TB14	Y0C
TB15	Y0D
TB16	Y0E
TB17	Y0F
TB18	COM2
TB19	24 VDC
TB20	0V

3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.3 A1SY14EU Contact Output Module

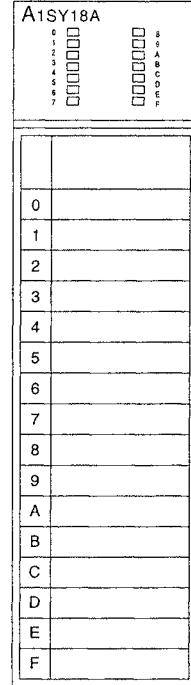
Model		Contact Output Module		Appearance																																									
Specifications		A1SY14EU																																											
Number of output points		12 points (number of occupied I/O points : 16 points)																																											
Insulation method		Photocoupler																																											
Switching rated voltage/current		24 VDC 2 A (load resistance) 240 VAC 2 A (COSφ = 1) /1 point, 8 A/common																																											
Min. switching load		5 VDC 10 mA																																											
Max. switching voltage		264VAC 125 VDC																																											
Response time	OFF → ON	10 ms or less																																											
	ON → OFF	12 ms or less																																											
Service life	Mechanical	More than 20 million times or more																																											
	Electrical	Switching rated voltage/current More than 200000 times or more																																											
		200 VAC 2A, 240VAC 1.8 A (COSφ = 0.7) More than 200000 times or more																																											
		200 VAC 1.1A, 240VAC 0.9 A (COSφ = 0.35) More than 200000 times or more																																											
24 VDC 1.1A, 100 VDC 0.1 A (L/R = 7 ms) More than 200000 times or more																																													
Max. switching frequency		3600 times per hour																																											
Surge absorber		None																																											
Fuse		None																																											
Common terminal arrangement		4 points/common (common terminals: TB5, TB10, TB15)																																											
Operating indicator		ON state is indicated (LEDs)																																											
External connections		20-point terminal block connector (M3.5 x 7 screws)																																											
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)																																											
Applicable crimp terminals		RAV1.25-3.5																																											
Accessories		None																																											
Insulation withstand voltage	AC terminals-Relay coil, 5VAC	2830VAC rms/3 cycle (altitude 2,000 m)																																											
	Relay coil, 5VAC	500VAC rms/3 cycle (altitude 2,000 m)																																											
Insulation resistor		10 MΩ or higher at insulation resistance tester																																											
Noise immunity		IEC801-4:1 kV																																											
External power supply	Voltage	24 VDC ±10%, Ripple voltage: 4VP-P or less	Must be a SELV power supply																																										
	Current	100 mA (TYP 24 VDC all points ON)																																											
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)																																											
Weight kg		0.25																																											
External Connections																																													
			<table border="1"> <thead> <tr> <th>Terminal No.</th> <th>Signal Name</th> </tr> </thead> <tbody> <tr><td>TB1</td><td>Y00</td></tr> <tr><td>TB2</td><td>Y01</td></tr> <tr><td>TB3</td><td>Y02</td></tr> <tr><td>TB4</td><td>Y03</td></tr> <tr><td>TB5</td><td>COM1</td></tr> <tr><td>TB6</td><td>Y04</td></tr> <tr><td>TB7</td><td>Y05</td></tr> <tr><td>TB8</td><td>Y06</td></tr> <tr><td>TB9</td><td>Y07</td></tr> <tr><td>TB10</td><td>COM2</td></tr> <tr><td>TB11</td><td>Y08</td></tr> <tr><td>TB12</td><td>Y09</td></tr> <tr><td>TB13</td><td>Y0A</td></tr> <tr><td>TB14</td><td>Y0B</td></tr> <tr><td>TB15</td><td>COM3</td></tr> <tr><td>TB16</td><td>Vacant</td></tr> <tr><td>TB17</td><td>Vacant</td></tr> <tr><td>TB18</td><td>Vacant</td></tr> <tr><td>TB19</td><td>24 VDC</td></tr> <tr><td>TB20</td><td>0V</td></tr> </tbody> </table>	Terminal No.	Signal Name	TB1	Y00	TB2	Y01	TB3	Y02	TB4	Y03	TB5	COM1	TB6	Y04	TB7	Y05	TB8	Y06	TB9	Y07	TB10	COM2	TB11	Y08	TB12	Y09	TB13	Y0A	TB14	Y0B	TB15	COM3	TB16	Vacant	TB17	Vacant	TB18	Vacant	TB19	24 VDC	TB20	0V
Terminal No.	Signal Name																																												
TB1	Y00																																												
TB2	Y01																																												
TB3	Y02																																												
TB4	Y03																																												
TB5	COM1																																												
TB6	Y04																																												
TB7	Y05																																												
TB8	Y06																																												
TB9	Y07																																												
TB10	COM2																																												
TB11	Y08																																												
TB12	Y09																																												
TB13	Y0A																																												
TB14	Y0B																																												
TB15	COM3																																												
TB16	Vacant																																												
TB17	Vacant																																												
TB18	Vacant																																												
TB19	24 VDC																																												
TB20	0V																																												

3. OUTPUT MODULE SPECIFICATIONS

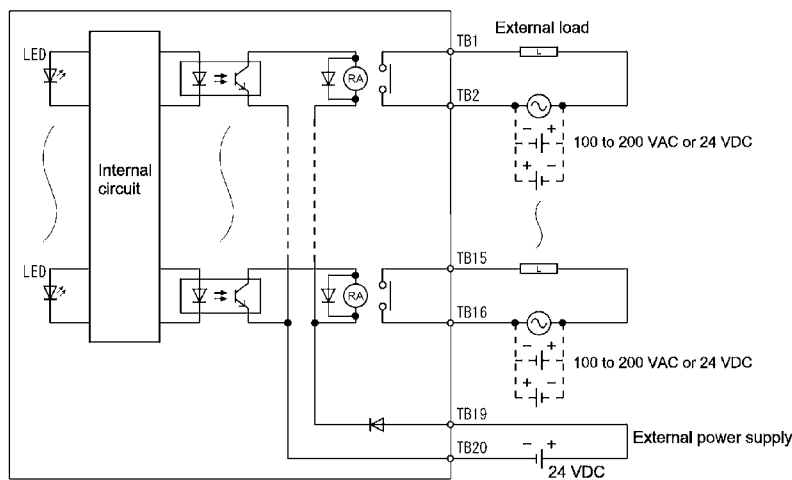
MELSEC-A

3.4 A1SY18A Contact Output Module (All Points Independent)

Model		Contact Output Module	
Specifications		A1SY18A	
Number of output points		8 points (number of occupied I/O points : 16 points)	
Isolation method		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	
Min. switching load		5 VDC 1 mA	
Max. switching voltage		264 VAC 125 VDC	
Response time	OFF → ON	10 ms or less	
	ON → OFF	12 ms or less	
Service life	Mechanical	More than 20 million times or more	
	Electrical	Switching rated voltage/current More than 200000 times or more	
		200 VAC 1.5 A, 240 VAC 1 A (COSφ = 0.7) More than 200000 times or more	
		200 VAC 0.75 A, 240 VAC 0.5 A (COSφ = 0.35) More than 200000 times or more	
24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) More than 200000 times or more			
Max. switching frequency		3600 times per hour	
Surge absorber		None	
Fuse		None	
Common terminal arrangement		None (all points independent)	
Operating indicator		ON state is indicated (LEDs)	
External connections		20-point terminal block connector (M3.5 × 7 screws)	
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19)(Applicable tightening torque 78.4 N·cm)	
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5	
Accessories		None	
External power supply	Voltage	24 VDC ±10%, Ripple voltage: 4VP-P or less	
	Current	75 mA (TYP, 24 VDC all points ON)	
Internal current consumption (5 VDC)		240 mA (TYP, all points ON)	
Weight kg		0.25	



External Connections

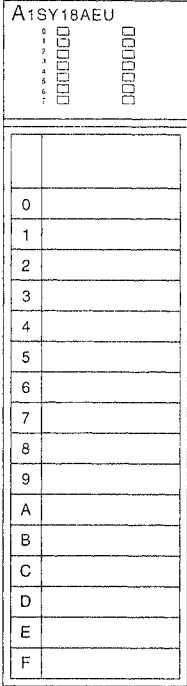
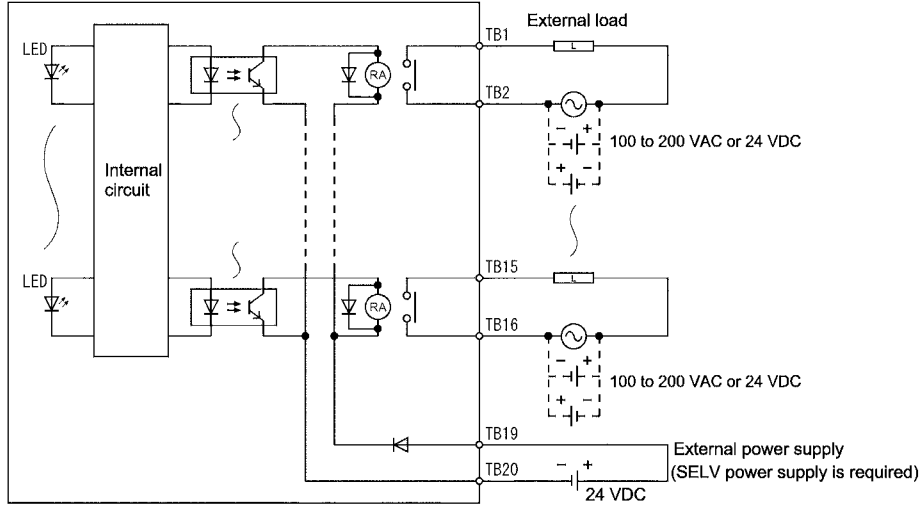


Terminal No.	Signal Name
TB1	Y00
TB2	
TB3	
TB4	
TB5	Y02
TB6	
TB7	
TB8	Y03
TB9	
TB10	Y04
TB11	
TB12	Y05
TB13	
TB14	Y06
TB15	
TB16	Y07
TB17	
TB18	Vacant
TB19	24 VDC
TB20	0 V

3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.5 A1SY18AEU Contact Output Modules (All Points Independent)

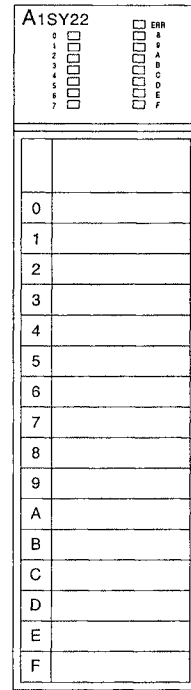
Model		Contact Output Module		Appearance	
Specifications		A1SY18AEU			
Number of output points		8 points (number of occupied I/O points : 16 points)			
Insulation method		Photocoupler			
Switching rated voltage/current		24 VDC 2 A (load resistance) /1 point 240 VAC 2 A (COSφ = 1)			
Min. switching load		5 VDC 1 mA			
Max. switching voltage		264VAC 125 VDC			
Response time	OFF → ON	10 ms or less			
	ON → OFF	12 ms or less			
Service life	Mechanical	More than 20 million times or more			
	Electrical	Switching rated voltage/current More than 200000 times or more			
		200 VAC 1.5 A, 240VAC 1 A (COSφ = 0.7) More than 200000 times or more			
		200 VAC 0.75 A, 240VAC 0.5 A (COSφ = 0.35) More than 200000 times or more			
24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) More than 200000 times or more					
Max. switching frequency		3600 times per hour			
Surge absorber		None			
Fuse		None			
Common terminal arrangement		None (all points independent)			
Operating indicator		ON state is indicated (LEDs)			
External connections		20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			
Applicable crimp terminals		RAV1.25-3.5			
Accessories		None			
Insulation withstand voltage		AC terminals-Relay coil, 5VAC	2830VAC rms/3 cycle (altitude 2,000 m)		
		Relay coil, 5VAC	500VAC rms/3 cycle (altitude 2,000 m)		
Insulation resistor		10 MΩ or higher at insulation resistance tester			
Noise immunity		IEC801-4:1 kV			
External power supply	Voltage	24 VDC ±10%, Ripple voltage: 4VP-P or less	Must be a SELV power supply		
	Current	75 mA (TYP 24 VDC all points ON)			
Internal current consumption (5 VDC)		240 mA (TYP, all points ON)			
Weight kg		0.25			
External Connections					
				Terminal No.	
				Signal Name	
				TB1	Y00
				TB2	
				TB3	Y01
				TB4	
				TB5	Y02
				TB6	
				TB7	Y03
				TB8	
				TB9	Y04
				TB10	
				TB11	Y05
				TB12	
				TB13	Y06
				TB14	
				TB15	Y07
				TB16	
				TB17	Vacant
				TB18	Vacant
TB19	24 VDC				
TB20	0V				

3. OUTPUT MODULE SPECIFICATIONS

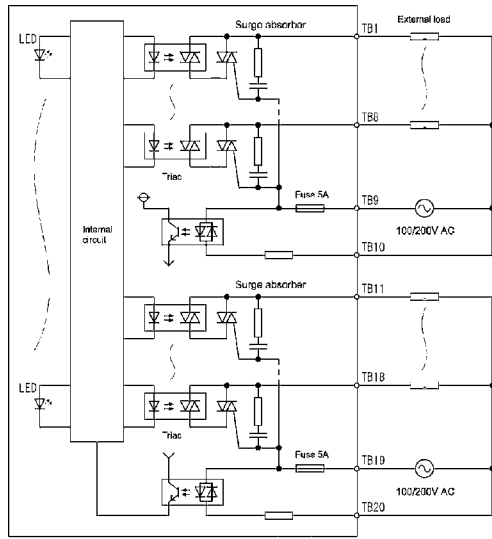
MELSEC-A

3.6 A1SY22 Triac Output Module

Model		Triac Output Module	
Specifications		A1SY22	
Number of output points		16 points	
Isolation method		Photocoupler	
Rated load voltage		100 to 240 VAC 50/60 Hz ±3 Hz	
Max. load voltage		264 VAC	
Max. load current		0.6 A/point, 2.4 A/common	
Min. load voltage/current		24 VAC 100 mA, 100 VAC 10 mA, 240 VAC 20 mA	
Max. allowed rush current		20 A 10 ms or less, 8 A 100 ms or less	
Leakage current at OFF circuit		1.5 mA (120 VAC 60 Hz), 3mA (240 VAC 60 Hz)	
Max. voltage drop 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)	
Response time	OFF → ON	1 ms or less	
	ON → OFF	1 ms + 0.5 cycles or less	
Surge absorber		CR absorber (0.01 μF + 47 Ω)	
Fuse rating		5 A (1 piece/common), not replaceable *1	
Fuse capacity		70 A	
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	
Common terminal arrangement		8 points/common (common terminals: TB9, TB19)	
Operating indicator		ON state is indicated (LEDs)	
External connections		20-point terminal block connector (M3.5 x 7 screws)	
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	
Applicable solderless terminals		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	
Accessories		None	
External power supply	Voltage	100 to 240 VAC (85 to 264 VAC)	
	Current	2 mA (TYP 200 VAC/common)	
Internal current consumption (5 VDC)		270 mA (TYP, all points ON)	
Weight kg		0.24	



External Connections



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	Y0D
TB17	Y0E
TB18	Y0F
TB19	COM2
TB20	100/200 VAC

*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.

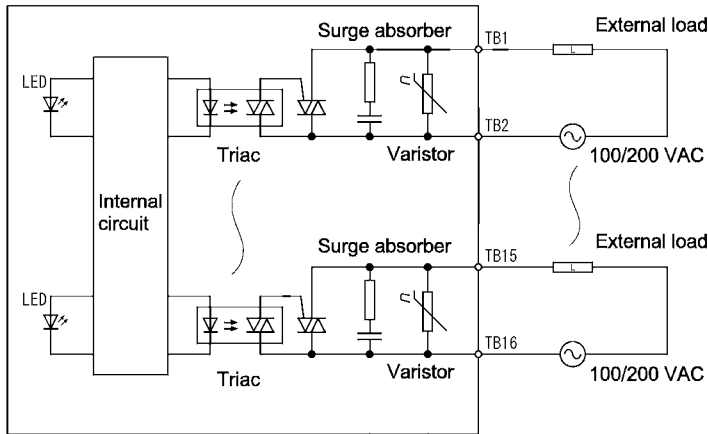
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.7 A1SY28A Triac Output Module (All Points Independent)

Model		Triac Output Module		
Specifications		A1SY28A		
Number of output points	8 points (number of occupied I/O points : 16 points)		<div style="border: 1px solid black; padding: 5px;"> <p>A1SY28A</p> </div>	
Isolation method	Photocoupler			
Rated load voltage	100 to 240 VAC 50/60 Hz ±3 Hz			
Max. load voltage	264 VAC			
Max. load current	1A/point, 8A/module (132VAC, 46°C), 8A/module (264VAC, 40°C), 4A/module (132VAC, 55°C), 2A/module (264VAC, 55°C)			
Min. load voltage/current	24 VAC 100 mA, 100 VAC 55 mA, 240 VAC 55 mA			
Max. allowed rush current	25 A 10 ms or less, 10 A 100 ms or less			
Leakage current at OFF circuit	1.5 mA (120 VAC 60 Hz), 3mA (240 VAC 60 Hz)			
Max. voltage drop 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)			
Response time	OFF → ON	1 ms or less		
	ON → OFF	1 ms + 0.5 cycles or less		
Surge absorber	CR absorber (0.01 μF + 47 Ω), Varistor (387 to 473 V)			
Fuse rating	None			
Common terminal arrangement	None (all points independent)			
Operating indicator	ON state is indicated (LEDs)			
External connections	20-point terminal block connector (M3.5 × 7 screws)			
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			
Applicable solderless terminals	R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5			
Accessories	None			
External power supply	None			
Internal current consumption (5 VDC)	130 mA (TYP, all points ON)			
Weight kg	0.25			

External Connections



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

3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.8 A1SY28EU Triac Output Module

Model		Triac Output Module																	
Specifications		A1SY28EU																	
Number of output points	8 points (number of occupied I/O points : 16 points)		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 5px;"> A1SY28EU </div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>0</td></tr> <tr><td>1</td></tr> <tr><td>2</td></tr> <tr><td>3</td></tr> <tr><td>4</td></tr> <tr><td>5</td></tr> <tr><td>6</td></tr> <tr><td>7</td></tr> <tr><td>8</td></tr> <tr><td>9</td></tr> <tr><td>A</td></tr> <tr><td>B</td></tr> <tr><td>C</td></tr> <tr><td>D</td></tr> <tr><td>E</td></tr> <tr><td>F</td></tr> </table> </div>	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0																			
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
A																			
B																			
C																			
D																			
E																			
F																			
Insulation method	Photocoupler																		
Rated load voltage	100 to 240 VAC 50/60 Hz ±3 Hz																		
Max. load voltage	264 VAC																		
Max. load current	0.6A/point, 2.4A/common (49°C), 1.9A/common (55°C)																		
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 time	OFF → ON	1 ms or less																	
	ON → OFF	1 ms + 0.5 cycles or less																	
Surge absorber	Built-in CR absorber (0.1 μF + 47 Ω)																		
Fuse rating	None																		
Common terminal arrangement	4 points/common (common terminals: TB8, TB16)																		
Operating indicator	ON state is indicated (LEDs)																		
External connections	20-point terminal block connector (M3.5 × 7 screws)																		
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)																		
Applicable crimp terminals	RAV1.25-3.5																		
Accessories	None																		
Insulation withstand voltage	2830VAC rms/3 cycle (altitude 2,000 m)																		
Insulation resistor	10 MΩ or higher at insulation resistance tester																		
Noise immunity	IEC801-4:1 kV																		
Internal current consumption (5 VDC)	270 mA (TYP, all points ON)																		
Weight kg	0.24																		

External Connections		
Terminal No.	Signal Name	
TB1	Y00	
TB2	Vacant	
TB3	Y01	
TB4	Vacant	
TB5	Y02	
TB6	Vacant	
TB7	Y03	
TB8	COM1	
TB9	Y04	
TB10	Vacant	
TB11	Y05	
TB12	Vacant	
TB13	Y06	
TB14	Vacant	
TB15	Y07	
TB16	COM2	
TB17	Vacant	
TB18	Vacant	
TB19	Vacant	
TB20	Vacant	

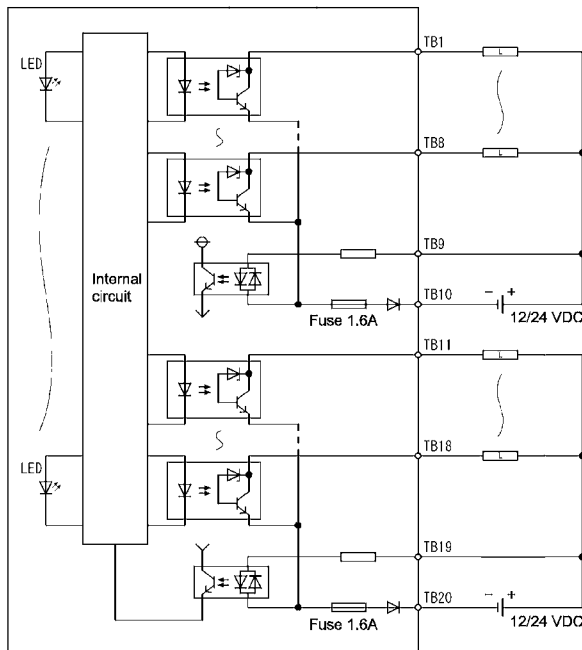
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.9 A1SY40 Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink Type)	
Specifications		A1SY40	Appearance
Number of output points		16 points	
Isolation method		Photocoupler	
Rated load voltage		12/24 VDC	
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current		0.1 A/point, 0.8 A/common	
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 circuit		1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A	
Response time	OFF → ON	2 ms or less	
	ON → OFF	2 ms or less (resistive load)	
Surge absorber		Zener diode	
Fuse rating		Fuse 1.6 A (1 piece/common), not replaceable *1	
Fuse capacity		50 A	
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	
Common terminal arrangement		8 points/common (common terminals: TB10, TB20)	
Operating indicator		ON state is indicated (LEDs)	
External connections		20-point terminal block connector (M3.5 x 7 screws)	
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	
Applicable solderless terminals		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	
Accessories		None	
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)	
	Current	8 mA (TYP 24 VDC/common)	
Internal current consumption (5 VDC)		270 mA (TYP, all points ON)	
Weight kg		0.19	

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

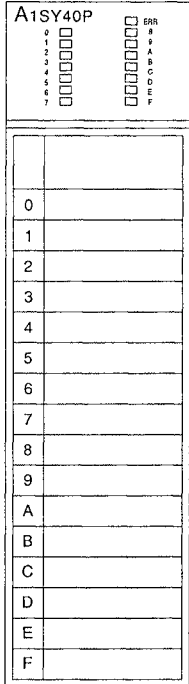
*1 : The fuse in the output module is provided to prevent the external wiring from burning in the event of a short in the module's output. Therefore, it may not be able to protect output devices.
If an output device is damaged in a failure mode other than a short circuit, the fuse might not blow.

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

3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.9.1 A1SY40P Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink Type)	
Specifications		A1SY40P	Appearance
Number of output points		16 points	
Isolation method		Photocoupler	
Rated load voltage		12/24 VDC	
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current		0.1 A/point, 0.8 A/common	
Max. allowed rush current		0.7 A 10 ms or less	
Leakage current at OFF circuit		0.1 mA or less	
Max. voltage drop at ON circuit		0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	
Response time	OFF → ON	1 ms or less	
	ON → OFF	1 ms or less (resistive load)	
Surge absorber		Zener diode	
Fuse		None	
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 terminal arrangement		8 points/common (common terminals: TB10, TB20)	
Operating indicator		ON state is indicated (LEDs)	
External connections		20-point terminal block connector (M3.5 x 7 screws)	
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)	
Applicable solderless terminals		R1.25-3.5, R2-3.5 RAV1.25-3.5, RAV2-3.5	
Accessories		None	
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)	
	Current	11 mA (TYP 24 VDC/common)	
Internal current consumption (5 VDC)		79 mA (TYP, all points ON) (0.08A is shown on the rating plate of the module.)	
Weight kg		0.13	

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

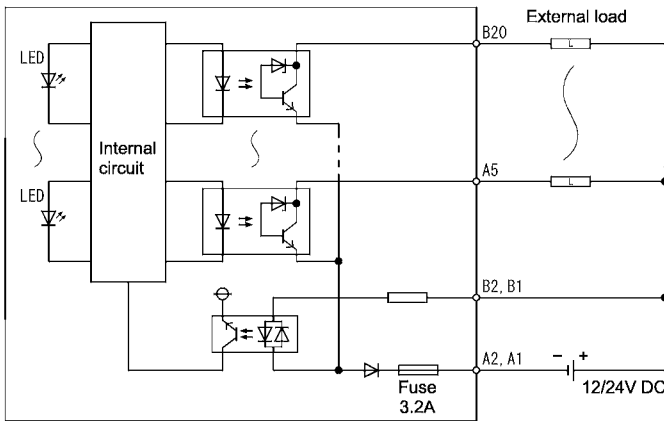
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.10 A1SY41 Transistor Output Module (Sink Type)

Specifications	Model	Transistor Output Module (Sink type)		
	A1SY41	Appearance		
Number of output points	32 points			
Isolation method	Photocoupler			
Rated load voltage	12/24 VDC			
Operating voltage range	10.2 to 30 VDC (peak voltage 30 VDC)			
Max. load current	0.1 A/point, 2 A/common			
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 circuit	1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A			
Response time	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: A1, A2)			
Operating indicator	ON state is indicated (LEDs)			
External connections	40-pin connector			
Applicable wire size	0.3 mm ²			
Accessories	Connector (1 pce.) for external wiring (soldering type)			
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)		
	Current	8 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)	500 mA (TYP, all points ON)			
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.

Pin Arrangement	Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)
	B20	Y00	A20	Y10
	B19	Y01	A19	Y11
	B18	Y02	A18	Y12
	B17	Y03	A17	Y13
	B16	Y04	A16	Y14
	B15	Y05	A15	Y15
	B14	Y06	A14	Y16
	B13	Y07	A13	Y17
	B12	Y08	A12	Y18
	B11	Y09	A11	Y19
	B10	Y0A	A10	Y1A
	B9	Y0B	A9	Y1B
	B8	Y0C	A8	Y1C
	B7	Y0D	A7	Y1D
	B6	Y0E	A6	Y1E
	B5	Y0F	A5	Y1F
	B4	Vacant	A4	Vacant
	B3	Vacant	A3	Vacant
	B2	12/24 VDC	A2	COM
	B1	12/24 VDC	A1	COM

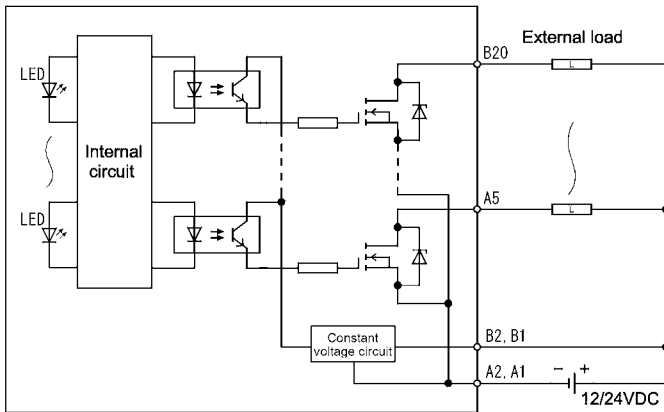
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.10.1 A1SY41P Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink type)	
Specifications		A1SY41P	Appearance
Number of output points		32 points	
Isolation method		Photocoupler	
Rated load voltage		12/24 VDC	
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current		0.1 A/point, 2 A/common	
Max. allowed rush current		0.7 A 10 ms or less	
Leakage current at OFF circuit		0.1 mA or less	
Max. voltage drop at ON circuit		0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	
Response time	OFF → ON	1 ms or less	
	ON → OFF	1 ms or less (resistive load)	
Surge absorber		Zener diode	
Fuse		None	
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 terminal arrangement		32 points/common (common terminals: A1, A2)	
Operating indicator		ON state is indicated (LEDs)	
External connections		40-pin connector	
Applicable wire size		0.3 mm ²	
Accessories		Connector (1 pce.) for external wiring (soldering type)	
Applicable connector/terminal block converter unit		A6TBXY36, A6TBXY54	
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)	
	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.)	
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
	B17	Y03	A17	Y13
	B16	Y04	A16	Y14
	B15	Y05	A15	Y15
	B14	Y06	A14	Y16
	B13	Y07	A13	Y17
	B12	Y08	A12	Y18
	B11	Y09	A11	Y19
	B10	Y0A	A10	Y1A
	B9	Y0B	A9	Y1B
	B8	Y0C	A8	Y1C
	B7	Y0D	A7	Y1D
	B6	Y0E	A6	Y1E
	B5	Y0F	A5	Y1F
	B4	Vacant	A4	Vacant
	B3	Vacant	A3	Vacant
	B2	12/24 VDC	A2	COM
	B1	12/24 VDC	A1	COM

*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.

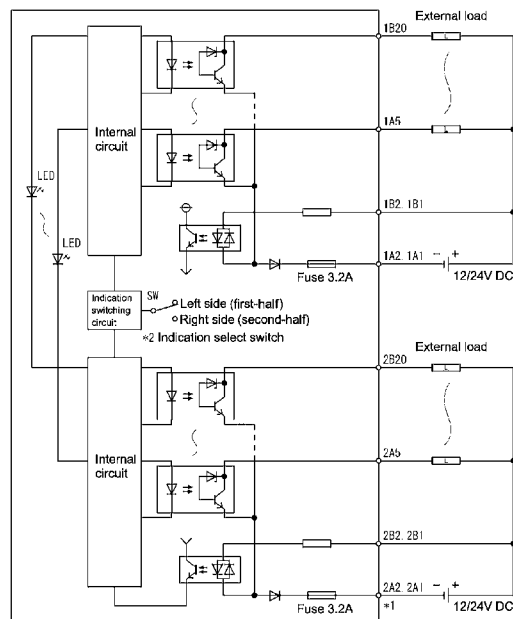
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.11 A1SY42 Transistor Output Module (Sink Type)

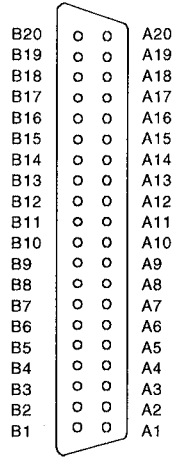
Model		Transistor Output Module (Sink Type)		Appearance
Specifications		A1SY42		
Number of output points		64 points		
Isolation method		Photocoupler		
Rated load voltage		12/24 VDC		
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)		
Max. load current		0.1 A/point, 1.6 A/common		
Max. allowed rush current		0.4 A 10 ms or less		
Leakage current at OFF circuit		0.1 mA or less		
Max. voltage drop at ON circuit		1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A		
Response time	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		0.3 mm ²		
Accessories		Connectors (2 pcs.) for external wiring (soldering type)		
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)		
	Current	8 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)		930 mA (TYP, all points ON)		
Weight kg		0.27		

External Connections



3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

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

*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.

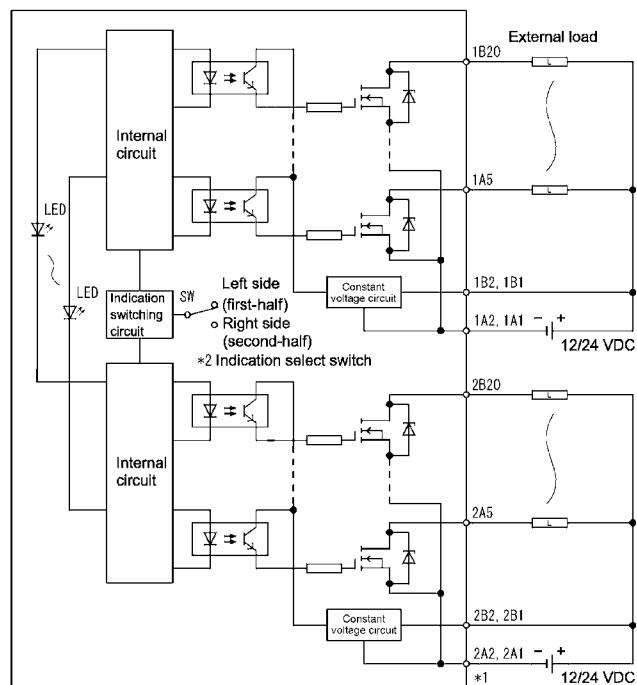
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.11.1 A1SY42P Transistor Output Module (Sink Type)

Model		Transistor Output Module (Sink Type)		Appearance
Specifications		A1SY42P		
Number of output points		64 points		
Isolation method		Photocoupler		
Rated load voltage		12/24 VDC		
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)		
Max. load current		0.1 A/point, 2 A/common		
Max. allowed rush current		0.7 A 10 ms or less		
Leakage current at OFF circuit		0.1 mA or less		
Max. voltage drop at ON circuit		0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A		
Response time	OFF → ON	1 ms or less		
	ON → OFF	1 ms or less (rated load, resistance load)		
Surge absorber		Zener diode		
Fuse		No		
Common terminal arrangement		32 points/common (common terminals: 1A1, 1A2, 2A1, 2A2)		
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.		
Operating indicator		ON state is indicated (LEDs), 32-bit indication by switch		
External connections		40-pin connector		
Applicable wire size		0.3 mm ²		
Accessories		Connectors (2 pcs.) for external wiring (soldering type)		
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)		
	Current	14 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)		170 mA (TYP, all points ON)		
Weight kg		0.17		

External Connections



3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

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
		1B18	Y02	1A18	Y12	2B18	Y22	2A18	Y32
		1B17	Y03	1A17	Y13	2B17	Y23	2A17	Y33
		1B16	Y04	1A16	Y14	2B16	Y24	2A16	Y34
		1B15	Y05	1A15	Y15	2B15	Y25	2A15	Y35
		1B14	Y06	1A14	Y16	2B14	Y26	2A14	Y36
		1B13	Y07	1A13	Y17	2B13	Y27	2A13	Y37
		1B12	Y08	1A12	Y18	2B12	Y28	2A12	Y38
		1B11	Y09	1A11	Y19	2B11	Y29	2A11	Y39
		1B10	Y0A	1A10	Y1A	2B10	Y2A	2A10	Y3A
		1B9	Y0B	1A9	Y1B	2B9	Y2B	2A9	Y3B
		1B8	Y0C	1A8	Y1C	2B8	Y2C	2A8	Y3C
		1B7	Y0D	1A7	Y1D	2B7	Y2D	2A7	Y3D
		1B6	Y0E	1A6	Y1E	2B6	Y2E	2A6	Y3E
		1B5	Y0F	1A5	Y1F	2B5	Y2F	2A5	Y3F
		1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant
		1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant
		1B2	12/24 VDC	1A2	COM1	2B2	12/24 VDC	2A2	COM2
		1B1	12/24 VDC	1A1	COM1	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.

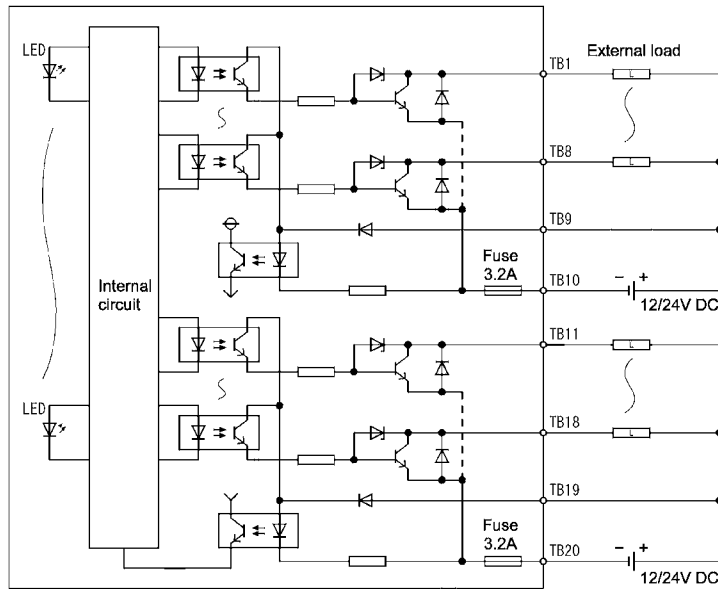
*2 : When the switch is set to the left side position, the status of the first-half devices (Y00 to Y1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (Y20 to Y3F) is displayed by the LEDs.

3. OUTPUT MODULE SPECIFICATIONS

3.12 A1SY50 Transistor Output Module (Sink Type)

Specifications	Model	Transistor Output Module (Sink Type)		
	A1SY50	Appearance		
Number of output points	16 points			
Isolation method	Photocoupler			
Rated load voltage	12/24 VDC			
Operating voltage range	10.2 to 30 VDC (peak voltage 30 VDC)			
Max. load current	0.5 A/point, 2 A/common			
Max. allowed rush current	4 A 10 ms or less			
Leakage current at OFF circuit	0.1 mA or less			
Max. voltage drop at ON circuit	0.9 VDC (TYP) 0.5 A, 1.5 VDC (MAX) 0.5 A			
Response time	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 *1			
Fuse capacity	50 A			
Error display	LED goes ON when fuse blows: signal output to PC CPU *2			
Common terminal arrangement	8 points/common (common terminals: TB10, TB20)			
Operating indicator	ON state is indicated (LEDs)			
External connections	20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			
Applicable solderless terminals	R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5			
Accessories	None			
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)		
	Current	60 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)	120 mA (TYP, all points ON)			
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

*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. OUTPUT MODULE SPECIFICATIONS

3.13 A1SY60 Transistor Output Module (Sink Type)

Specifications		Model	Transistor Output Module (Sink Type)	
		A1SY60	Appearance	
Number of output points		16 points		
Isolation method		Photocoupler		
Rated load voltage		24 VDC		
Operating voltage range		21.6 to 26.4 VDC (peak voltage 26.4 VDC)		
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)		
Max. allowed rush current		8 A 10 ms or less		
Leakage current at OFF circuit		0.1 mA or less		
Max. voltage drop at ON circuit		0.9 VDC (TYP) 2 A, 1.5 VDC (MAX) 0.5 A		
Response time	OFF → ON	2 ms or less		
	ON → OFF	2 ms or less (resistive load)		
Surge absorber		Zener diode		
Fuse rating		Fuse 5 A (1 piece/common), not replaceable *1		
Fuse capacity		50 A		
Error display		LED goes ON when fuse blows: signal output to PC CPU *2		
Common terminal arrangement		8 points/common (common terminals: TB10, TB20)		
Operating indicator		ON state is indicated (LEDs)		
External connections		20-point terminal block connector (M3.5 x 7 screws)		
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)		
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5		
Accessories		None		
External power supply	Voltage	24 VDC (21.6 to 26.4 VDC)		
	Current	15 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)		
Weight kg		0.25		

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	

*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.

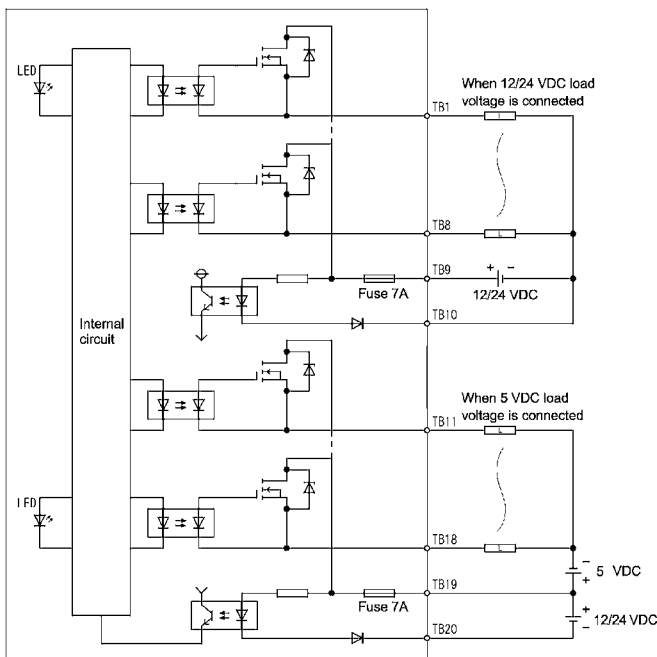
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

3.14 A1SY60E Transistor Output Module (Source Type)

Specifications	Model	Transistor Output Module (Source Type)		
	A1SY60E	Appearance		
Number of output points	16 points			
Isolation method	Photocoupler			
Rated load voltage	5/12/24 VDC			
Operating voltage range	4.5 to 26.4 VDC (peak voltage 26.4 VDC)			
Max. load current	2 A/point (condition: $\tau = L/R \leq 2.5$ ms), 4 A/common			
Max. allowed rush current	8 A 10 ms or less			
Leakage current at OFF circuit	0.1 mA or less			
Max. voltage drop at ON circuit	0.2 VDC (MAX) 1 A, 0.4 VDC (MAX) 2 A			
Response time	OFF → ON	3 ms or less		
	ON → OFF	10 ms or less (resistive load)		
Surge absorber	Zener diode			
Fuse rating	Fuse 7 A (1 piece/common), not replaceable *1			
Fuse capacity	300 A			
Error display	LED goes ON when fuse blows: signal output to PC CPU *2			
Common terminal arrangement	8 points/common (common terminals: TB9, TB19)			
Operating indicator	ON state is indicated (LEDs)			
External connections	20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			
Applicable solderless terminals	R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5			
Accessories	None			
External power supply	Voltage	12/24 VDC (10.2 to 26.4 VDC)*3		
	Current	10 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)	200 mA (TYP, all points ON)			
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	COM1
TB10	0V
TB11	Y08
TB12	Y09
TB13	Y0A
TB14	Y0B
TB15	Y0C
TB16	Y0D
TB17	Y0E
TB18	Y0F
TB19	COM2
TB20	0V

- *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.

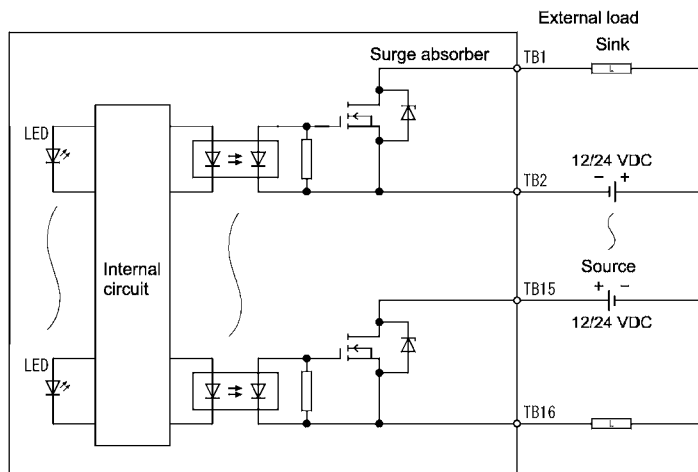
3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

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

Specifications	Model	Transistor Output Module		
	A1SY68A	Appearance		
Number of output points	8 points (number of occupied I/O points : 16 points)			
Isolation method	Photocoupler			
Rated load voltage	5/12/24/48 VDC			
Operating voltage range	4.5 to 52.8 VDC			
Max. load current	2 A/point			
Max. allowed rush current	8 A 10 ms or less			
Leakage current at OFF circuit	0.1 mA or less			
Max. voltage drop at ON circuit	0.4 VDC (MAX) 2 A			
Response time	OFF → ON	3 ms or less		
	ON → OFF	10 ms or less (resistive load)		
Surge absorber	Zener diode			
Common terminal arrangement	None (all points independent)			
Operating indicator	ON state is indicated (LEDs)			
External connections	20-point terminal block connector (M3.5 x 7 screws)			
Applicable wire size	0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)			
Applicable solderless terminals	R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5			
External power supply	None			
Internal current consumption (5 VDC)	110 mA			
Weight kg	0.2			

External Connections

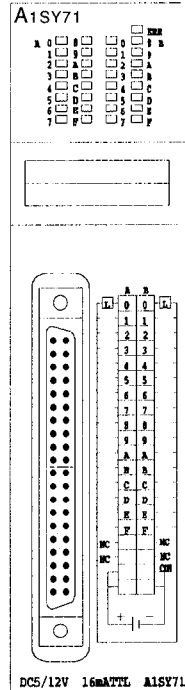


Terminal No.	Signal Name
TB1	Y00
TB2	
TB3	Y01
TB4	
TB5	Y02
TB6	
TB7	Y03
TB8	
TB9	Y04
TB10	
TB11	Y05
TB12	
TB13	Y06
TB14	
TB15	Y07
TB16	
TB17	Vacant
TB18	Vacant
TB19	Vacant
TB20	Vacant

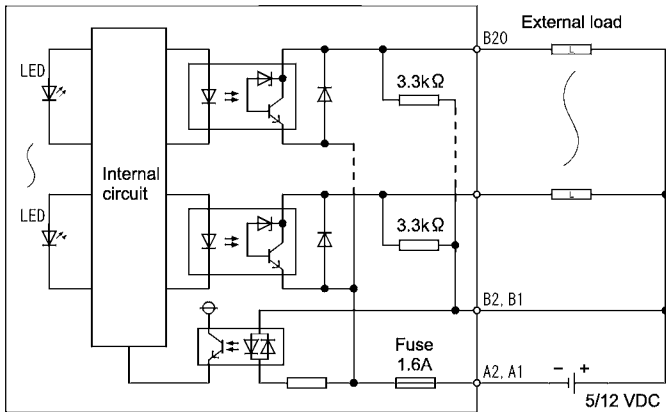
3. OUTPUT MODULE SPECIFICATIONS

3.16 A1SY71 Transistor Output Module (Sink Type)

Specifications		Model	Transistor Output Module (for TTL, CMOS : Sink Type)	
		A1SY71	Appearance	
Number of output points		32 points		
Isolation method		Photocoupler		
Rated load voltage		5/12 VDC		
Operating voltage range		4.5 to 15 VDC		
Max. load current		16 mA/point, 256 mA/common		
Max. allowed rush current		40 mA 10 ms or less		
Leakage current at OFF circuit		V _{OH} : 3.5 VDC (V _{CC} = 5 VDC, I _{OH} = 0.4 mA)		
Max. voltage drop at ON circuit		V _{OL} : 0.3 VDC		
Response time	OFF → ON	1 ms or less		
	ON → OFF	1 ms or less (resistive load)		
Surge absorber		None		
Fuse rating		Fuse 1.6 A (1 piece/common), not replaceable *2		
Fuse capacity		50 A		
Error display		LED goes ON when fuse blows: signal output to PC CPU *3		
Common terminal arrangement		32 points/common (common terminals: A1, A2)		
Operating indicator		ON state is indicated (LEDs)		
External connections		40-pin connector		
Applicable wire size		0.3 mm ²		
Accessories		Connector (1 pcs.) for external wiring (soldering type)		
External power supply	Voltage	5/12 VDC (4.5 to 15 VDC)		
	Current	150 mA (TYP 12 VDC/common)		
Internal current consumption (5 VDC)		400 mA (TYP, all points ON)		
Weight kg		0.19		



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 : 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.

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

3. OUTPUT MODULE SPECIFICATIONS

3.17 A1SY80 Transistor Output Module (Source Type)

Model		Transistor Output Module (Source Type)		Appearance
Specifications		A1SY80		
Number of output points		16 points		
Isolation method		Photocoupler		
Rated load voltage		12/24 VDC		
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)		
Max. load current		0.8 A/point, 3.2 A/common		
Max. allowed rush current		8 A 10 ms or less		
Leakage current at OFF circuit		0.1 mA or less		
Max. voltage drop at ON circuit		1.5 VDC (MAX) 0.8 A		
Response time	OFF → ON	2 ms or less		
	ON → OFF	2 ms or less (resistive load)		
Surge absorber		Zener diode		
Fuse rating		Fuse 5 A (1 piece/common), not replaceable *1		
Fuse capacity		50 A		
Error display		LED goes ON when fuse blows: signal output to PC CPU *2		
Common terminal arrangement		8 points/common (common terminals: TB9, TB19)		
Operating indicator		ON state is indicated (LEDs)		
External connections		20-point terminal block connector (M3.5 x 7 screws)		
Applicable wire size		0.75 to 1.25 mm ² (AWG16 to AWG19) (Applicable tightening torque 78.4 N•cm)		
Applicable solderless terminals		R1.25-3.5 R2-3.5 RAV1.25-3.5 RAV2-3.5		
Accessories		None		
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)		
	Current	20 mA (TYP 24 VDC/common)		
Internal current consumption (5 VDC)		120 mA (TYP, all points ON)		
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	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

*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.

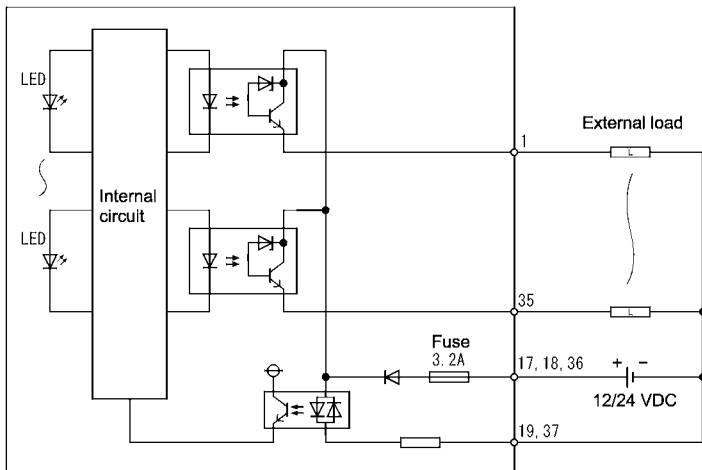
*2 : The ERR. indicating LED will also light when the external power supply is shut OFF.

3. OUTPUT MODULE SPECIFICATIONS

3.18 A1SY81 Transistor Output Module (Source Type)

Model		Transistor Output Module (Source Type)	
Specifications		A1SY81	Appearance
Number of output points		32 points	
Isolation method		Photocoupler	
Rated load voltage		12/24 VDC	
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current		0.1 A/point, 2 A/common	
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 circuit		1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A	
Response time	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 *1	
Fuse breaking capacity		50 A	
Error display		LED goes ON when fuse blows: signal output to PC CPU *2	
Common terminal arrangement		32 points/common (common terminals: 17, 18, 36)	
Operating indicator		ON state is indicated (LEDs)	
External connections		37-pin D sub-connector	
Applicable wire size		0.3 mm ²	
Accessories		Connector (1 pce.) for external wiring (soldering type)	
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)	
	Current	8 mA (TYP 24 VDC/common)	
Internal current consumption (5 VDC)		500 mA (TYP, all points ON)	
Weight kg		0.23	

External Connections



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

*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.

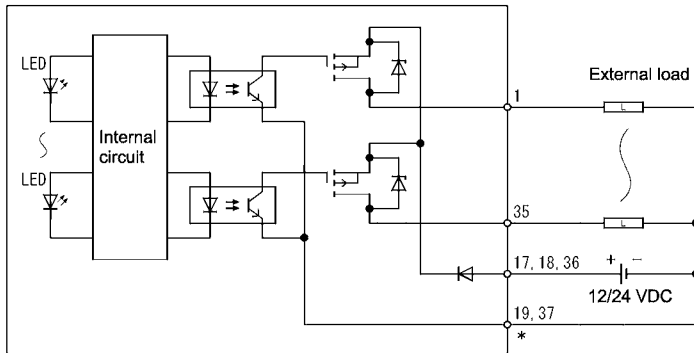
*2 : The ERR. indicating LED will also light when the external power supply is shut OFF.

3. OUTPUT MODULE SPECIFICATIONS

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

Model		Transistor Output Module (Source Type)	
Specifications		A1SY81EP	Appearance
Number of output points		32 points	
Isolation method		Photocoupler	
Rated load voltage		12/24 VDC	
Operating load voltage range		10.2 to 26.4 VDC	
Max. load current		0.1 A/point, 2 A/common (25 °C), 0.05 A/point, 1.6 A/common (55 °C)	
Max. inrush current		No limit (short protect)	
Leakage current at OFF circuit		0.1 mA or lower	
Max. voltage drop at ON circuit		3.5 VDC (0.1 A Max.), 2.5 VDC (0.1 A Min.)	
Response time	OFF → ON	0.5 ms or less	
	ON → OFF	1.5 ms or less (resistive load)	
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 detection indication		None (signal not output to a PLC CPU.)	
Protect reset		Automatic reset (reset by canceling thermal protect)	
Common method		32 points/common (common terminals: 17, 18, 36)	
Operating indicator		ON state is indicated (LEDs)	
External connections		37-pin D sub-connector	
Applicable wire size		0.3 mm ²	
Accessories		Connector (1 pcs.) for external wiring (soldering type)	
External power supply	Voltage	12/24 VDC (10.2 to 26.4 VDC)	
	Current	80 mA (TYP. 24 VDC/common)	
Internal current consumption (5 VDC)		500 mA (TYP. all points ON)	
Weight kg		0.25	

External Connections



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

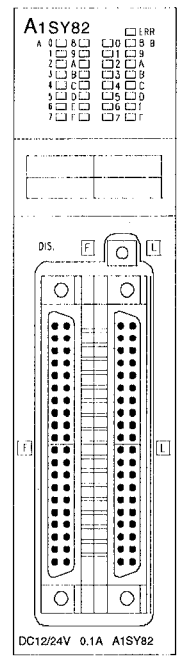
* Make sure that output short-circuits do not occur at more than three outputs simultaneously.
If output short-circuits occur in three or outputs at the same time, the output element may be deteriorated or corrupted.

3. OUTPUT MODULE SPECIFICATIONS

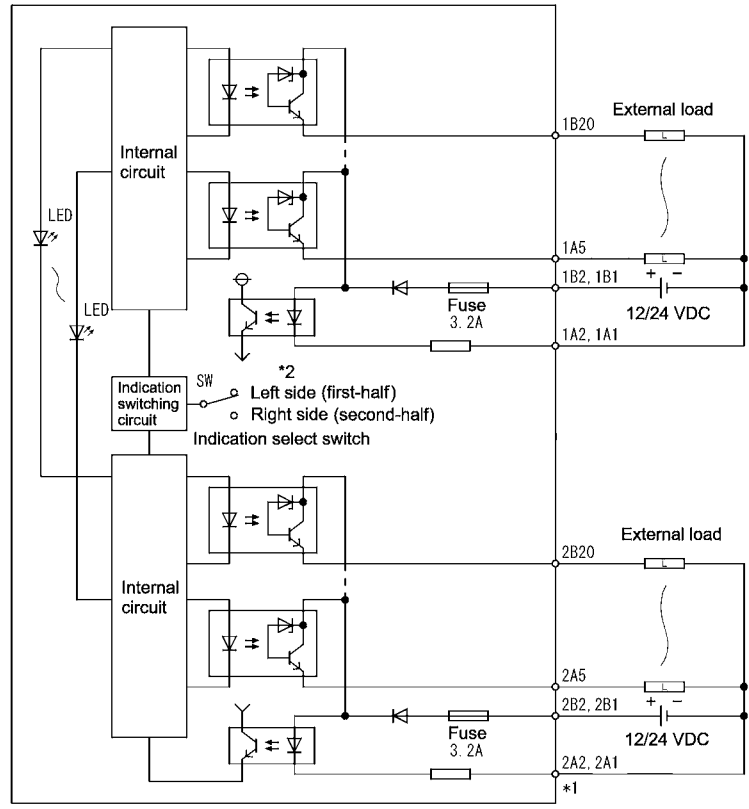
MELSEC-A

3.20 A1SY82 Transistor Output Module (Source Type)

Model		Transistor Output Module (Source Type)	
		A1SY82	Appearance
Specifications			
Number of output points		64 points	
Isolation method		Photocoupler	
Rated load voltage		12/24 VDC	
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current		0.1 A/point, 1.6 A/common	
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 circuit		1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A	
Response time	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		0.3 mm ²	
Accessories		Connectors (2 pces.) for external wiring (soldering type)	
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)	
	Current	8 mA (TYP 24 VDC/common)	
Internal current consumption (5 VDC)		930 mA (TYP, all points ON)	
Weight kg		0.27	



External Connections



3. OUTPUT MODULE SPECIFICATIONS

MELSEC-A

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

*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.

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

4.1 Input/Output Composite Module Specifications

4.1.1 A1SH42 input/output module

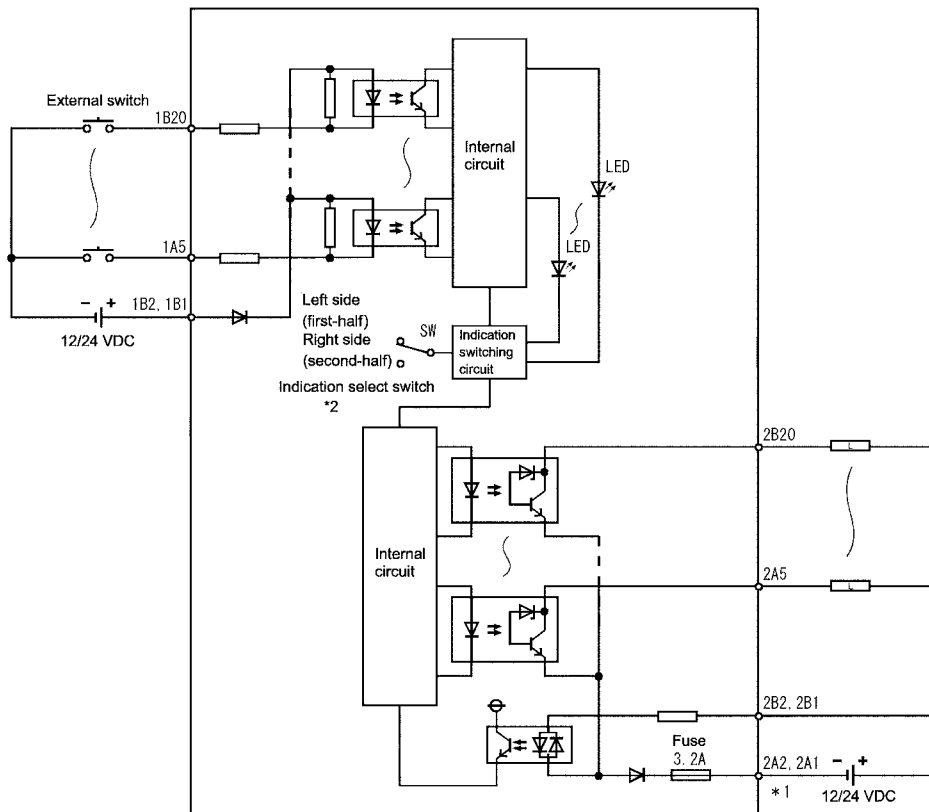
Model		Input/Output Composite Module		Appearance	
Specifications		Input Specifications			
Number of input points		32 points			
Isolation method		Photocoupler			
Rated input voltage		12 VDC	24 VDC		
Rated input current		Approx. 2 mA	Approx. 5 mA		
Operating voltage range		10.2 to 26.4 VDC (ripple: less than 5%)			
Max. simultaneous input points		60% (20 points/common) simultaneously ON (at 24 VDC)			
ON voltage/ON current		8 VDC or higher/2 mA or higher			
OFF voltage/OFF current		4 VDC or lower/0.6 mA or lower			
Input resistance		Approx. 5 kΩ			
Response time	OFF → ON	10 ms or less (24 VDC)			
	ON → OFF	10 ms or less (24 VDC)			
Common method		32 points/common (common terminals: 1B1, 1B2)			
		Output Specifications			
Number of output points		32 points			
Isolation method		Photocoupler			
Rated input voltage		12/24 VDC			
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)			
Max. load current		0.1 A/point, 1.6 A/common			
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 circuit		1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A			
Response time	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 method		32 points/common (common terminals: 2A1, 2A2)			
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)			
	Current	8 mA (TYP 24 VDC/common)			
		Common Specifications			
Number of I/O points		32 (I/O allocation is set as a 32-point output module)			
Operating indicator		ON state is indicated (LEDs), 32-bit indication by switch			
External connections		40-pin connector			
Applicable wire size		0.3 mm ²			
Accessories		Connector (2 cps.) for external wiring (soldering type)			
Internal current consumption (5 VDC)		500 mA (TYP, all points ON)			
Weight kg		0.27			

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

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
	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12
	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13
	1B16	X04	1A16	X14	2B16	Y04	2A16	Y14
	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15
	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16
	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17
	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18
	1B11	X09	1A11	X19	2B11	Y09	2A11	Y19
	1B10	X0A	1A10	X1A	2B10	Y0A	2A10	Y1A
	1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B
	1B8	X0C	1A8	X1C	2B8	Y0C	2A8	Y1C
	1B7	X0D	1A7	X1D	2B7	Y0D	2A7	Y1D
	1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E
	1B5	X0F	1A5	X1F	2B5	Y0F	2A5	Y1F
	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant
	1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant
	1B2	12/24 VDC	1A2	Vacant	2B2	12/24 VDC	2A2	COM2
	1B1	12/24 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.

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

4.1.2 A1SH42P input / output module

Model		Input / Output Composite Module		Appearance
Specifications		Input Specifications		
Number of input points		32 points		
Isolation method		Photocoupler		
Rated input voltage		12VDC	24VDC	
Rated input current		Approx. 2 mA	Approx. 5 mA	
Operating voltage range		10.2 to 26.4 VDC (ripple: less than 5%)		
Max. simultaneous input points		60% (20 points / common) simultaneously ON (at 24 VDC)		
ON voltage/ON current		8 VDC or higher/2mA or higher		
OFF voltage/OFF current		4 V or lower / 0.6 mA or lower		
Input resistance		Approx. 5k Ω		
Response time	OFF→ON	10 ms or less (24 VDC)		
	ON→OFF	10 ms or less (24 VDC)		
Common method		32 points / common (common terminal: 1B1, 1B2)		
		Output Specifications		
Number of Output points		32 points		
Isolation method		Photocoupler		
Rated input voltage		12 / 24 VDC		
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)		
Max. load current		0.1 A / points, 2 A / common		
Max. allowed rush current		0.7 A 10 ms or less		
Leakage current at OFF circuit		0.1 mA or less		
Max. voltage drop at ON circuit		0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A		
Response time	OFF→ON	1 ms or less		
	ON→OFF	1 ms or less (resistive load)		
Surge absorber		Zener diode		
Fuse rating		None		
Common method		32 points / common (common terminals: 2A1, 2A2)		
External power supply	Voltage	12 / 24 VDC (10.2 to 30 VDC)		
	Current	12 mA (TYP 24 VDC / common)		
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		
Number of I/O points		32 (I/O allocation is set as a 32-point output module)		
Operating indicator		ON state is indicated (LEDs), 32-bit indication by switch		
External connections		40-pin connector		
Applicable wire size		0.3mm ²		
Accessories		Connector (2 cps.) for external wiring (soldering type)		
Internal current consumption (5 VDC)		130 mA (TYP, all points ON)		
Weight Kg		0.17		

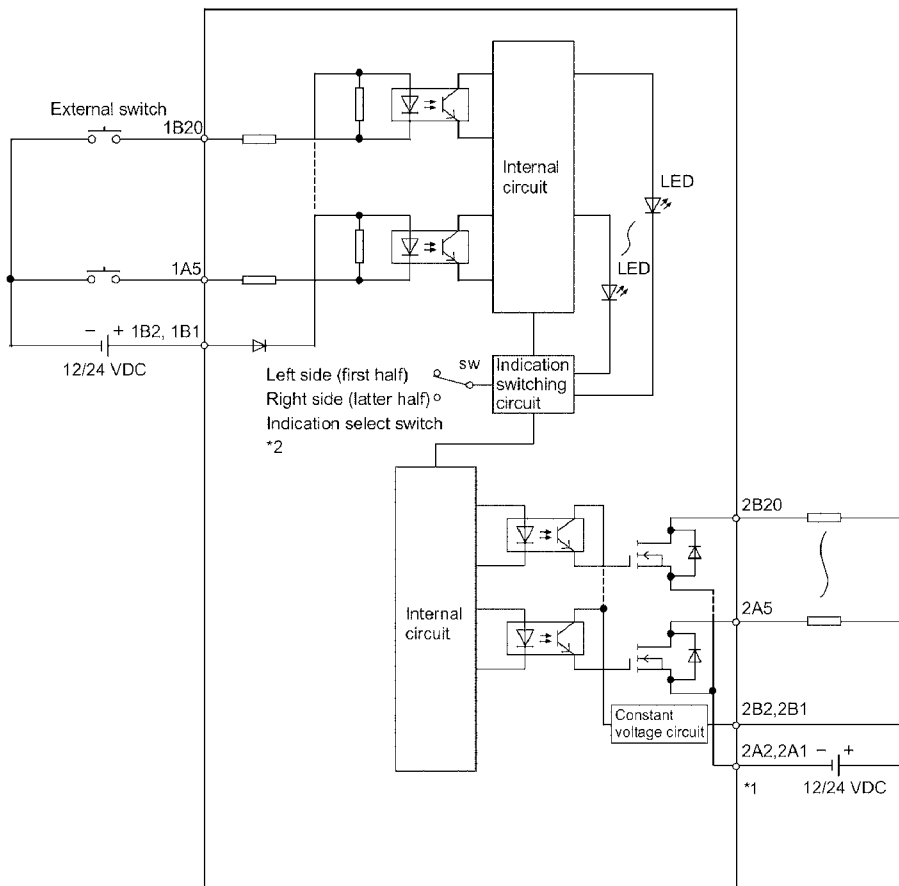
DC12/24 2/5mA DC12/24V 0.1A A1SH42P

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

External Connections

Pin Arrangement		Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)	
B20	○ ○	A20	1B20	X00	1A20	X10	2B20	Y00	2A20	Y10
B19	○ ○	A19	1B19	X01	1A19	X11	2B19	Y01	2A19	Y11
B18	○ ○	A18	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12
B17	○ ○	A17	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13
B16	○ ○	A16	1B16	X04	1A16	X14	2B16	Y04	2A16	Y14
B15	○ ○	A15	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15
B14	○ ○	A14	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16
B13	○ ○	A13	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17
B12	○ ○	A12	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18
B11	○ ○	A11	1B11	X09	1A11	X19	2B11	Y09	2A11	Y19
B10	○ ○	A10	1B10	X0A	1A10	X1A	2B10	Y0A	2A10	Y1A
B9	○ ○	A9	1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B
B8	○ ○	A8	1B8	X0C	1A8	X1C	2B8	Y0C	2A8	Y1C
B7	○ ○	A7	1B7	X0D	1A7	X1D	2B7	Y0D	2A7	Y1D
B6	○ ○	A6	1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E
B5	○ ○	A5	1B5	X0F	1A5	X1F	2B5	Y0F	2A5	Y1F
B4	○ ○	A4	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant
B3	○ ○	A3	1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant
B2	○ ○	A2	1B2	12/24 VDC	1A2	Vacant	2B2	12/24 VDC	2A2	COM2
B1	○ ○	A1	1B1	12/24 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.

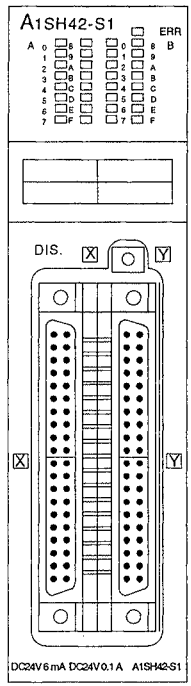
*2 : When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the LEDs. When it is set to the right side, the status of the second-half devices (Y00 to Y1F) is displayed by the LEDs.

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

4.1.3 A1SH42-S1 input/output module

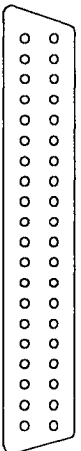
Model		Input/Output Composite Module	
Specifications		Input Specifications	Appearance
Number of input points		32 points	
Isolation method		Photocoupler	
Rated input voltage		24 VDC	
Rated input current		Approx. 5 mA	
Operating voltage range		19.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultaneous input points		60% (20 points/common) simultaneously ON (at 24 VDC)	
ON voltage/ON current		15 VDC or higher/3 mA or higher	
OFF voltage/OFF current		3 VDC or lower/0.5 mA or lower	
Input resistance		Approx. 5 kΩ	
Response time	OFF → ON	0.3 ms or less (24 VDC)	
	ON → OFF	0.3 ms or less (24 VDC)	
Common method		32 points/common (common terminals: 1B1, 1B2)	
		Output Specifications	
Number of output points		32 points	
Isolation method		Photocoupler	
Rated input voltage		12/24 VDC	
Operating voltage range		10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current		0.1 A/point, 1.6 A/common	
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 circuit		1.0 VDC (TYP) 0.1 A, 2.5 VDC (MAX) 0.1 A	
Response time	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 method		32 points/common (common terminals: 2A1, 2A2)	
External power supply	Voltage	12/24 VDC (10.2 to 30 VDC)	
	Current	8 mA (TYP 24 VDC/common)	
		Common Specifications	
Number of I/O points		32 (I/O allocation is set as a 32-point output module)	
Operating indicator		ON state is indicated (LEDs), 32-bit indication by switch	
External connections		40-pin connector	
Applicable wire size		0.3 mm ²	
Accessories		Connector (2 cps.) for external wiring (soldering type)	
Internal current consumption (5 VDC)		500 mA (TYP, all points ON)	
Weight kg		0.27	

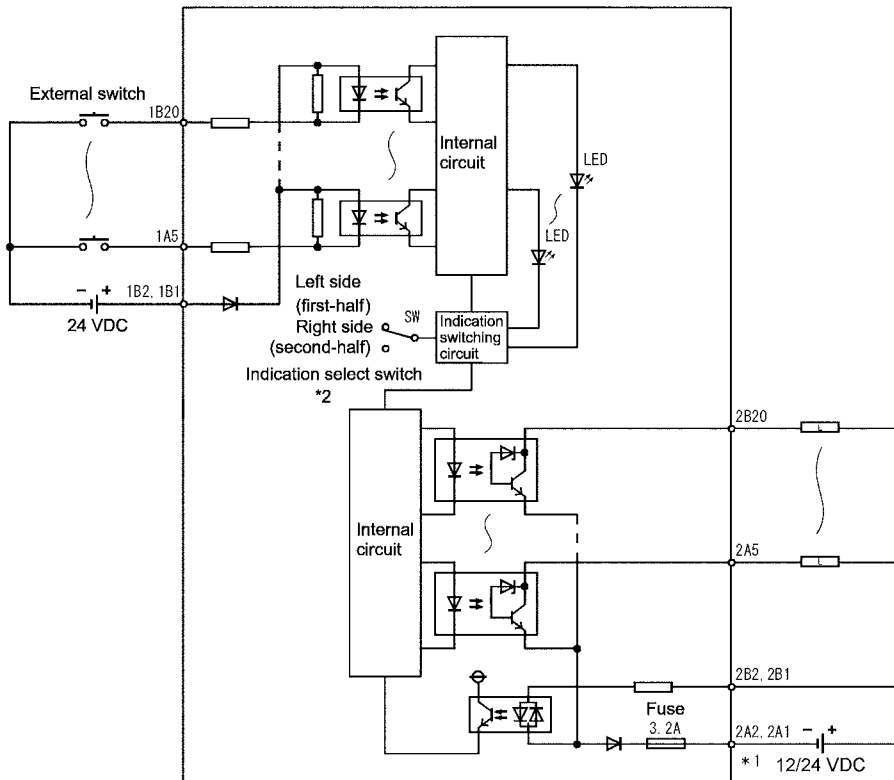


4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

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
	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12
	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13
	1B16	X04	1A16	X14	2B16	Y04	2A16	Y14
	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15
	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16
	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17
	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18
	1B11	X09	1A11	X19	2B11	Y09	2A11	Y19
	1B10	X0A	1A10	X1A	2B10	Y0A	2A10	Y1A
	1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B
	1B8	X0C	1A8	X1C	2B8	Y0C	2A8	Y1C
	1B7	X0D	1A7	X1D	2B7	Y0D	2A7	Y1D
	1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E
	1B5	X0F	1A5	X1F	2B5	Y0F	2A5	Y1F
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	
1B1	24 VDC	1A1	Vacant	2B1	12/24 VDC	2A1	COM2	



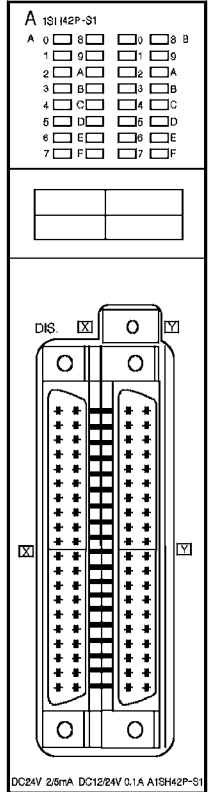
- *1 : In the pin number column, the pins beginning with "1[][]" are left connector pins and those beginning with "2[][]" are right connector pins.
- *2 : When the switch is set to the left side position, the status of the first-half devices (X00 to X1F) is displayed by the LEDs. When it is set to the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

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

4.1.4 A1SH42P-S1 input / output module

Specifications		Model	Input / Output Composite Module	
			Input Specifications	Appearance
Number of input points			32 points	
Isolation method			Photocoupler	
Rated input voltage			24VDC	
Rated input current			Approx. 5 mA	
Operating voltage range			10.2 to 26.4 VDC (ripple: less than 5%)	
Max. simultaneous input points			60% (20 points / common) simultaneously ON (at 24 VDC)	
ON voltage/ON current			15 VDC or higher / 3 mA or higher	
OFF voltage/OFF current			3 V or lower / 0.5 mA or lower	
Input resistance			Approx. 5k Ω	
Response time	OFF→ON		0.3 ms or less (24 VDC)	
	ON→OFF		0.3 ms or less (24 VDC)	
Common method			32 points / common (common terminal: 1B1, 1B2)	
			Output Specifications	
Number of Output points			32 points	
Isolation method			Photocoupler	
Rated input voltage			12 / 24 VDC	
Operating voltage range			10.2 to 30 VDC (peak voltage 30 VDC)	
Max. load current			0.1 A / points, 2 A / common	
Max. allowed rush current			0.7 A 10 ms or less	
Leakage current at OFF circuit			0.1 mA or less	
Max. voltage drop at ON circuit			0.1 VDC (TYP) 0.1 A, 0.2 VDC (MAX) 0.1 A	
Response time	OFF→ON		1 ms or less	
	ON→OFF		1 ms or less (resistive load)	
Surge absorber			Zener diode	
Fuse rating			None	
Common method			32 points / common (common terminals: 2A1, 2A2)	
External power supply	Voltage		12 / 24 VDC (10.2 to 30 VDC)	
	Current		12 mA (TYP 24 VDC / common)	
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	
Number of I/O points			32 (I/O allocation is set as a 32-point output module)	
Operating indicator			ON state is indicated (LEDs), 32-bit indication by switch	
External connections			40-pin connector	
Applicable wire size			0.3mm ²	
Accessories			Connector (2 cps.) for external wiring (soldering type)	
Internal current consumption (5 VDC)			130 mA (TYP, all points ON)	
Weight Kg			0.17	

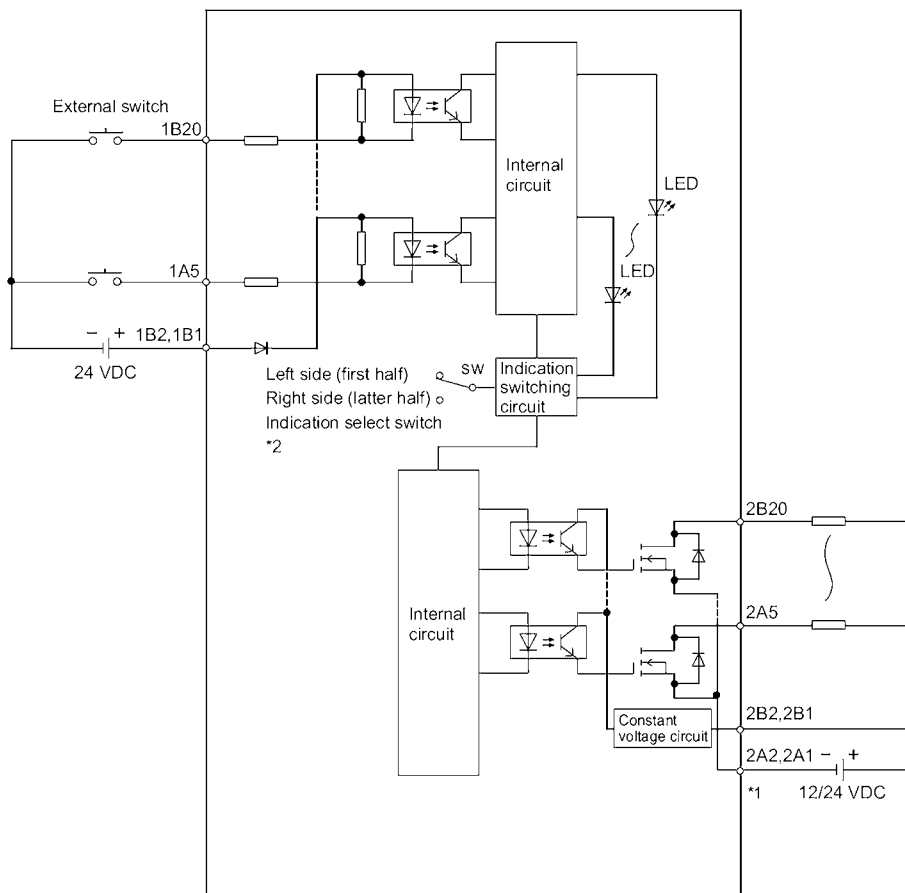


4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

External Connections

Pin Arrangement		Pin No.	Signal Name (FH)	Pin No.	Signal Name (FH)	Pin No.	Signal Name (LH)	Pin No.	Signal Name (LH)	
B20	○ ○	A20	1B20	X00	1A20	X10	2B20	Y00	2A20	Y10
B19	○ ○	A19	1B19	X01	1A19	X11	2B19	Y01	2A19	Y11
B18	○ ○	A18	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12
B17	○ ○	A17	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13
B16	○ ○	A16	1B16	X04	1A16	X14	2B16	Y04	2A16	Y14
B15	○ ○	A15	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15
B14	○ ○	A14	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16
B13	○ ○	A13	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17
B12	○ ○	A12	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18
B11	○ ○	A11	1B11	X09	1A11	X19	2B11	Y09	2A11	Y19
B10	○ ○	A10	1B10	X0A	1A10	X1A	2B10	Y0A	2A10	Y1A
B9	○ ○	A9	1B9	X0B	1A9	X1B	2B9	Y0B	2A9	Y1B
B8	○ ○	A8	1B8	X0C	1A8	X1C	2B8	Y0C	2A8	Y1C
B7	○ ○	A7	1B7	X0D	1A7	X1D	2B7	Y0D	2A7	Y1D
B6	○ ○	A6	1B6	X0E	1A6	X1E	2B6	Y0E	2A6	Y1E
B5	○ ○	A5	1B5	X0F	1A5	X1F	2B5	Y0F	2A5	Y1F
B4	○ ○	A4	1B4	Vacant	1A4	Vacant	2B4	Vacant	2A4	Vacant
B3	○ ○	A3	1B3	Vacant	1A3	Vacant	2B3	Vacant	2A3	Vacant
B2	○ ○	A2	1B2	24 VDC	1A2	Vacant	2B2	12/24 VDC	2A2	COM2
B1	○ ○	A1	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.

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

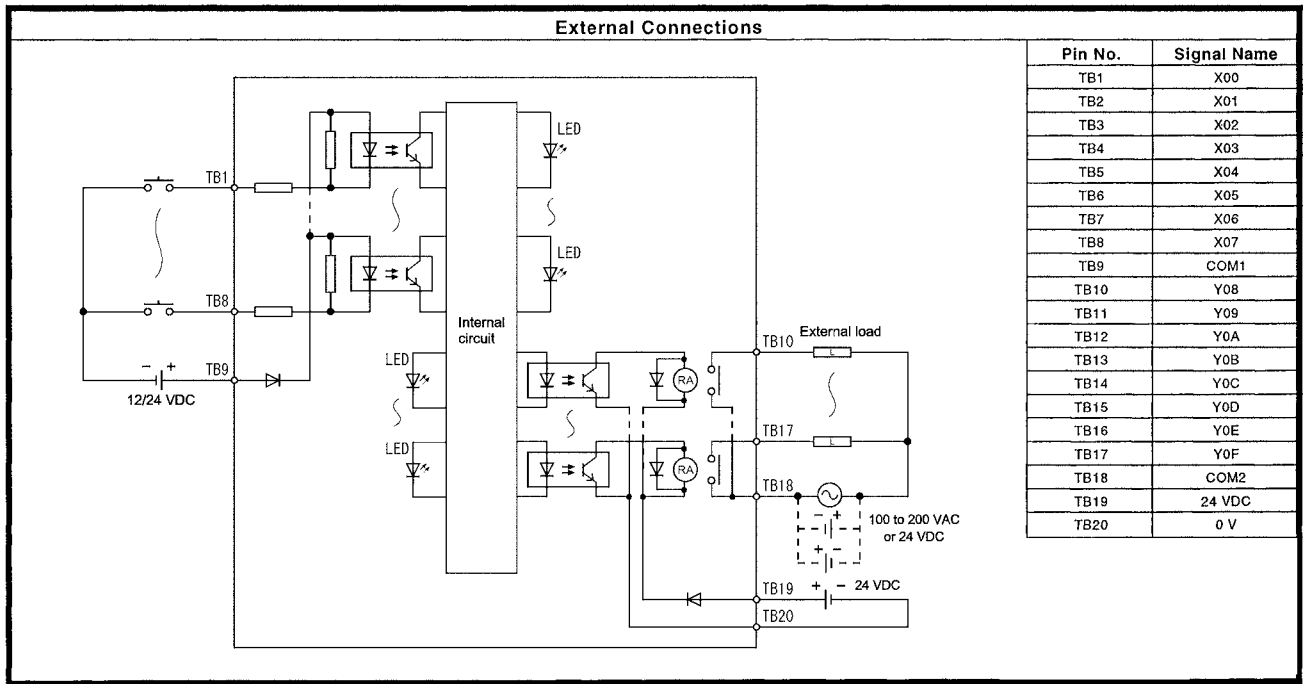
MELSEC-A

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

Model		Input/Output Composite Module		Appearance
Specifications		Input Specifications		
Number of input points		8 points		<p>A1SX48Y 18</p> <p>0 1 2 3 4 5 6 7</p> <p>A B C D E F</p>
Isolation method		Photocoupler		
Rated input voltage		24 VDC		
Rated input current		Approx. 7 mA		
Operating voltage range		19.2 to 26.4 VDC (ripple: less than 5%)		
Max. simultaneous input points		100% simultaneously ON (at 26.4 VDC)		
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 time	OFF → ON	10 ms or less (24 VDC)		
	ON → OFF	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		
Isolation method		Photocoupler		
Rated switching voltage and current		24 VDC 2 A (resistive load) 240 VAC 2A (COSφ=1)/point, 8 A/common		
Minimum switching load		5 VDC 1mA		
Maximum switching voltage		264 VAC 125 VDC		
Response time	OFF → ON	10 ms or less		
	ON → OFF	12 ms or less (resistive load)		
Service life	Mechanical	20,000,000 times of switching or over		
	Electrical	At rated switching voltage and current loads 100,000 times of switching or over		
		At 200 VAC 1.5 A, 240 VAC 1 A (COSφ=0.7) 100,000 times of switching or over		
		At 200 VAC 1 A, 240 VAC 0.5 A (COSφ=0.35) 100,000 times of switching or over		
		At 24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) 100,000 times of switching or over		
Maximum switching frequency		3600 times/hour		
Surge absorber		Not provided		
Fuse		None		
External power supply (relay coil drive)	Voltage	24 VDC ±10%, ripple voltage: 4 V _{P-P} or less		
	Current	45 mA (TYP. 24 VDC all points ON)		
Common method		8 points/common (common terminal: TB18)		
		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 mm ² (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 points		16 points (Make I/O allocation as a 16-point output module.)		

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A



4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

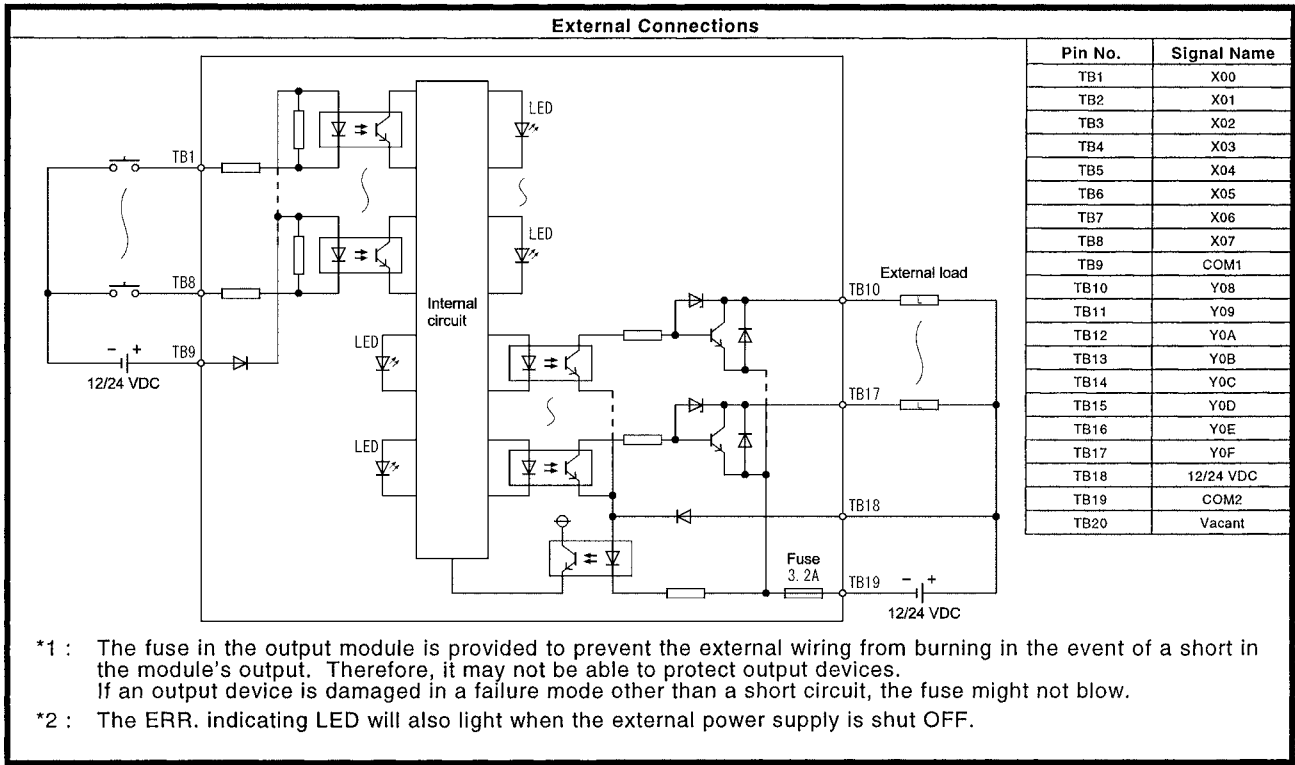
MELSEC-A

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

Model		Input/Output Composite Module		Appearance	
Specifications		Input Specifications			
Number of input points		8 points			
Isolation method		Photocoupler			
Rated input voltage		24 VDC			
Rated input current		Approx. 7 mA			
Operating voltage range		19.2 to 26.4 VDC (ripple: less than 5%)			
Max. simultaneous input points		100% simultaneously ON (at 26.4 VDC)			
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 time	OFF → ON	10 ms or less (24 VDC)			
	ON → OFF	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			
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 circuit		0.9 VDC (TYP.) 0.5 A 1.5 VDC (MAX.) 0.5 A			
Response time	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 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)	Voltage	12/24 VDC (10.2 to 30 VDC)			
	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 mm ² (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)		60 mA (TYP. all points ON)			
Weight kg		0.2			
Number of I/O points		16 points (Make I/O allocation as a 16-point output module.)			

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A



4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

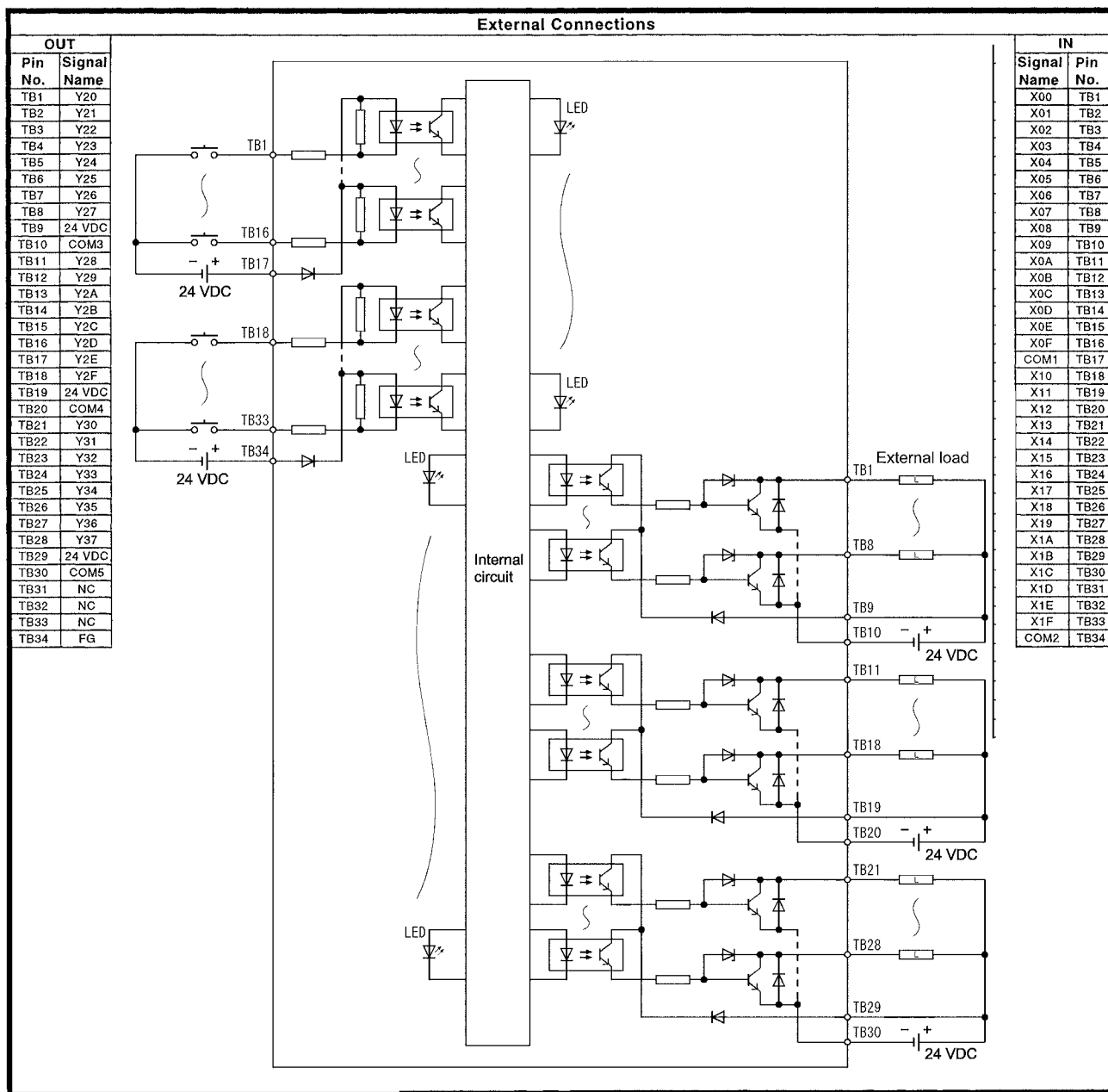
4.1.7 A1SJ-56DT I/O module

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

Output Specifications		Input Specifications		
Number of output points	24 points	Number of input points	32 points	
Isolation method	Photocoupler	Isolation method	Photocoupler	
Rated load voltage	24 VDC	Rated input voltage	24 VDC	
Operating load voltage range	19.2 to 30 VDC (peak voltage: 30 VDC)	Rated input current	Approx. 7 mA	
Maximum load current	0.5 A/point, 4 A/common	Operating voltage range	19.2 to 26.4 VDC (ripple: less than 5%)	
Maximum inrush current	4 A 10 ms or less	ON voltage/ON current	14 VDC or higher/3.5 mA or higher	
Leakage current at OFF circuit	0.1mA or less	OFF voltage/OFF current	6.5 VDC or lower/1.7 mA or lower	
Maximum voltage drop at OFF circuit	0.9 V (TYP.) 0.5 A 1.5 V (MAX.) 0.5 A	Input resistance	Approx. 3.3 KΩ	
Response time	OFF → ON	2 ms or less	Input method	Sink input (method by which the input current flows out)
	ON → OFF	2 ms or less (resistive load)		Response time
External power supply	Voltage	24 VDC (19.2 to 30 VDC)	Common method	16 points/common (common terminal: TB17, TB34)
	Current	60 mA (TYP. 24 VDC/common)		Operating indicator
Surge absorber	Zener diode	Operating indicator	Provided (the LED lights when the input is ON.)	
Common method	8 points/common (common terminal: TB10, TB20, TB30)	Maximum simultaneous input points	60 % (10 points/common)simultaneously ON	
Operating indicator	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: 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), 2 connectors			
Applicable cable size	0.75 to 2 mm ² (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			
Weight kg	0.7			

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A



4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

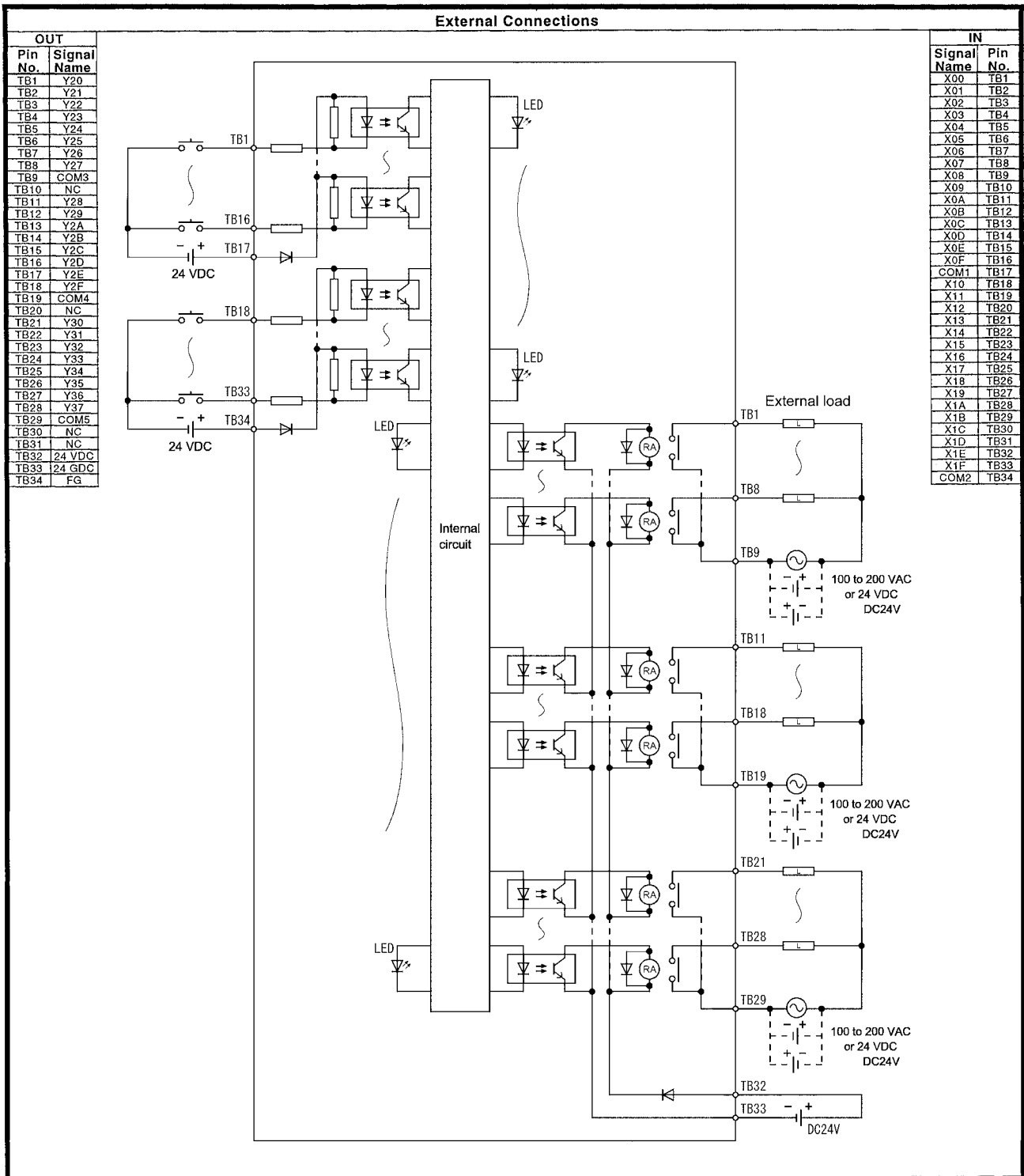
4.1.8 A1SJ-56DR I/O module

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

Output Specifications			Input Specifications			
Number of output points	24 points		Number of input points	32 points		
Isolation method	Photocoupler		Isolation method	Photocoupler		
Rated switching voltage and current	24 VDC 2 A (resistive load) 240 VAC 2A (COSφ=1)/point, 5 A/common		Rated input voltage	24 VDC		
			Rated input current	Approx. 7 mA		
Minimum switching load	5 VDC 1 mA		Operating voltage 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		
Service life	Mechanical	20,000,000 times of switching or over	Input resistance	Approx. 3.3 KΩ		
	Electrical	At rated switching voltage and current loads 100,000 times of switching or over	Input method	Sink input (method by which the input current flows out)		
		At 200 VAC 1.5 A, 240 VAC 1 A (COSφ=0.7) 100,000 times of switching or over	Response time	OFF → ON	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	ON → OFF	10 ms or less (24 VDC)		
	At 24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) 100,000 times of switching or over	Common method	16 points/common (common terminal: TB17, TB34)			
		Operating indicator	Provided (the LED lights when the input is ON.)			
Response time	OFF → ON	10 ms or less	Maximum simultaneous input points	60 % (10 points/common)simultaneously ON		
	ON → OFF	12 ms or less				
External power supply (relay coil drive)	Voltage	24 VDC ±10%, ripple voltage: 4 V _{P-P} or less				
	Current	140 mA (TYP. 24 VDC all points ON)				
Surge absorber	None					
Common method	8 points/common (common terminal: TB9, TB18, TB27)					
Operating indicator	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: 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), 2 connectors					
Applicable cable size	0.75 to 2 mm ² (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					
Weight kg	0.8					

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A



4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

4.2 Dynamic Input/Output Module Specifications

4.2.1 A1S42X dynamic input module

Specifications	Model	Dynamic Input Module		Appearance
		A1S42X		
Number of input points *1	16/32/48/64 points (switch setting)			
Isolation method	Photocoupler			
Rated input voltage	12 VDC	24 VDC		
Rated input current	Approx. 4 mA	Approx. 9 mA		
Operating voltage range	10.2 to 26.4 VDC (ripple : less than 5 %)			
Max. simultaneous input points	100 % simultaneously ON (at 26.4 VDC)			
ON voltage/ON current	8 VDC or higher/2 mA or higher			
OFF voltage/OFF current	4 VDC or lower/1 mA or lower			
Input resistance	Approx. 2.4 kΩ			
Response time	OFF → ON	0.4 ms or less (24 VDC)		
	ON → OFF	0.4 ms or less (24 VDC)		
Dynamic scan cycle	13.3 ms			
Operating indicator	On state is indicated (LEDs), 32-bit indication by switch			
External connections	24-pin connector			
Applicable wire size	0.3 mm ²			
Accessories	Connector (1 pce.) for external wiring (soldering type)			
Internal current consumption (5 VDC)	80 mA (TYP, all points ON)			
Weight kg	0.18			

External Connections

*1 Be sure to connect a diode to each switch if there will be any occasions where 2 or more switches are pressed simultaneously. (Refer to the figure on the right.)

Pin Arrangement

Front view

Pin No.	Signal Name	Pin No.	Signal Name
B12	XD0	A12	XD1
B11	XD2	A11	XD3
B10	XD4	A10	XD5
B9	XD6	A9	XD7
B8	XSCN0	A8	XSCN1
B7	XSCN2	A7	XSCN3
B6	XSCN4	A6	XSCN5
B5	XSCN6	A5	XSCN7
B4	Vacant	A4	Vacant
B3	12/24 VDC	A3	12/24 VDC
B2	0V	A2	0V
B1	FG	A1	FG

4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

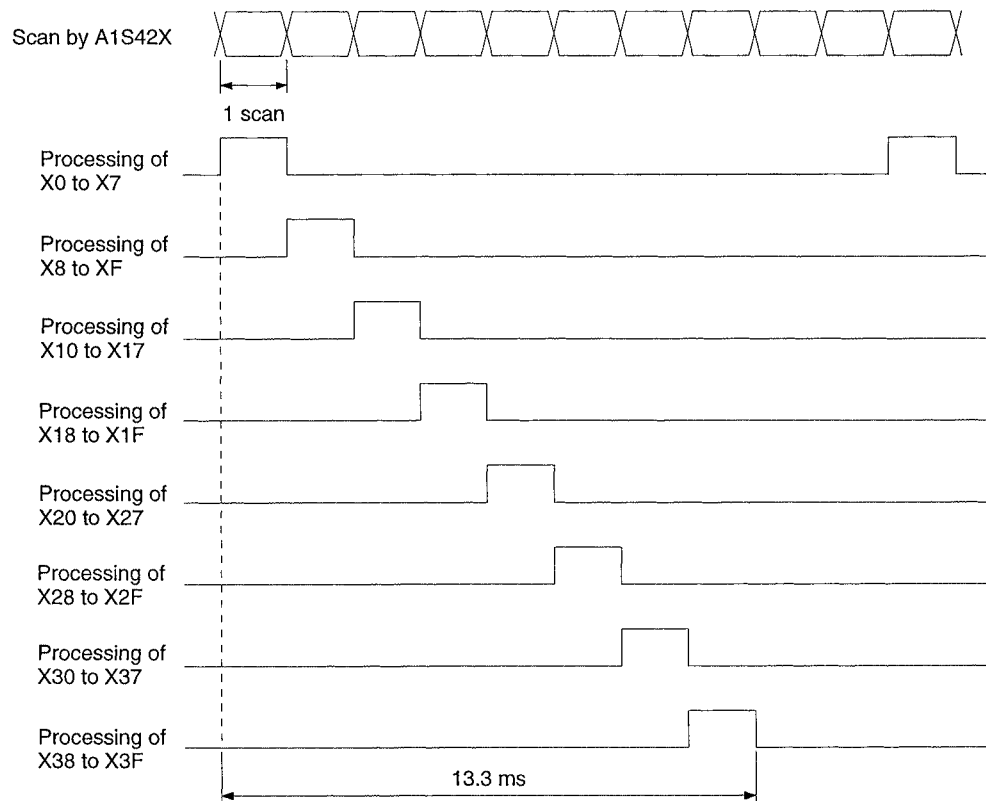
(1) Number of occupied I/O points setting

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				

(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.



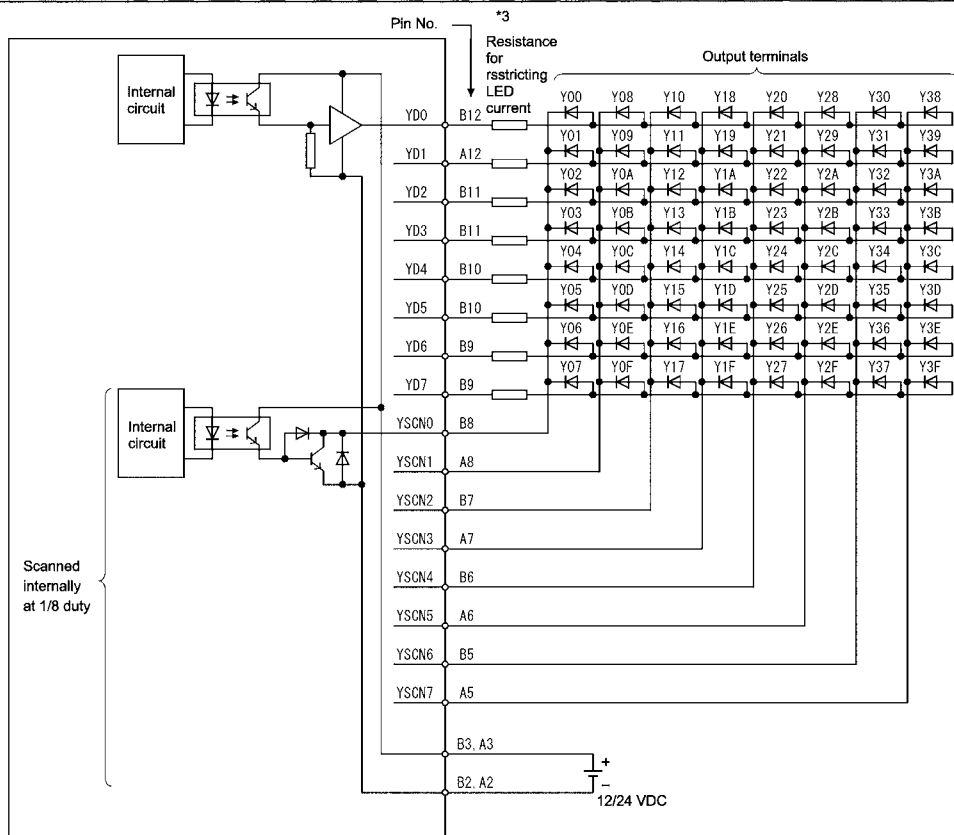
4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

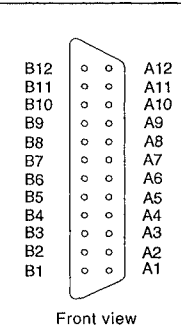
4.2.2 A1S42Y dynamic output module

Specifications	Model	Dynamic Output Module		Appearance
		A1S42Y		
Number of output points	16/32/48/64 points (switch setting)			
Isolation method	Photocoupler			
Rated load voltage	12/24 VDC			
Operating voltage range	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 OFF circuit	0.1 mA or less			
Max. voltage drop at ON circuit	Source 2.0 VDC (MAX) 0.1 A Sink 2.0 VDC (MAX) 0.1 A			
Response time	OFF → ON	2 ms or less (resistive load)		
	ON → OFF	2 ms or less (resistive load)		
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	24-pin connector			
Applicable wire size	0.3 mm ²			
Accessories	Connector (1 pce.) for external wiring (soldering type)			
External power supply	Voltage	12/24 VDC (10.2 to 26.4 VDC)		
	Current	55 mA (TYP, 24 VDC/common)		
Internal current consumption (5 VDC)	180 mA (TYP, all points ON)			
Weight kg	0.19			

External Connections

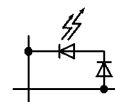


Pin Arrangement



Pin No.	Signal Name (FH)	Pin No.	Signal Name (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	A5	YSCN7
B4	Vacant	A4	Vacant
B3	12/24 VDC	A3	12/24 VDC
B2	0V	A2	0V
B1	Vacant	A1	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.



4. INPUT/OUTPUT COMPOSITE MODULE SPECIFICATIONS

MELSEC-A

(1) Number of occupied I/O points setting

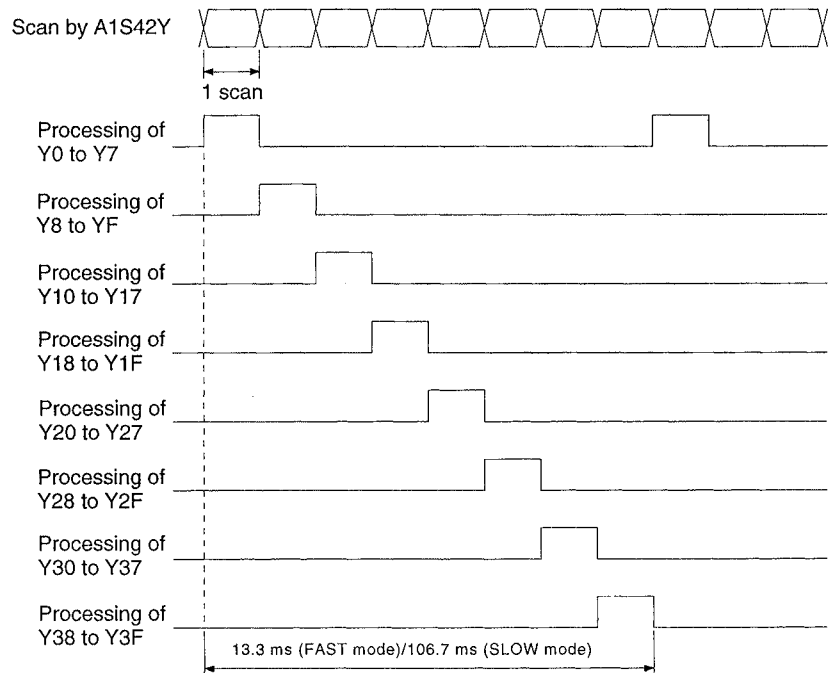
The number of occupied I/O points is set using the DIP switches on the front face of the module. It is factory-set to 64 points.

Number of occupied I/O points	16 points	32 points	48 points	64 points
Switch setting				

(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.

FAST mode	SLOW mode
Module top	Module top

5. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTOR MODULES

MELSEC-A

5. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTOR MODULES

5.1 Specifications of Connector/Terminal Block Convertor Modules

1) Connector/Terminal Block Convertor Module

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

POINT

- (1) The number of connectable I/O points is 32 for all connector/terminal block convertor modules.
Two connector/terminal block convertor modules and two cables for connector/terminal block convertor 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 is a source type output module, 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 CONVERTOR MODULES

MELSEC-A

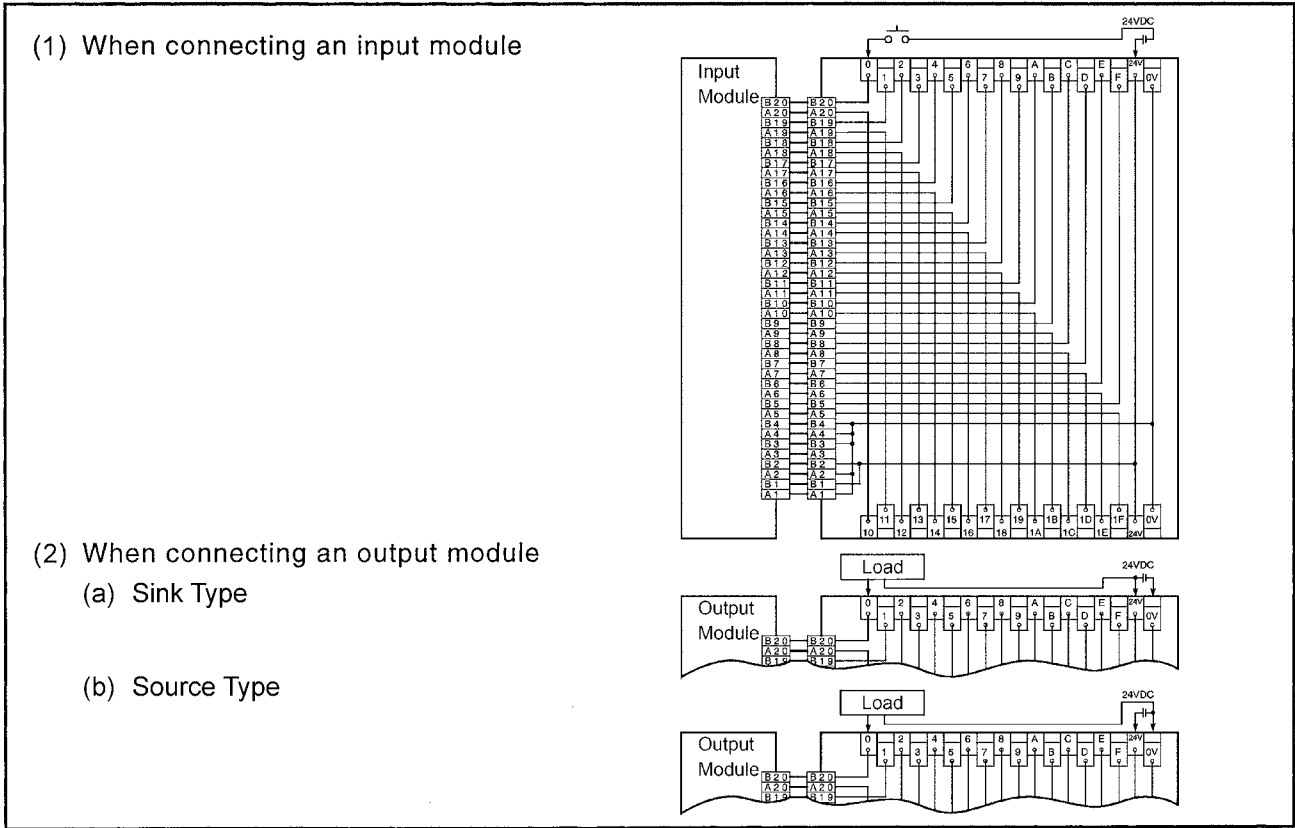
2) Cable

Type	Details	Weight	Applicable Models
AC05TB	0.5 m (19.69 in.), for sink modules	0.17kg	A6TBXY36 A6TBXY54 A6TBX70
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	
AC50TB	5 m (196.85 in.), for sink modules	0.76kg	
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	A6TBX36-E A6TBY36-E A6TBX54-E A6TBY54-E A6TBX70-E
AC10TB-E	1 m (39.37 in.), for source modules	0.23kg	
AC20TB-E	2 m (78.74 in.), for source modules	0.37kg	
AC30TB-E	3 m (118.11 in.), for source modules	0.51kg	
AC50TB-E	5 m (196.85 in.), for source modules	0.76kg	

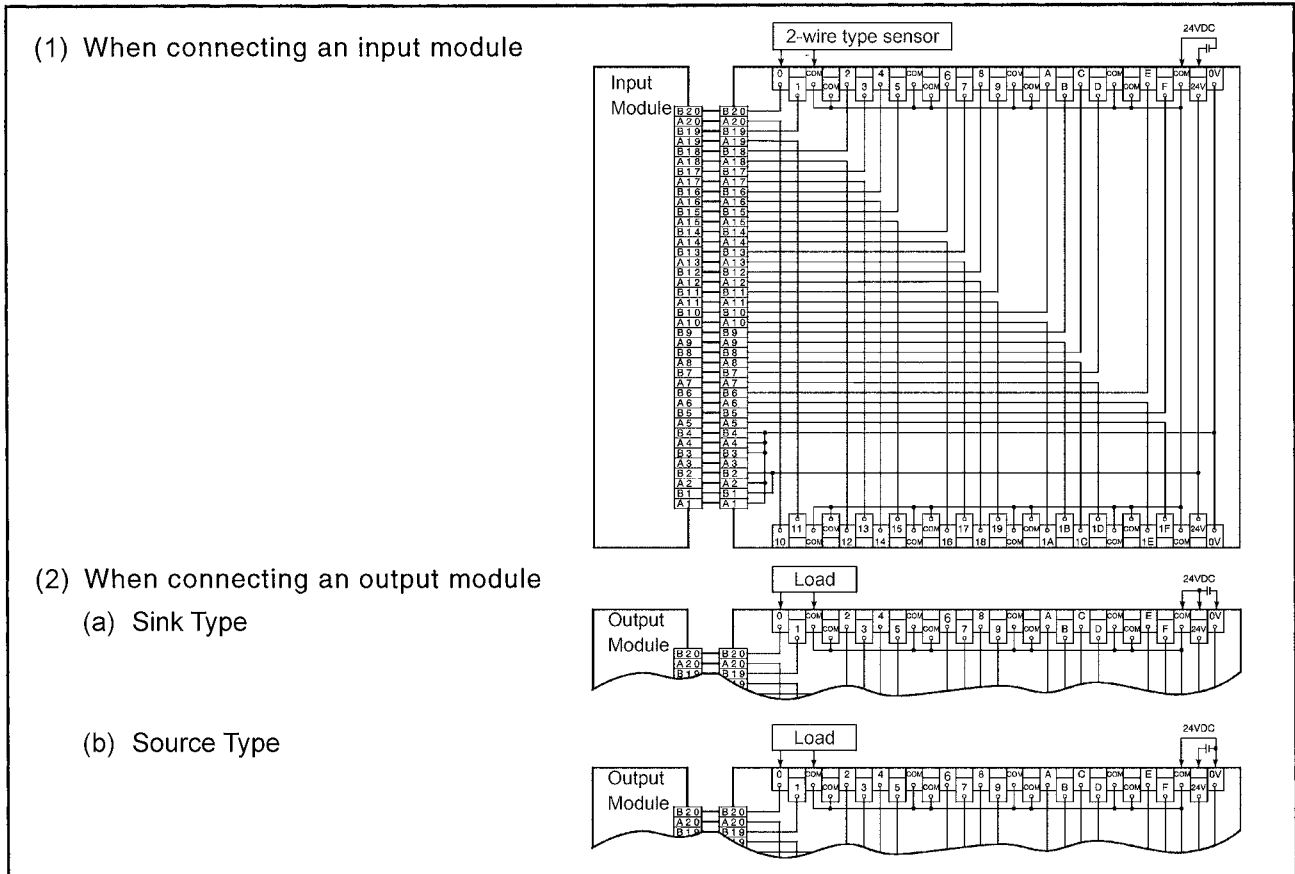
5. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTOR MODULES

5.2 Connector/Terminal Block Convertor Module Connection Diagrams

5.2.1 A6TBXY36



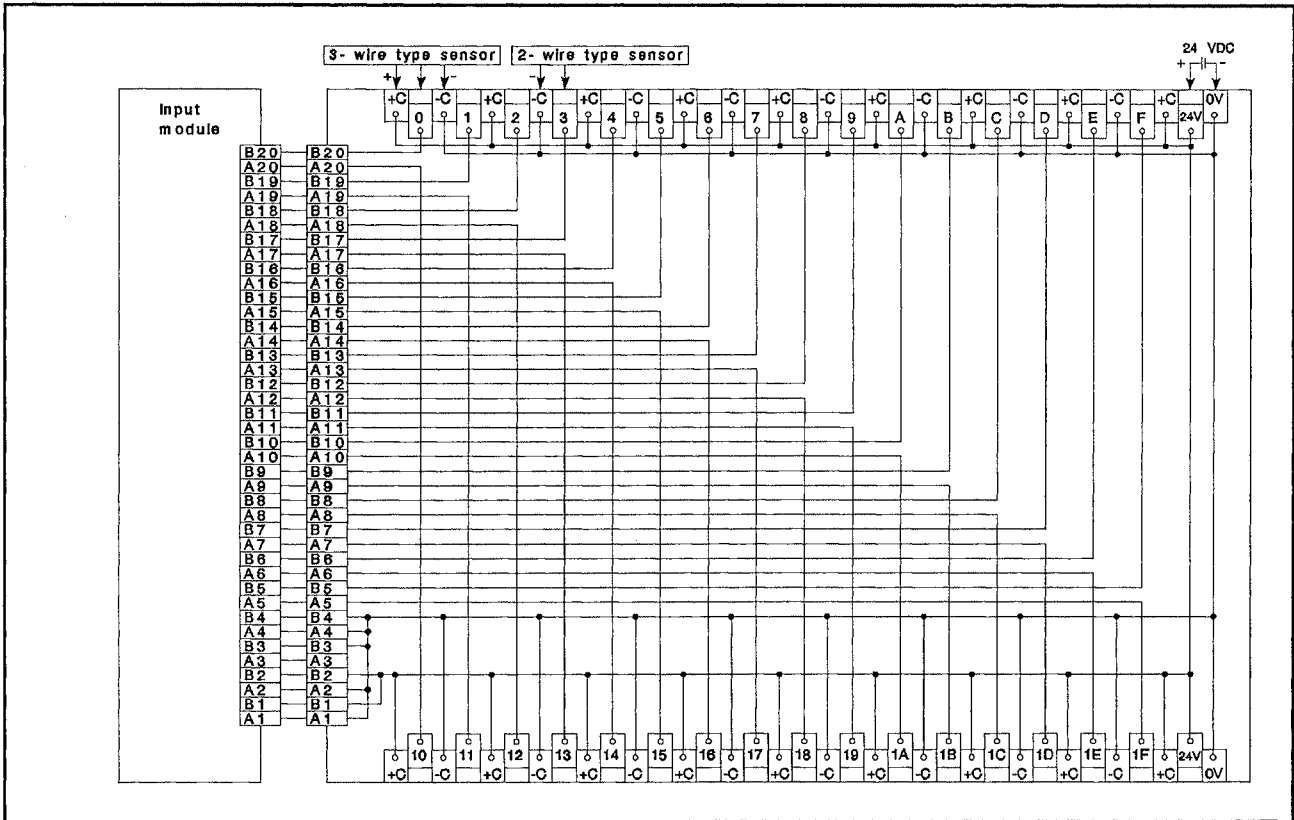
5.2.2 A6TBXY54



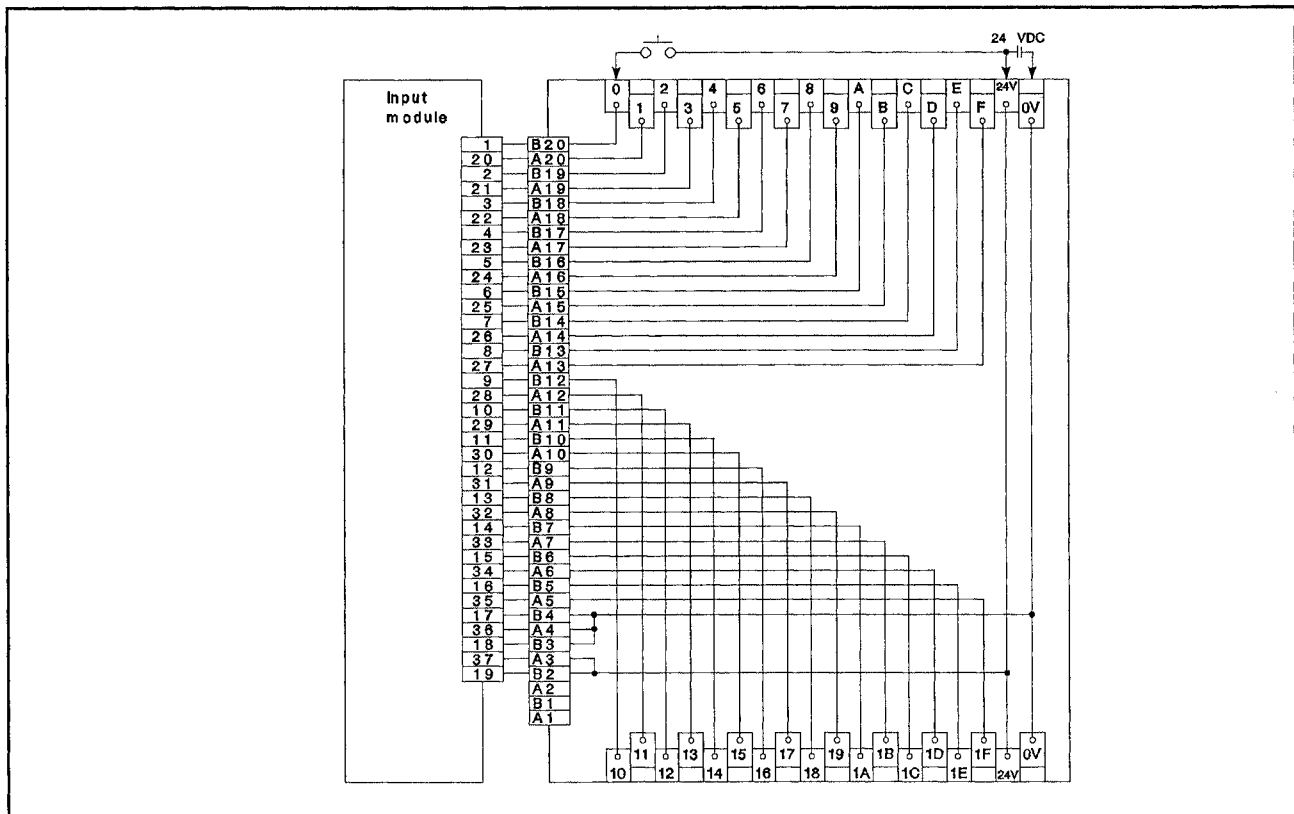
5. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTOR MODULES

MELSEC-A

5.2.3 A6TBX70



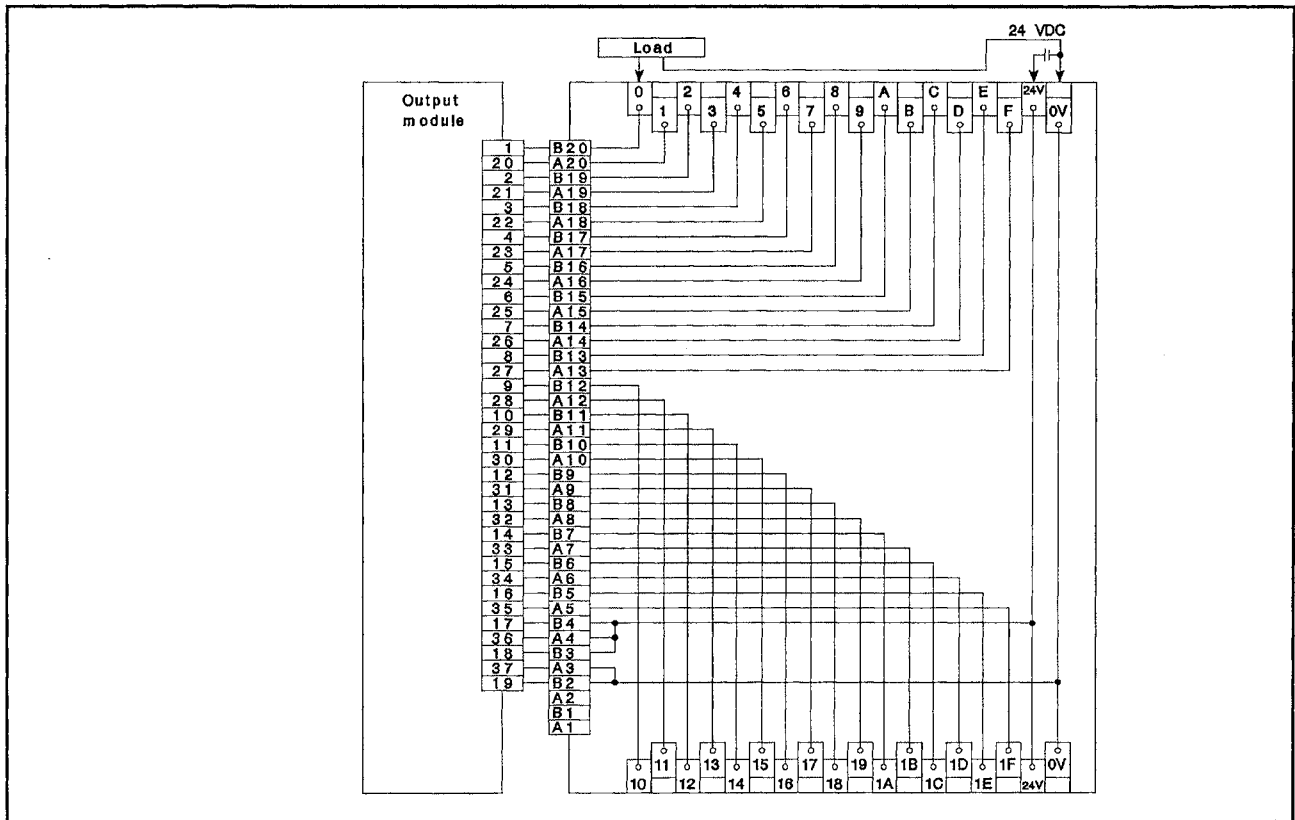
5.2.4 A6TBX36-E



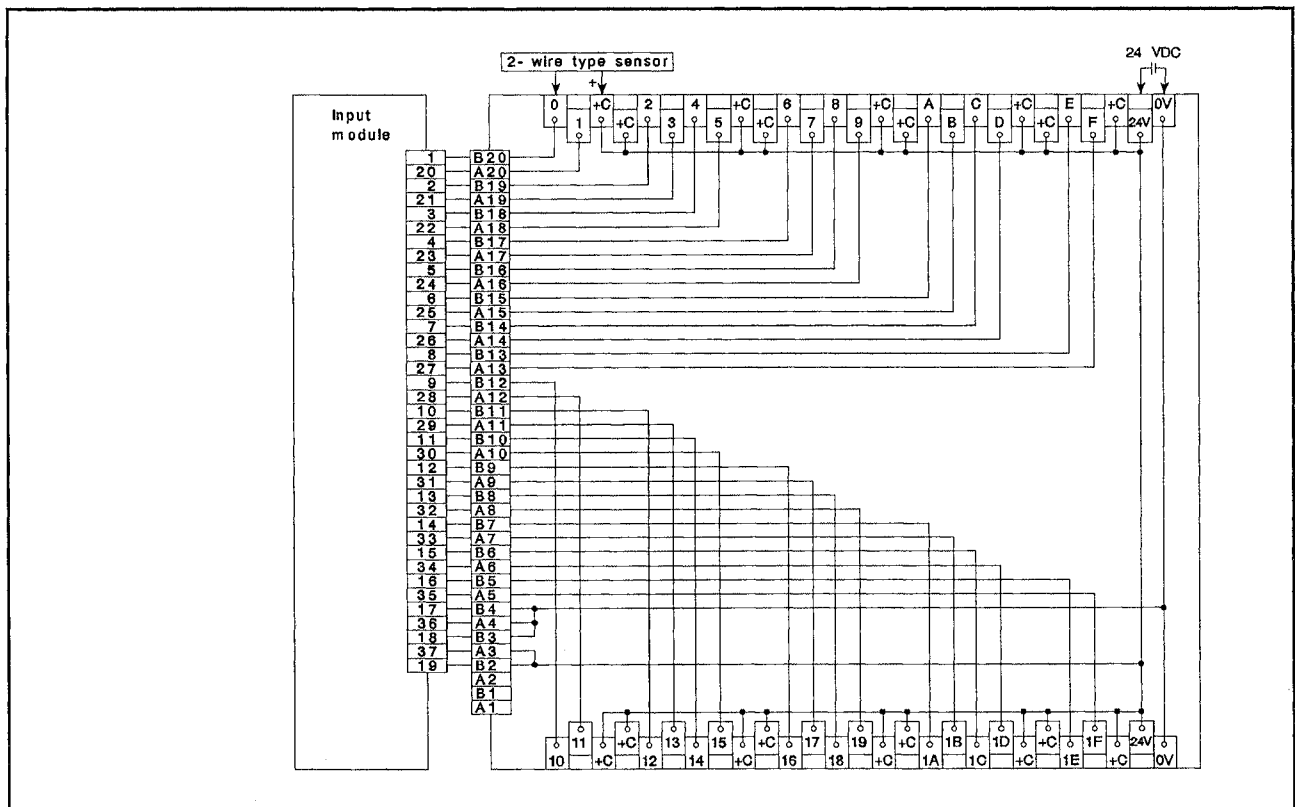
5. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTOR MODULES

MELSEC-A

5.2.5 A6TBY36-E



5.2.6 A6TBX54-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

Item	Model	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 \square points 0, 16, 32, 48, or 64 points can be specified to \square .	\square input (X) points Designate the number of points set with the select switch in the \square .
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 dimensions (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

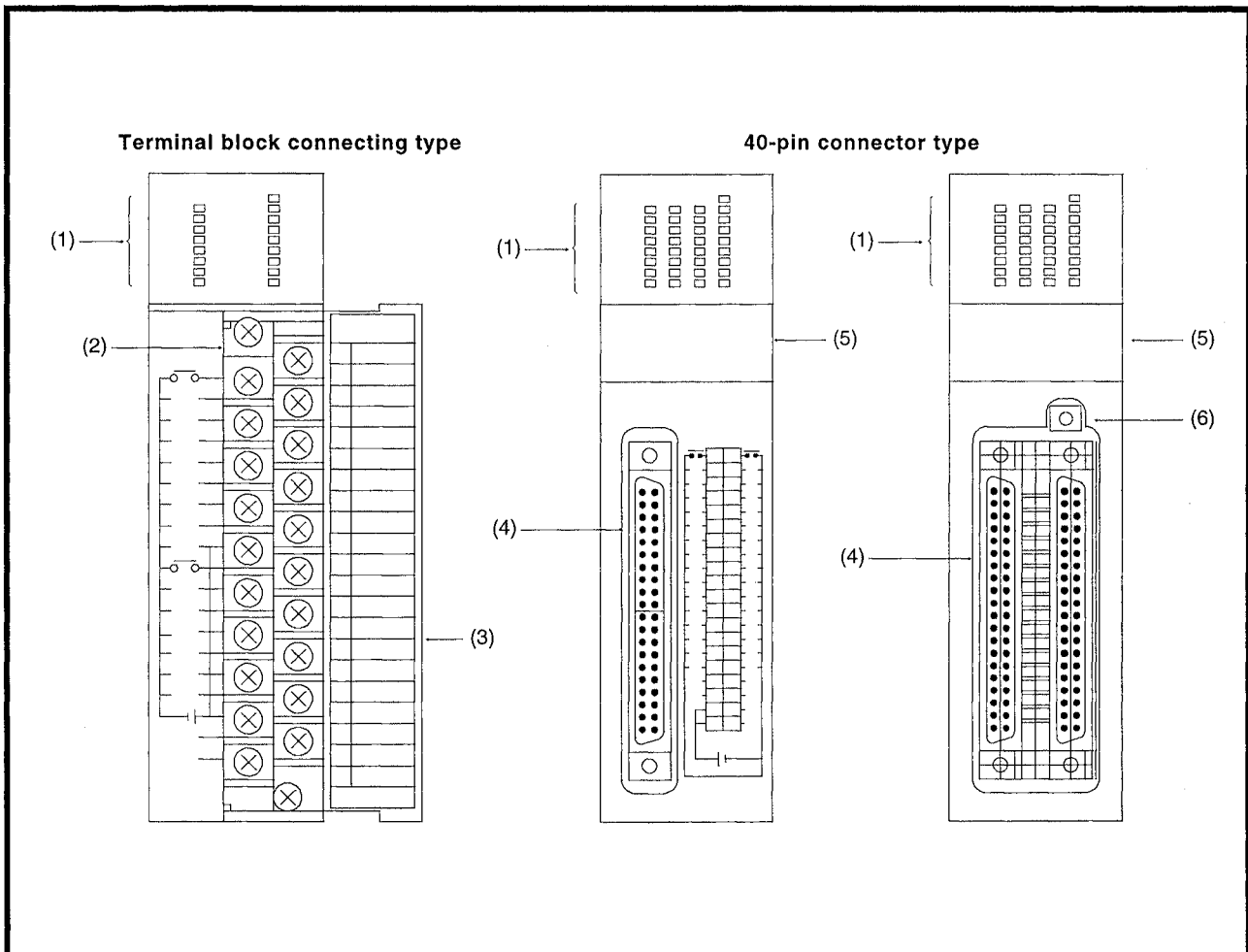
6.2 Setting the Occupying Number of Inputs/Outputs for A1SG62

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				

7. NAMES OF PARTS AND SETTINGS

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



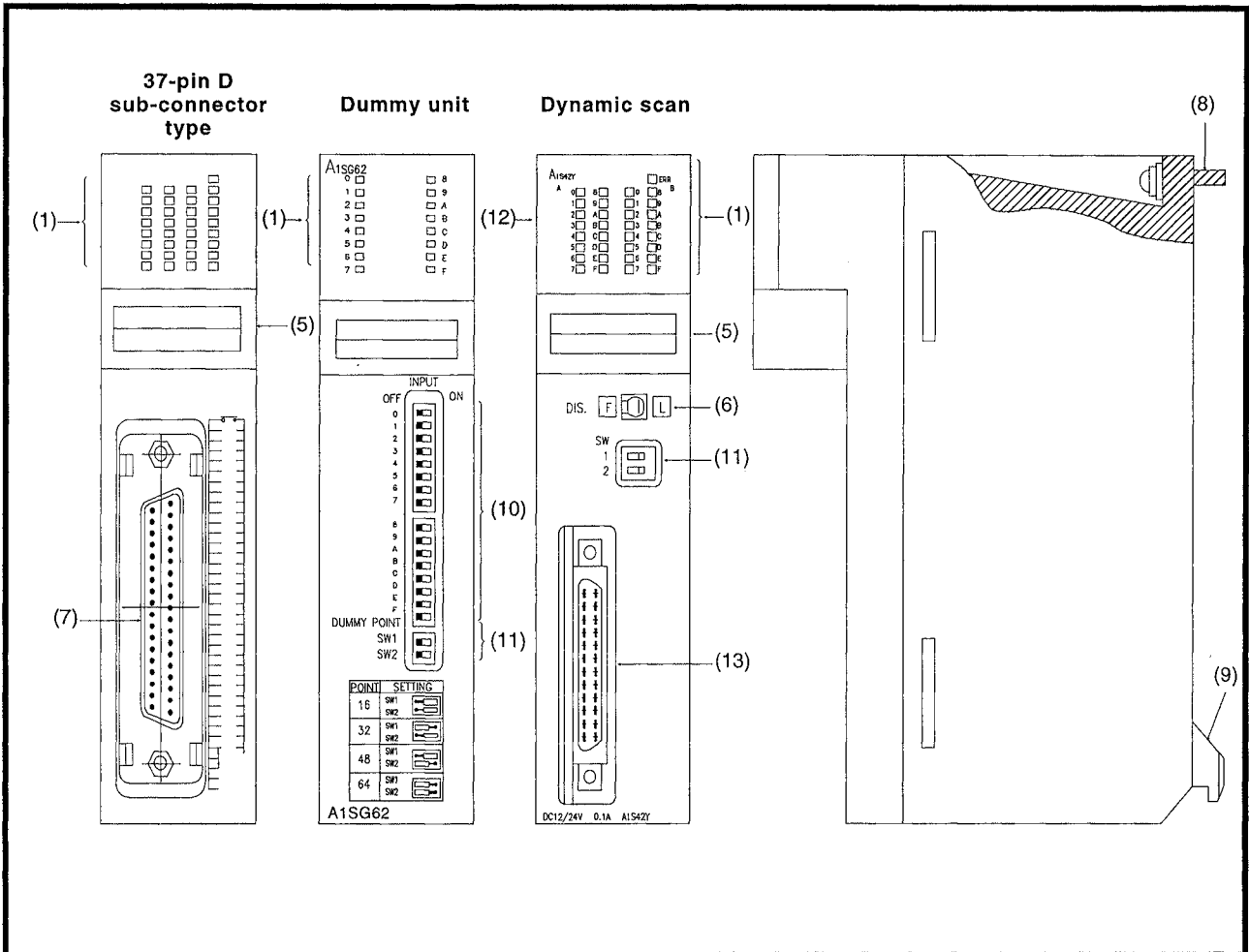
No.	Name	Description
(1)	I/O indicator LED	Indicates the ON/OFF state of input and output. Indicates the ON state when it is lit.
(2)	Terminal block	Used to connect a power cable and I/O cables. (M3.5 screw)
(3)	Terminal cover	Covers the terminals. Terminal symbols can be written on the card attached to the inside of the cover.
(4)	40-pin connector	For 32-I/O and 64-I/O modules. Used to connect a power cable and I/O cables.
(5)	Symbol card cover	Symbol card cover
(6)	Indicator select switch	Used to switch the LED indication for the first-half 32 I/Os or for the second-half 32 I/Os of a 64-I/O module.
(7)	37-pin D sub connector	For 32-I/O and 64-I/O modules. Used to connect a power cable and I/O signal cables.
(8)	Module mounting screw	Used to fix the module to the base unit.
(9)	Module mounting hook	Engages with the mounting hole in the base unit to secure the module.

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.

7. NAMES OF PARTS AND SETTINGS

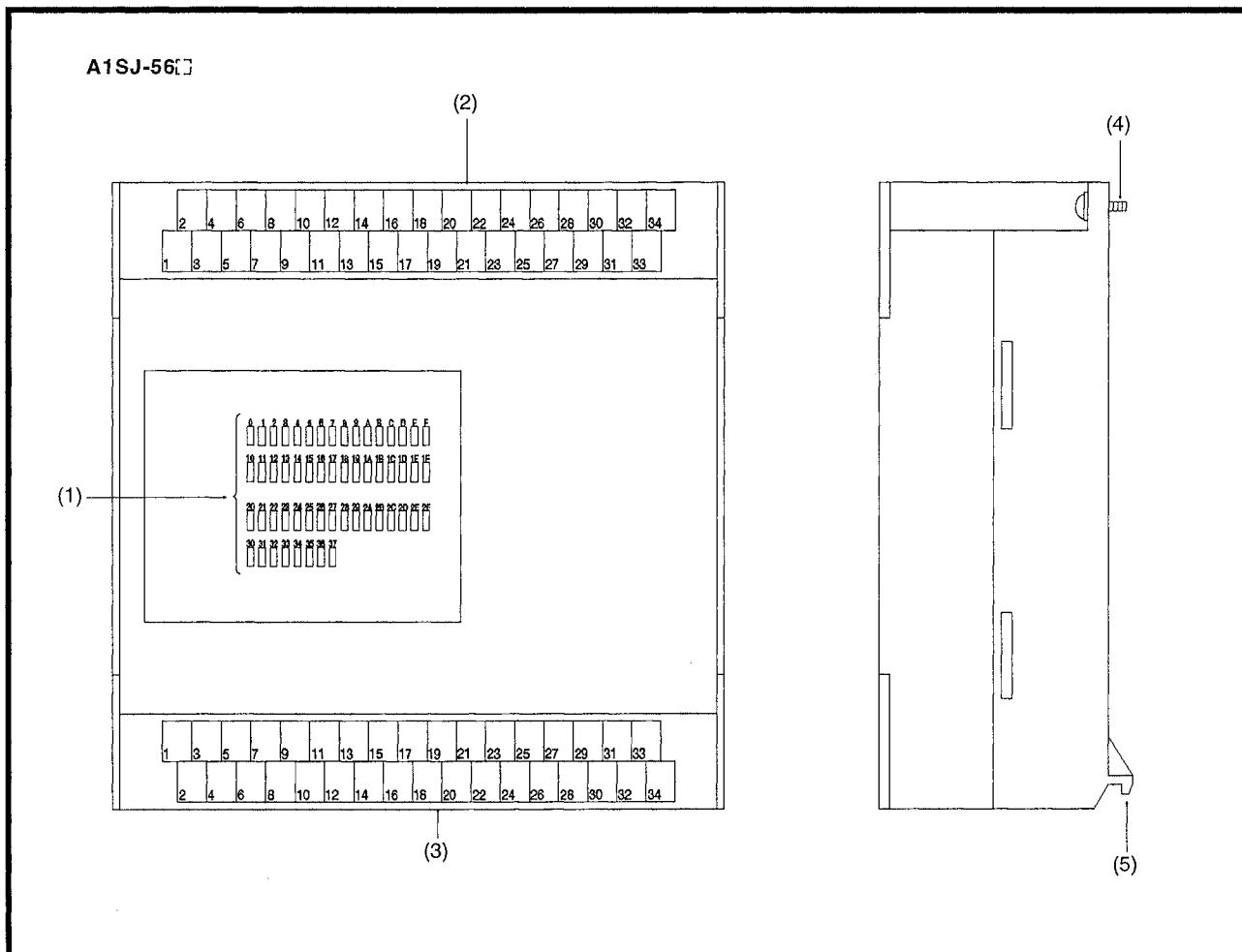
MELSEC-A



No.	Name	Description
(10)	Simulation switches	Used for input simulation. 16 points beginning with the head I/O number of the dummy module are allocated.
(11)	Occupied I/O points	16, 32, 48, or 64 points can be selected for the occupied I/O points.
(12)	Dynamic scan cycle	Used to set the dynamic scan cycle at 13.3 msec (FAST mode) or 106.7 msec (SLOW mode). (This switch is located on the rear face of the module.)
(13)	24-pin connector	Used for the dynamic scan I/O module to connect a power supply cable and I/O signal wires.

7. NAMES OF PARTS AND SETTINGS

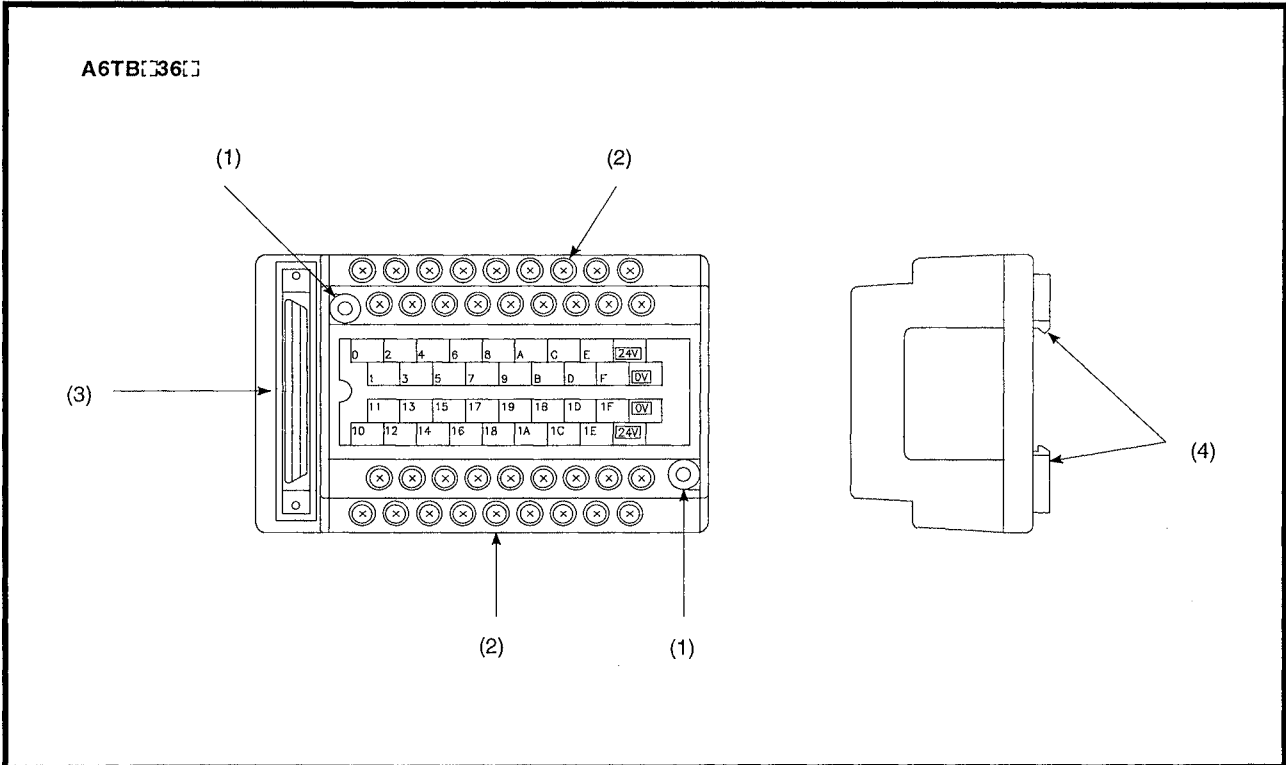
MELSEC-A



No.	Name	Description
(1)	I/O indicator LED	Indicates the ON/OFF state of input and output. Indicates the ON state when it is lit. 0 to 1F: input X0 to 1F, 20 to 37: Y20 to 37
(2)	Terminal block	Used to connect a power cable and input cables.
(3)	Terminal block	Used to connect a power cable and output cables.
(4)	Module mounting screw	Used to fix the module to the base unit.
(5)	Module mounting hook	Engages with the mounting hole in the base unit to secure the module.

7. NAMES OF PARTS AND SETTINGS

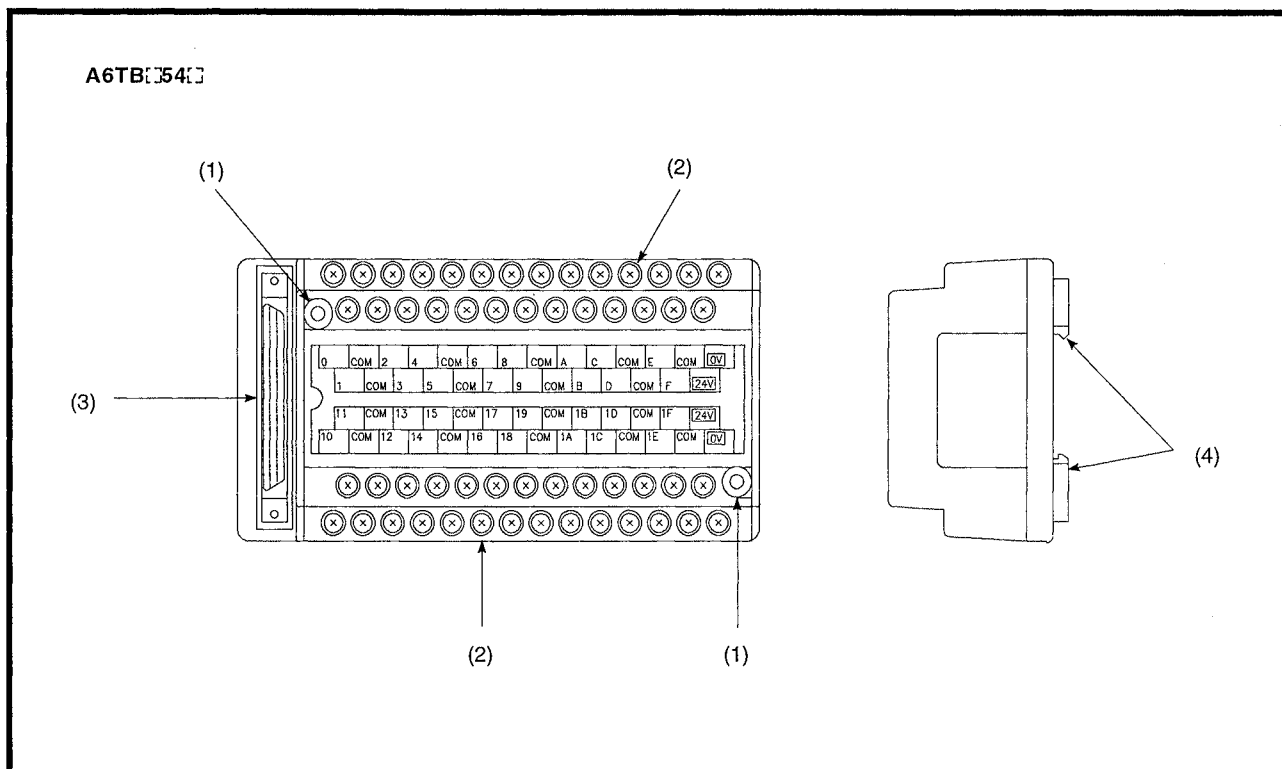
MELSEC-A



No.	Name	Description
(1)	Panel mounting hole	Panel mounting hole (for M4 screws)
(2)	Terminal block	Terminal block that connects power supply and signal wires
(3)	40-pin connector	40-pin connector for a 32-point module; connects power supply and input signal wires
(4)	Module fixing hooks	Hooks for mounting on a DIN rail

7. NAMES OF PARTS AND SETTINGS

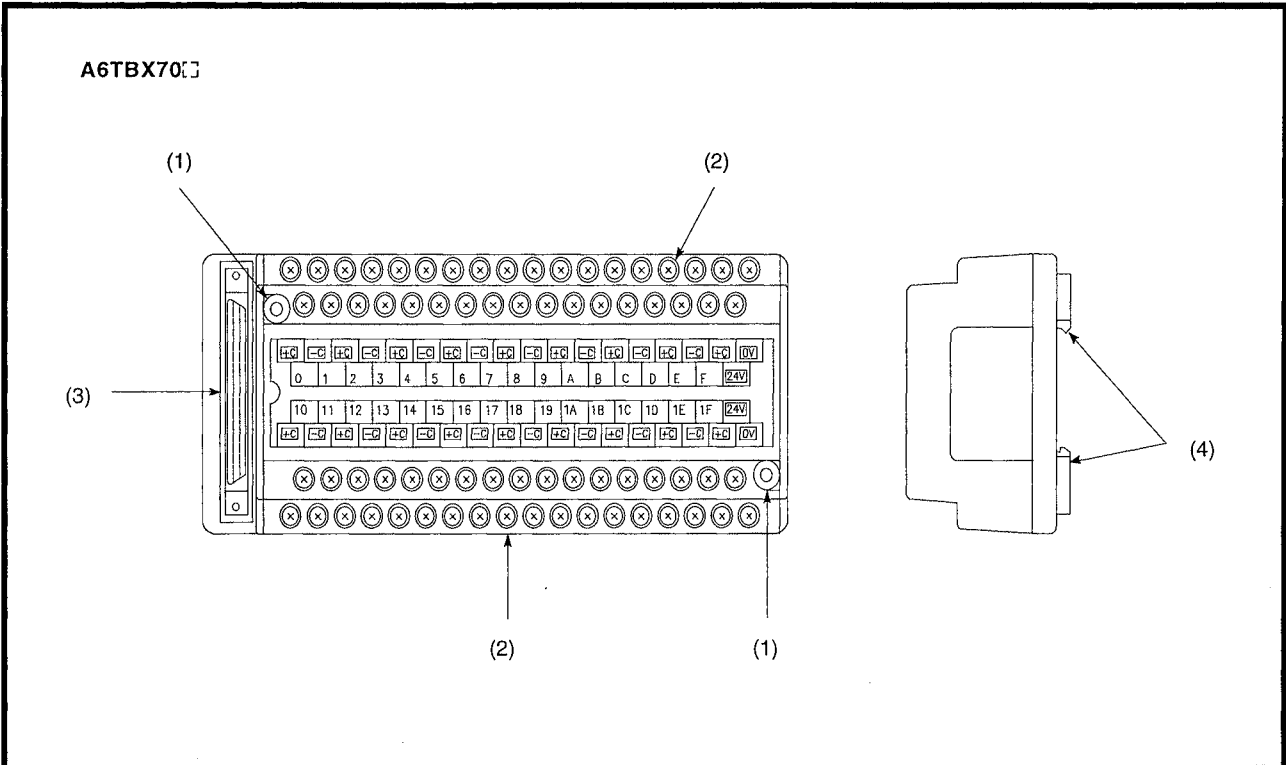
MELSEC-A



No.	Name	Description
(1)	Panel mounting hole	Panel mounting hole (for M4 screws)
(2)	Terminal block	Terminal block that connects power supply and signal wires
(3)	40-pin connector	40-pin connector for a 32-point module; connects power supply and input signal wires
(4)	Module fixing hooks	Hooks for mounting on a DIN rail

7. NAMES OF PARTS AND SETTINGS

MELSEC-A



No.	Name	Description
(1)	Panel mounting hole	Panel mounting hole (for M4 screws)
(2)	Terminal block	Terminal block that connects power supply and signal wires
(3)	40-pin connector	40-pin connector for a 32-point module; connects power supply and input signal wires
(4)	Module fixing hooks	Hooks for mounting on a DIN rail

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

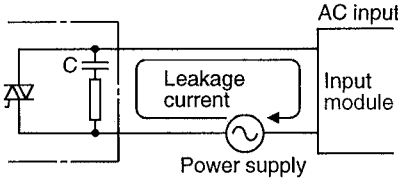
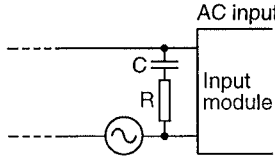
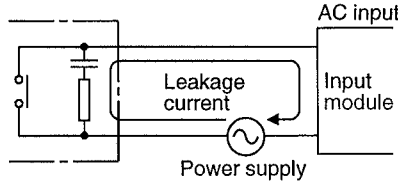
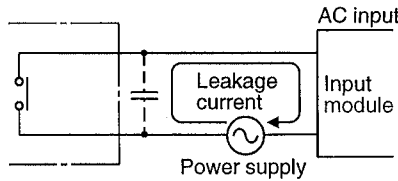
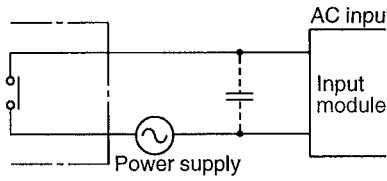
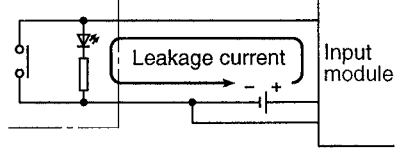
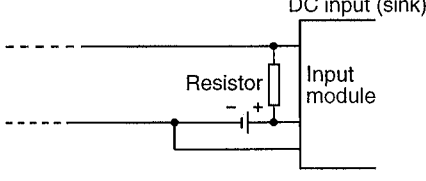
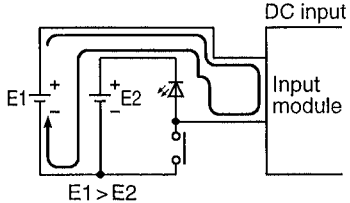
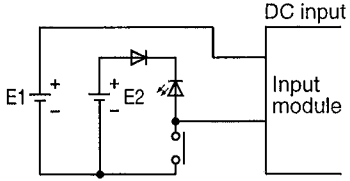
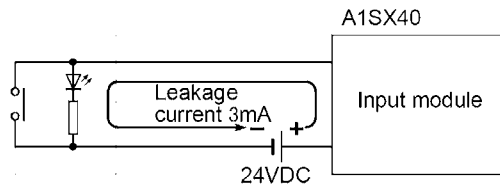
	Condition	Cause	Corrective Action
Example 1	Input signal does not turn OFF.	<ul style="list-style-type: none"> Leakage current of input switch (e.g. drive by non-contact switch). 	<ul style="list-style-type: none"> Connect an appropriate resistor which will make the voltage across the terminals of the input module lower than the OFF voltage value.  <p>It is recommended to use 0.1 to 0.47 μF + 47 to 120 Ω (1/2 W) for the CR constant.</p>
Example 2	Input signal does not turn OFF.	<ul style="list-style-type: none"> Drive by a limit switch with neon lamp. 	<ul style="list-style-type: none"> Same as Example 1. Or make up another independent display circuit.
Example 3	Input signal does not turn OFF.	<ul style="list-style-type: none"> Leakage current due to line capacity of wiring cable. (Line capacity C of twisted pair wire is approx. 100 PF/m). 	<ul style="list-style-type: none"> Same as Example 1. However, leakage current is not generated when the power supply is located in the input equipment side as shown below. 
Example 4	Input signal does not turn OFF.	<ul style="list-style-type: none"> Drive by switch with LED indicator. 	<ul style="list-style-type: none"> Connect an appropriate resistor as shown below so that the current flowing along the input module becomes lower than OFF current.  <p>* An example calculation of a value for a connected resistor is given on the following page.</p>

Table 8.1 Input Circuit Problems and Corrective Action (Continued)

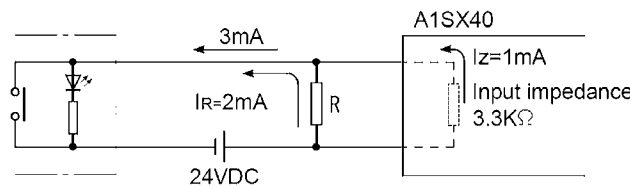
	Condition	Cause	Corrective Action
Example 5	Input signal does not turn OFF.	<ul style="list-style-type: none"> Sneak path due to the use of two power supplies. 	<ul style="list-style-type: none"> Use only one power supply. Connect a sneak path prevention diode. (Figure below) 

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



- 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.

$$I_R: I_z = Z \text{ (Input impedance): } R$$

$$R \leq \frac{I_z}{I_R} \times Z \text{ (Input impedance)} = \frac{1.0}{2.0} \times 3.3 = 1.65 [\text{k}\Omega]$$

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

- Connect a resistor of 1.5 (kΩ) 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.
- Also, OFF voltage when resistor R is connected will be as follows.

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

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

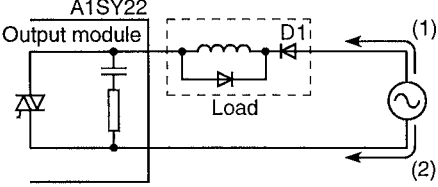
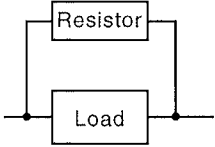
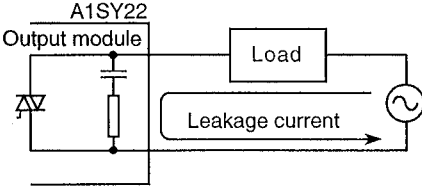
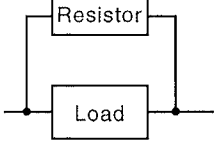
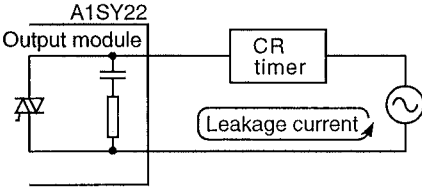
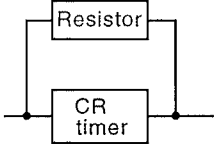
	Condition	Cause	Corrective Action
Example 1	When the output is OFF, excessive voltage is applied to the load.	<ul style="list-style-type: none"> Load is half-wave rectified inside (in some cases, this is true of a solenoid).  <ul style="list-style-type: none"> When the polarity of the power supply is 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. 	<ul style="list-style-type: none"> Connect a resistor several tens to hundreds of kΩ across the load. <p>(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.)</p> 
Example 2	The load does not turn OFF (triac output).	<ul style="list-style-type: none"> Leakage current due to built-in noise suppression 	<ul style="list-style-type: none"> Connect the resistors to both ends of the load. <p>(When the wiring distance from the output module to the load is long, there may be a leakage current due to the line capacity.)</p> 
Example 3	When the load is a CR type timer, time constant fluctuates (triac output).		<ul style="list-style-type: none"> Connect the resistors to both ends of the CR timer. <p>(When the wiring distance from the output module to the load is long, there may be a leakage current due to the line capacity.)</p>  <p>Calculate the CR constant depending on the load.</p>

Table 8.2 Output Circuit Failures and Corrective Action (Continued)

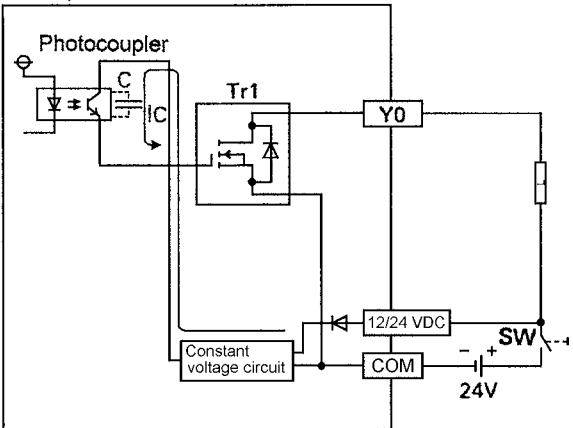
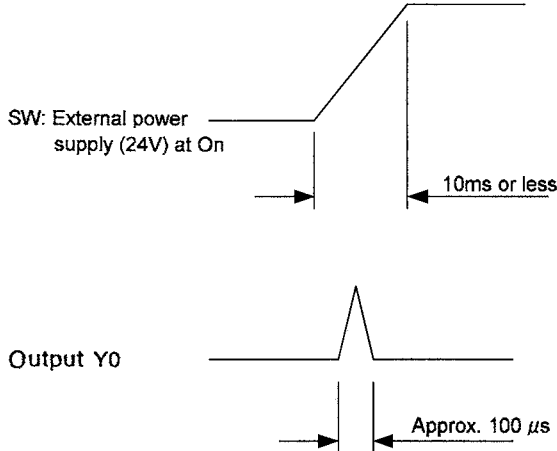
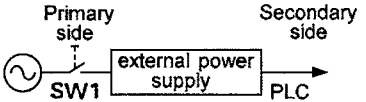
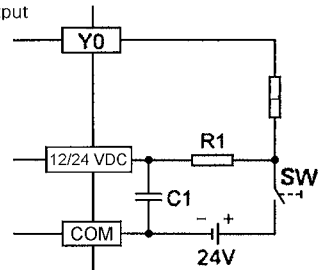
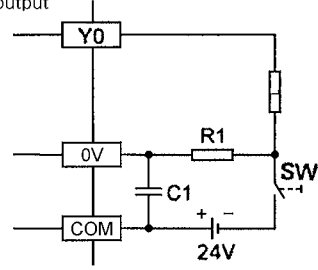
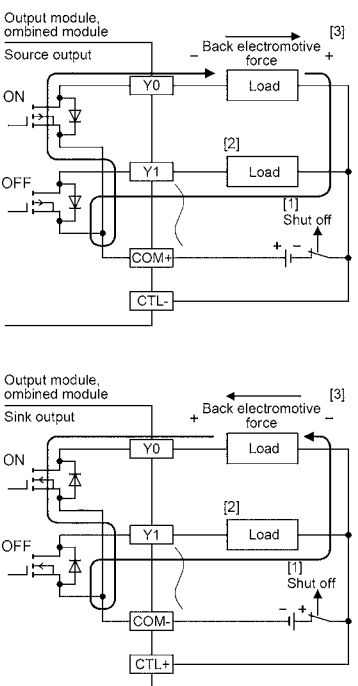
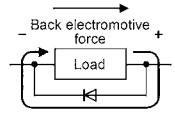
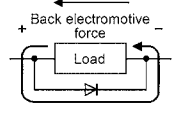
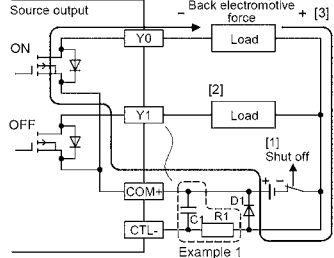
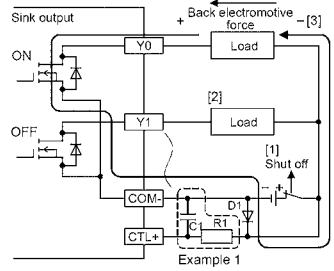
Condition	Cause	Corrective Action
<p>Example 5</p> <p>When the external power supply turns on, the load turns on for a moment.</p>	<p>Erroneous output due to the stray capacitance (C) between collector and emitter of hotocoupler.</p> <p>(There is no erroneous output at normal road. An erroneus output may occur at high sensitivity load (such as solid state relay).)</p> <p>Output module, Combined module</p>  <p>If the external power supply is turned on precipitously, Ic current flows due to the stray capacitance (C) between collector and emitter of hotocoupler</p> <p>Ic current flows to the next stage of transistor Tr1 gate and Y0 output turns on by 100 μs.</p> 	<p>When the external power supply turns ON/OFF, check that the external power supply rising edge must be 10ms or more, and switch the SW1 to the primary side of external power supply.</p>  <p>When switching to the secondary side of the external power supply is required, the external power supply rising edge connected a condenser must be slow, and measured 10ms or more.</p> <p>Sink output</p>  <p>Source output</p>  <p>R1: Several tens of ohms</p> <p>Power capacity \geq $(\text{external power supply current}^{*1})^2 \times \text{resistance value} \times (3 \text{ to } 5)^{*2}$</p> <p>C1:several hundreds of microfarads 50V</p> <p>*1 Refer to consumption current of the external power supply for modules used in this manual.</p> <p>*2 Select the power capacity of resistance to be 3 to 5 times lager than the actual power consumption.</p> <p>(Example)</p> <p>R1=40 Ω, C1=300 μF</p> <p>Use the below expression to calculated a time constant</p> $C1 \times R1 = 300 \times 10^{-6} \times 40 = 12 \times 10^{-3} \text{s} = 12 \text{ms}$

Table 8.2 Output Circuit Failures and Corrective Action (Continued)

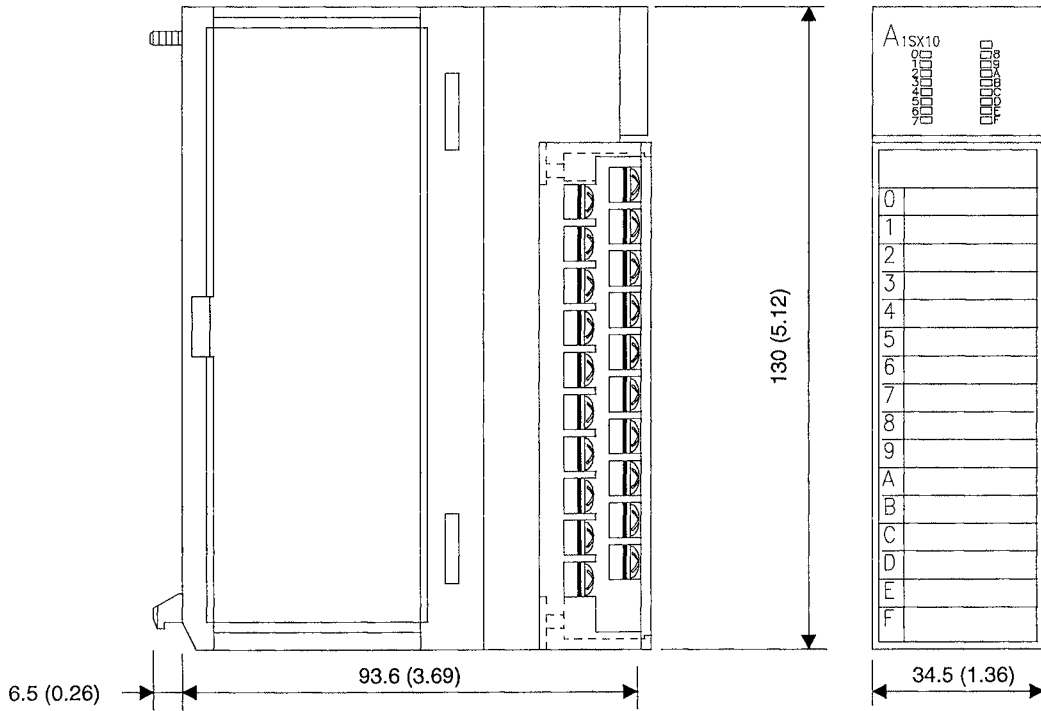
	Condition	Cause	Corrective Action
<p>Example 6</p>	<p>The load which was turned OFF is turned ON for a moment at power-off. (Transistor output)</p>	<p>The load [2] which was turned OFF may be turned ON due to back electromotive force at the time of power-off [1] if an inductive load is used.</p> 	<p>Take action in the following (1) or (2).</p> <p>(1) To prevent the generation of the back electromotive force, connect diode in parallel with load where the back electromotive force has been generated.</p> <p>Source output [3]</p>  <p>Sink output [3]</p>  <p>(2) Install a diode between the positive and negative external power supply to allow an electric current to pass another current path. When the corrective action shown in the example 1 is taken simultaneously, the diode must be installed in parallel with the C1 and R1.</p>  <p>* The measures are ineffective in the following modules due to the characteristic of the external power supply circuit</p> <ul style="list-style-type: none"> • AJ65SBTB1-8TE • AJ65SBTB1-16TE  <p>D1: Reverse voltage VR (VRM)···*1, Forward current IF (IFM)···*2</p> <p>*1 Approximately 10times higher than the rated voltage in the specifications Example: 24 VDC→Approximately 200V</p> <p>*2 More than twice as much as the maximum load current (common) in the specifications Example: 2A/1 common→4A or more</p>

APPENDICES

APPENDIX 1 OUTSIDE DIMENSIONS

1.1 Input/Output Modules

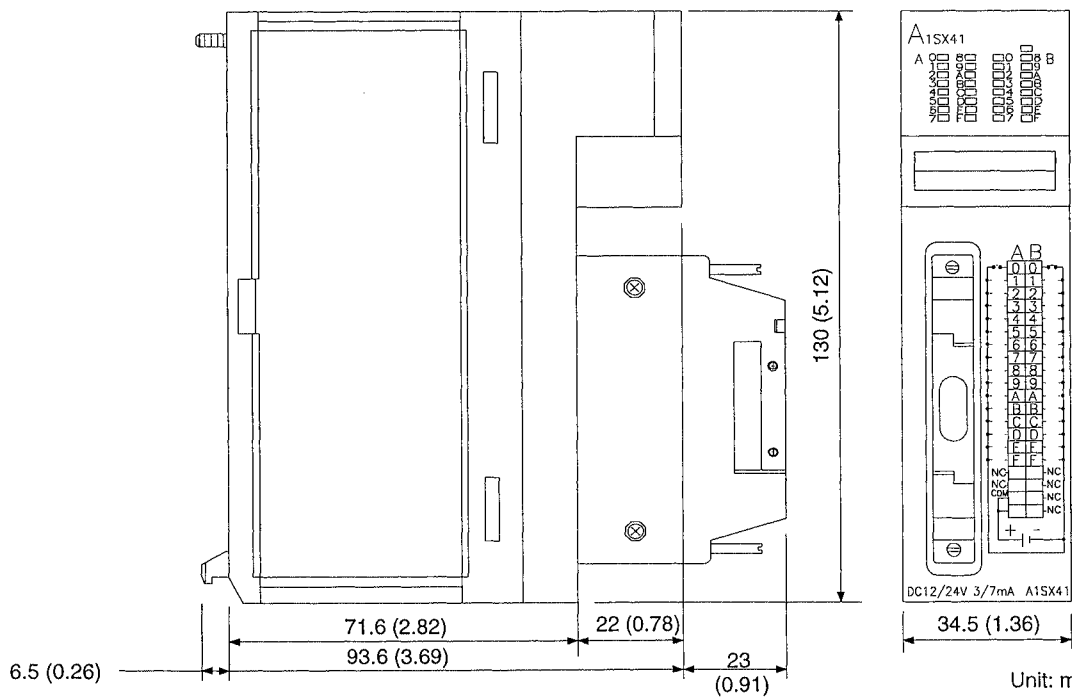
1.1.1 Terminal base connecting type



Unit: mm (inch)

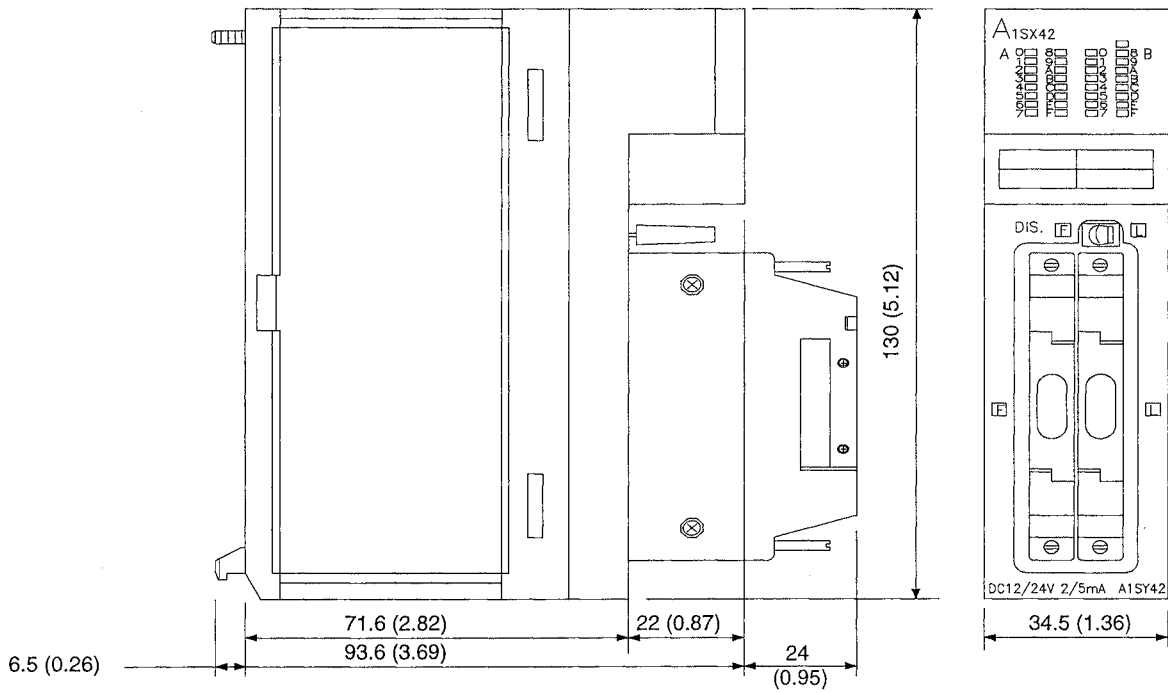
1.1.2 40-pin connector type

(1) 32-input/output module



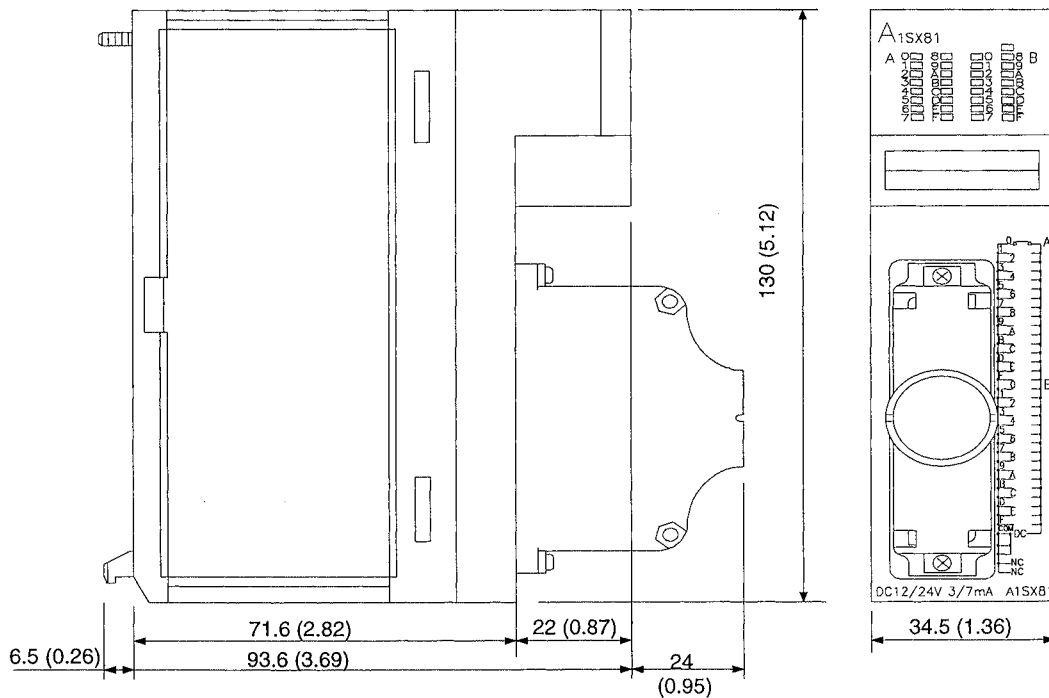
Unit: mm (inch)

(2) 64-input/output module



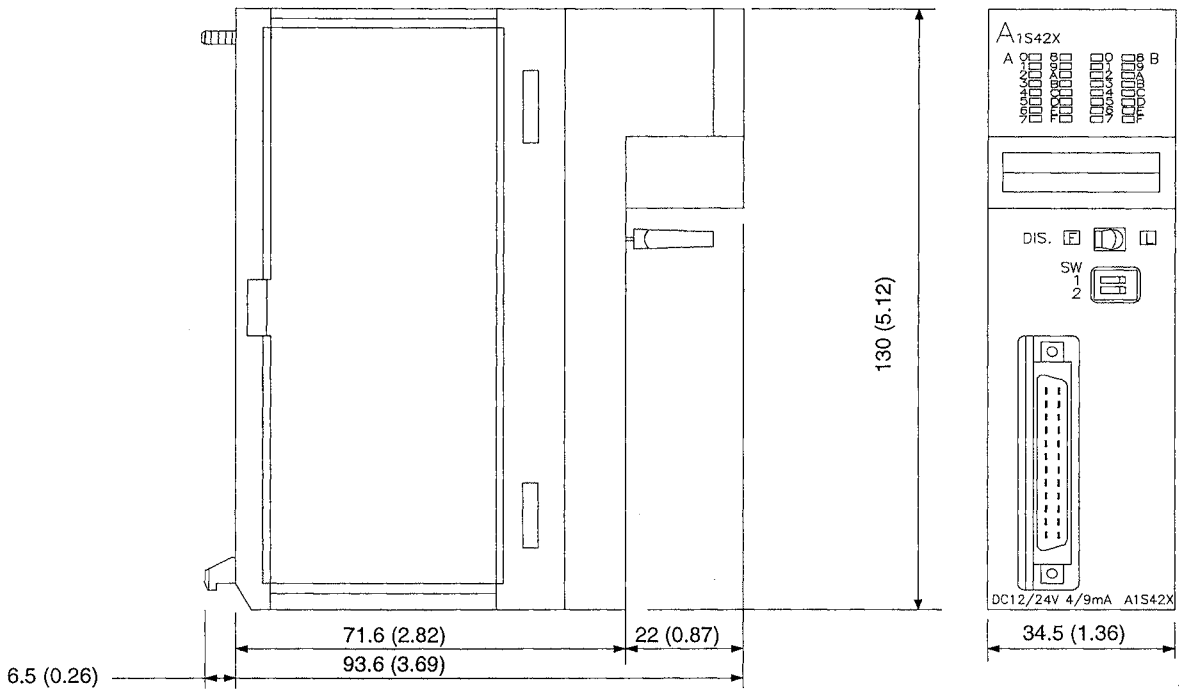
Unit: mm (inch)

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



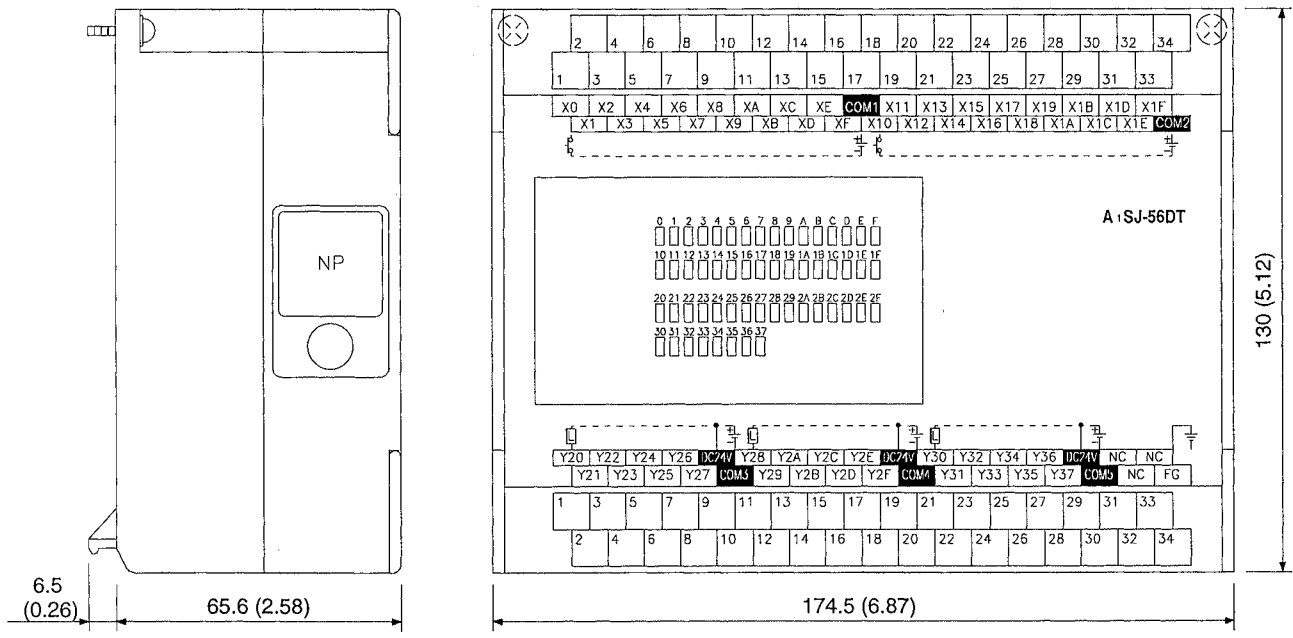
Unit: mm (inch)

1.2 Dynamic I/O Module



Unit: mm (inch)

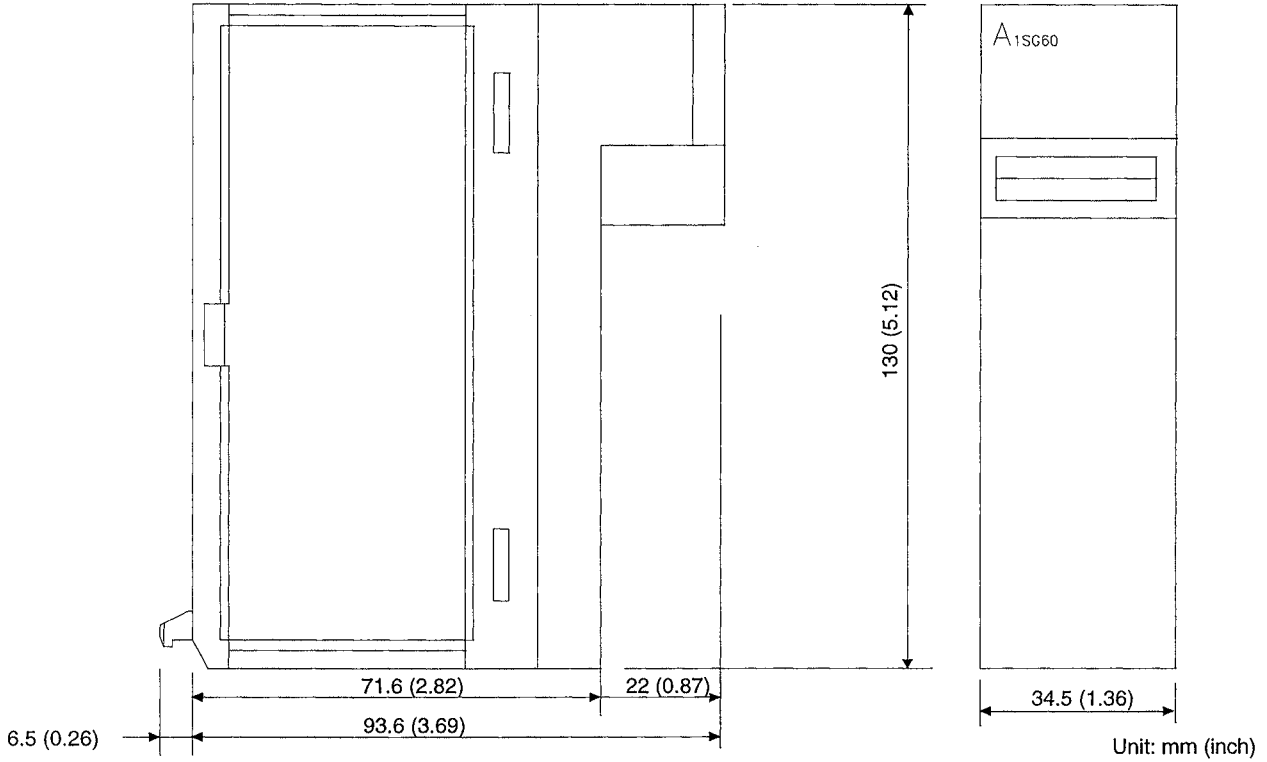
1.3 A1SJ-56DT Input/Output Combination Module



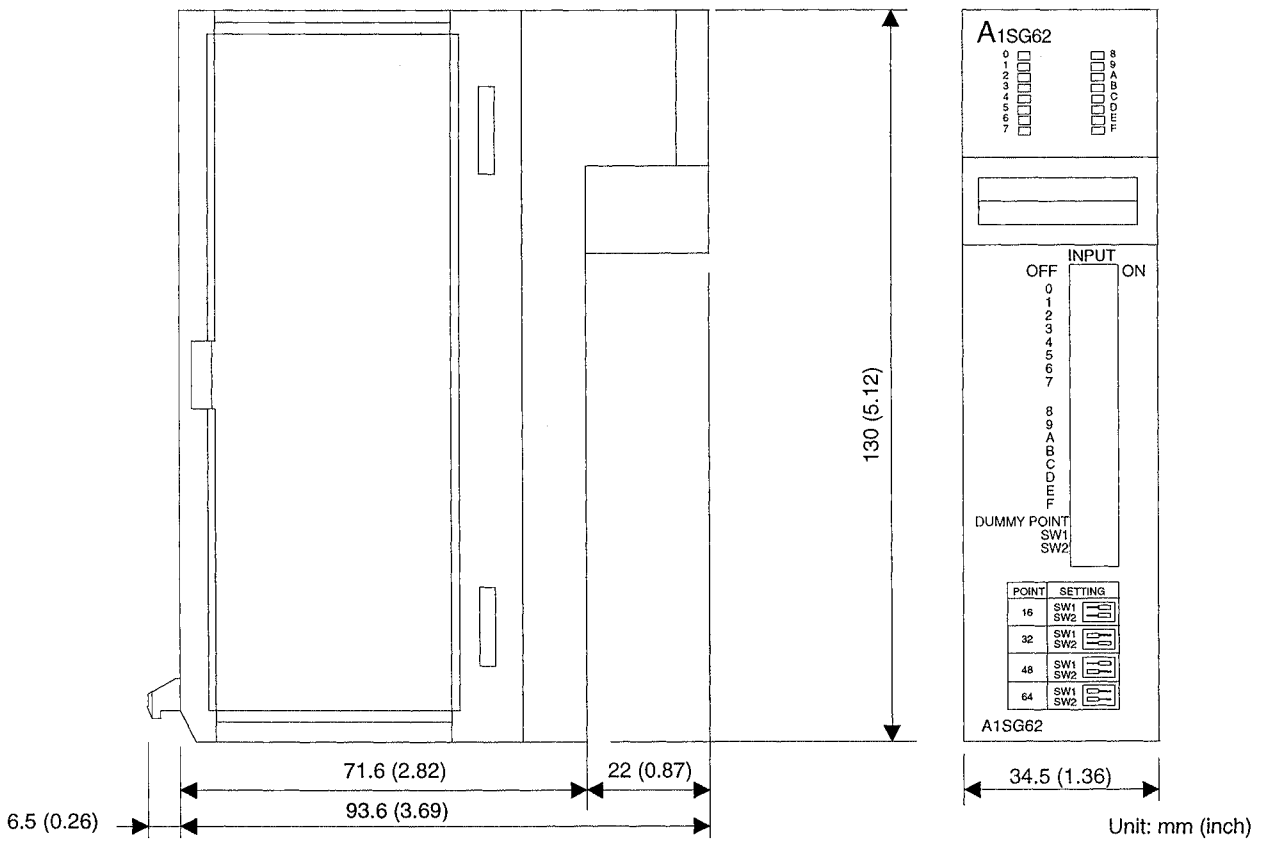
Unit: mm (inch)

1.4 Dummy Module, Blank Cover

1.4.1 A1SG60 blank cover

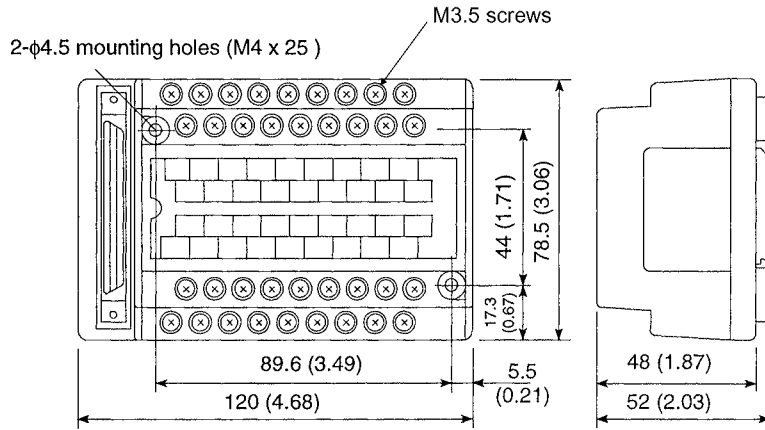


1.4.2 A1SG62 dummy module



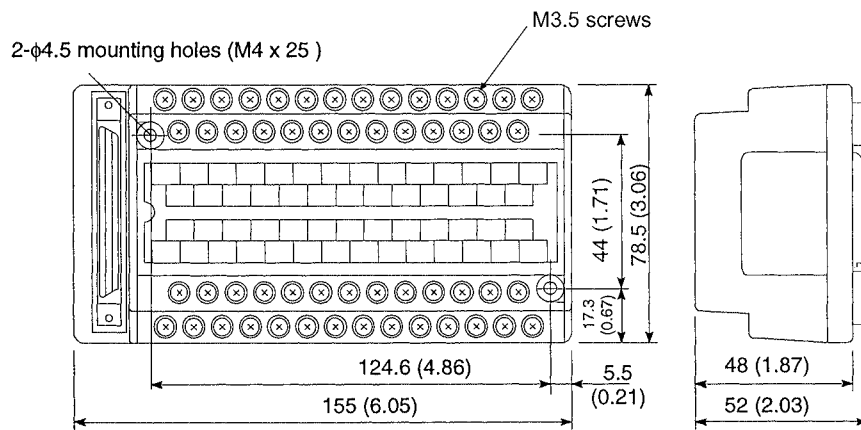
1.5 Connector/Terminal Block Converter Modules

1.5.1 A6TB-36 type connector/terminal block converter module



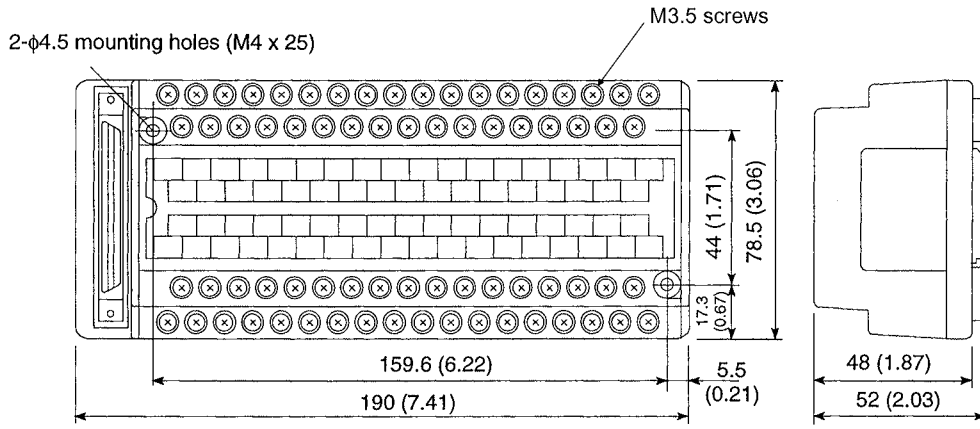
Unit: mm (inch)

1.5.2 A6TB-54 type connector/terminal block converter module



Unit: mm (inch)

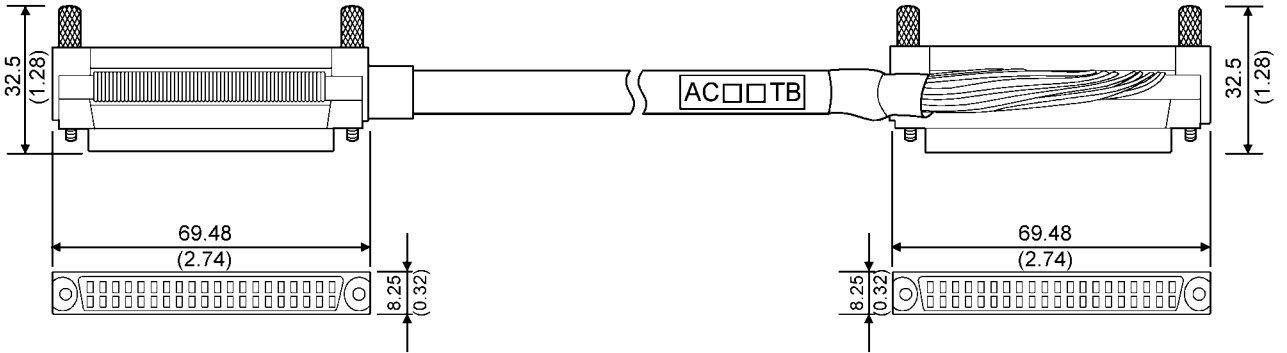
1.5.3 A6TBX70 type connector/terminal block convertor module



Unit: mm (inch)

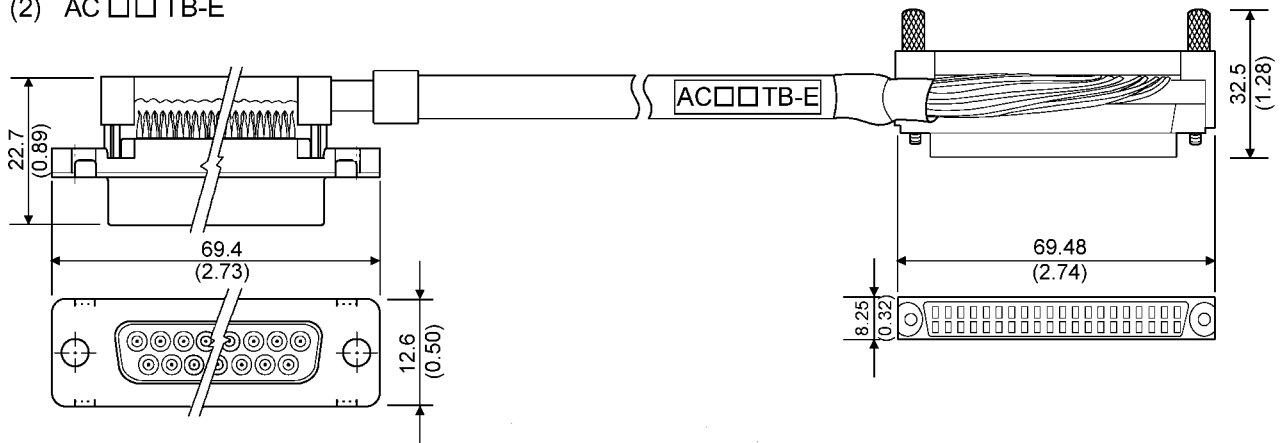
1.5.4 Connector/terminal block converter module cable

(1) AC□□TB



Unit: mm (inch)

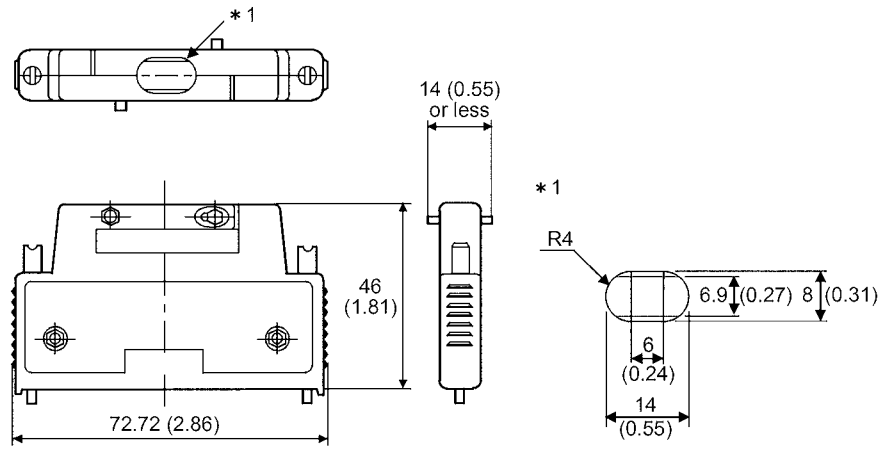
(2) AC□□TB-E



Unit: mm (inch)

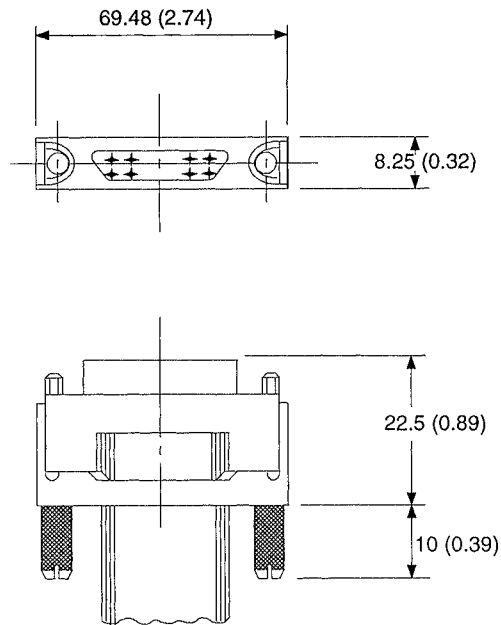
1.6 40-Pin Connectors

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



Unit: mm (inch)

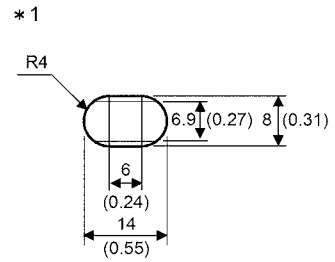
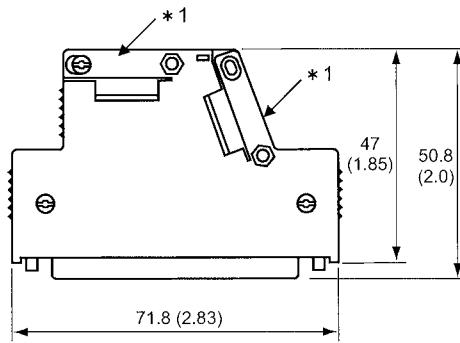
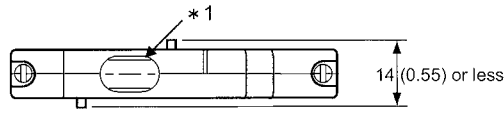
1.6.2 A6CON3 pressure-displacement-type 40-pin connector (flat cable type)



* Sequence of the flat cable is in order of A1→B1→A2

Unit: mm (inch)

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

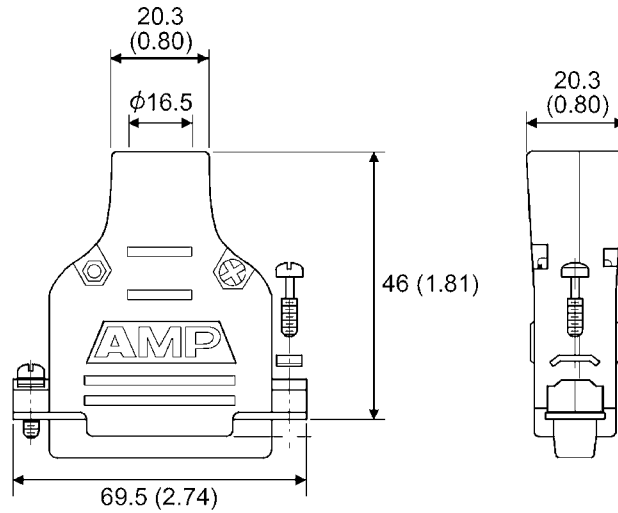


Unit: mm (inch)

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.

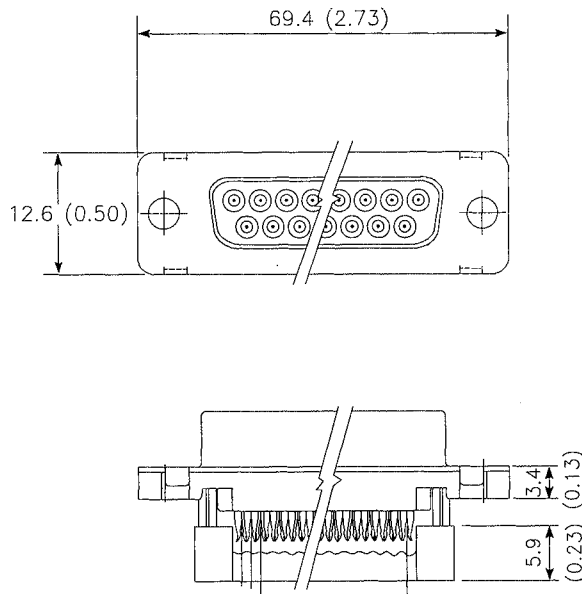
1.7 Pin D Sub-Connectors

- 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)



Unit: mm (inch)

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.

6. Product application

- (1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- (2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable controller applications.

In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.

However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.

AnS Module Type I/O

User's Manual

MODEL	ANS-TYPE-I/O-U-E
MODEL CODE	13JE81
IB(NA)-66541-P(0901)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

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.