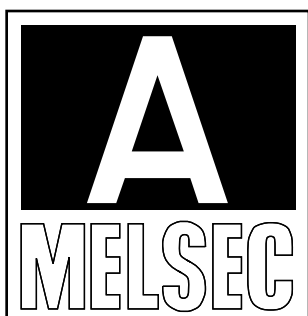
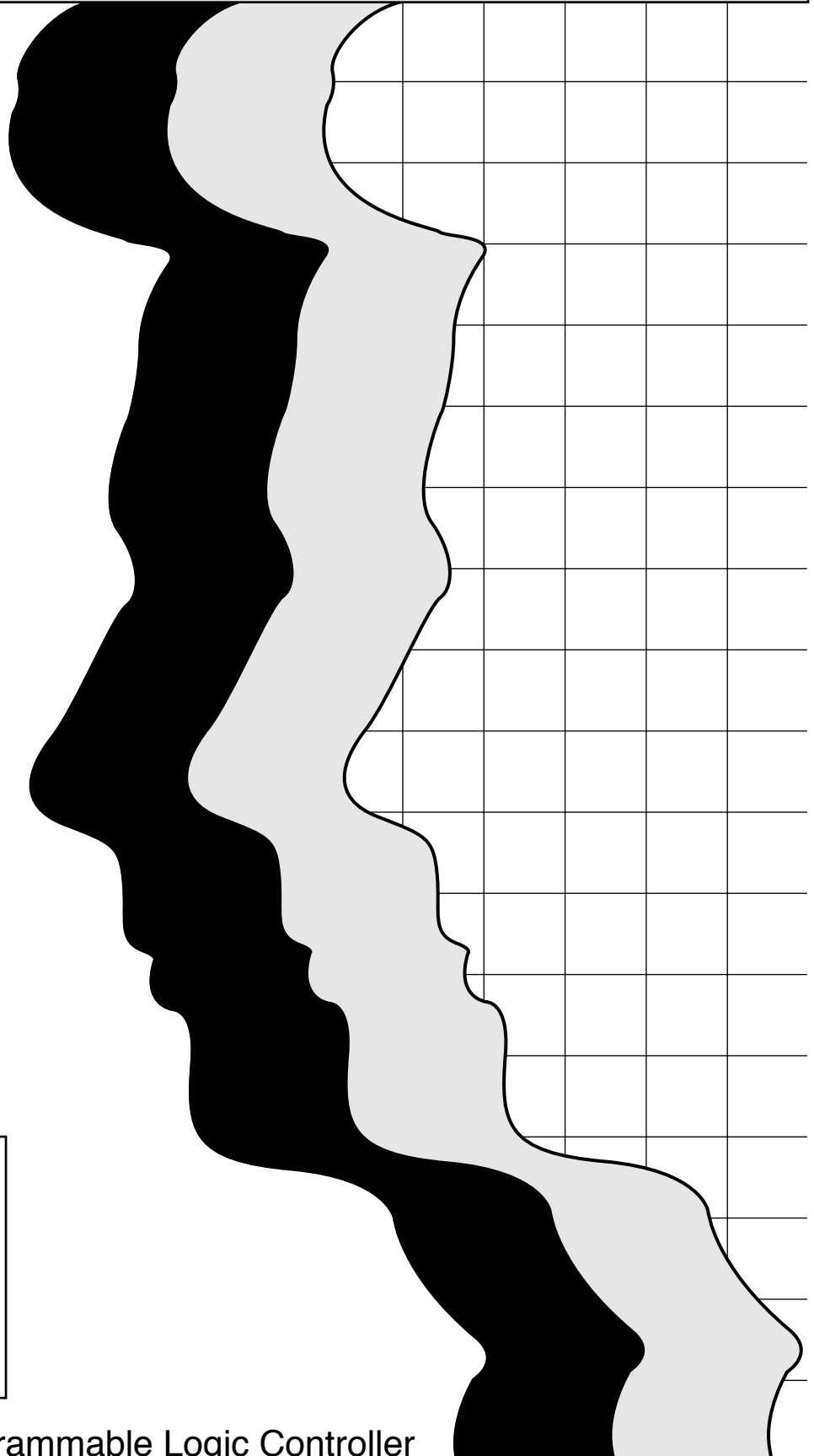


# MITSUBISHI

Type A0J2 (Input/Output unit)

User's Manual



Mitsubishi Programmable Logic Controller

# ● SAFETY CAUTIONS ●

(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".



**DANGER**

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



**CAUTION**

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

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

[System Design Precautions]



**DANGER**

- Safety circuits should be installed external to the programmable controller to ensure that the system as a whole will continue to operate safely in the event of an external power supply malfunction or a programmable controller failure. Erroneous outputs and operation could result in an accident.
  - 1) The following circuitry should be installed outside the programmable controller:  
Interlock circuitry for the emergency stop circuit protective circuit, and for reciprocal operations such as forward/reverse, etc., and interlock circuitry for upper/lower positioning limits, etc., to prevent machine damage.
  - 2) When the programmable controller detects an abnormal condition, processing is stopped and all outputs are switched OFF. This happens in the following cases:
    - When the power supply module's over-current or over-voltage protection device is activated.
    - When an error (watchdog timer error, etc.) is detected at the PC CPU by the self-diagnosis function.Some errors, such as input/output control errors, cannot be detected by the PC CPU, and there may be cases when all outputs are turned ON when such errors occur. In order to ensure that the machine operates safely in such cases, a failsafe circuit or mechanism should be provided outside the programmable controller. Refer to the CPU module user's manual for an example of such a failsafe circuit.
  - 3) Outputs may become stuck at ON or OFF due to an output module relay or transistor failure. An external circuit should therefore be provided to monitor output signals whose incorrect operation could cause serious accidents.
- If an excessive current flows continuously for a long time at an output module, for example due to a current exceeding the rating or shorting of the load, smoke may be generated and fire may be caused; for this reason a safety circuit such as a fuse must be provided externally.
- A circuit should be installed which permits the external power supply to be switched ON only after the programmable controller power has been switched ON. Accidents caused by erroneous outputs and motion could result if the external power supply is switched ON first.

[System Design Precautions ]



**CAUTION**

- Do not bundle control lines or communication wires together with main circuit or power lines, or lay them close to these lines.  
As a guide, separate the lines by a distance of at least 100 mm, otherwise malfunctions may occur due to noise.
- 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 to ON. Take measures such as replacing the module with one having sufficient rated current.

[Cautions on Mounting]

 **CAUTION**

- Use the PC in an environment that conforms to the general specifications in the manual. Using the PC in environments outside the ranges stated in the general specifications will cause electric shock, fire, malfunction, or damage to/deterioration of the product.
- Extension cables should be securely connected to base unit and module connectors. Check for loose connection after installation.  
A poor connection could result in contact problems and erroneous inputs/outputs.
- Do not directly touch the electrically conductive areas and electronic parts.  
Direct touch can cause malfunctions and failure of the module.

[Cautions on Wiring]

 **DANGER**

- Switch off the external power supply before starting installation and wiring work.  
Failure to do so could result in electrical shocks and equipment damage.
- After installation and wiring is completed, be sure to attach the terminal cover before switching the power ON and starting operation.  
Failure to do so could result in electrical shocks.

 **CAUTION**

- Be sure to ground the FG and LG terminals, carrying out at least class 3 grounding work with a ground exclusive to the PC.  
Otherwise there will be a danger of electric shock and malfunctions.
- Carry out wiring to the PC correctly, checking the rated voltage and terminal arrangement of the product.  
Using a power supply that does not conform to the rated voltage, or carrying out wiring incorrectly, will cause fire or failure.
- Outputs from multiple power supply modules should not be connected in parallel. Failure to do so could cause the power supply module to overheat, resulting in a fire or module failure.
- Tighten the terminal screws to the stipulated torque.  
Loose screws will cause short circuits, fire, or malfunctions.
- Make sure that no foreign matter such as chips or wiring offcuts gets inside the module.  
It will cause fire, failure or malfunction.

[Cautions on Startup and Maintenance]



**DANGER**

- Do not touch terminals while the power is ON.  
This will cause malfunctions.
- Switch the power off before cleaning or re-tightening terminal screws.  
Carrying out this work while the power is ON will cause failure or malfunction of the module.



**CAUTION**

- Do not disassemble or modify any module.  
This will cause failure, malfunction, injuries, or fire.
- Switch the power OFF before mounting or removing the module.  
Mounting or removing it with the power ON can cause failure or malfunction of the module.
- When replacing fuses, be sure to use the prescribed fuse. A fuse of the wrong capacity could cause a fire.
- 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 so may cause a failure or malfunctions of the module.

[Cautions on Disposal]



**CAUTION**

- Dispose of this product as industrial waste.

## REVISIONS

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

Print Date	*Manual Number	Revision
Dec., 1986	IB (NA) 66068-A	First edition
May., 1987	IB (NA) 66068-B	Correction Page 2-9, 2-14, 2-16, 2-19, 2-22, 2-24, 2-27
Nov., 1988	IB (NA) 66068-C	Correction Page 1-1, 2-1, 2-3 "Instructions for Strategic Materials" added
Dec., 1988	IB (NA) 66068-D	Correction Section 2.1.17
Dec., 1988	IB (NA) 66068-E	Correction Sections 2.1.5, 2.1.10, 2.1.17, 2.1.18, 2.1.26
Dec., 1988	IB (NA) 66068-F	Correction Chapter 1, Sections 2.1.16, 2.2, 2.3.1, 2.3.2, 3.2.3, 4.2 Addition Section 3.3.1
Dec., 1988	IB (NA) 66068-G	Correction made in Japanese version.
Jul., 1989	IB (NA) 66068-H	Addition Section 2.2
Feb., 1990	IB (NA) 66068-I	Correction Sections 2.1.9, 2.1.10, 2.1.18, 2.1.25, 2.1.26
Oct., 1990	IB (NA) 66068-J	Correction APPENDIX 2 Addition Sections 2.3.1, 2.3.2
Sep., 1993	IB (NA) 66068-K	Correction Sections 2.1.6, 2.1.9, 2.1.13, 2.1.16, 2.1.19, 2.1.21, 2.1.24

Print Date	*Manual Number	Revision
Apr., 1997	IB (NA) 66068-L	<div data-bbox="715 376 885 409" style="border: 1px solid black; padding: 2px;">Correction</div> <p data-bbox="715 432 1123 465">INTRODUCTION, IMPORTANT</p> <div data-bbox="715 488 885 521" style="border: 1px solid black; padding: 2px;">Addition</div> <p data-bbox="715 544 1362 633">A0J2C03F, A0J2C10, A0J2C20, A0J2PW-DC24 SAFETY PRECAUTIONS, Section 2.1.10, 2.1.18, 2.2, 2.3.1, 2.3.2, 3.3</p>
May., 2003	IB (NA) 66068-M	<div data-bbox="715 656 885 689" style="border: 1px solid black; padding: 2px;">Correction</div> <p data-bbox="715 712 885 745">Section 2.1.1</p>
Dec., 2003	IB (NA) 66068-N	<div data-bbox="715 763 981 797" style="border: 1px solid black; padding: 2px;">Partial Correction</div> <p data-bbox="715 819 1043 853">SAFETY PRECAUTIONS</p>

Japanese Manual Version IB-64599-N

## **INTRODUCTION**

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



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## 1. GENERAL DESCRIPTION

This manual describes specifications and handling procedures of I/O units, extension power supply unit, cables, and fuse of Type A0J2CPU general-purpose programmable controller. The A0J2 I/O units are available in 28 points (16 inputs, 12 outputs), 56 points (32 inputs, 24 outputs), 32 points (inputs only), 24 points (outputs only), and their combinations. Various I/O types are also available.

For details, refer to Chapter 2.

All I/O units are furnished with a standard I/O cable for unit-to-unit mountings (A0J2C01).

### POINTS

- (1) I/O units described in this manual are indicated A0J2-E    .
- (2) When the A series extension base unit is used for the A0J2CPU system, refer to the User's Manual for specifications of the I/O units which will be loaded into the base unit.

### 2. SPECIFICATIONS

This chapter describes the specifications of I/O units, extension power supply unit, cables, and fuse used for the A0J2CPU system.

#### 2.1 I/O Unit Specifications

This section describes the precautions for selection and the specifications of I/O units to be used for the A0J2CPU system.

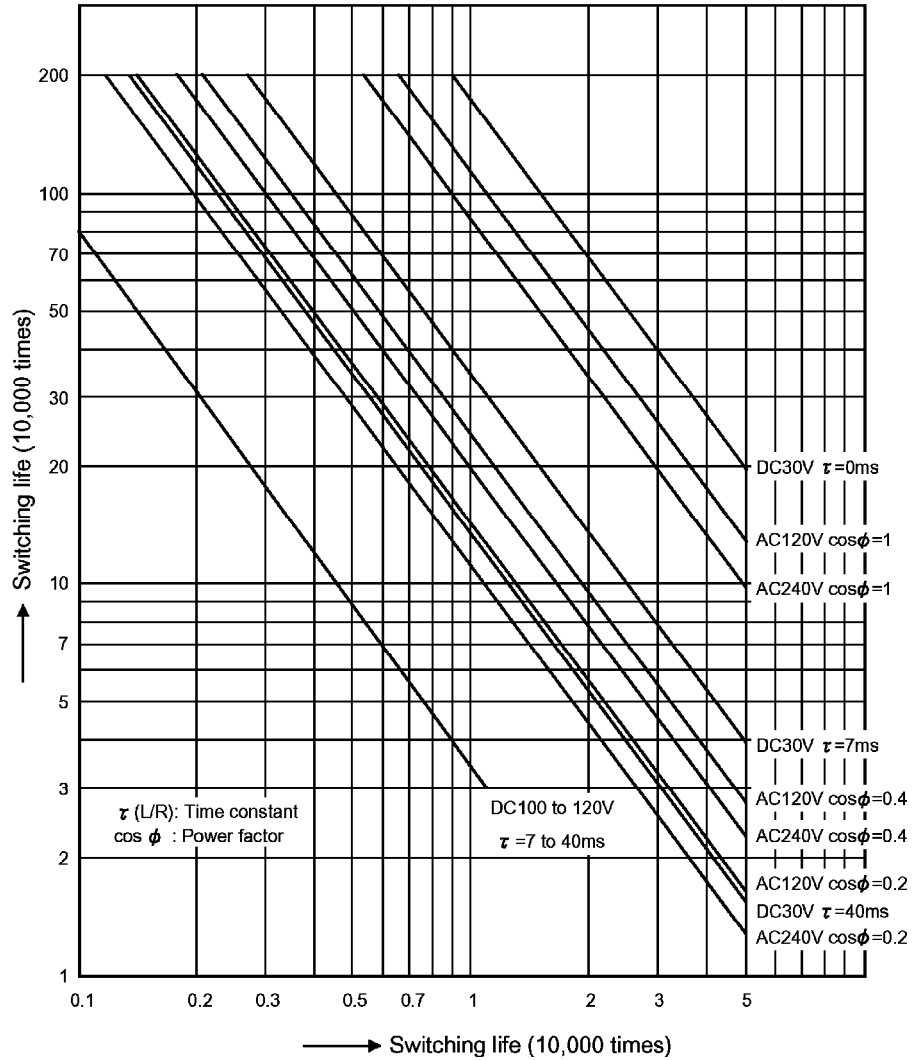
##### 2.1.1 Precautions for I/O unit selection

- (1) For output units, it is recommended to use a triac output unit for a load which is frequently opened and closed, and inductive L loads that have a large capacity or low power factor. (If relay output is used, service life should be shortened.)
- (2) For output units, the maximum opening and closing frequencies should be 1 second ON and 1 second OFF when the inductive L load is driven.
- (3) The wiring of output unit with a fuse must satisfy the following values. If the values are not satisfied, protection cannot be provided by the fuse. In such a case, install a protection fuse outside the unit.

Item	Load Voltage	100/200 VAC Load
Wiring length		3 m (118 inch) or more
Cable size		2 mm <sup>2</sup> (14 AWG) or less
Short-circuit current		—
Transformer capacity		2 kVA or less

However, since protection cannot be provided against overload, install a fuse outside the unit per point for the purpose of protection.

- (4) For the relay life of relay output unit, refer to the diagram shown below.  
 The characteristics of relay are as shown below. However, make selection in consideration of the description in above (2).  
 Applicable unit types are AOJ2-E24R, AOJ2E-E24R, AOJ2-E28AR, AOJ2-E28DR, AOJ2E-E28DR, AOJ2-E56AR, AOJ2-E56DR and AOJ2E-E56DR.

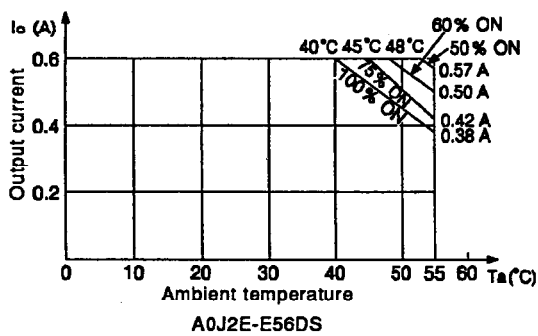
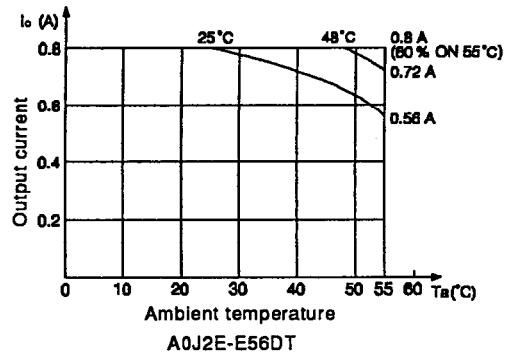
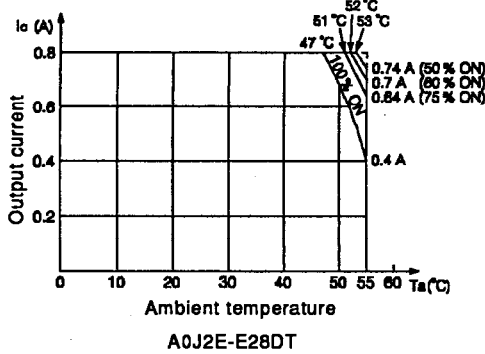
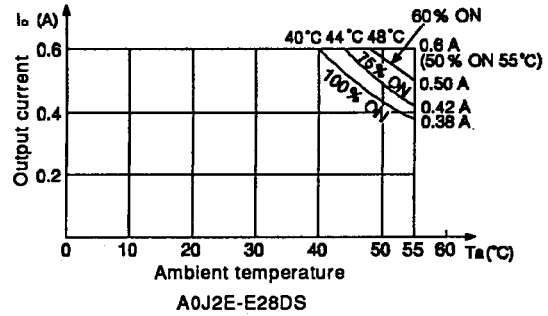
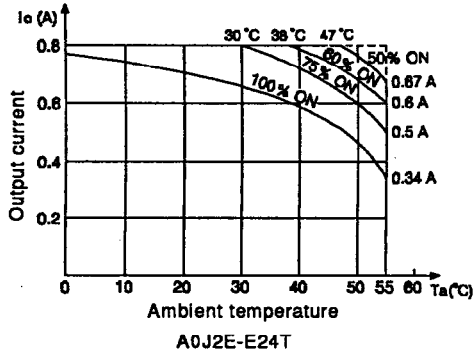


<b>POINT</b>								
<p><b>(1) When using the module for the application in which the relay contact is frequently switched, the relay life span should be considered. Therefore, it is recommended to use a triac output module.</b></p> <p><b>(2) The relay life curve shows the value based on actual use, which is not guaranteed. Therefore, make sure to allow for a margin of error.</b>  <b>The relay life span differs according to the specifications as follows:</b></p> <table style="margin-left: 20px; border: none;"> <tr> <td style="padding-right: 20px;">Rated switching voltage, current load</td> <td>200 thousand operations</td> </tr> <tr> <td>200V AC 1.5A, 240V AC 1A (COS <math>\phi</math> =0.7)</td> <td>200 thousand operations</td> </tr> <tr> <td>200V AC 0.75A, 240V AC 0.5A (COS <math>\phi</math> =0.35)</td> <td>200 thousand operations</td> </tr> <tr> <td>24V DC 1A, 100V DC 0.1A (L/R=7ms)</td> <td>200 thousand operations</td> </tr> </table> <p><b>(3) Relay life is substantially affected by the load type and inrush current characteristics.</b>  <b>The inrush current may cause the contact welding. Therefore, consideration should be given to it as well as constant current.</b></p> <p><b>(a) Inductive load</b>  <b>When the inductive load such as electromagnetic contactor or solenoid is shut off, high counter-electromotive force is generated between the contacting materials to produce an arc discharge. Consideration should be made especially when the power factor is low, as it may decrease the life period.</b>  <b>In addition, make sure to consider the contact melting, as the inrush current equivalent to 5 to 15 times of constant current flows when the module is powered on.</b></p> <p><b>(b) Lamp load</b>  <b>Make sure to consider the contact melting, as the inrush current equivalent to 10 to 15 times of constant current flows in the lamp circuit.</b></p> <p><b>(c) Capacitive load</b>  <b>Make sure to consider the contact melting when a device such as condenser is used in a load circuit, as the inrush current equivalent to 20 to 40 times of constant current may flow in the circuit.</b>  <b>Also, pay full attention to the wire capacity if long length of wire is routed.</b></p>	Rated switching voltage, current load	200 thousand operations	200V AC 1.5A, 240V AC 1A (COS $\phi$ =0.7)	200 thousand operations	200V AC 0.75A, 240V AC 0.5A (COS $\phi$ =0.35)	200 thousand operations	24V DC 1A, 100V DC 0.1A (L/R=7ms)	200 thousand operations
Rated switching voltage, current load	200 thousand operations							
200V AC 1.5A, 240V AC 1A (COS $\phi$ =0.7)	200 thousand operations							
200V AC 0.75A, 240V AC 0.5A (COS $\phi$ =0.35)	200 thousand operations							
24V DC 1A, 100V DC 0.1A (L/R=7ms)	200 thousand operations							

## 2. SPECIFICATIONS

## MELSEC-A

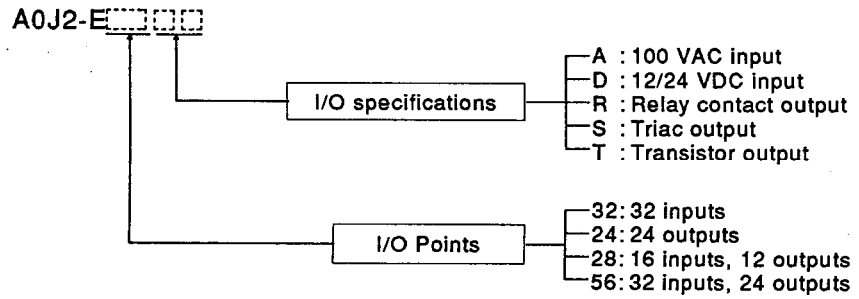
- (5) When the A0J2E-E□□□T (Transistor Type) or A0J2E-E□□□S (Triac Type) output unit is used, the number of simultaneous ON points changes depending on the conditions of output current and ambient temperature. Therefore, select the number of simultaneous ON points, referring to the figure below.



## 2.1.2 Unit type

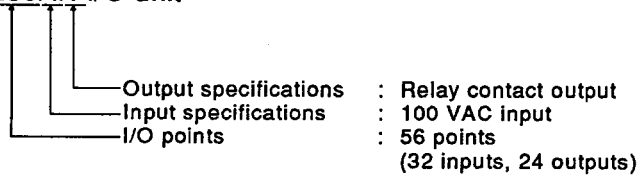
This section describes I/O unit types.

The last letters of the I/O unit type indicate I/O specifications.



Example:

Type A0J2-E56AR I/O unit





## 2. SPECIFICATIONS

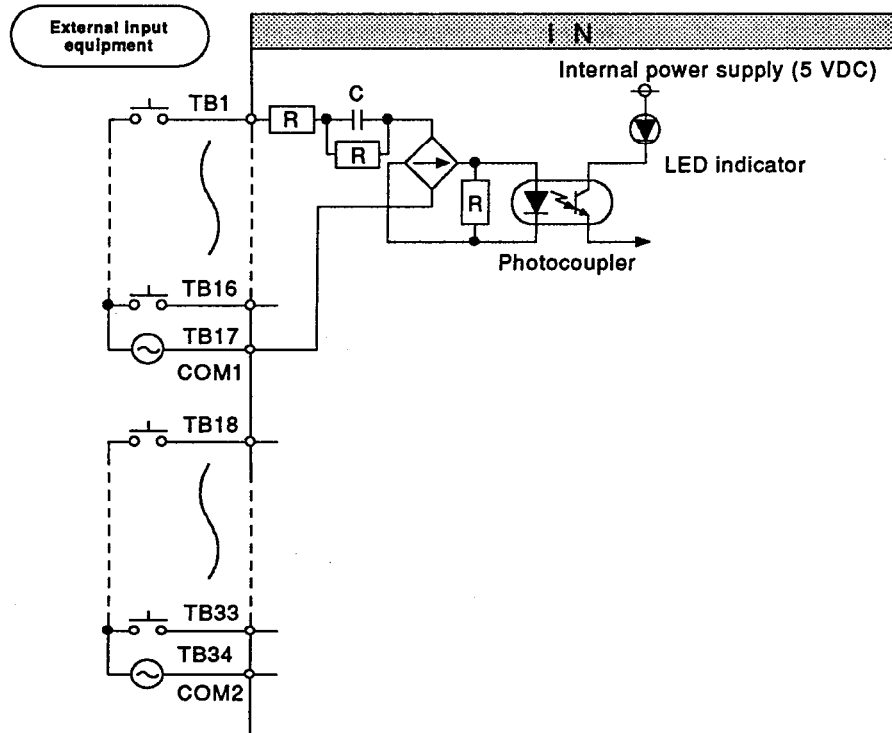
MELSEC-A

### 2.1.3 Specifications of Type A0J2-E32A input unit

Input Specifications		
Input points	32 points	
Insulation system	Photocoupler	
Rated input voltage	100 to 120 VAC, 50/60 Hz	
Rated input current	10 mA (100 VAC, 60 Hz)	
Operating voltage range	85 to 132 VAC (50/60 Hz $\pm$ 5 %)	
ON voltage/ON current	80 VAC or higher/6 mA or higher	
OFF voltage/OFF current	40 VAC or lower/4 mA or lower	
Inrush current	Max. 300 mA, within 0.3 ms (132 VAC)	
Input impedance	Approx. 10 k $\Omega$ (60 Hz), approx. 12 k $\Omega$ (50 Hz)	
Response time	OFF→ON	15 ms or less (6 ms TYP.)
	ON→OFF	35 ms or less (16 ms TYP.)
Common wiring system	16 points/common (common terminal: TB17, TB34)	
Operation indicator	Provided (LED lit when input enabled)	
Internal current consumption (5 VDC)	105 mA (TYP. all points ON)	
External connection system	36-point terminal block connector (M3 x 6 mm screws)	
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])	
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	
Weight kg (lb)	0.68 (1.5)	

External connection diagram

IN	
Terminal No.	Input Signal No.
TB1	X00
TB2	X01
TB3	X02
TB4	X03
TB5	X04
TB6	X05
TB7	X06
TB8	X07
TB9	X08
TB10	X09
TB11	X0A
TB12	X0B
TB13	X0C
TB14	X0D
TB15	X0E
TB16	X0F
TB17	COM1
TB18	X10
TB19	X11
TB20	X12
TB21	X13
TB22	X14
TB23	X15
TB24	X16
TB25	X17
TB26	X18
TB27	X19
TB28	X1A
TB29	X1B
TB30	X1C
TB31	X1D
TB32	X1E
TB33	X1F
TB34	COM2
TB35	NC
TB36	FG

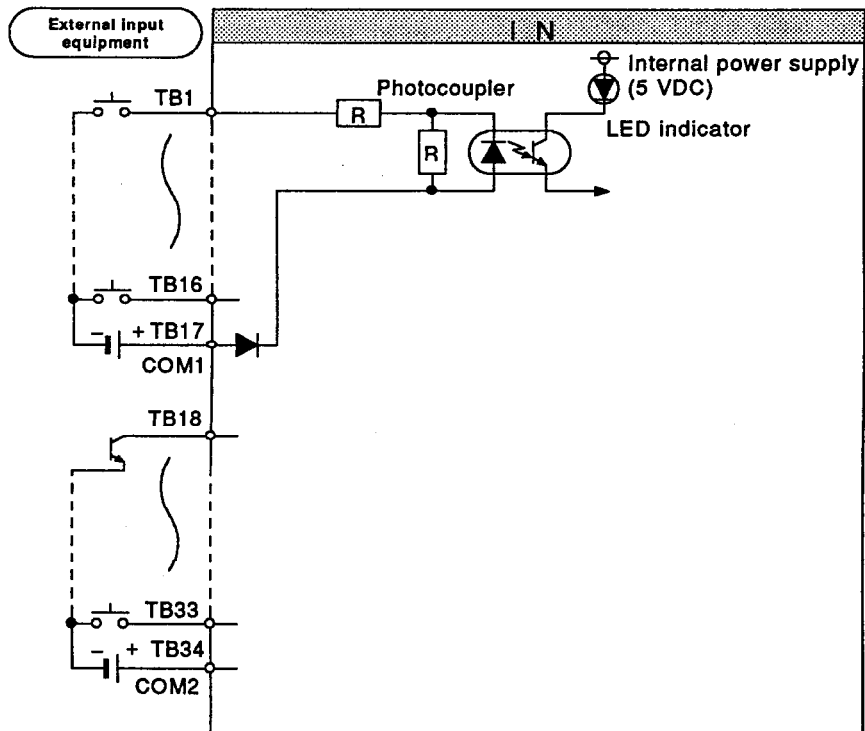


## 2.1.4 Specifications of Type A0J2-E32D input unit

Input Specifications		
Input points	32 points	
Insulation system	Photocoupler	
Rated input voltage	12 VDC 24 VDC	
Rated input current	3 mA 7 mA	
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5%)	
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher	
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower	
Input resistance	Approx. 3.4 kΩ	
Input form	Sink input (input current outflow form)	
Response time	OFF→ON	10 ms or less (6 ms TYP.)
	ON→OFF	10 ms or less (7.5 ms TYP.)
Common wiring system	16 points/common (common terminal: TB17, TB34)	
Operation indicator	Provided (LED lit when input enabled)	
Internal current consumption (5 VDC)	105 mA (TYP. all points ON)	
External connection system	36-point terminal block connector (M3 x 6 mm screws)	
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])	
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	
Weight kg (lb)	0.63 (1.39)	

External connection diagram

IN	
Terminal No.	Input Signal No.
TB1	X00
TB2	X01
TB3	X02
TB4	X03
TB5	X04
TB6	X05
TB7	X06
TB8	X07
TB9	X08
TB10	X09
TB11	X0A
TB12	X0B
TB13	X0C
TB14	X0D
TB15	X0E
TB16	X0F
TB17	COM1
TB18	X10
TB19	X11
TB20	X12
TB21	X13
TB22	X14
TB23	X15
TB24	X16
TB25	X17
TB26	X18
TB27	X19
TB28	X1A
TB29	X1B
TB30	X1C
TB31	X1D
TB32	X1E
TB33	X1F
TB34	COM2
TB35	NC
TB36	FG



## 2. SPECIFICATIONS

MELSEC-A

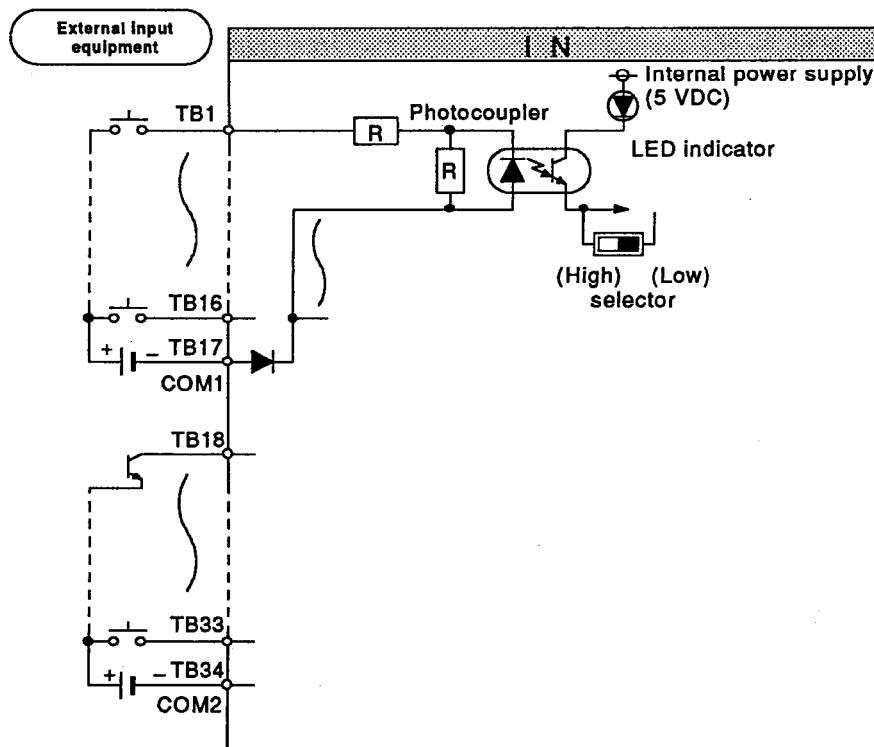
### 2.1.5 Specifications of Type A0J2E-E32D input unit

Input Specifications		
Input points	32 points	
Insulation system	Photocoupler	
Rated input voltage	12 VDC	24 VDC
Rated input current	3 mA	7 mA
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5 %)	
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher	
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower	
Input resistance	Approx. 3.4 kΩ	
Input form	Source input (input current inflow form)	
Response time	OFF→ON	5.5 ms (TYP.)
	ON→OFF	6.0 ms (TYP.)
Response time (high speed mode) (upper 8 points only)	OFF→ON	0.5 ms or less
	ON→OFF	1.0 ms or less
Common wiring system	16 points/common (common terminal: TB17, TB34)	
Operation indicator	Provided (LED lit when input enabled)	
Internal current consumption (5 VDC)	105 mA (TYP. all points ON)	
External connection system	36-point terminal block connector (M3 x 6 mm screws)	
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])	
Applicable solder less terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	
Weight kg (lb)	0.61 (1.34)	

#### External connection diagram

Terminal No.	Input Signal No.
TB1	X00
TB2	X01
TB3	X02
TB4	X03
TB5	X04
TB6	X05
TB7	X06
TB8	X07
TB9	X08
TB10	X09
TB11	X0A
TB12	X0B
TB13	X0C
TB14	X0D
TB15	X0E
TB16	X0F
TB17	COM1
TB18	X10
TB19	X11
TB20	X12
TB21	X13
TB22	X14
TB23	X15
TB24	X16
TB25	X17
TB26	X18
TB27	X19
TB28	X1A
TB29	X1B
TB30	X1C
TB31	X1D
TB32	X1E
TB33	X1F
TB34	COM2
TB35	NC
TB36	FG

\*For only upper 8 points, high or low speed can be selected using DIP switches. Set after removing the top cover.

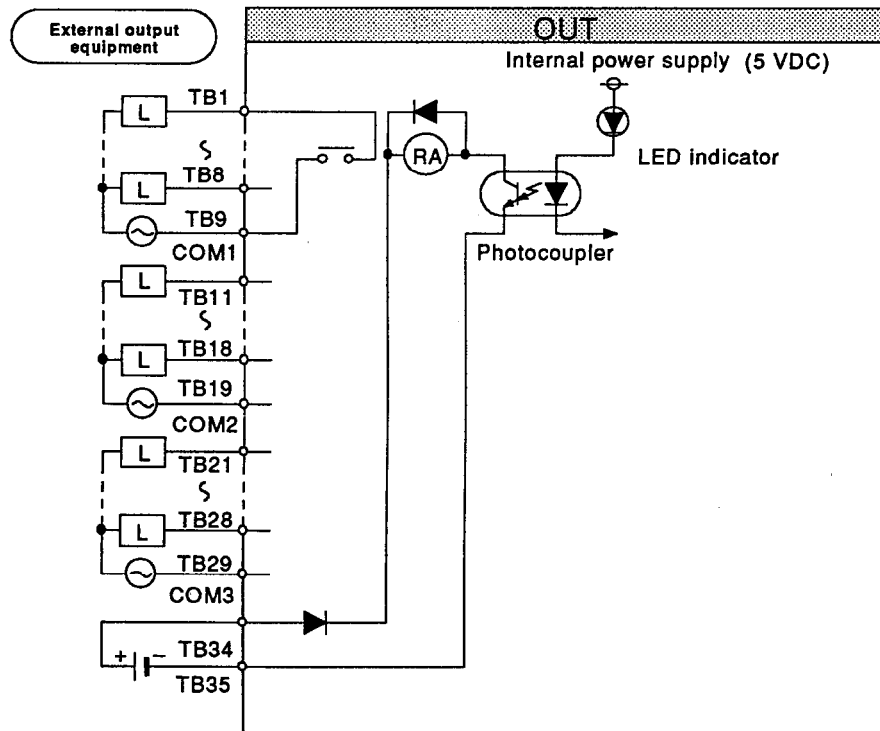


2.1.6 Specifications of Type A0J2E-E24R output unit

Output Specifications			
Output points	24 points		
Insulation system	Photocoupler		
Rated switching voltage, current	24 VDC 2 A (resistance load)/point, 5 A/common 240 VAC 2 A (cosφ = 1)/point, 5 A/common		
Min. switching load	5 VDC/1 mA		
Max. switching voltage	264 VAC, 125 VDC		
Max. switching frequency	3600 times/hour		
Life	Mechanical	20 million times or more	
	Electrical	Rated switching voltage, current load	200 thousand times or more
		200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7)	200 thousand times or more
		200 VAC 1 A, 240 VAC 0.5 A (cosφ = 0.35)	200 thousand times or more
24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms)	200 thousand times or more		
Responce time	OFF→ON	10 ms or less	
	ON→OFF	12 ms or less	
External supply power (relay coil driving power)	Voltage	24 VDC ±10 % (ripple voltage 4 Vp-p less)	
	Current	230 mA (24 VDC all points ON)	
Noise suppression	None		
Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)		
Operation indicator	Provided (LED lit when output enabled)		
Internal current consumption (5 VDC)	145 mA (TYP. all points ON)		
External connection system	36-point terminal block connector (M3 x 6 mm screws)		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])		
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	0.71 (1.56)		

External connection diagram

OUT	
Terminal No.	Output Signal No.
TB1	Y20
TB2	Y21
TB3	Y22
TB4	Y23
TB5	Y24
TB6	Y25
TB7	Y26
TB8	Y27
TB9	COM1
TB10	NC
TB11	Y28
TB12	Y29
TB13	Y2A
TB14	Y2B
TB15	Y2C
TB16	Y2D
TB17	Y2E
TB18	Y2F
TB19	COM2
TB20	NC
TB21	Y30
TB22	Y31
TB23	Y32
TB24	Y33
TB25	Y34
TB26	Y35
TB27	Y36
TB28	Y37
TB29	COM3
TB30	NC
TB31	NC
TB32	NC
TB33	NC
TB34	24 VDC
TB35	24 GDC
TB36	FG



## 2. SPECIFICATIONS

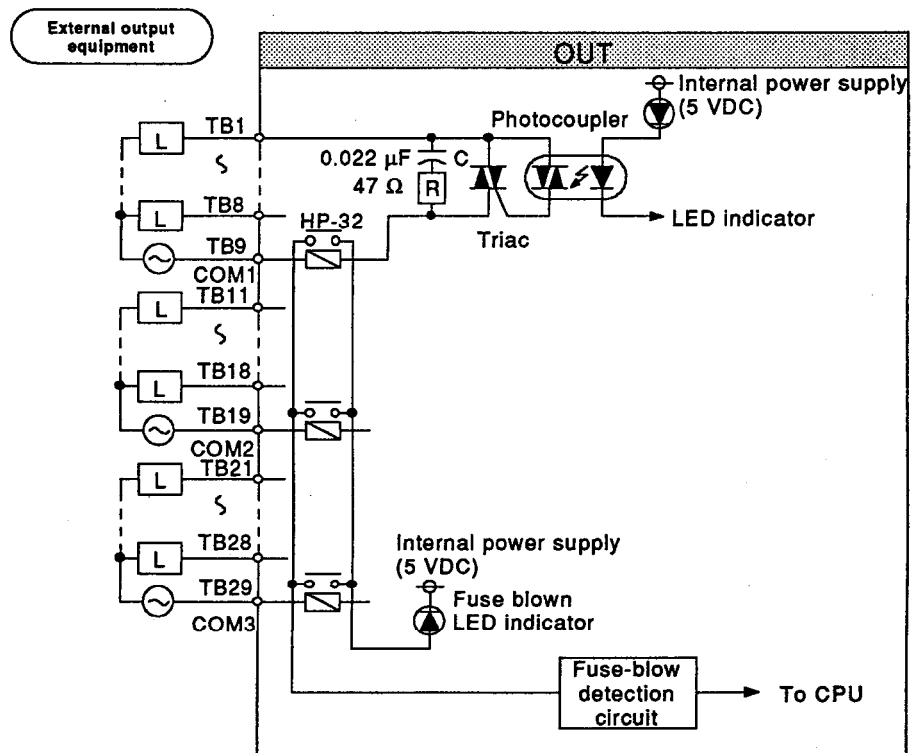
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### 2.1.7 Specifications of Type A0J2-E24S output unit

Output Specifications		
Output points	24 points	
Insulation system	Photocoupler	
Rated load voltage	100 to 240 VAC, 40 to 70 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, 100/240 VAC 10 mA	
Max. inrush current	20 A-10 ms or less, 8 A-100 ms or less	
Leakage current at OFF	1.5 mA (120 VAC 60 Hz), 3 mA (240 VAC 60 Hz)	
Max. voltage drop at ON	1.5 V or lower (0.1 to 0.6 A), 1.8 V or lower (0.1 A or lower), 2.0 V or lower (10 to 50 mA)	
Response time	OFF→ON	1 ms or less
	ON→OFF	0.5 cycle + 1 ms or less
Fuse rating	Fast melting fuse 3.2 A (1 common/pce) HP-32	
Fuse blow indicator	Provided (LED lit and signal output when fuse blown)	
Noise suppression	CR absorber (0.022 μF + 47 Ω)	
Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)	
Operation indicator	Provided (LED lit when output enabled)	
Internal current consumption (5 VDC)	400 mA (TYP. all points ON)	
External connection system	36-point terminal block connector (M3 x 6 mm screws)	
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg-cm (68.25 N-cm) [6.06 lb-inch])	
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	
Weight kg (lb)	0.70 (1.54)	

External connection diagram

OUT	
Terminal No.	Output Signal No.
TB1	Y20
TB2	Y21
TB3	Y22
TB4	Y23
TB5	Y24
TB6	Y25
TB7	Y26
TB8	Y27
TB9	COM1
TB10	NC
TB11	Y28
TB12	Y29
TB13	Y2A
TB14	Y2B
TB15	Y2C
TB16	Y2D
TB17	Y2E
TB18	Y2F
TB19	COM2
TB20	NC
TB21	Y30
TB22	Y31
TB23	Y32
TB24	Y33
TB25	Y34
TB26	Y35
TB27	Y36
TB28	Y37
TB29	COM3
TB30	NC
TB31	NC
TB32	NC
TB33	NC
TB34	NC
TB35	NC
TB36	FG

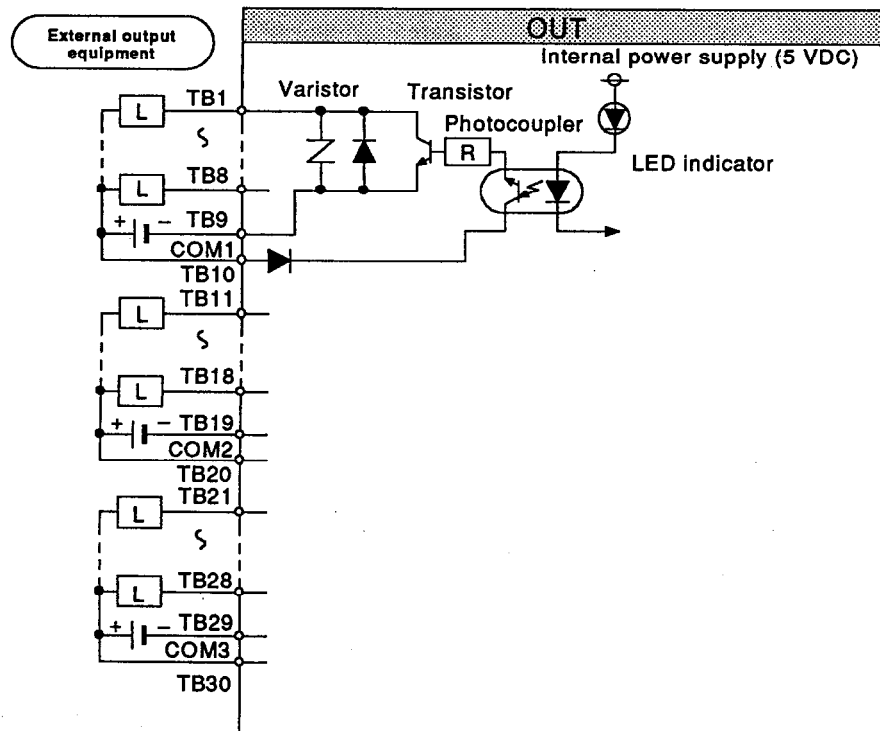


## 2.1.8 Specifications of Type A0J2-E24T output unit

Output Specifications		
Output points	24 points	
Insulation system	Photocoupler	
Rated load voltage	12/24 VDC	
Operating load voltage range	10.2 to 30 VDC	
Max. load current	0.5 A/point, 4 A/common	
Max. inrush current	4 A-10 ms or shorter	
Leakage current at OFF	0.1 mA or lower	
Max. voltage drop at ON	0.9 V (TYP.) 0.5 A, 1.5 V (MAX) 0.5 A	
Response time	OFF→ON	2 ms or less
	ON→OFF	2 ms or less (resistance load)
External supply power	Voltage	12/24 VDC (10.2 to 30 VDC)
	Current	23 mA (TYP. 24 VDC 8 points/common ON)
Noise suppression	Varistor (52 to 62 V)	
Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)	
Operation indicator	Provided (LED lit when output enabled)	
Internal current consumption (5 VDC)	145 mA (TYP. all points ON)	
External connection system	36-point terminal block connector (M3 x 6 mm screws)	
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])	
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	
Weight kg (lb)	0.68 (1.5)	

External connection diagram

OUT	
Terminal No.	Output Signal No.
TB1	Y20
TB2	Y21
TB3	Y22
TB4	Y23
TB5	Y24
TB6	Y25
TB7	Y26
TB8	Y27
TB9	COM1
TB10	12/24 VDC
TB11	Y28
TB12	Y29
TB13	Y2A
TB14	Y2B
TB15	Y2C
TB16	Y2D
TB17	Y2E
TB18	Y2F
TB19	COM2
TB20	12/24 VDC
TB21	Y30
TB22	Y31
TB23	Y32
TB24	Y33
TB25	Y34
TB26	Y35
TB27	Y36
TB28	Y37
TB29	COM3
TB30	12/24 VDC
TB31	NC
TB32	NC
TB33	NC
TB34	NC
TB35	NC
TB36	FG

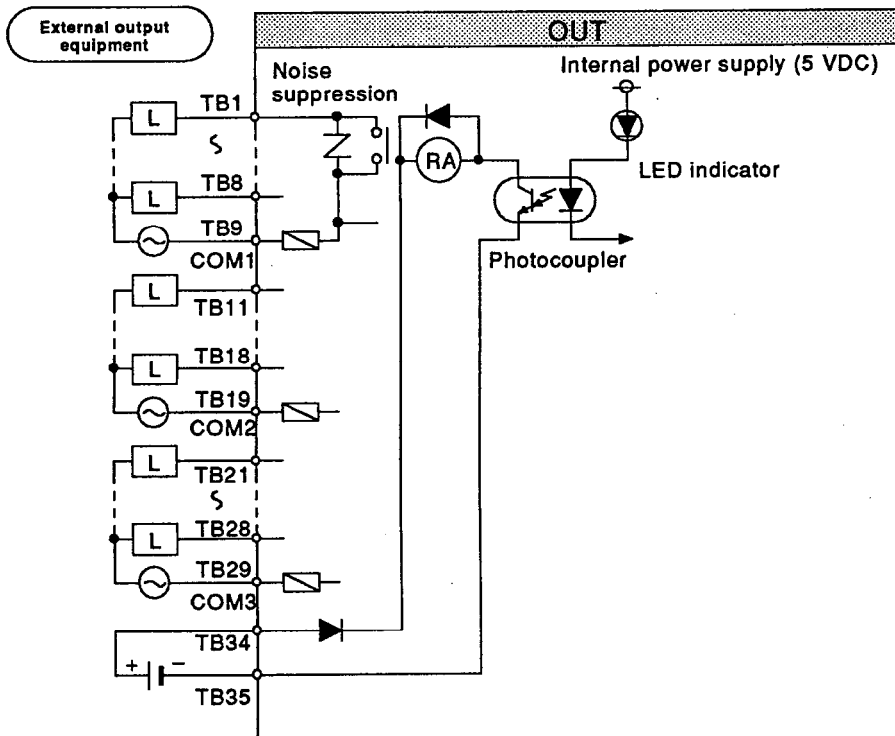


2.1.9 Specifications of Type A0J2E-E24R output unit

Output Specifications		
Output points	24 points	
Insulation system	Photocoupler	
Rated switching voltage, current	24 VDC 2 A (resistance load)/point, 5 A/common 240 VAC 2 A (cosφ = 1)/point, 5 A/common	
Min. switching load	5 VDC/1 mA	
Max. switching voltage	250 VAC, 125 VDC	
Max. switching frequency	3600 times/hour	
Life	Mechanical	20 million times or more
	Electrical	Rated switching voltage, current load 200 thousand times or more
		200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7) 200 thousand times or more
		200 VAC 1A, 240 VAC 0.5 A (cosφ = 0.35) 200 thousand times or more
24 VDC 1A, 100 VDC 0.1 A (L/R = 7 ms) 200 thousand times or more		
Response time	OFF→ON	10 ms or less
	ON→OFF	12 ms or less
External supply power (relay coil driving power)	Voltage	24 VDC ±10 % (ripple voltage 4 Vp-p less)
	Current	220 mA (24 VDC all points ON)
Noise suppression	Varistor (387 to 473 V)	
Fuse	Provided (8 A) MF51NM8	
Fuse blow indication	Not provided	
Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)	
Operation indicator	Provided (LED lit when output enabled)	
Internal current consumption (5 VDC)	145 mA (TYP. all points ON)	
External connection system	36-point terminal block connector (M3 x 6 mm screws)	
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])	
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	
Weight kg (lb)	0.75 (1.65)	

External connection diagram

Terminal No.	Output Signal No.
TB1	Y20
TB2	Y21
TB3	Y22
TB4	Y23
TB5	Y24
TB6	Y25
TB7	Y26
TB8	Y27
TB9	COM1
TB10	NC
TB11	Y28
TB12	Y29
TB13	Y2A
TB14	Y2B
TB15	Y2C
TB16	Y2D
TB17	Y2E
TB18	Y2F
TB19	COM2
TB20	NC
TB21	Y30
TB22	Y31
TB23	Y32
TB24	Y33
TB25	Y34
TB26	Y35
TB27	Y36
TB28	Y37
TB29	COM3
TB30	NC
TB31	NC
TB32	NC
TB33	NC
TB34	24 VDC
TB35	24 GDC
TB36	FG



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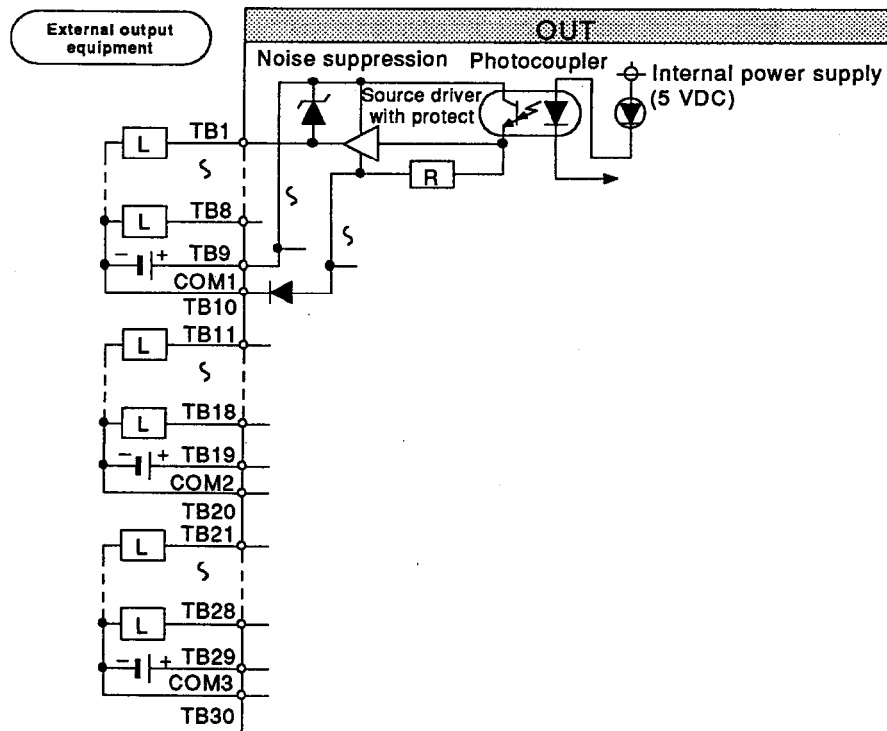
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### 2.1.10 Specifications of Type A0J2E-E24T output unit

Output Specifications		
Output points	24 points	
Insulation system	Photocoupler	
Rated load voltage	12/24 VDC	
Operating load voltage range	10.2 to 26.4 VDC	
Max. load current	0.8 A/point, 0.6 A/point (60 % ON, 55 °C)	
Max. inrush current	No limit (short protect)	
Leakage current at OFF	1.0 mA or lower	
Max. voltage drop at ON	1.0 V (TYP.) 0.8 A, 1.5 V (MAX) 0.8 A	
Response time	OFF→ON	0.5 ms or less
	ON→OFF	1.5 ms or less
External supply power	Voltage	12/24 VDC (10.2 to 26.4 VDC)
	Current	200 mA (24 VDC all points ON)
Noise suppression	Surge absorbing diode	
Protect	Provided (thermal protect, short protect)	
Protect detection indication	None	
Protect reset	Automatic reset (reset when thermal protect is cancelled.) Thermal protection is detected in two-point units. This means that if, at any terminal, thermal protection is actuated at an even-numbered device number and the output is turned OFF, the output of the next odd number device number is also turned OFF simultaneously. Conversely, if thermal protection is actuated at an odd-numbered device number and the output is turned OFF, the output of the preceding even numbered device number is also turned OFF simultaneously.	
Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)	
Operation indicator	Provided (LED lit when output enabled)	
Internal current consumption (5 VDC)	145 mA (TYP. all points ON)	
External connection system	36-point terminal block connector (M3 x 6 mm screws)	
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])	
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	
Weight kg (lb)	0.73 (1.61)	

External connection diagram

Terminal No.	Output Signal No.
TB1	Y20
TB2	Y21
TB3	Y22
TB4	Y23
TB5	Y24
TB6	Y25
TB7	Y26
TB8	Y27
TB9	12/24 VDC
TB10	0 V
TB11	Y28
TB12	Y29
TB13	Y2A
TB14	Y2B
TB15	Y2C
TB16	Y2D
TB17	Y2E
TB18	Y2F
TB19	12/24 VDC
TB20	0 V
TB21	Y30
TB22	Y31
TB23	Y32
TB24	Y33
TB25	Y34
TB26	Y35
TB27	Y36
TB28	Y37
TB29	12/24 VDC
TB30	0 V
TB31	NC
TB32	NC
TB33	NC
TB34	NC
TB35	NC
TB36	FG





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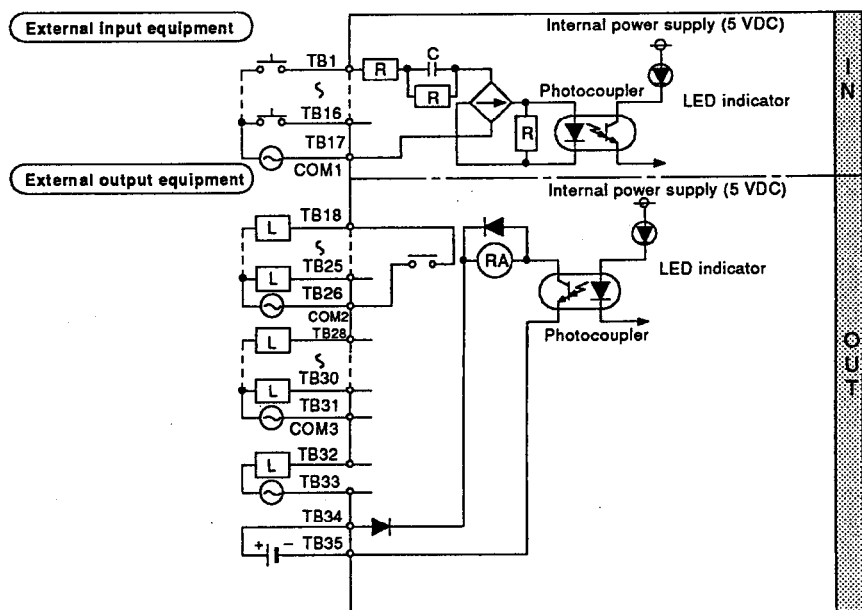
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### 2.1.11 Specifications of Type A0J2E-E28AR I/O unit

Input Specifications		Output Specifications		
Input points	16 points	Output points	12 points	
Insulation system	Photocoupler	Insulation system	Photocoupler	
Rated input voltage	100 to 120 VAC 50/60 Hz	Rated switching voltage, current	24 VDC 2 A (resistance load)/point, 5 A/common 240 VAC 2 A (cosφ = 1)/point, 5 A/common	
Rated input current	10 mA (100 VAC, 60 Hz)			
Operating voltage range	85 to 132 VAC (50/60 Hz ±5 %)			
ON voltage/ON current	80 VAC or higher/6 mA or higher			
OFF voltage/OFF current	40 VAC or lower/4 mA or lower	Min. switching load	5 VDC/1 mA	
Inrush current	Max. 300 mA within 0.3 ms (132 VAC)	Max. switching voltage	264 VAC, 125 VDC	
		Max. switching frequency	3600 times/hour	
Input impedance	Approx. 10 kΩ (60 Hz), Approx. 12 kΩ (50 Hz)	Life	Mechanical	20 million times or more
			Electrical	Rated switching voltage, current load 200 thousand times or more
200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7) 200 thousand times or more				
200 VAC 1 A, 240 VAC 0.5 A (cosφ = 0.35) 200 thousand times or more				
Common wiring system	16 points/common (common terminal: TB17)		24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) 200 thousand times or more	
Operation indicator	Provided (LED lit when input enabled)			
Internal current consumption (5 VDC)	140 mA (TYP. all points ON)	Response time	OFF→ON	10 ms or less
			ON→OFF	12 ms or less
		External supply power (relay coil driving power)	Voltage	24 VDC ±10 % (ripple voltage 4 Vp-p less)
			Current	125 mA (24 VDC all points ON)
		Noise suppression	None	
		Common wiring system	8 points/common (common terminal: TB26) 3 points/common (common terminal: TB31) independent contact (common terminal: TB33)	
Operation indicator	Provided (LED lit when output enabled)			
External connection system	36-point terminal block connector (M3 x 6 mm screws)			
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])			
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A			
Weight kg (lb)	0.68 (1.5)			

External connection diagram

	Terminal No.	Signal No.
IN	TB1	X00
	TB2	X01
	TB3	X02
	TB4	X03
	TB5	X04
	TB6	X05
	TB7	X06
	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
	TB17	COM1
OUT	TB18	Y20
	TB19	Y21
	TB20	Y22
	TB21	Y23
	TB22	Y24
	TB23	Y25
	TB24	Y26
	TB25	Y27
	TB26	COM2
	TB27	NC
	TB28	Y28
	TB29	Y29
	TB30	Y2A
	TB31	COM3
	TB32	Y2B
	TB33	COM4
	TB34	24 VDC
	TB35	24 GDC
	TB36	FG



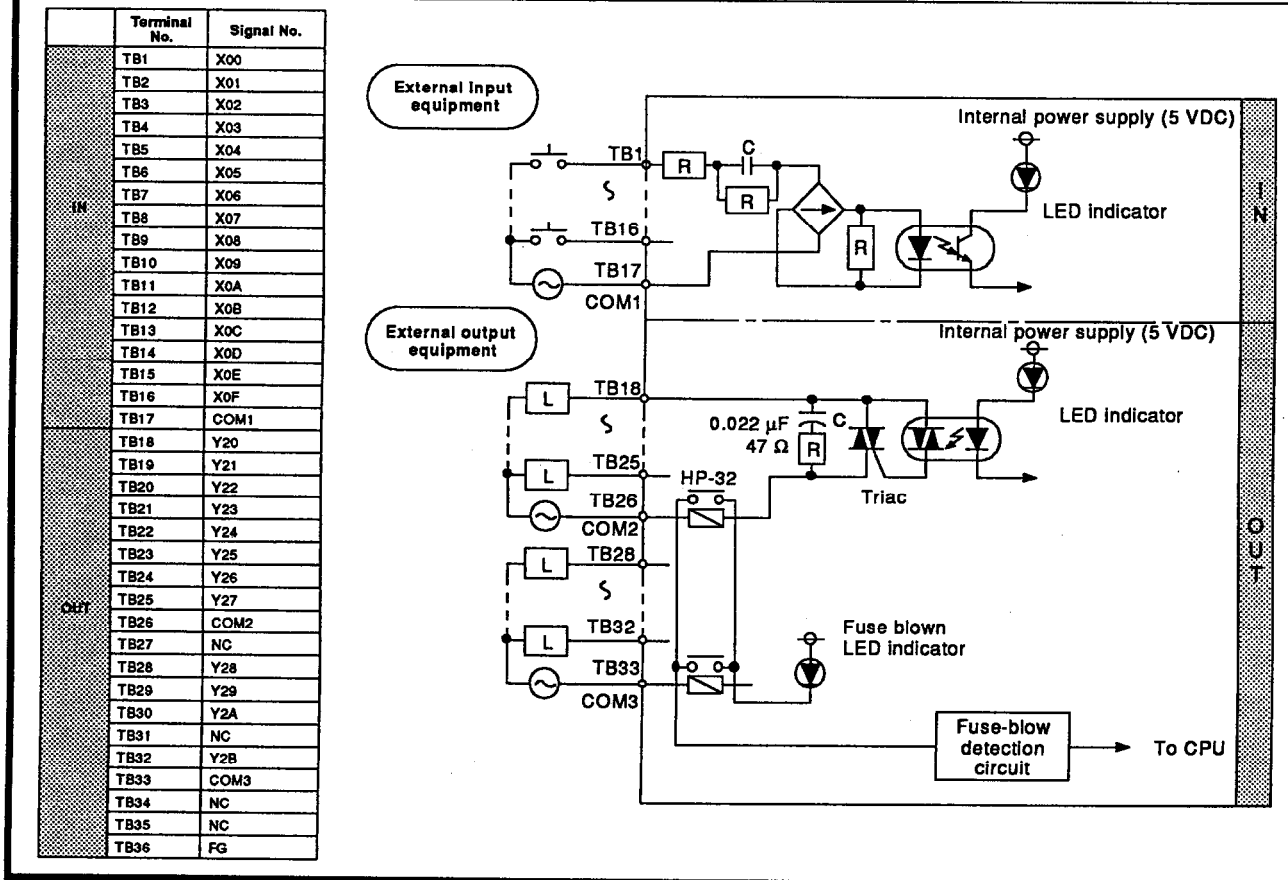
## 2. SPECIFICATIONS

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### 2.1.12 Specifications of Type A0J2-E28AS I/O unit

Input Specifications		Output Specifications	
Input points	16 points	Output points	12 points
Insulation system	Photocoupler	Insulation system	Photocoupler
Rated input voltage	100 to 120 VAC 50/60 Hz	Rated load voltage	100 to 240 VAC, 40 to 70 Hz
Rated input current	10 mA (100 VAC, 60 Hz)	Max. load voltage	264 VAC
Operating voltage range	85 to 132 VAC (50/60 Hz $\pm 5\%$ )	Max. load current	0.6 A/point, 2.4 A/common
ON voltage/ON current	80 VAC or higher/6 mA or higher	Min. load voltage, current	24 VAC 100 mA, 100/240 VAC 10 mA
OFF voltage/OFF current	40 V or lower/4 mA lower		
Inrush current	Max. 300 mA within 0.3 ms (132 VAC)	Max. inrush current	20 A 10 ms or less, 8 A 100 ms or less
Input impedance	Approx. 10 k $\Omega$ (60 Hz), Approx. 12 k $\Omega$ (50 Hz)	Leakage current at OFF	1.5 mA (120 VAC 60 Hz), 3 mA (240 VAC 60 Hz)
Response time	OFF $\rightarrow$ ON	Max. voltage drop at ON	1.5 V or lower (0.1 to 0.6 A), 1.8 V or lower (0.1 A or lower), 2.0 V or lower (10 to 50 mA)
	ON $\rightarrow$ OFF		
Common wiring system	16 points/common (common terminal: TB17)	Response time	OFF $\rightarrow$ ON ON $\rightarrow$ OFF
Operation indicator	Provided (LED lit when input enabled)		1 ms or less 0.5 CYCLE + 1 ms or less
		Fuse rating	Fast-melting fuse 3.2 A (1 common/pce) HP-32
		Fuse blow indicator	Provided LED lit and signal output when fuse blown
		Noise suppression	CR absorber (0.022 $\mu$ F + 47 $\Omega$ )
		Common wiring system	8 points/common (common terminal: TB26) 4 points/common (common terminal: TB33)
		Operation indicator	Provided (LED lit when output enabled)
Internal current consumption (5 VDC)	260 mA (TYP. all points ON)		
External connection system	36-point terminal block connector (M3 x 6 mm screws)		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg-cm (68.25 N-cm) [6.06 lb-inch])		
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	0.68 (1.5)		

External connection diagram



## 2. SPECIFICATIONS

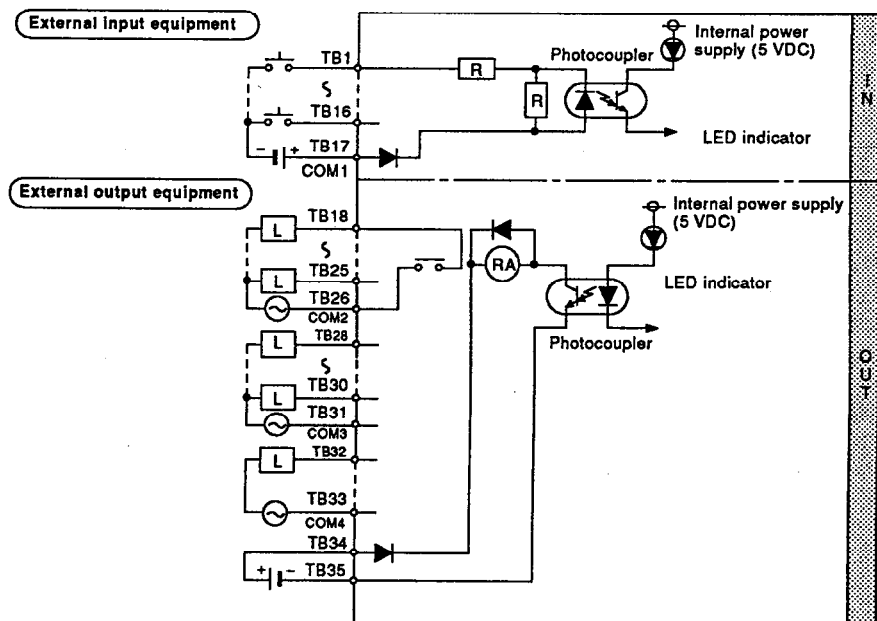
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### 2.1.13 Specifications of Type A0J2-E28DR I/O unit

Input Specifications		Output Specifications	
Input points	16 points	Output points	12 points
Insulation system	Photocoupler	Insulation system	Photocoupler
Rated input voltage	12 VDC      24 VDC	Rated switching voltage, current	24 VDC 2 A (resistance load)/point, 5 A/common 240 VAC 2 A (cosφ = 1)/point, 5 A/common
Rated input current	3 mA      7 mA		
Operating voltage range	10.2 to 26.4 VDC (ripple ratio within 5%)	Min. switching load	5 VDC/1 mA
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher	Max. switching voltage	264 VAC, 125 VDC
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower	Max. switching frequency	3600 times/hour
Input resistance	Approx. 3.4 kΩ	Life	Mechanical 20 million times or more
Input form	Sink input (input current outflow form)		
Response time	OFF→ON	Electrical	Rated switching voltage, current load 200 thousand times or more 200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7) 200 thousand times or more 200 VAC 1 A, 240 VAC 0.5 A (cosφ = 0.35) 200 thousand times or more 24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) 200 thousand times or more
	ON→OFF		
Common wiring system	16 points/common (common terminal: TB17)	Response time	OFF→ON 10 ms or less ON→OFF 12 ms or less
Operation indicator	Provided (LED lit when input enabled)	External supply power (relay coil driving power)	Voltage 24 VDC ±10% (ripple voltage 4 Vp-p or less) Current 125 mA (24 VDC all points ON)
		Noise suppression	None
		Common wiring system	8 points/common (common terminal: TB26) 3 points/common (common terminal: TB31) Independent contact (common terminal: TB33)
		Operation indicator	Provided (LED lit when output enabled)
Internal current consumption (5 VDC)	130 mA (TYP. all points ON)		
External connection system	36-point terminal block connector (M3 x 6 mm screws)		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])		
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	0.68 (1.5)		

External connection diagram

	Terminal No.	Signal No.
IN	TB1	X00
	TB2	X01
	TB3	X02
	TB4	X03
	TB5	X04
	TB6	X05
	TB7	X06
	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
	TB17	COM1
OUT	TB18	Y20
	TB19	Y21
	TB20	Y22
	TB21	Y23
	TB22	Y24
	TB23	Y25
	TB24	Y26
	TB25	Y27
	TB26	COM2
	TB27	NC
	TB28	Y28
	TB29	Y29
	TB30	Y2A
	TB31	COM3
	TB32	Y2B
	TB33	COM4
	TB34	24 VDC
	TB35	24 GDC
	TB36	FG



## 2. SPECIFICATIONS

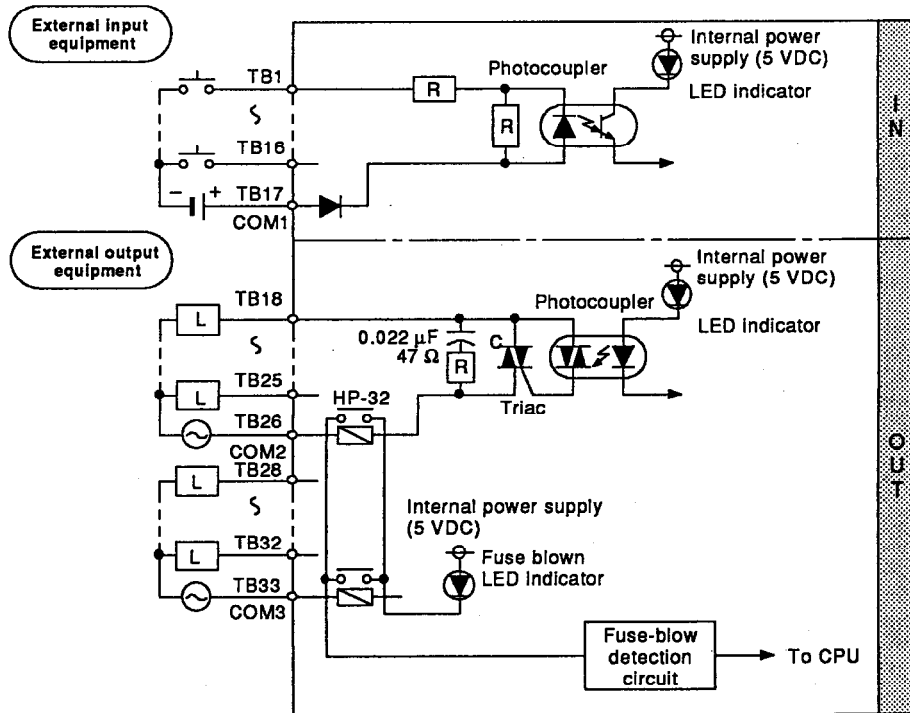
MELSEC-A

### 2.1.14 Specifications of Type A0J2-E28DS I/O unit

Input Specifications		Output Specifications	
Input points	16 points	Output points	12 points
Insulation system	Photocoupler	Insulation system	Photocoupler
Rated input voltage	12 VDC      24 VDC	Rated load voltage	100 to 240 VAC, 40 to 70 Hz
Rated input current	3 mA      7 mA	Max. load voltage	264 VAC
Operating voltage range	10.2 to 26.4 VDC. (ripple ratio: within 5%)	Max. load current	0.6 A/point, 2.4 A/common
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher	Min. load voltage, current	24 VAC 100 mA, 100/240 VAC 10 mA
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		
Input resistance	Approx. 3.4 kΩ	Max. inrush current	20 A 10 ms or less, 8 A 100 ms or less
Input form	Sink input (input current outflow form)	Leakage current at OFF	1.5 mA (120 VAC 60 Hz), 3 mA (240 VAC 60 Hz)
Response time	OFF→ON	Max. voltage drop at ON	1.5 V or lower (0.1 to 0.6 A), 1.8 V or lower (0.1 A or lower), 2.0 V or lower (10 to 50 mA)
	ON→OFF		
Common wiring system	16 points/common (common terminal: TB17)	Response time	OFF→ON      1 ms or less ON→OFF      0.5 CYCLE + 1 ms or less
Operation indicator	Provided (LED lit when input enabled)	Fuse rating	Fast-melting fuse 3.2 A (1 common/pce) HP-32
		Fuse blow indicator	Provided LED lit and signal output when fuse blown
		Noise suppression	CR absorber (0.022 μF + 47 Ω)
		Common wiring system	8 points/common (common terminal: TB26) 4 points/common (common terminal: TB33)
		Operation indicator	Provided (LED lit when output enabled)
Internal current consumption (5 VDC)	260 mA (TYP. all points ON)		
External connection system	36-points terminal block connector (M3 x 6 mm screws)		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])		
Applicable solderless terminal	1.25-S, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-S, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	0.65 (1.43)		

External connection diagram

	Terminal No.	Signal No.
IN	TB1	X00
	TB2	X01
	TB3	X02
	TB4	X03
	TB5	X04
	TB6	X05
	TB7	X06
	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
TB17	COM1	
OUT	TB18	Y20
	TB19	Y21
	TB20	Y22
	TB21	Y23
	TB22	Y24
	TB23	Y25
	TB24	Y26
	TB25	Y27
	TB26	COM2
	TB27	NC
	TB28	Y28
	TB29	Y29
	TB30	Y2A
	TB31	NC
	TB32	Y2B
	TB33	COM3
	TB34	NC
	TB35	NC
	TB36	FG



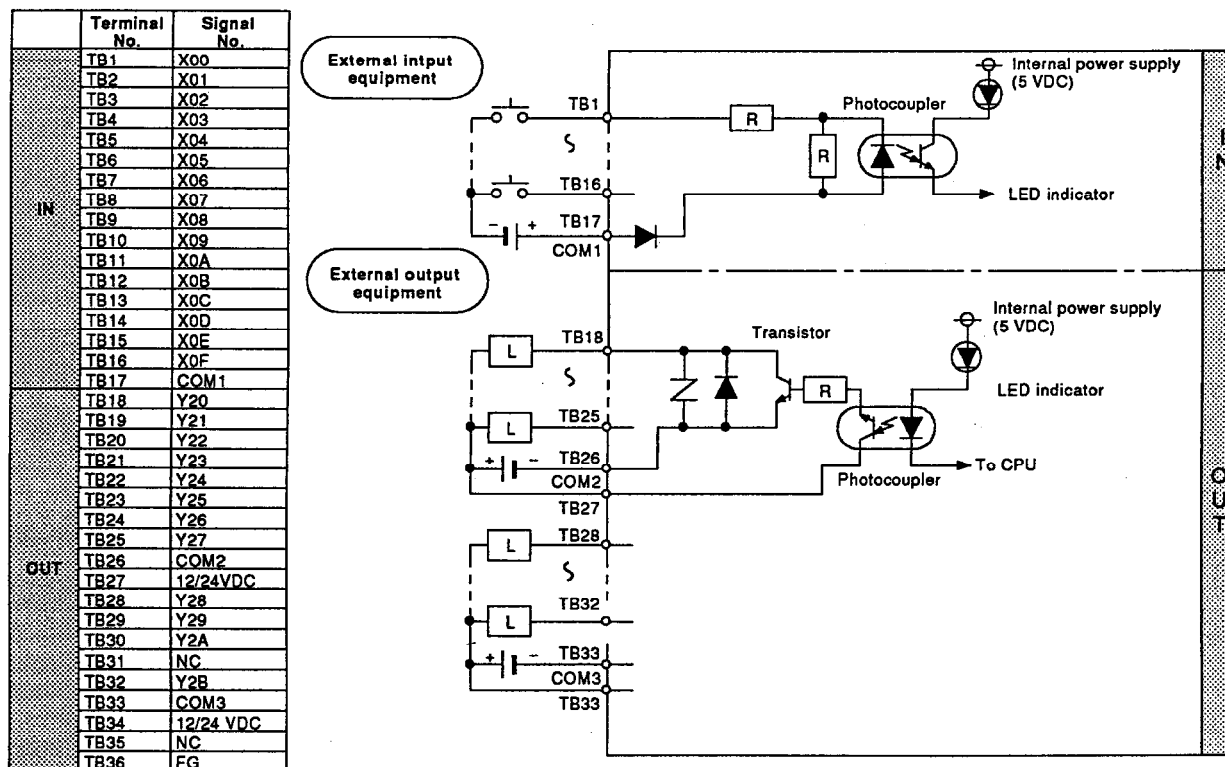
## 2. SPECIFICATIONS

MELSEC-A

### 2.1.15 Specifications of Type A0J2-E28DT I/O unit

Input Specifications		Output Specifications	
Input points	16 points	Output points	12 points
Insulation system	Photocoupler	Insulation system	Photocoupler
Rated input voltage	12 VDC	Rated load voltage	12/24 VDC
Rated input current	3 mA	Operating load voltage range	10.2 to 30 VDC
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5%)	Max. load current	0.5 A/point, 4 A/common
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher	Max. inrush current	4 A 10ms or less
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower	Leakage current at OFF	0.1 mA or lower
Input resistance	Approx. 3.4 kΩ	Max. voltage drop at ON	0.9 V (TYP.) 0.5 A, 1.5 V (MAX) 0.5 A
Input form	Sink input (input current outflow form)	Response time	OFF→ON: 2 ms or less ON→OFF: 2 ms or less (resistance load)
Response time	OFF→ON: 10 ms or less (6 ms TYP.) ON→OFF: 10 ms or less (7.5 ms TYP.)	External supply power (relay coil driving power)	Voltage: 12/24 VDC (10.2 to 30 VDC) Current: 23 mA (TYP. 24 VDC 8 points/common ON)
Common wiring system	16 points/common (common terminal: TB17)	Noise suppression	Varistor (52 to 62 V)
Operation indicator	Provided (LED lit when input enabled)	Common wiring system	8 points/common (common terminal: TB26) 4 points/common (common terminal: TB33)
Internal current consumption (5 VDC)	125 mA (TYP. all points ON)	Operation indicator	Provided (LED lit when output enabled)
External connection system	36-point terminal block connector (M3 x 6 mm screws)		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg-cm (68.25 N-cm) [6.06 lb-inch])		
Applicable solderless terminal	1.25-S, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-S, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	0.65 (1.43)		

External connection diagram



## 2. SPECIFICATIONS

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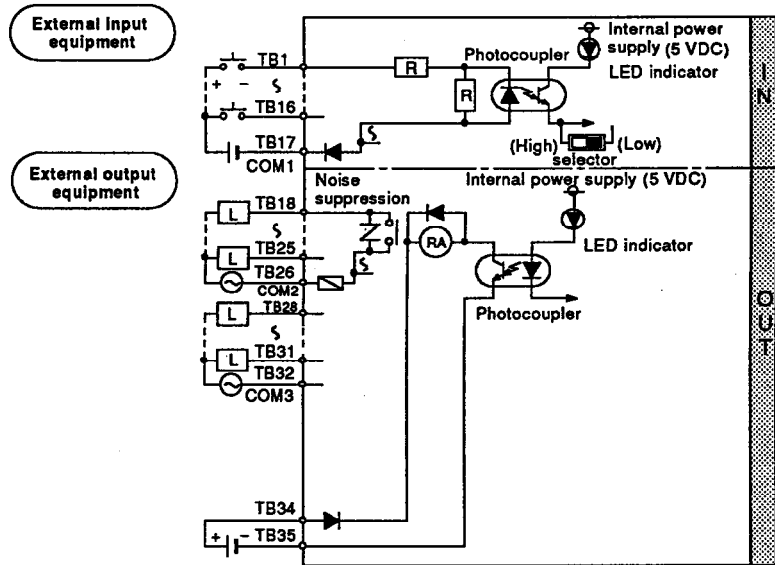
### 2.1.16 Specifications of Type A0J2E-E28DR I/O unit

Input Specifications			Output Specifications		
Input points	16 points		Output points	12 points	
Insulation system	Photocoupler		Insulation system	Photocoupler	
Rated input voltage	12 VDC	24 VDC	Rated switching voltage, current	24 VDC 2A (resistance load)/point, 5 A/common	
Rated input current	3 mA	7 mA		240 VAC 2A (cosφ = 1)/point, 5 A/common	
Operating voltage range	10.2 to 26.4 VDC (ripple ratio within 5%)		Min. switching load	5 VDC 1mA	
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher		Max. switching voltage	250 VAC, 125 VDC	
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		Max. switching frequency	3600 times/hour	
Input resistance	Approx. 3.4 kΩ		Life	Mechanical	20 million times or more
Input form	Source input (input current inflow form)			Electrical	Rated switching voltage, current load 200 thousand times or more
Response time	OFF→ON	5.5 ms (TYP.)	200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7) 200 thousand times or more		
	ON→OFF	6.0 ms (TYP.)	200 VAC 1 A, 240 VAC 0.5 A (cosφ = 0.35) 200 thousand times or more		
Common wiring system	16 points/common (common terminal: TB17)		24 VDC 1A, 100 VDC 0.1 A (L/R = 7 ms) 200 thousand times or more		
Operation indicator	Provided (LED lit when input enabled)		Response time	OFF→ON	10 ms or less
Response time (high speed mode upper 8 points only)	OFF→ON	0.5 ms or less		ON→OFF	12 ms or less
	ON→OFF	1.0 ms or less	External supply power (relay coil driving power)	Voltage	24 VDC ±10% (ripple voltage 4 Vp-p less)
Current				110 mA (24 VDC all points ON)	
Internal current consumption (5 VDC)	130 mA (TYP. all points ON)		Noise suppression	Varistor (387 to 473 V)	
			Common wiring system	8 points/common (common terminal: TB26) 4 points/common (common terminal: TB32)	
			Operation indicator	Provided (LED lit when output enabled)	
			Fuse	Provided (8 A) MF51NM8	
			Fuse blow indication	Not provided	
External connection system	36-point terminal block connector (M3 x 6 mm screws)				
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])				
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A				
Weight kg (lb)	0.70 (1.54)				

External connection diagram

	Terminal No.	Signal No.
IN	TB1	X00
	TB2	X01
	TB3	X02
	TB4	X03
	TB5	X04
	TB6	X05
	TB7	X06
	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
	TB17	COM1
OUT	TB18	Y20
	TB19	Y21
	TB20	Y22
	TB21	Y23
	TB22	Y24
	TB23	Y25
	TB24	Y26
	TB25	Y27
	TB26	COM2
	TB27	NC
	TB28	Y28
	TB29	Y29
	TB30	Y2A
	TB31	Y2B
	TB32	COM3
	TB33	NC
	TB34	24 VDC
	TB35	24 GND
	TB36	FG

\* For only upper 8 points, high or low speed can be selected using DIP switches.  
Set after removing the top cover.



# 2. SPECIFICATIONS

MELSEC-A

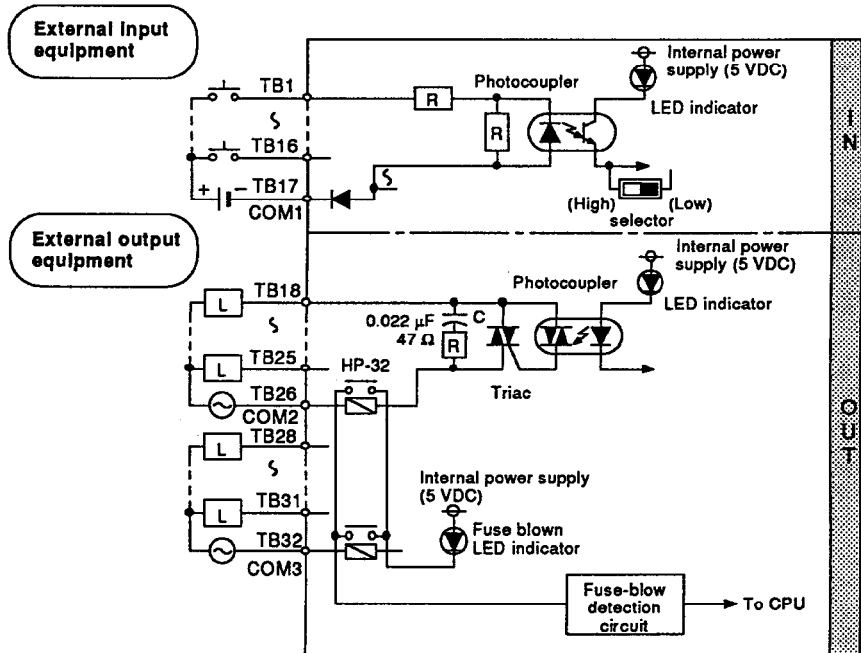
## 2.1.17 Specifications of Type A0J2E-E28DS I/O unit

Input Specifications			Output Specifications	
Input points	16 points		Output points	12 points
Insulation system	Photocoupler		Insulation system	Photocoupler
Rated input voltage	12 VDC	24 VDC	Rated load voltage	100 to 240 VAC, 40 to 70 Hz
Rated input current	3 mA	7 mA	Max. load voltage	264 VAC
			Max. load current	0.6 A/point, 0.5 A/point (60 % ON, 55 °C)
Operating voltage range	10.2 to 26.4 VDC (ripple ratio within 5 %)		Min. load voltage, current	24 VAC 100 mA, 100/240 VAC 10 mA
ON voltage/ON current	9.5 VDC or higher/2.6mA or higher		Max. inrush current	20 A 10 ms or less, 8 A 100 ms or less
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		Leakage current at OFF	1.5 mA (120 VAC 60 Hz), 3 mA (240 VAC 60 Hz)
Input resistance	Approx. 3.4 kΩ		Max. voltage drop at ON	1.5 V or lower (0.1 to 0.6 A), 1.8 V or lower (0.1 A or lower), 2.0 V or lower (10 to 50 mA)
Input form	Source input (input current inflow form)		Response time	OFF→ON: 1 ms or less ON→OFF: 0.5 CYCLE + 1 ms or less
Response time	OFF→ON	5.5 ms (TYP.)	Fuse rating	Fast-melting fuse 3.2 A (1 common/pce) HP-32
	ON→OFF	6.0 ms (TYP.)		
Common wiring system	16 points/common (common terminal: TB17)		Fuse blow indicator	Provided (LED lit and signal output when fuse blown)
Operation indicator	Provided (LED lit when input enabled)		Noise suppression	CR absorber (0.022 μF + 47 Ω)
Response time (high speed mode upper 8 points only)	OFF→ON	0.5 ms or less	Common wiring system	8 points/common (common terminal: TB26) 4 points/common (common terminal: TB32)
	ON→OFF	1.0 ms or less	Operation indicator	Provided (LED lit when output enabled)
Internal current consumption (5 VDC)	260 mA (TYP. all points ON)			
External connection system	36-point terminal block connector (M3 x 6 mm screws)			
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])			
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A			
Weight kg (lb)	0.66 (1.45)			

External connection diagram

\* For only upper 8 points, high or low speed can be selected using DIP switches. Set after removing the top cover.

	Terminal No.	Signal No.
IN	TB1	X00
	TB2	X01
	TB3	X02
	TB4	X03
	TB5	X04
	TB6	X05
	TB7	X06
	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
	TB17	COM1
OUT	TB18	Y20
	TB19	Y21
	TB20	Y22
	TB21	Y23
	TB22	Y24
	TB23	Y25
	TB24	Y26
	TB25	Y27
	TB26	COM2
	TB27	NC
	TB28	Y28
	TB29	Y29
	TB30	Y2A
	TB31	Y2B
	TB32	COM3
	TB33	NC
	TB34	NC
	TB35	NC
	TB36	FG



## 2. SPECIFICATIONS

MELSEC-A

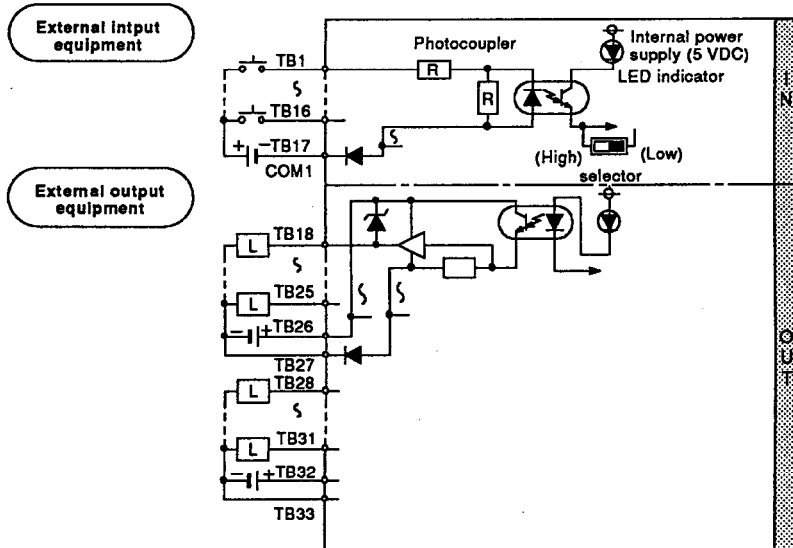
### 2.1.18 Specifications of Type A0J2E-E28DT I/O unit

Input Specifications			Output Specifications		
Input points	16 points		Output points	12 points	
Insulation system	Photocoupler		Insulation system	Photocoupler	
Rated input voltage	12 VDC	24 VDC	Rated load voltage, range	10.2 to 26.4 VDC	
Rated input current	3 mA	7 mA	Max. load current	0.8A/point, 0.7/point (60 % ON, 55 °C)	
Operating voltage range	10.2 to 26.4 VDC (ripple ratio within 5 %)		Max. inrush current	Not limit (short protect)	
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher		Leakage current at OFF	1.0 mA or lower	
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		Max. voltage drop at ON	1.0 V (TYP) 0.8 A 1.5 V (MAX) 0.8 A	
Input resistance	Approx. 3.4 kΩ		Response time	OFF→ON	0.5 ms or less
Input form	Source input (input current inflow form)			ON→OFF	1.5 ms or less
Response time	OFF→ON	5.5 ms (TYP.)	External supply power	Voltage	12/24 VDC (10.2 to 26.4 VDC)
	ON→OFF	6.0 ms (TYP.)		Current	100 mA (24 VDC all points ON)
Common wiring system	16 points/common (common terminal: TB17)		Noise suppression	Surge absorbing diode	
Operation indicator	Provided (LED lit when input enabled)		Common wiring system	8 points/common (common terminal: TB26) 4 points/common (common terminal: TB32)	
Response time (high speed mode upper 8 points only)	OFF→ON	0.5 ms or less	Operation indicator	Provided (LED lit when output enabled)	
	ON→OFF	1.0 ms or less	Protect	Provided (thermal protect, short protect) Thermal protection is detected in two point units. This means that if, at any terminal, thermal protection is actuated at an even-numbered device number and the output is turned OFF, the output of the next odd-numbered device number is also turned OFF simultaneously. Conversely, if thermal protection is actuated at an odd-numbered device number and the output is turned OFF, the output of the preceding even-numbered device number is also turned OFF simultaneously.	
			Protect detection indication	None	
			Protect reset	Automatic reset (reset when thermal protect is canceled.)	
Internal current consumption (5 VDC)	125 mA (TYP. all points ON)				
External connection system	36-point terminal block connector (M3 x 6 mm screws)				
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg-cm (68.25 N-cm) [6.06 lb-inch])				
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A				
Weight kg (lb)	0.68 (1.5)				

External connection diagram

	Terminal No.	Signal No.
IN	TB1	X00
	TB2	X01
	TB3	X02
	TB4	X03
	TB5	X04
	TB6	X05
	TB7	X06
	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
	TB17	COM1
OUT	TB18	Y20
	TB19	Y21
	TB20	Y22
	TB21	Y23
	TB22	Y24
	TB23	Y25
	TB24	Y26
	TB25	Y27
	TB26	12/24 VDC
	TB27	0 V
	TB28	Y28
	TB29	Y29
	TB30	Y2A
	TB31	Y2B
	TB32	12/24 VDC
	TB33	0 V
	TB34	NC
	TB35	NC
	TB36	FG

\* For only upper 8 points, high or low speed can be selected using DIP switches. Set after removing the top cover.





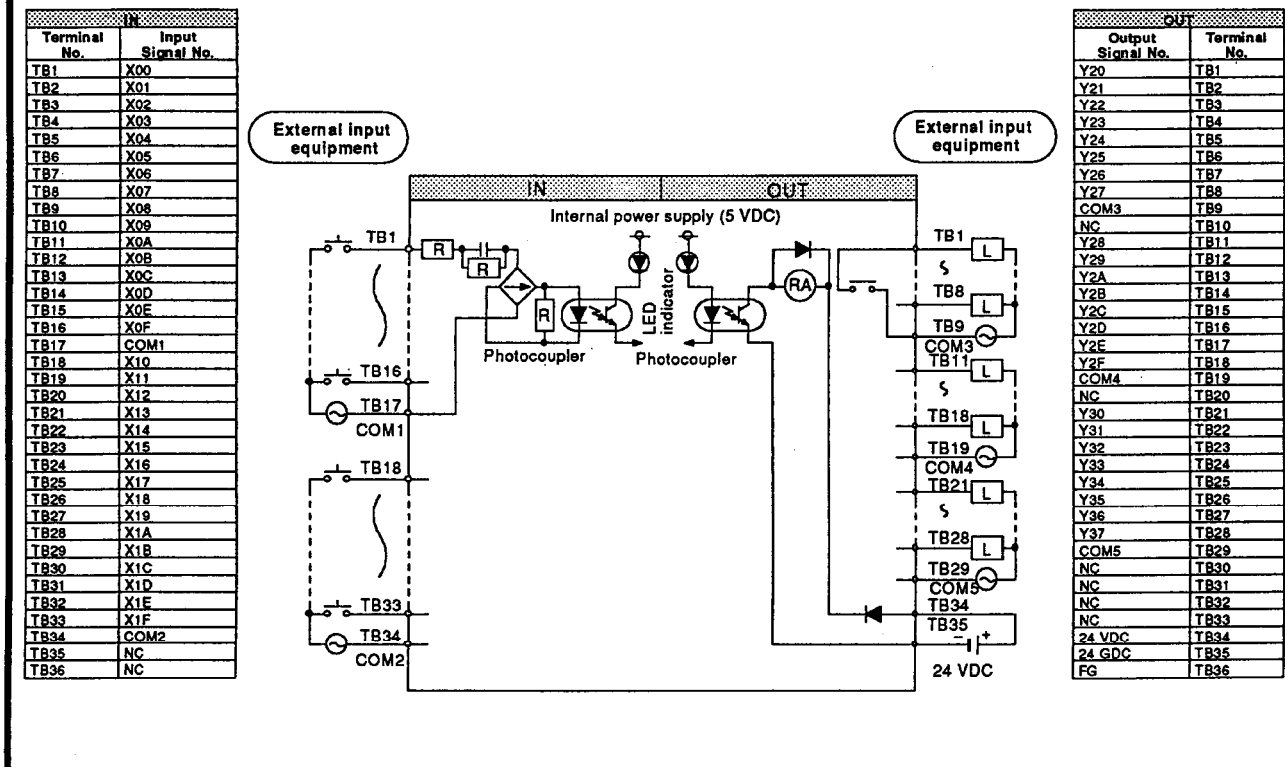
## 2. SPECIFICATIONS

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### 2.1.19 Specifications of Type A0J2-E56AR I/O unit

Input Specifications		Output Specifications			
Input points	32 points	Output points	24 points		
Insulation system	Photocoupler	Insulation system	Photocoupler		
Rated input voltage	100 to 120 VAC 50/60 Hz	Rated switching voltage, current	24 VDC 2 A (resistance load)/point, 5 A/common 240 VAC 2 A (cosφ = 1)/point, 5 A/common		
Rated input current	10 mA (100 VAC, 60 Hz)	Min. switching load	5 VDC/1 mA		
Operating voltage range	85 to 132 VAC (50/60 Hz ±5 %)	Max. switching voltage	264 VAC, 125 VDC		
ON voltage/ON current	80 VAC or higher/6 mA or higher	Max. switching frequency	3600 times/hour		
OFF voltage/OFF current	40 VAC or lower/4 mA or lower	Life	Mechanical	20 million times or more	
Inrush current	Max. 300 mA within 0.3 ms (132 VAC)		Electrical	Rated switching voltage, current load 200 thousand times or more	
				200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7) 200 thousand times or more	
Input impedance				200 VAC 1A, 240 VAC 0.5 A (cosφ = 0.35) 200 thousand times or more	
Response time	OFF→ON	24 VDC 1A, 100 VDC 0.1A (L/R = 7 ms) 200 thousand times or more			
	ON→OFF	Response time	OFF→ON	10 ms or less	
Common wiring system	16 points/common (common terminal: TB17, TB34)	ON→OFF	12 ms or less		
Operation indicator	Provided (LED lit when input enabled)	External supply power (relay coil driving power)	Voltage	24 VDC ±10 % (ripple voltage 4 Vp-p less)	
Max. simultaneous ON points	60 % (10 points/common) simultaneous ON		Current	230 mA (24 VDC all points ON)	
		Noise suppression	None		
Internal current consumption (5 VDC)	225 mA (TYP. all points ON)	Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)		
		Operation indicator	Provided (LED lit when output enabled)		
		External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])	Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	1.10 (2.42)				

External connection diagram



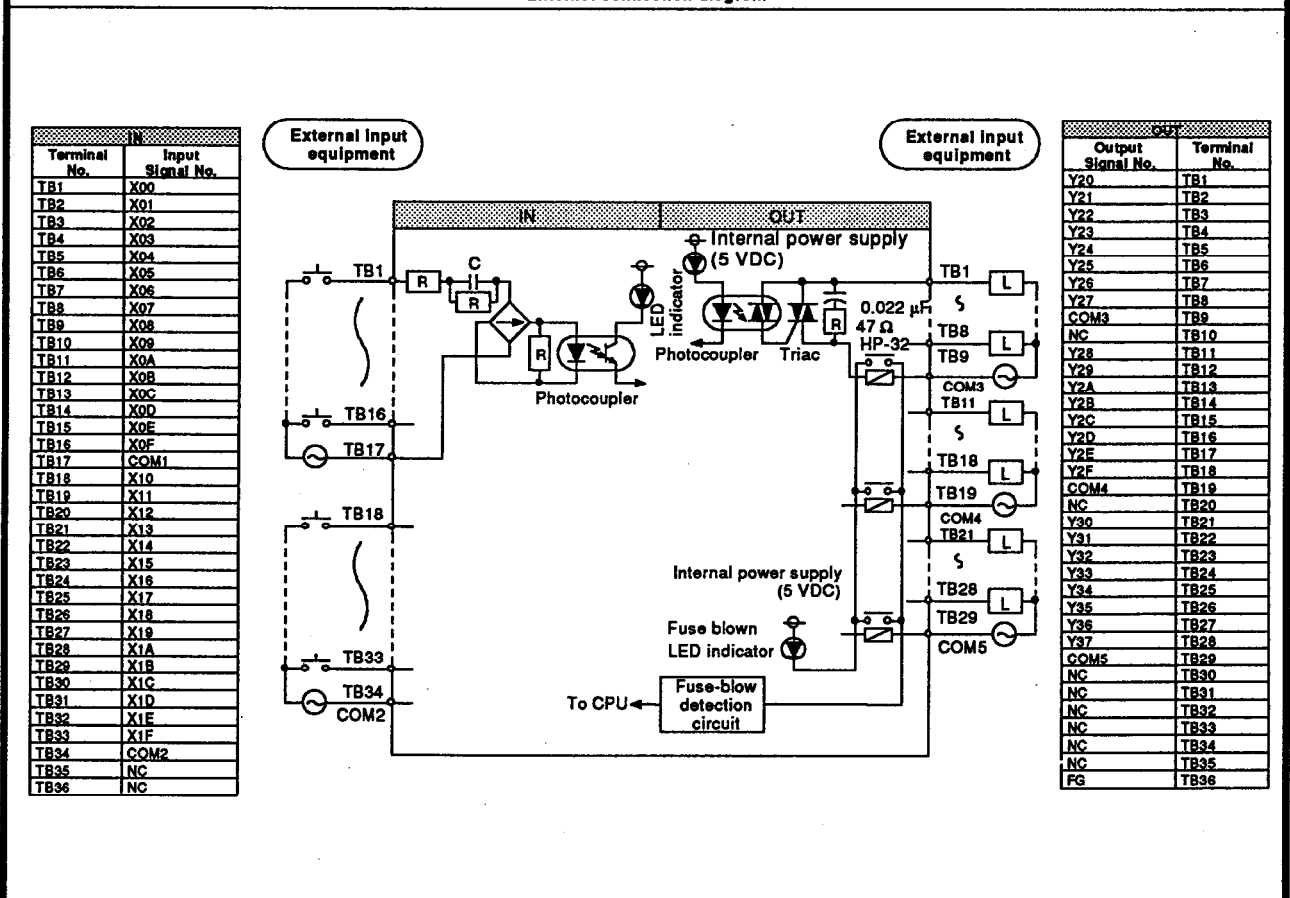
## 2. SPECIFICATIONS

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### 2.1.20 Specifications of Type A0J2-E56AS I/O unit

Input Specifications		Output Specifications	
Input points	32 points	Output points	24 points
Insulation system	Photocoupler	Insulation system	Photocoupler
Rated input voltage	100 to 120 VAC 50/60 Hz	Rated load voltage	100 to 240 VAC, 40 to 70 Hz
Rated input current	10 mA (100 VAC, 60 Hz)	Max. load voltage	264 VAC
Operating voltage range	85 to 132 VAC (50/60 Hz $\pm 5\%$ )	Max. load current	0.6 point, 2.4 A/common
ON voltage/ON current	80 VAC or higher/6 mA or higher	Min. load voltage, current	24 VAC 100 mA, 100/240 VAC 10 mA
OFF voltage/OFF current	40 VAC or lower/4 mA or lower	Max. inrush current	20 A 10 ms or less, 8 A 100 ms or less
Inrush current	Max. 300 mA within 0.3 ms (132 VAC)	Leakage current at OFF	1.5 mA (120 VAC 60 Hz), 3 mA (240 VAC 60 Hz)
		Max. voltage drop at ON	1.5 V or lower (0.1 to 0.6 A), 1.8 V or lower (0.1A or lower) 2.0 V or lower (10 to 50 mA)
Input impedance	Approx. 10 k $\Omega$ (60 Hz), Approx. 12 k $\Omega$ (50 Hz)	Response time	OFF $\rightarrow$ ON: 1 ms or less ON $\rightarrow$ OFF: 0.5 CYCLE + 1 ms or less
Response time	OFF $\rightarrow$ ON: 15 ms or less (6 ms TYP.) ON $\rightarrow$ OFF: 35 ms or less (16 ms TYP.)	Fuse rating	Fast-melting fuse 3.2 A (1 common/pce) HP-32
Common wiring system	16 points/common (common terminal: TB17, TB34)	Fuse blow indicator	Provided (LED lit and signal output when fuse blown)
Operation indicator	Provided (LED lit when input enabled)	Noise suppression	CR absorber (0.022 $\mu$ F + 47 $\Omega$ )
Max. simultaneous ON points	60 % (10 points/common) simultaneous ON	Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)
		Operation indicator	Provided (LED lit when output enabled)
Internal current consumption (5 VDC)	460 mA (TYP. all points ON)		
External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg-cm (68.25 N-cm) [6.06 lb-inch])		
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	1.10 (2.42)		

External connection diagram



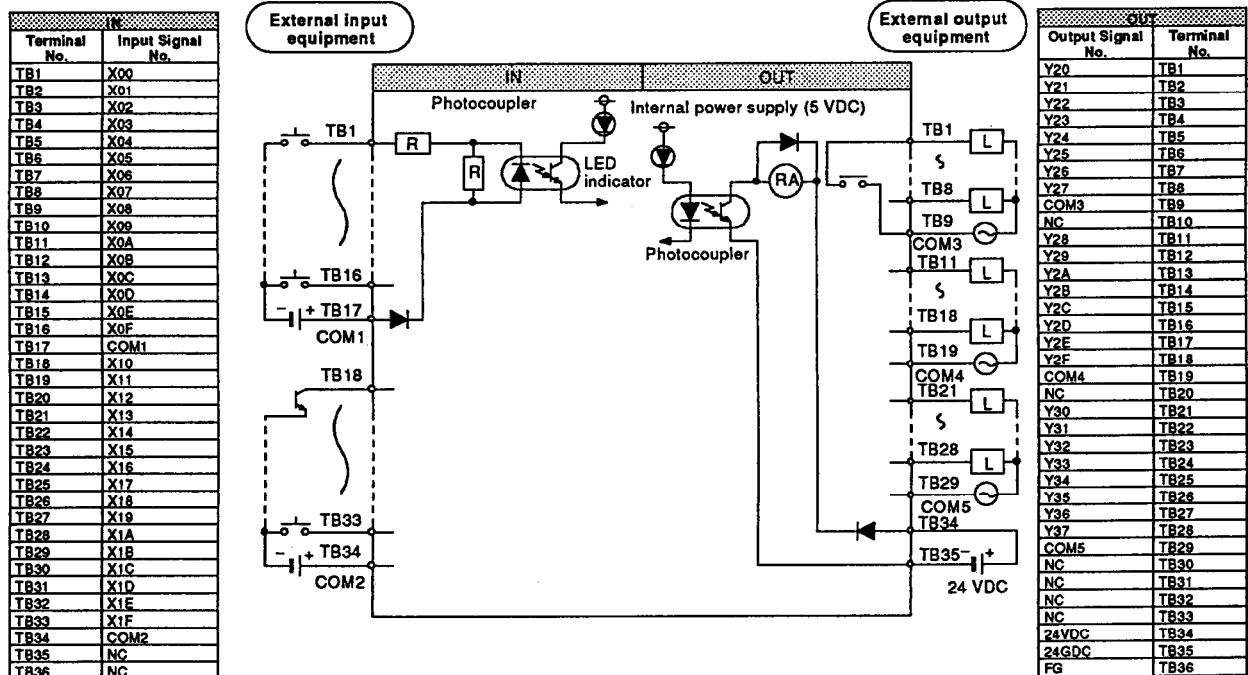
## 2. SPECIFICATIONS

MELSEC-A

### 2.1.21 Specifications of Type A0J2-E56DR I/O unit

Input Specifications			Output Specifications			
Input points	32 points		Output points	24 points		
Insulation system	Photocoupler		Insulation system	Photocoupler		
Rated input voltage	12 VDC	24 VDC	Rated switching voltage, current	24 VDC 2 A (resistance load)/point, 5 A/common 240 VAC 2 A (cosφ = 1)/point, 5 A/common		
Rated input current	3 mA	7 mA	Min. switching load	5 VDC/1 mA		
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5%)		Max. switching voltage	264 VAC, 125 VDC		
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher		Max. switching frequency	3600 times/hour		
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		Life	Mechanical	20 million times or more	
Inrush resistance	Approx. 3.4 kΩ			Electrical	Rated switching voltage, current load 200 thousand times or more	
Input form	Sink input (input current outflow form)				200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7) 200 thousand times or more	
Response time	OFF→ON	10 ms or less (6 ms TYP.)			200 VAC 1A, 240 VAC 0.5 A (cosφ = 0.35) 200 thousand times or more	
	ON→OFF	10 ms or less (7.5 ms TYP.)	24 VDC 1A, 100 VDC 0.1 A (L/R = 7 ms) 200 thousand times or more			
Common wiring system	16 points/common (common terminal: TB17, TB34)		Response time	OFF→ON	10 ms or less	
Operation indicator	Provided (LED lit when input enabled)		ON→OFF	12 ms or less		
Max. simultaneous ON points	60% (10 points/common) simultaneous ON		External supply power (relay coil driving power)	Voltage	24 VDC ±10% (ripple voltage 4 Vp-p less)	
				Current	230 mA (24 VDC all points ON)	
			Noise suppression	None		
			Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)		
Operation indicator	Provided (LED lit when output enabled)					
Internal current consumption (5 VDC)	230 mA (TYP. all points ON)					
External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces					
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])					
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A					
Weight kg (lb)	1.08 (2.38)					

External connection diagram



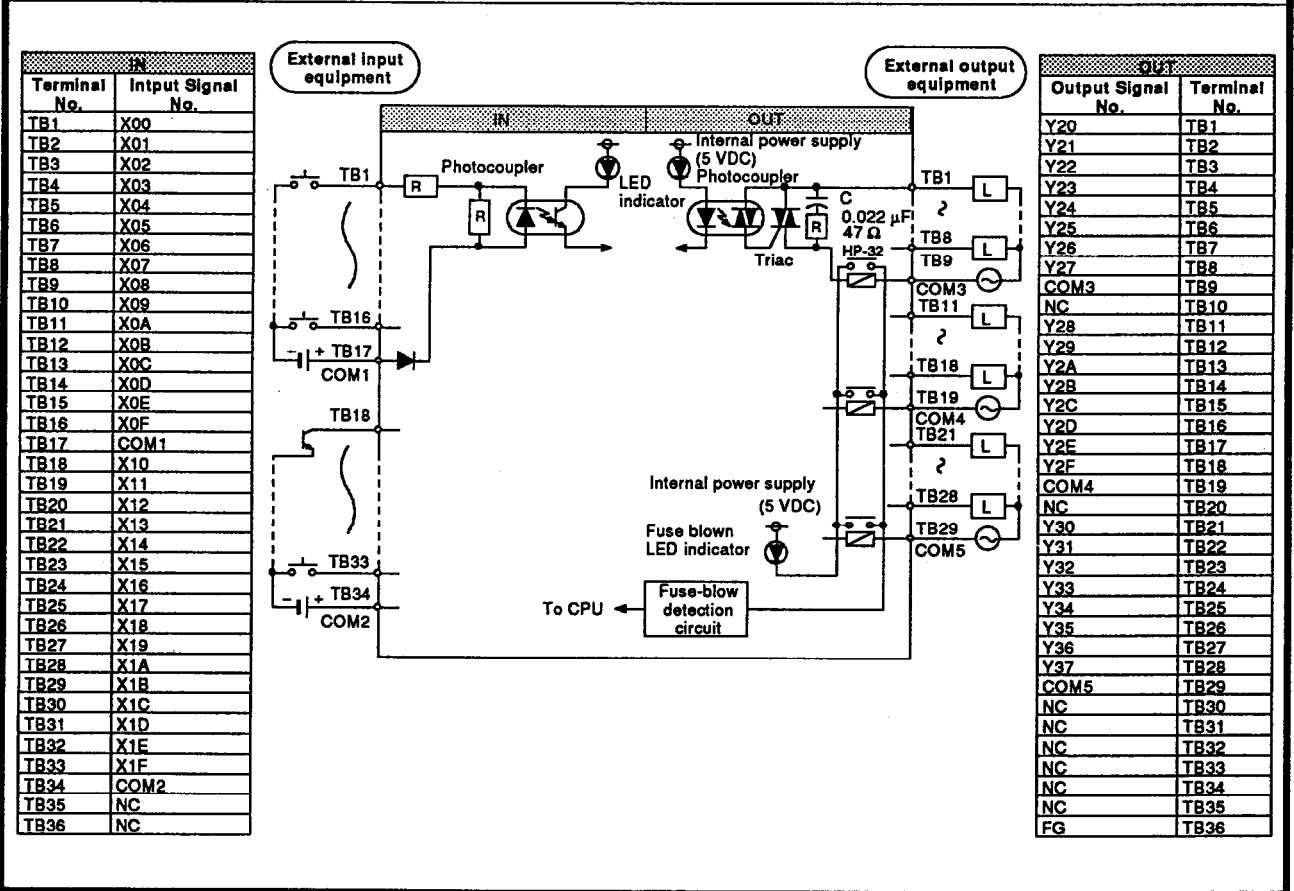
# 2. SPECIFICATIONS

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## 2.1.22 Specifications of Type A0J2-E56DS I/O unit

Input Specifications		Output Specifications			
Input points	32 points	Output points	24 points		
Insulation system	Photocoupler	Insulation system	Photocoupler		
Rated input voltage	12 VDC      24 VDC	Rated load voltage	100 to 240 VAC, 40 to 70 Hz		
Rated input current	3 mA      7 mA	Max. load voltage	264 VAC		
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5%)	Max. load current	0.6 A/point, 2.4 A/common		
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher	Min. load voltage, current	24 VAC 100 mA, 100/240 VAC 10 mA		
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower	Max. inrush current	20 A 10 ms or less, 8A 100 ms or less		
Input resistance	Approx. 3.4 kΩ	Leakage current at OFF	1.5 mA (120 VAC 60 Hz), 3 mA (240 VAC 60 Hz)		
Input form	Sink input (input current outflow form)	Max. voltage drop at ON	1.5 V or lower (0.1 to 0.6 A), 1.8 V or lower (0.1 A or lower) 2.0 V or lower (10 to 50 mA)		
Response time	OFF→ON	10 ms or less (6 ms TYP.)	Response time	OFF→ON	1 ms or less
	ON→OFF	10 ms or less (7.5 ms TYP.)		ON→OFF	0.5 CYCLE + 1 ms or less
Common wiring system	16 points/common (common terminal: TB17, TB34)	Fuse rating	Fast-melting fuse 3.2 A (1 common/pce) HP-32		
Operation indicator	Provided (LED lit when input enabled)	Fuse blow indicator	Provided (LED lit and signal output when fuse blown)		
Max. simultaneous ON points	60 % (10 points/common) simultaneous ON	Noise suppression	CR absorber (0.022 μF + 47 Ω)		
		Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)		
		Operation indicator	Provided (LED lit when output enabled)		
Internal current consumption (5 VDC)	460 mA (TYP. all points ON)				
External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces				
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])				
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A				
Weight kg (lb)	1.05 (2.31)				

External connection diagram



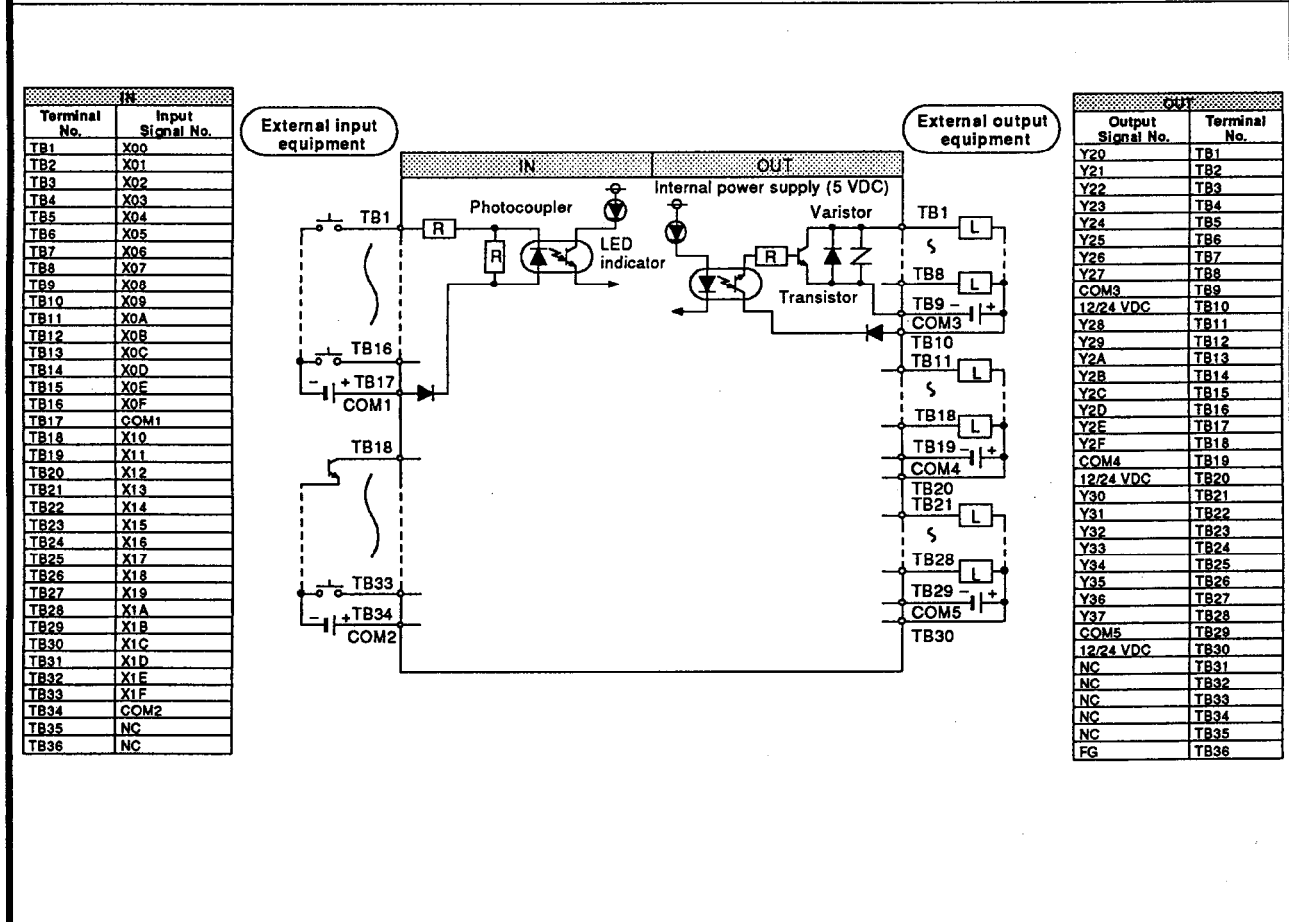
## 2. SPECIFICATIONS

MELSEC-A

### 2.1.23 Specifications of Type A0J2-E56DT I/O unit

Input Specifications		Output Specifications	
Input points	32 points	Output points	24 points
Insulation system	Photocoupler	Insulation system	Photocoupler
Rated input voltage	12 VDC      24 VDC	Rated load voltage	12/24 VDC
Rated input current	3 mA      7 mA	Operating load voltage range	10.2 to 30 VDC
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5%)	Max. load current	0.5 A/point, 4 A/common
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher	Max. inrush current	4 A 10 ms or less
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower	Leakage current at OFF	0.1 mA or lower
Input resistance	Approx. 3.4 kΩ	Max. voltage drop at ON	0.9 V (TYP.) 0.5 A 1.5 V (MAX) 0.5 A
Input form	Sink input (input current outflow form)	Response time	OFF→ON      2 ms or less ON→OFF      2 ms or less
Response time	OFF→ON      10 ms or less (6 ms TYP.) ON→OFF      10 ms or less (7.5 ms TYP.)	External supply power	Voltage      12/24 VDC (10.2 to 30 VDC) Current      23 mA (TYP. 24 VDC 8 points/common ON)
Common wiring system	16 points/common (common terminal: TB17, TB34)	Noise suppression	Varistor (52 to 62 V)
Operation indicator	Provided (LED lit when input enabled)	Common wiring system	8 points/common (common terminal: TB9, TB19, TB29))
Max. simultaneous ON points	60% (10 points/common) simultaneous ON	Operation indicator	Provided (LED lit when output enabled)
Internal current consumption (5 VDC)	225 mA (TYP. all points ON)		
External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces		
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])		
Applicable solderless terminal	1.25-S, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-S, V1.25-YS3A, V2-S3, V2-YS3A		
Weight kg (lb)	1.04 (2.29)		

External connection diagram



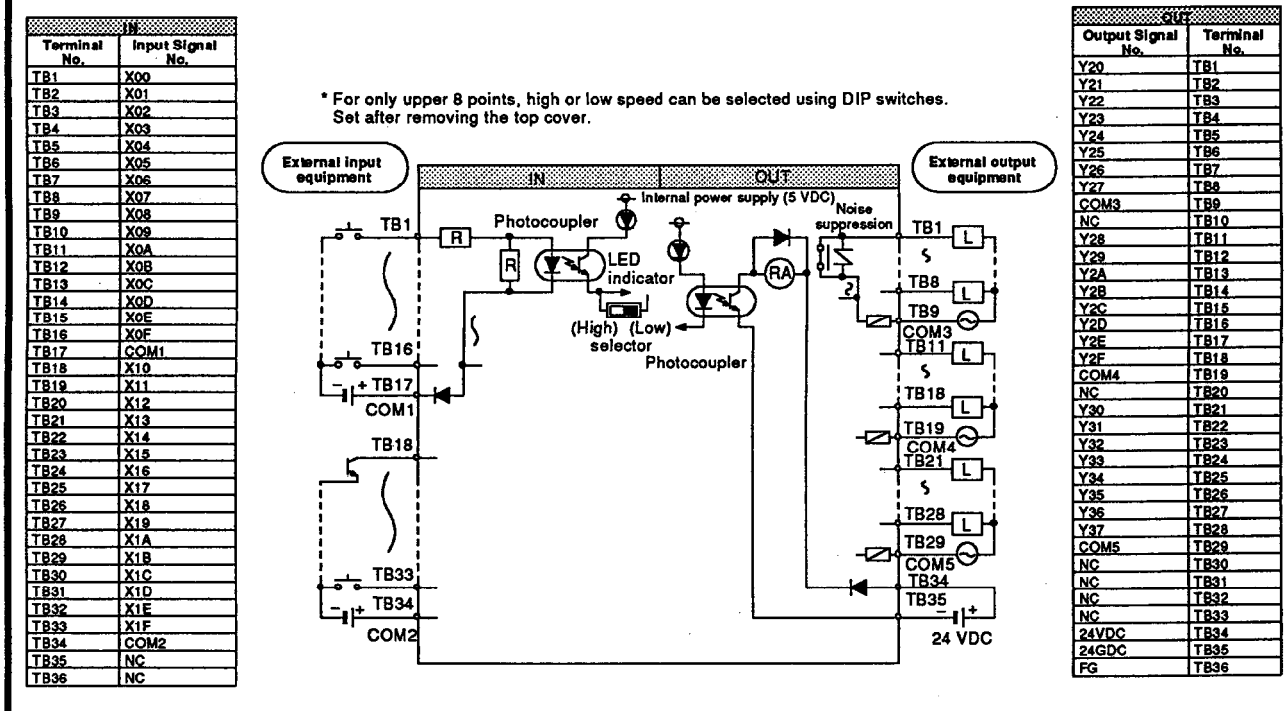
## 2. SPECIFICATIONS

MELSEC-A

### 2.1.24 Specifications of Type A0J2E-E56DR I/O unit

Input Specifications			Output Specifications			
Input points	32 points		Output points	24 points		
Insulation system	Photocoupler		Insulation system	Photocoupler		
Rated input voltage	12 VDC	24 VDC	Rated switching voltage, current	24 VDC 2 A (resistance load)/point, 5 A/common 240 VAC 2 A (cosφ = 1)/point, 5 A/common		
Rated input current	3 mA	7 mA	Min. switching load	5 VDC/1 mA		
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5 %)		Max. switching voltage	250 VAC, 125 VDC		
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher		Max. switching frequency	3600 times/hour		
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		Life	Mechanical	20 million times or more	
Input resistance	Approx. 3.4 kΩ			Electrical	Rated switching voltage, current load 200 thousand times or more	
Input form	Source input (input current inflow form)				200 VAC 1.5 A, 240 VAC 1 A (cosφ = 0.7) 200 thousand times or more	
Response time	OFF→ON	5.5 ms (TYP.)			200 VAC 1 A, 240 VAC 0.5 A (cosφ = 0.35) 200 thousand times or more	
	ON→OFF	6.0 ms (TYP.)	24 VDC 1 A, 100 VDC 0.1 A (L/R = 7 ms) 200 thousand times or more			
Common wiring system	16 points/common (common terminal: TB17, TB34)		Response time	OFF→ON	10 ms or less	
Operation indicator	Provided (LED lit when input enabled)		ON→OFF	12 ms or less		
Max. simultaneous ON points	60 % (10 points/common) simultaneous ON		External supply power (relay coil driving power)	Voltage	24 VDC ±10 % (ripple voltage 4 Vp-p or less)	
Response time (high speed mode upper 8 points only)	OFF→ON	0.5 ms or less		Current	220 mA (24 VDC all points ON)	
	ON→OFF	1.0 ms or less	Noise suppression	Varistor (387 to 473 V)		
			Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)		
			Operation indicator	Provided (LED lit when output enabled)		
			Fuse	Provided (8 A) MF51NM8		
			Fuse blow indication	Not provided		
Internal current consumption (5 VDC)	230 mA (TYP. all points ON)					
External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces					
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])					
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A					
Weight kg (lb)	1.13 (2.49)					

External connection diagram



## 2. SPECIFICATIONS

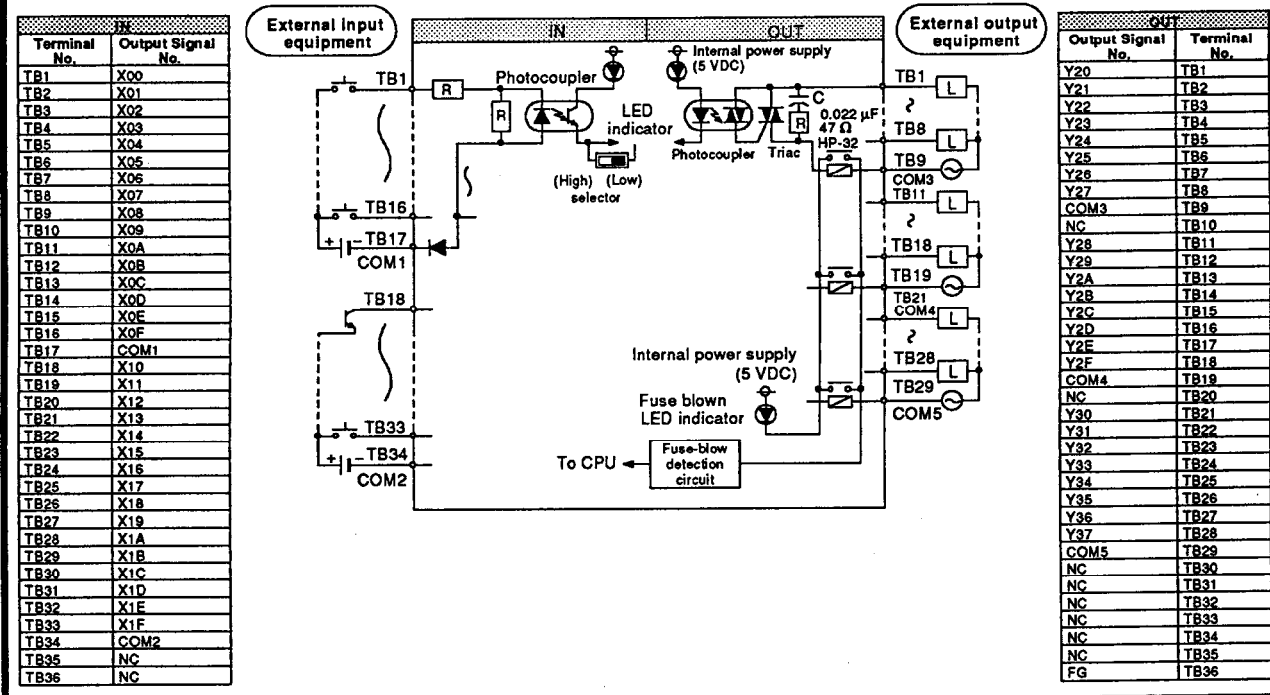
MELSEC-A

### 2.1.25 Specifications of Type A0J2E-E56DS I/O unit

Input Specifications			Output Specifications		
Input points	32 points		Output points	24 points	
Insulation system	Photocoupler		Insulation system	Photocoupler	
Rated input voltage	12 VDC	24 VDC	Rated load voltage	100 to 240 VAC, 40 to 70 Hz	
Rated input current	3 mA	7 mA	Max. load voltage	264 VAC	
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5 %)		Max. load current	0.6 A/point, 0.5 A/point (60 % ON, 55 °c)	
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher		Min. load voltage, current	24 VAC 100 mA, 100/240 VAC 10 mA	
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		Max. inrush current	20 A 10 ms or less, 8 A 100 ms or less	
Input resistance	Approx. 3.4 kΩ		Leakage current at OFF	1.5 mA (120 VAC 60 Hz), 3 mA (240 VAC 60 Hz)	
Input form	Source input (input current inflow form)		Max. voltage drop at ON	1.5 V or lower (0.1 to 0.6 A), 1.8 V or lower (0.1 A or lower) 2.0 V or lower (10 to 50 mA)	
Response time	OFF→ON	5.5 ms (TYP.)	Response time	OFF→ON	1 ms or less
	ON→OFF	6 ms (TYP.)		ON→OFF	0.5 CYCLE + 1 ms or less
Common wiring system	16 points/common (common terminal: TB17, TB34)		Fuse rating	Fast-melting fuse 3.2 A (1 common/pce) HP-32	
Operation indicator	Provided (LED lit when input enabled)		Fuse blow indicator	Provided LED lit and signal output when fuse blown	
Max. simultaneous ON points	60 % (10 points/common) simultaneous ON		Noise suppression	CR absorber (0.022 μF + 47 Ω)	
Response time (high speed mode upper 8 points only)	OFF→ON	0.5 ms or less	Common wiring system	8 points/common (common terminal: TB9, TB19, TB29))	
	ON→OFF	1.0 ms or less	Operation indicator	Provided (LED lit when output enabled)	
Internal current consumption (5 VDC)	460 mA (TYP. all points ON)				
External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces				
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg-cm (68.25 N-cm) [6.06 lb-inch])				
Applicable solderless terminal	1.25-3, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A				
Weight kg (lb)	1.08 (2.38)				

#### External connection diagram

\* For only upper 8 points, high or low speed can be selected using DIP switches.  
Set after removing the top cover.



## 2. SPECIFICATIONS

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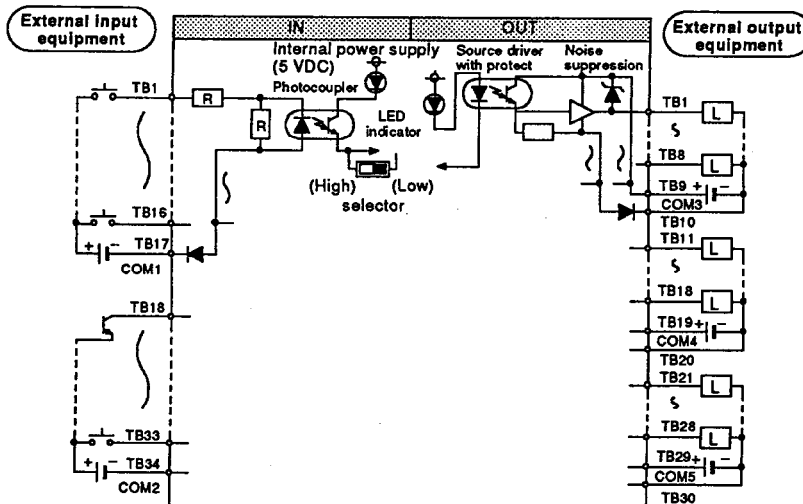
### 2.1.26 Specifications of Type A0J2E-E56DT I/O unit

Input Specifications			Output Specifications		
Input points	32 points		Output points	24 points	
Insulation system	Photocoupler		Insulation system	Photocoupler	
Rated input voltage	12 VDC	24 VDC	Rated load voltage	12/24 VDC	
Rated input current	3 mA	7 mA	Operating load voltage range	10.2 to 26.4 VDC	
Operating voltage range	10.2 to 26.4 VDC (ripple ratio: within 5%)		Max. load current	0.8 A/point, 0.8 A/point (60% ON, 55 °C)	
ON voltage/ON current	9.5 VDC or higher/2.6 mA or higher		Max. inrush current	Not limit (short protect)	
OFF voltage/OFF current	6 VDC or lower/1.0 mA or lower		Leakage current at OFF	1.0 mA or lower	
Inrush resistance	Approx. 3.4 kΩ		Max. voltage drop at ON	1.0 V (TYP.) 0.8 A 1.5 V (MAX) 0.8 A	
Input form	Source input (input current inflow form)		Response time	OFF→ON	0.5 ms or less
Response time	OFF→ON	5.5 ms (TYP.)	External supply power	ON→OFF	1.5 ms or less
	ON→OFF	6.0 ms (TYP.)		Voltage	12/24 VDC (10.2 to 26.4 VDC)
Common wiring system	16 points/common (common terminal: TB17, TB34)		Current	200 mA (24 VDC all points ON)	
Operation indicator	Provided (LED lit when input enabled)		Noise suppression	Surge absorbing diode	
Max. simultaneous ON points	60% (10 points/common) simultaneous ON		Common wiring system	8 points/common (common terminal: TB9, TB19, TB29)	
Response time (high speed mode upper 8 points only)	OFF→ON	0.5 ms or less	Operation indicator	Provided (LED lit when output enabled)	
	ON→OFF	1.0 ms or less	Protect	Provided (thermal protect, short protect)	
			Protect detection indication	None	
			Protect reset	Automatic reset (reset when thermal protect is cancelled)	
Internal current consumption (5 VDC)	225 mA (TYP. all points ON)				
External connection system	36-point terminal block connector (M3 x 6 mm screws) 2 pieces				
Applicable wire size	0.75 to 2 mm <sup>2</sup> (applicable tightening torque: 7 kg·cm (68.25 N·cm) [6.06 lb·inch])				
Applicable solderless terminal	1.25-S, 1.25-YS3A, 2-S3, 1-YS3A, V1.25-S, V1.25-YS3A, V2-S3, V2-YS3A				
Weight kg (lb)	1.08 (2.38)				

External connection diagram

Terminal No.	Input Signal No.
TB1	X00
TB2	X01
TB3	X02
TB4	X03
TB5	X04
TB6	X05
TB7	X06
TB8	X07
TB9	X08
TB10	X09
TB11	X0A
TB12	X0B
TB13	X0C
TB14	X0D
TB15	X0E
TB16	X0F
TB17	COM1
TB18	X10
TB19	X11
TB20	X12
TB21	X13
TB22	X14
TB23	X15
TB24	X16
TB25	X17
TB26	X18
TB27	X19
TB28	X1A
TB29	X1B
TB30	X1C
TB31	X1D
TB32	X1E
TB33	X1F
TB34	COM2
TB35	NC
TB36	NC

\*For only upper 8 points, high or low speed can be selected using DIP switches.  
Set after removing the top cover.



Output Signal No.	Terminal No.
Y20	TB1
Y21	TB2
Y22	TB3
Y23	TB4
Y24	TB5
Y25	TB6
Y26	TB7
Y27	TB8
12/24 VDC	TB9
0 V	TB10
Y28	TB11
Y29	TB12
Y2A	TB13
Y2B	TB14
Y2C	TB15
Y2D	TB16
Y2E	TB17
Y2F	TB18
12/24 VDC	TB19
0 V	TB20
Y30	TB21
Y31	TB22
Y32	TB23
Y33	TB24
Y34	TB25
Y35	TB26
Y36	TB27
Y37	TB28
12/24 VDC	TB29
0 V	TB30
NC	TB31
NC	TB32
NC	TB33
NC	TB34
NC	TB35
FG	TB36



## 2. SPECIFICATIONS

### 2.2 Specifications of Extension Power Supply Units

Table 2.1 shows specifications of extension power supply units to be used for the A0J2CPU system.

Item		Specifications		
Unit type		A0J2PW		A0J2PW-DC24
Input	Input power	100 to 120 VAC <sup>+10 %</sup> / <sub>-15 %</sub> (85 to 132 VAC)	200 to 240 VAC <sup>+10 %</sup> / <sub>-15 %</sub> (170 to 264 VAC)	24 VDC <sup>+30 %</sup> / <sub>-35 %</sub> (15.6 to 31.2 VDC)
	Input current	1.4 A or less	0.7 A or less	—
	Input frequency	50/60 Hz ±5 %		
	Maximum input apparent power	120 VA or less		
	Input power	—		
	Inrush current	40 A, within 5 ms		65 A, TYP (within 2 ms)
	Efficiency	65 % or more		65 % or more
Output	Rated output current	5 VDC	2.3 A	2.5 A
		24 VDC	1.5 A	—
	Overcurrent protection	5 VDC	2.6 A	2.7 A
		24 VDC	1.95 A	—
Power display	LED indicator provided		LED indicator provided	
Size mm (inch)	250 (9.84) x 112 (4.41) x 41 (1.61)		250 (9.84) x 112 (4.41) x 41 (1.61)	
Weight kg (lb)	0.71 (1.56)		0.71 (1.56)	

Table 2.1 Specifications of Extension Power Supply Units

#### POINTS

- (1) Extension power supply unit is used when power capacity is insufficient with only the CPU unit's built-in power supply.
- (2) One extension power supply unit may be used for the A0J2CPU system.
- (3) When the A0J2PW is used with a light load, noise caused by oscillation may occur, but this is not abnormal.

## 2. SPECIFICATIONS

### 2.3 Cable Specifications

This section describes specifications of the I/O and extension cables to be used for the A0J2CPU system.

#### 2.3.1 I/O cable specifications

Table 2.2 shows specifications of the I/O cables to be used for the A0J2 CPU system. Select I/O cable according to unit mounting method.

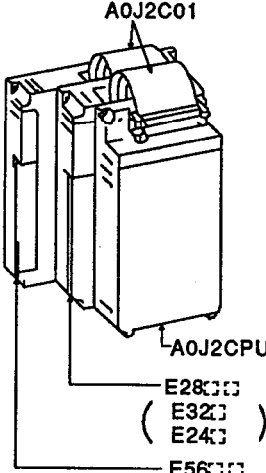
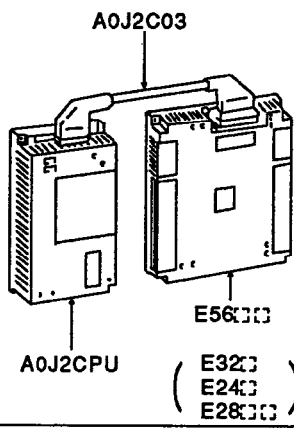
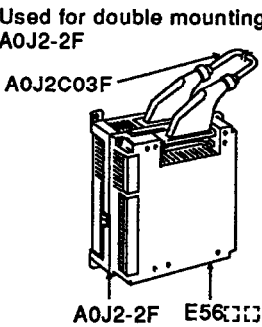
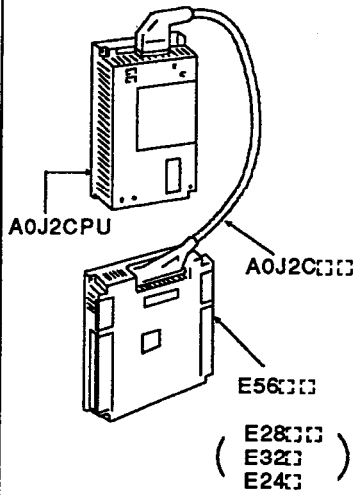
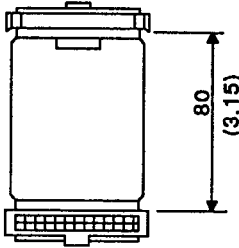
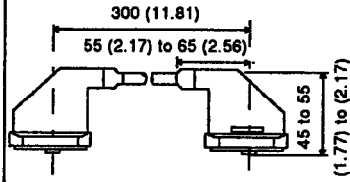
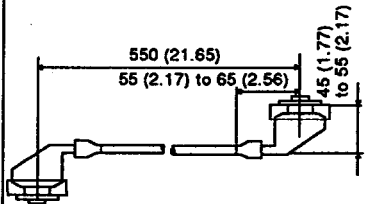
Type	A0J2C01	A0J2C03(F)	A0J2C06	A0J2C10	A0J2C20
Item					
Cable length mm (inch)	80 (3.15)	300 (11.81)	550 (21.65)	1000 (39.37)	2000 (78.74)
5 VDC supply line resistance ( $\Omega$ : at 55 °C)	0.047	0.0617	0.0882	0.168	0.294
Application	<p>Used for unit-to-unit mounting</p> 	<p>Used for side-to-side installation</p>  <p>Used for double mounting with A0J2-2F</p> 	<p>Used for top-to-bottom installation</p> 		
	<p>Connection between A0J2CPU unit and A0J2 I/O unit            Connection between extension power supply unit and A0J2 I/O unit            Connection between A0J2 I/O units</p>				
Weight kg (lb)	0.025 (0.01)	0.085 (0.003)	0.130 (0.005)	0.196 (0.43)	0.375 (0.83)
External dimensions mm (inch)					

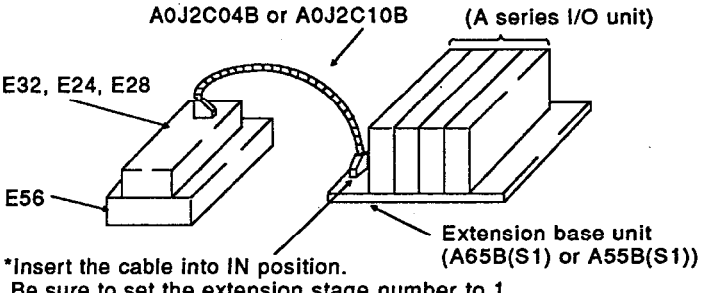
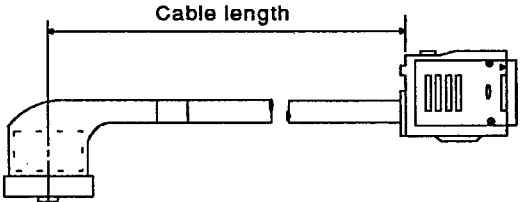
Table 2.2 I/O Cable Specifications

## 2. SPECIFICATIONS

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### 2.3.2 Extension cable specifications

This section describes specifications of the extension cables used for the A0J2CPU system.

Item \ Type	A0J2C04B	A0J2C10B
Cable length mm (inch)	400 (15.75)	1000 (39.37)
5 VDC supply line resistance ( $\Omega$ : at 55 °C)	0.0626	0.126
Application	Connection between A0J2 I/O unit and A series extension base unit Connection between extension power supply unit and A series extension base unit	
Connecting method outline	 <p>A0J2C04B or A0J2C10B (A series I/O unit)</p> <p>E32, E24, E28</p> <p>E56</p> <p>Extension base unit (A65B(S1) or A55B(S1))</p> <p>*Insert the cable into IN position. Be sure to set the extension stage number to 1.</p>	
Weight kg (lb)	0.160 (0.006)	0.260 (0.01)
External dimensions	 <p>Cable length</p>	

**2.4 Fuse Specifications**

Table 2.3 shows specifications of the fuse used for the output units.

Item \ Type	HP-32
Application	For triac output (Unit protection against short circuit) E24S E28CS E56CS
Type	Plug type (fast-melting type)
Rated current	3.2 A
Size mm (inch)	30.3 (1.19) x 8 (0.31) x 20 (0.79)

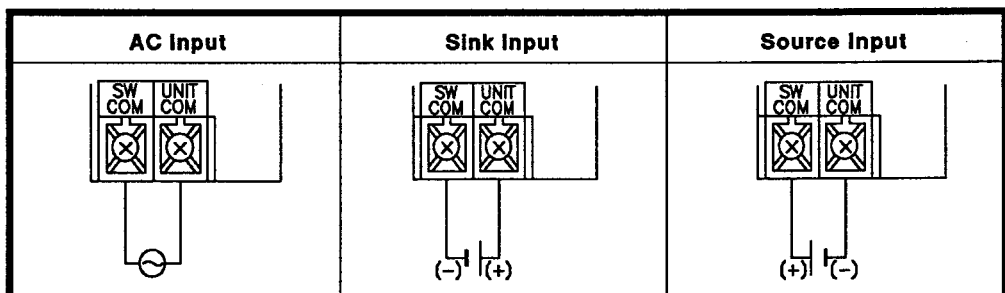
**Table 2.3 Fuse Specifications**

### 2.5 Simulation Switch Unit Specifications

By installing a simulation switch unit on the input side of the A0J2 I/O unit, simulated input can be provided easily.

Item \ Type	A0J2-SW16	A0J2-SW32
Number of input switches (points)	16	32
Rated voltage, current	250 VAC, 10 mA	
Minimum voltage, current	5 VDC, 1 mA	
Life	More than 10000 operations	
Lever operating force (g.f)	400 or less	
Size mm (inch)	165 (6.50) x 38 (1.50) x 39.5 (1.56)	192.5 (7.58) x 38 (1.50) x 39.5 (1.56)
Weight kg (lb)	0.18 (0.4)	0.19 (0.42)
External view mm (inch)		

To install the simulation switch unit, remove the input side terminal block and mount the switch unit. There are three types of power wiring depending on input types as shown below.



**3. HANDLING**

This chapter explains the handling instructions for unpackaging to installation and also the nomenclature and setting of various portions.

**3.1 Handling Instructions**

This section explains the handling instructions for the unpackaging to installation of the PC.

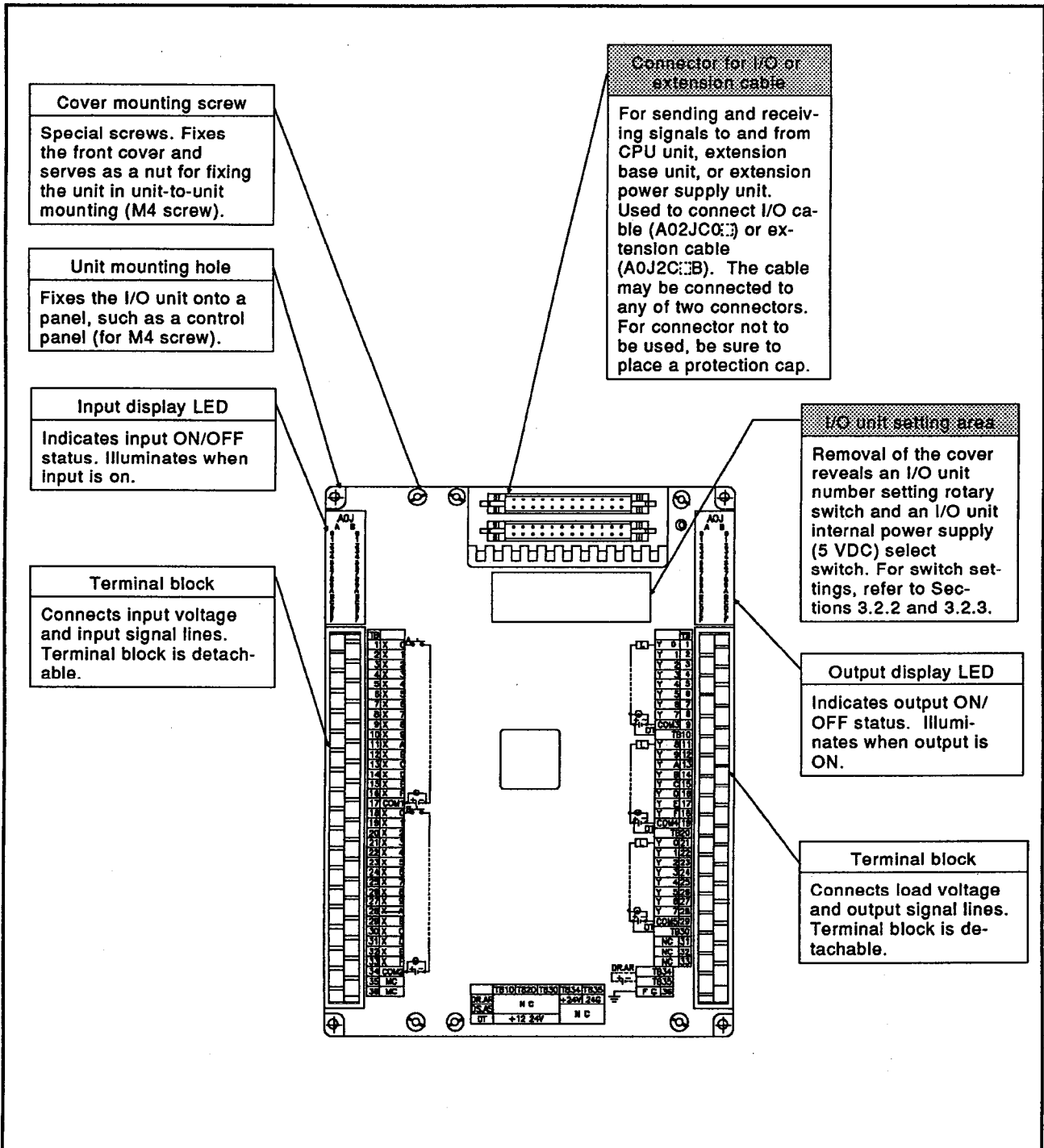
- (1) Since the case, terminal block connector, and pin connector of this PC are made of plastic, do not drop or give strong shock.
- (2) Do not remove the printed circuit board of each unit from the case. Removal may cause board failure.
- (3) At the time of wiring, take care to prevent the entry of wire chips from the top into the unit. If such chips have entered, remove them.
- (4) Tighten screws, such as unit mounting screws and terminal screws, in the range specified below.

Screw	Tightening Torque Range N·cm (kg·cm) [lb·inch]
I/O unit terminal block terminal screw (M3 screw)	40.75 to 78 (5 to 8) [4.33 to 6.93]
I/O unit terminal block mounting screw (M4 screw)	78 to 136.5 (8 to 14) [6.93 to 12.13]
CPU unit and extension power supply unit terminal block terminal screw (M4 screw)	97.5 to 136.5 (10 to 14) [8.66 to 12.13]
Unit mounting screw (M4 screw)	78 to 117 (8 to 12) [6.93 to 10.4]

## 3.2 I/O Unit

This section describes the nomenclature and setting of the I/O unit.

### 3.2.1 Nomenclature

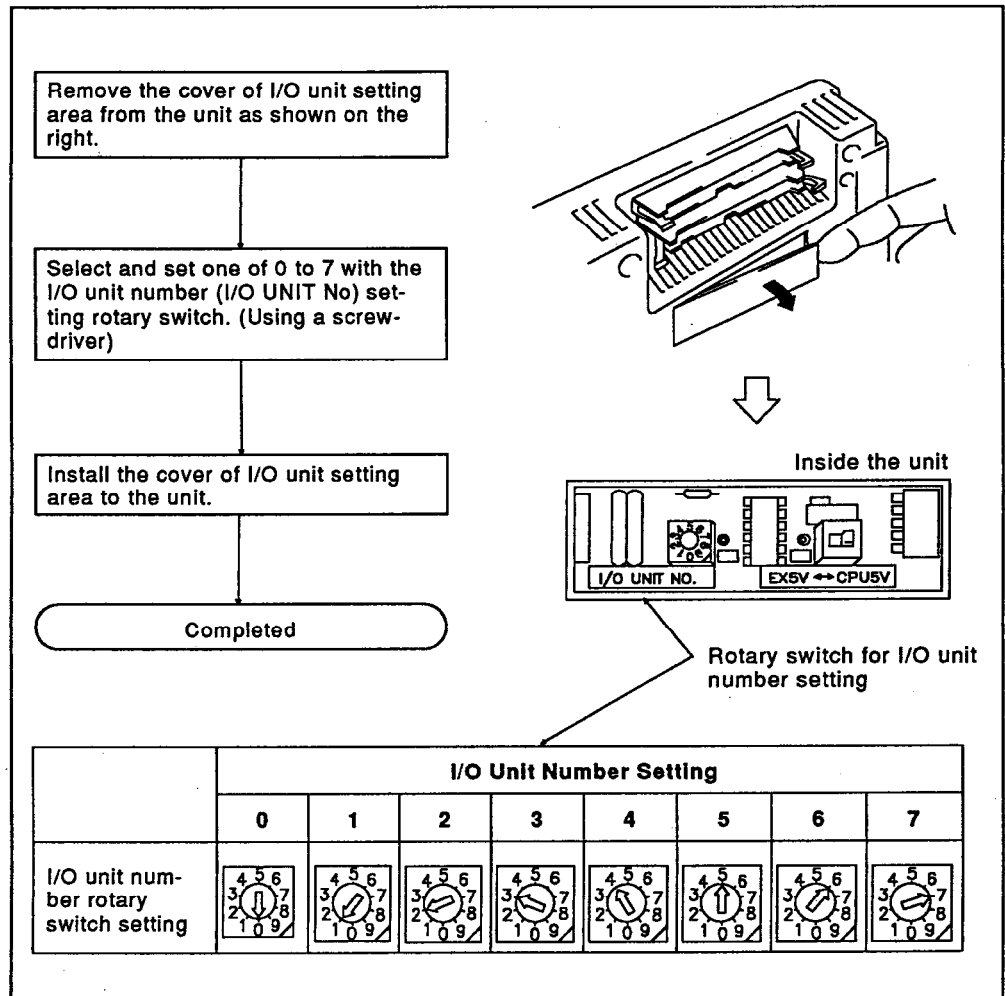


### REMARK

It is necessary to set or install the shaded areas before trial run and adjustment.

## 3.2.2 I/O unit number setting

This section describes I/O unit number setting.



### POINTS

- (1) Set the rotary switch for I/O unit number setting to an appropriate number in the range 0 to 7 according to the number of I/O unit. Note that setting the same I/O unit number between I/O units caused input/output errors.
- (2) Setting of I/O unit number determines X and Y addresses. For details, refer to the programming manual for A0J2CPU.



## 3.2.3 I/O unit internal power supply (5 VDC) setting

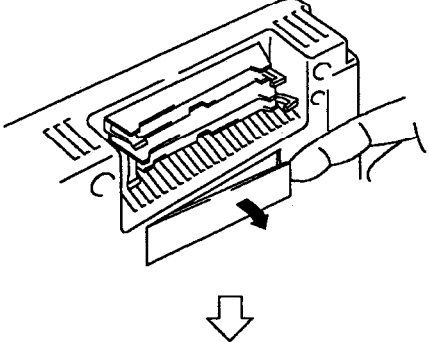
This section describes the setting of I/O unit internal power supply (5 VDC).

Remove the cover of I/O unit setting area from the unit as shown on the right.

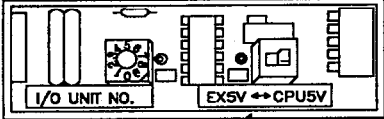
Check and set the I/O unit internal power supply (5 VDC) select switch. Set to "CPU5V" when the power is supplied by the CPU unit built-in power supply, and to "EX5V" when supplied from the extension power supply unit.

Install the cover of I/O unit setting area to the unit.



Completed



Inside the unit



I/O unit internal power supply (5 VDC) select switch

	I/O Unit Internal Power Supply (5 VDC) Setting	
	Power Supplied from CPU Unit Built-in Power Supply	Power Supplied from Extension Power Supply Unit
I/O unit internal power supply (5 VDC) select switch	 EX5V ← → CPU5V	 EX5V ← → CPU5V

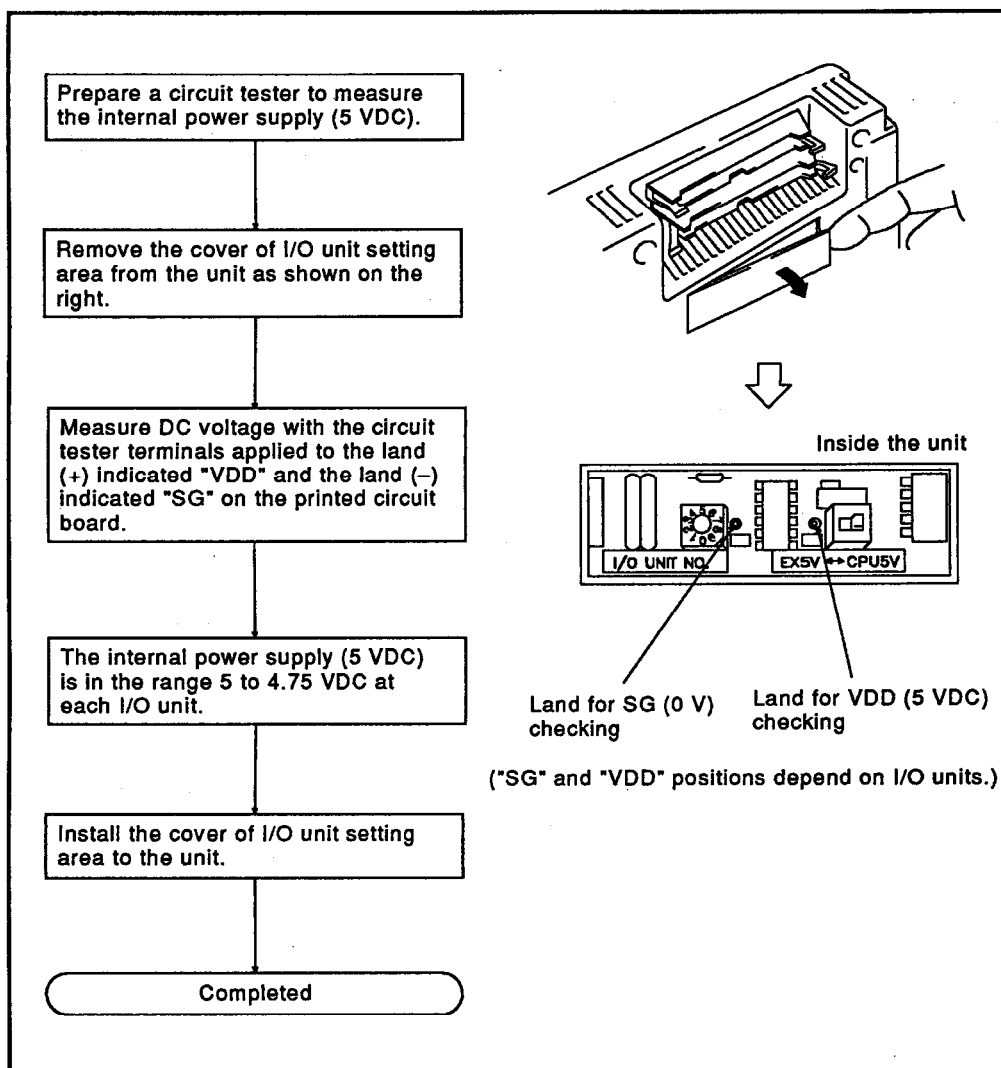
\*Black area indicates the slide switch setting position.

### POINTS

- (1) If the select switch is set to EX5V when I/O unit is supplied with 5 VDC power by the CPU unit internal power supply, the I/O unit does not operate properly. Be sure to check before the trial run.
- (2) To set the system using extension power supply unit, refer to Section 5.2 of the programming manual for A0J2CPU (CPU Unit Edition).

#### 3.2.4 I/O unit internal power supply (5 VDC) check

This section describes how to check the I/O unit internal power supply (5 VDC). Use a circuit tester for measurement.

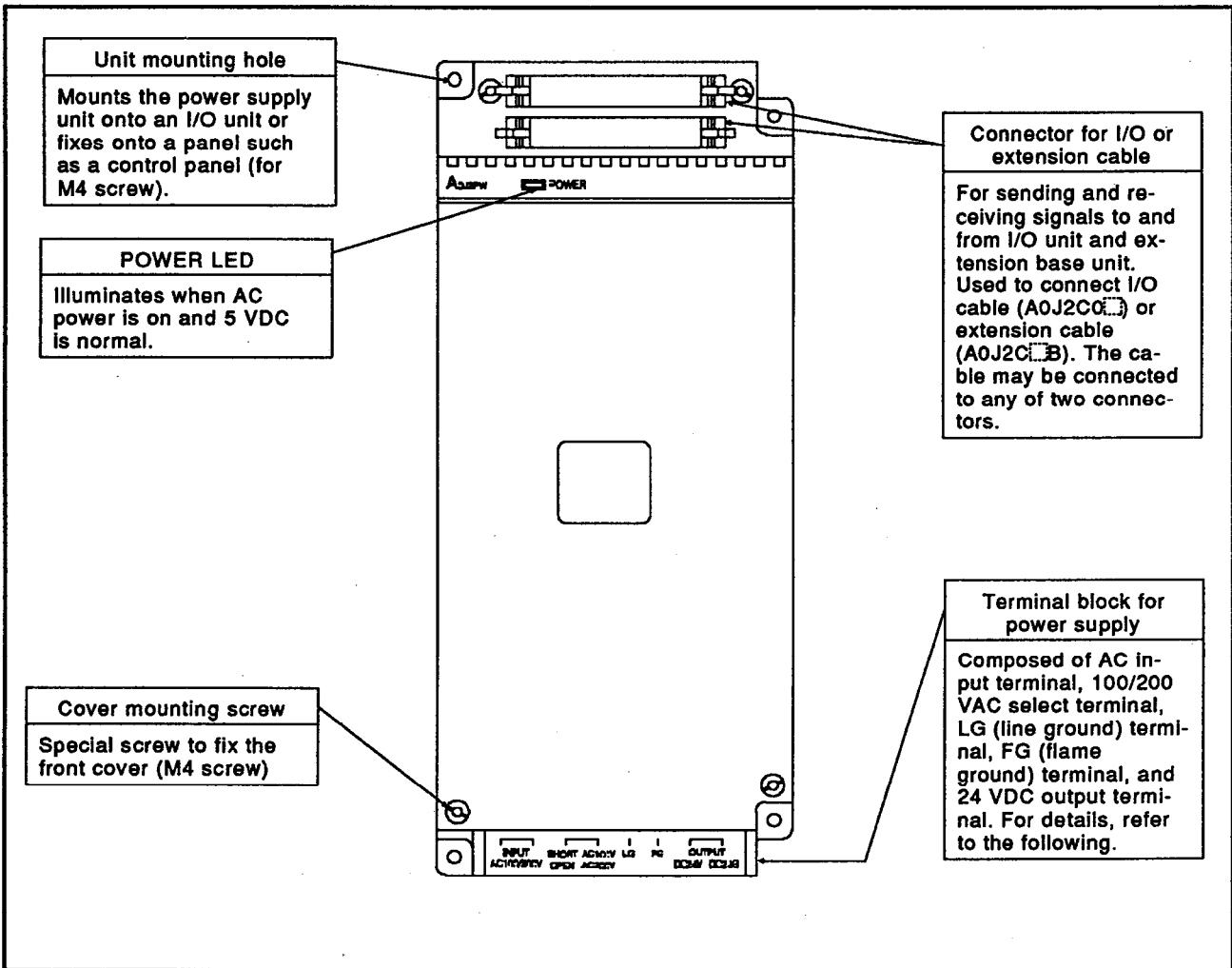


## 3.3 Extension Power Supply Unit

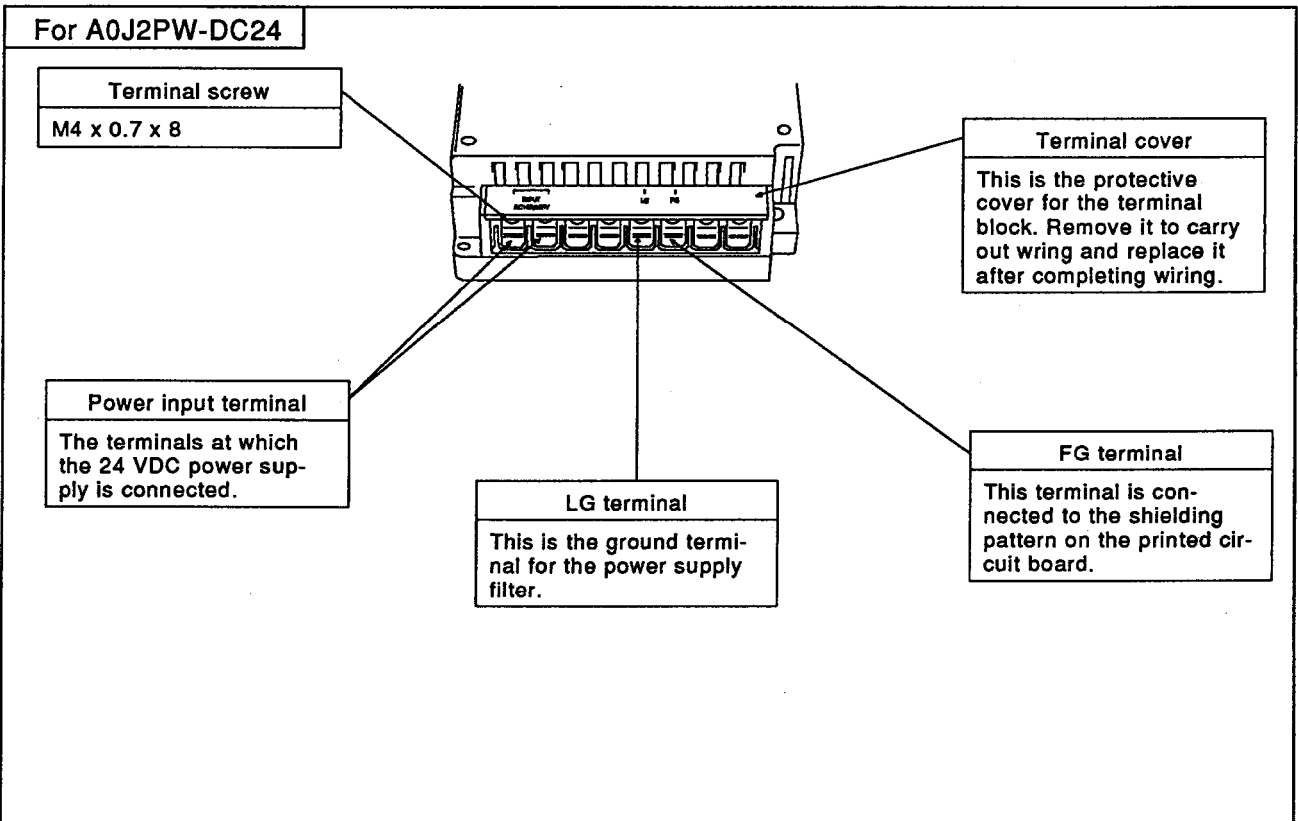
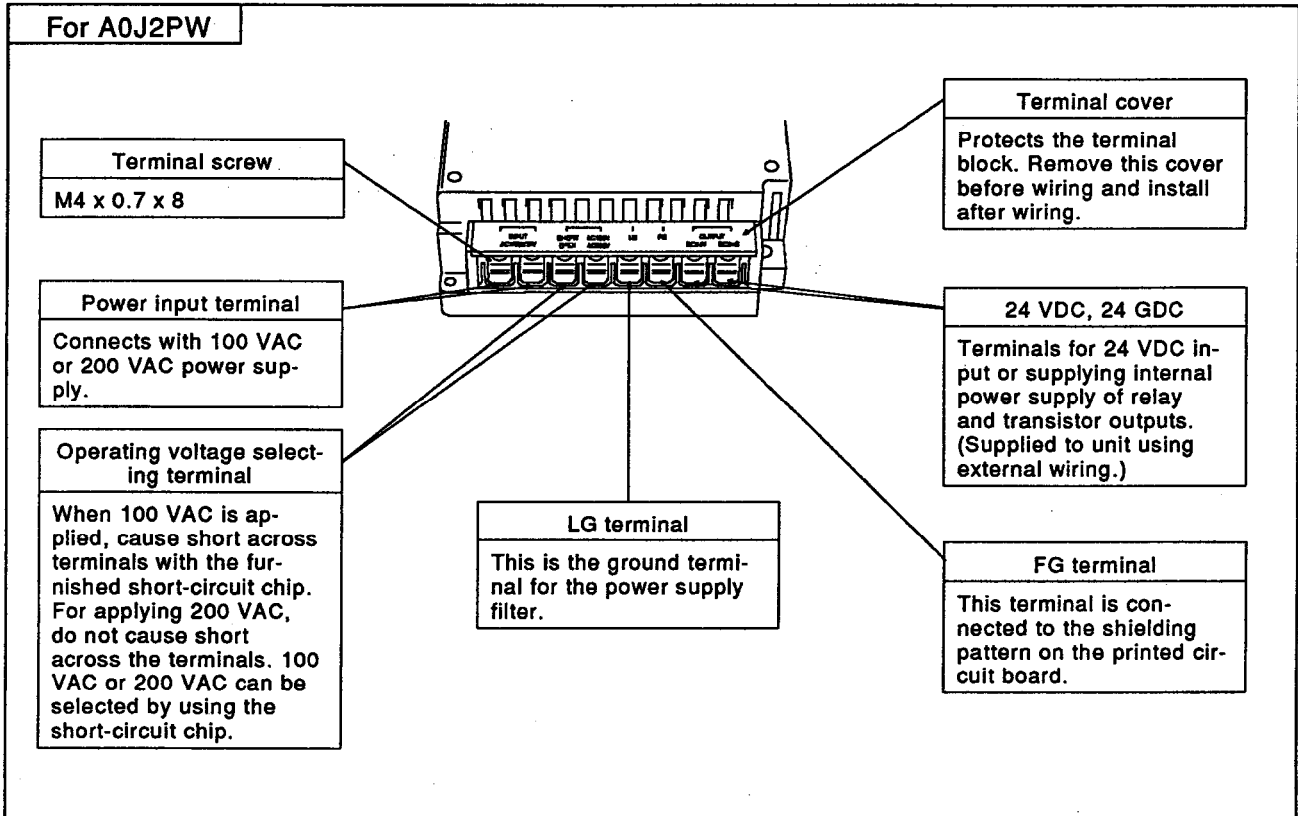
This section describes the nomenclature and setting of extension power supply unit.

### 3.3.1 Nomenclature

This section describes the nomenclature of extension power supply unit. (The power supply terminals of the A0J2PW-DC24 differ from those of the A0J2PW.)



Details of terminal block for power supply



4. PC TROUBLE EXAMPLES

This section explains circuit failure examples and corrective actions for I/O units.

4.1 Input Unit Circuit Failures and Corrective Actions

This section described circuit failure examples and corrective actions for input units.

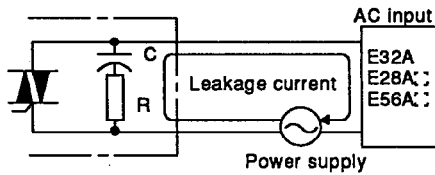
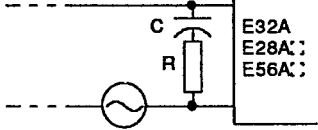
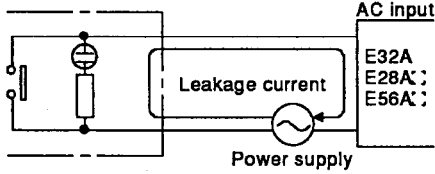
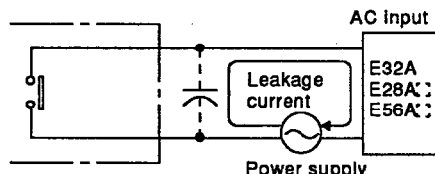
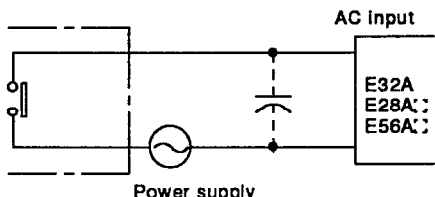
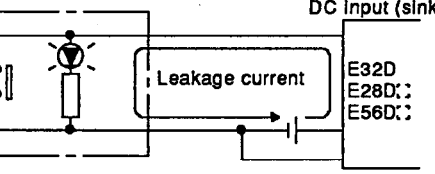
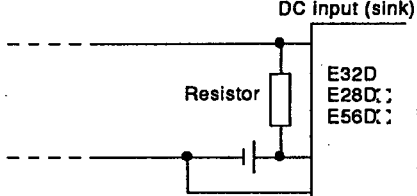
	Condition	Cause	Corrective Action
Example 1	Input signal does not turn off	<ul style="list-style-type: none"> <li>Leakage current of input switch (such as drive by non-contact switch).</li> </ul> 	<ul style="list-style-type: none"> <li>Correct an appropriate resistor which will reduce the voltage across terminals of input unit below OFF voltage value.</li> </ul>  <p>It is recommended to use 0.1 to 0.47 <math>\mu</math>F + 47 to 120 <math>\Omega</math> (1/2W) for CR constant. The CR value is determined by the leakage current value.</p>
Example 2		<ul style="list-style-type: none"> <li>Drive by a limit switch with neon lamp.</li> </ul> 	<ul style="list-style-type: none"> <li>Same as Example 1.</li> <li>Or make up another independent display circuit.</li> </ul>
Example 3		<ul style="list-style-type: none"> <li>Leakage current due to line capacity of wiring cable. Line capacity C of twisted pair wire is approx. 100 PF/m.</li> </ul> 	<ul style="list-style-type: none"> <li>Same as Example 1.</li> <li>However, leakage current is not generated when power supply is located on the input equipment side as shown below.</li> </ul> 
Example 4		<ul style="list-style-type: none"> <li>Drive by switch with LED indicator</li> </ul> 	<ul style="list-style-type: none"> <li>Connect a proper resistor, which will increase the voltage across input unit terminal and common above OFF voltage, as shown below.</li> </ul>  <p>*The calculation example of connected resistor value is shown in the following page.</p>

Table 4.1 Input Unit Circuit Failure and Correction Actions (Continue)

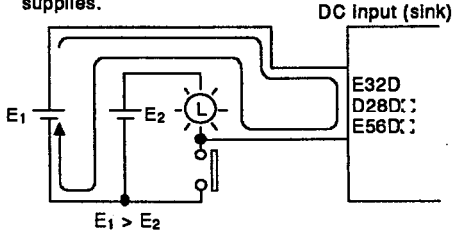
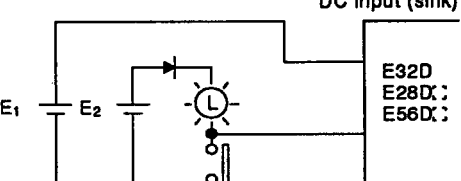
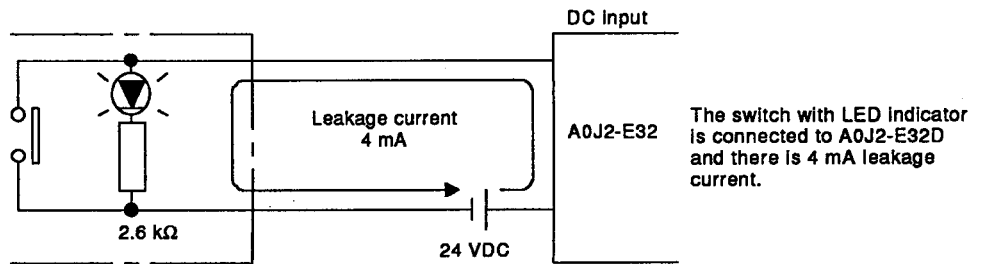
	Condition	Cause	Corrective Action
Example 5	Input signal does not turn off	<ul style="list-style-type: none"> <li>Sneak path due to the use of two power supplies.</li> </ul> 	<ul style="list-style-type: none"> <li>Reduce the power supplies from two to one.</li> <li><math>E_1 \leq E_2</math></li> <li>Connect a sneak path prevention diode. (See below)</li> </ul> 

Table 4.1 Input Unit Circuit Failure and Correction Actions

Calculation example of Example 4

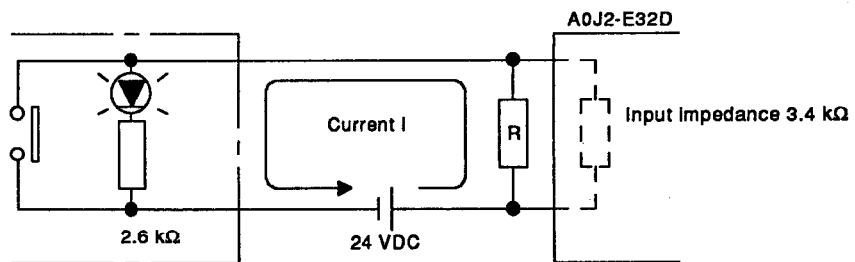


- Voltage  $V_{TB}$  across terminal and common is obtained by the following expression:

$$V_{TB} = 4 \text{ [mA]} \times 3.4 \text{ [k}\Omega\text{]} = 13.6 \text{ [V]}$$

(The voltage drop of LED is ignored.)

Since this voltage does not satisfy the OFF voltage of 6 [V] or lower, the input signal does not turn off. Therefore, connect a resistor as shown below.



- Calculate the value of resistor R as shown below:

Since A0J2-E32D terminal voltage should be 6 V or lower, current I which keeps the terminal voltage at 6 V or lower is,

$$(24 - 6 \text{ [V]}) \div 2.6 \text{ [k}\Omega\text{]} = 6.9 \text{ mA}$$

Therefore, connect a proper resistor R which keeps current I at 6.9 mA or higher.

- Now resistor R is as follows:

$$6 \text{ [V]} + R > 6.9 - \frac{6 \text{ V}}{3.4 \text{ k}\Omega}$$

$$\begin{aligned} 6 \text{ [V]} + 5.1 \text{ [mA]} &> R \\ 1.2 \text{ [k}\Omega] &> R \end{aligned}$$

Assuming that resistor R is 1 [kΩ], power capacity W of the resistor is obtained by the following expression:

$$W = (\text{applied voltage})^2 / R \text{ (or } W = (\text{maximum current})^2 \times R)$$

The terminal voltage of resistor R is,

$$\begin{aligned} \frac{3.4 \times 1}{3.4 + 1} \text{ [k}\Omega] \cdot \frac{3.4 \times 1}{3.4 + 1} + 2.6 \text{ [k}\Omega] &= X : 24 \text{ [V]} \\ X &= 5.5 \text{ [V]} \end{aligned}$$

Therefore, the power capacity W of resistor R is:

$$W = (5.5 \text{ [V]})^2 / 1 \text{ [k}\Omega] = 0.030 \text{ [W]}$$

- Since the power capacity of resistor is selected at 3 to 5 times larger than the actual power consumption, set the resistor power capacity to 0.125 to 0.25 [W].

As calculated above, connect a resistor of 1 [kΩ] and 0.125 to 0.25 [W] across the relevant terminal and COM.

4.2 Output Unit Circuit Failures and Corrective Actions

This section explains circuit failure examples and corrective actions for output units.

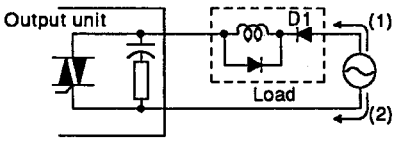
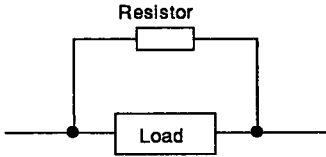
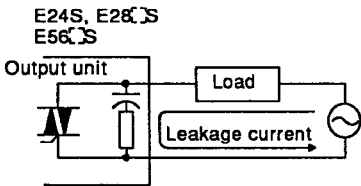
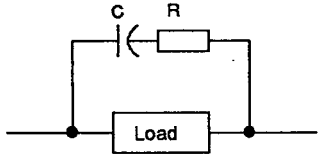
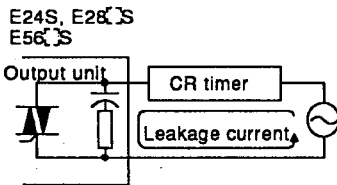
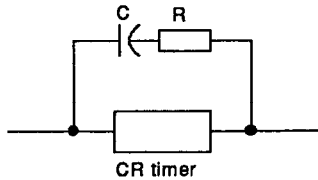
	Condition	Cause	Corrective Action
Example 1	When output is off, excessive voltage is applied to load.	<ul style="list-style-type: none"> <li>• Load is half-wave rectified inside (seen in some solenoids) E24S, E28S, E56S</li> </ul>  <ul style="list-style-type: none"> <li>• When the polarity of power supply is as shown by (1), C is charged. When the polarity is as shown by (2), voltage charged in C plus line voltage are applied across D1. Max. voltage is approx. <math>2\sqrt{2}E</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Connect a resistor of several ten kΩ to several hundred kΩ across the load</li> </ul> <p>When the resistor is used in this way, it does not pose an output element problem but may sometimes cause the diode built in the load to deteriorate, resulting in burning, etc.</p> 
Example 2	Load does not turn off.	<ul style="list-style-type: none"> <li>• Leakage current due to built-in noise suppression. This may occur especially in small capacity load.</li> </ul> 	<ul style="list-style-type: none"> <li>• Connect C and R across the load.</li> </ul> <p>When wiring distance from output card to load is long, be careful because there may exist leakage current due to line capacity.</p>  <p>It is recommended to use 0.1 to 0.47μF + 47 to 120 Ω (1/2W) for CR constant.</p>
Example 3	When load is C-R type timer, time limit fluctuates.		<ul style="list-style-type: none"> <li>• After driving the relay, drive the C-R type timer with the same contact.</li> </ul> <p>Some timers have half-wave rectified internal circuits. Therefore, the same care as indicated in Caution in Example 1 should be taken.</p> <ul style="list-style-type: none"> <li>• Connect C and R across the C-R type timer.</li> </ul>  <p>Calculate CR constant depending on loads.</p>

Table 4.2 Output Unit Circuit Failures and Correction Actions (Continue)



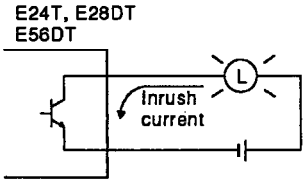
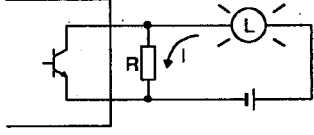
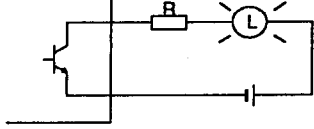
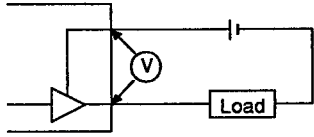
	Condition	Cause	Corrective Action
<p>Example 4</p>	<p>Output transistor is broken.</p>	<p>This may occur when a lamp is used as loads for transistor output. Since inrush current flows from the lamp when the transistor is on, the output transistor is broken.</p>  <p>E24T, E28DT E56DT</p> <p>Since the maximum inrush current of E24T, E28DT, and E56DT is 4 A (10 ms), use a lamp with its inrush current at less than 4A.</p>	<p>(1) Connect the resistor as shown below so that the current which does not illuminate the lamp may always flow. This prevents the inrush current from generating in the circuit.</p> <p>[Example] I : Firm current x (1/3 to 1/4) E24T, E28DT E56DT</p>  <p>(2) Connect the resistor as shown below to suppress the inrush current. E24T, E28DT E56DT</p> 
<p>Example 5</p>	<p>The load does not operate properly (due to load short). AOJ2E-E □□□T</p>	<p>Short may have occurred due to load deterioration or miswiring. Check as described on the right.</p>	<ul style="list-style-type: none"> <li>• Check load operation.</li> <li>• At ON time, measure the voltages shown below. If 3 V or more, the load may have shorted. Check the load.</li> </ul>  <p>Source driver</p>

Table 4.2 Output Unit Circuit Failures and Corrective Actions

**POINT**

It is recommended to use the C and R with the following specifications for Examples 2 and 3.

1) Combination of C and R

C	0.1 μF	0.47 μF	0.5 μF
R	120 Ω	47 Ω	50 Ω

2) C is a paper capacitor or metalized paper capacitor.

3) The rated voltage of C is 630 VDC or 200 VAC.

4) The power capacity of R is 1/2 W or more.

5) When the power consumption of load is 30 VA or more, use C of about 0.47 μF and R of about 47 Ω.

5 MAINTENANCE AND INSPECTION

5.1 Periodic Inspection

This section explains the inspection items which are to be checked every six months to one year. If the equipment have been moved or modified or wiring has been changed, also make the inspection.

Number	Check Item		Check Method	Judgement	Corrective Action
1	Ambient environment	Ambient temperature	Measure with thermometer and hygrometer. Measure corrosive gas.	0 to 55 °C	When PC is used inside a panel, the temperature in the panel is ambient temperature.
		Ambient humidity		10 to 90 %RH	
		Ambience		There should be no corrosive gases.	
2	Line voltage check		Measure voltage across 100/200 VAC terminal.	85 to 132 VAC ----- 170 to 264 VAC	Change supply power. Change transformer tap.
3	Mounting conditions	Looseness, play	Move the unit.	The unit should be mounted securely and positively.	Retighten screws. For CPU, I/O, and power supply units check all connections.
		Ingress of dust or foreign material	Visual check.	There should be no dust or foreign material, in the vicinity of the P.C.	Remove and clean.
4	Connecting conditions	Loose terminal screws	Visual check.	Connectors should not be loose.	Retighten.
		Distances between solderless terminals	Visual check.	Proper clearance should be provided between solderless terminals.	Correct.
		Loose connector	Visual check.	Connectors should not be loose.	Retighten connector mounting screws
5	Fuse		Check fuses.	Preventive maintenance	Change the fuse periodically due to rush current.

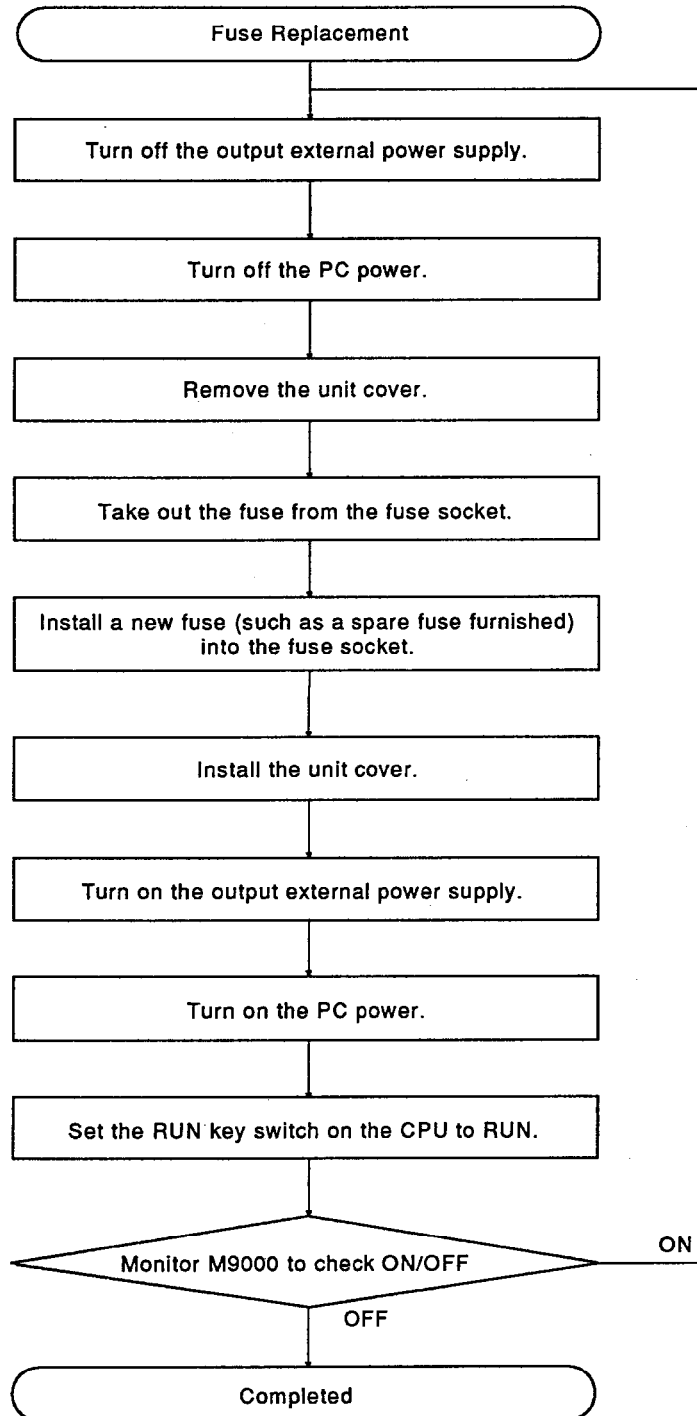
Table 5.1 Periodic Inspection

5.2 Fuse Replacement

If the fuse is not blown, the element may be worn by inrush current. Therefore, it is recommended to replace the fuse periodically.

5.2.1 Output unit fuse replacing procedure

This section describes the fuse replacing procedure.



APPENDICES

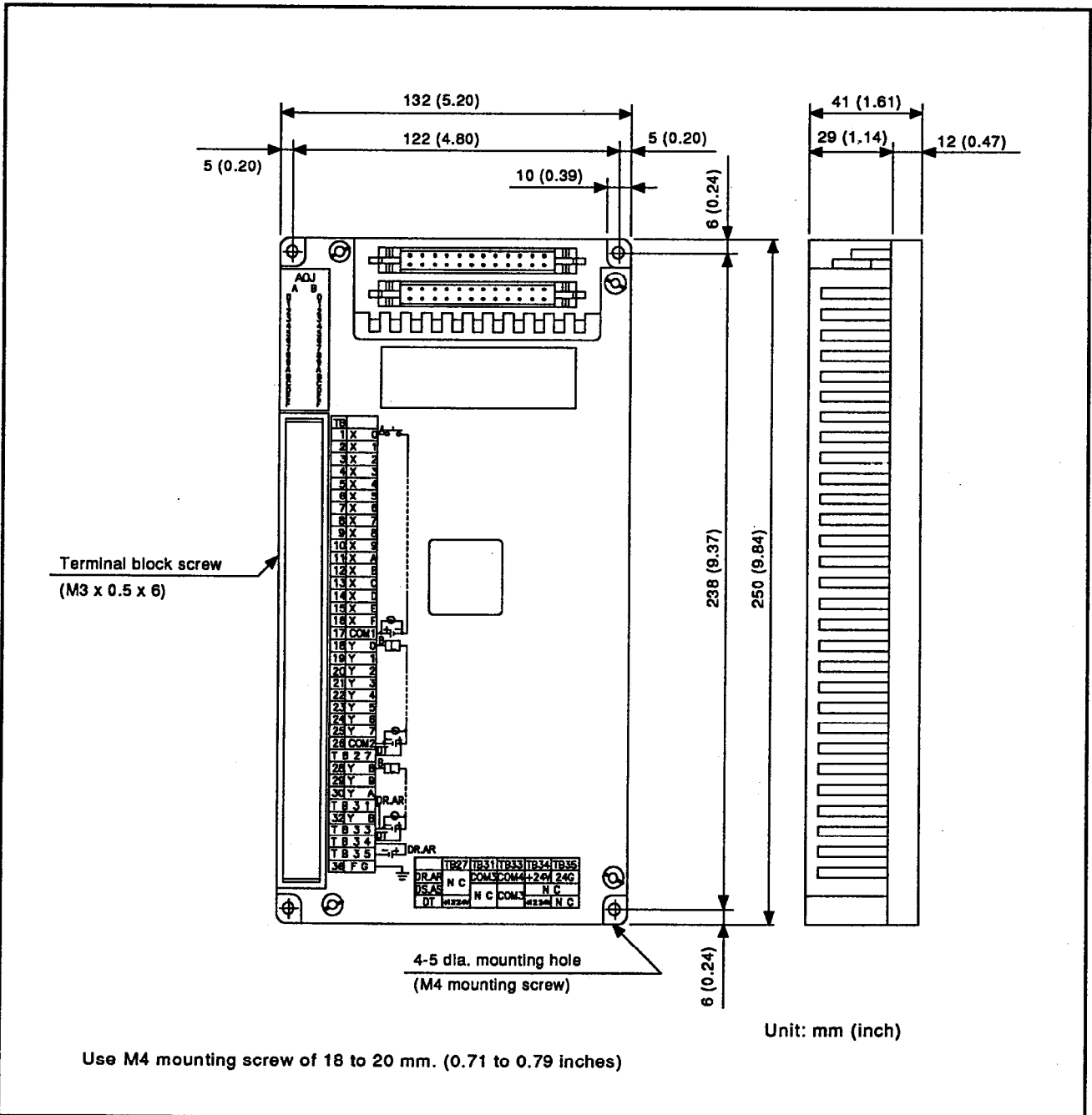
APPENDIX 1 DIMENSIONAL OUTLINE DRAWINGS

1.1 I/O Unit

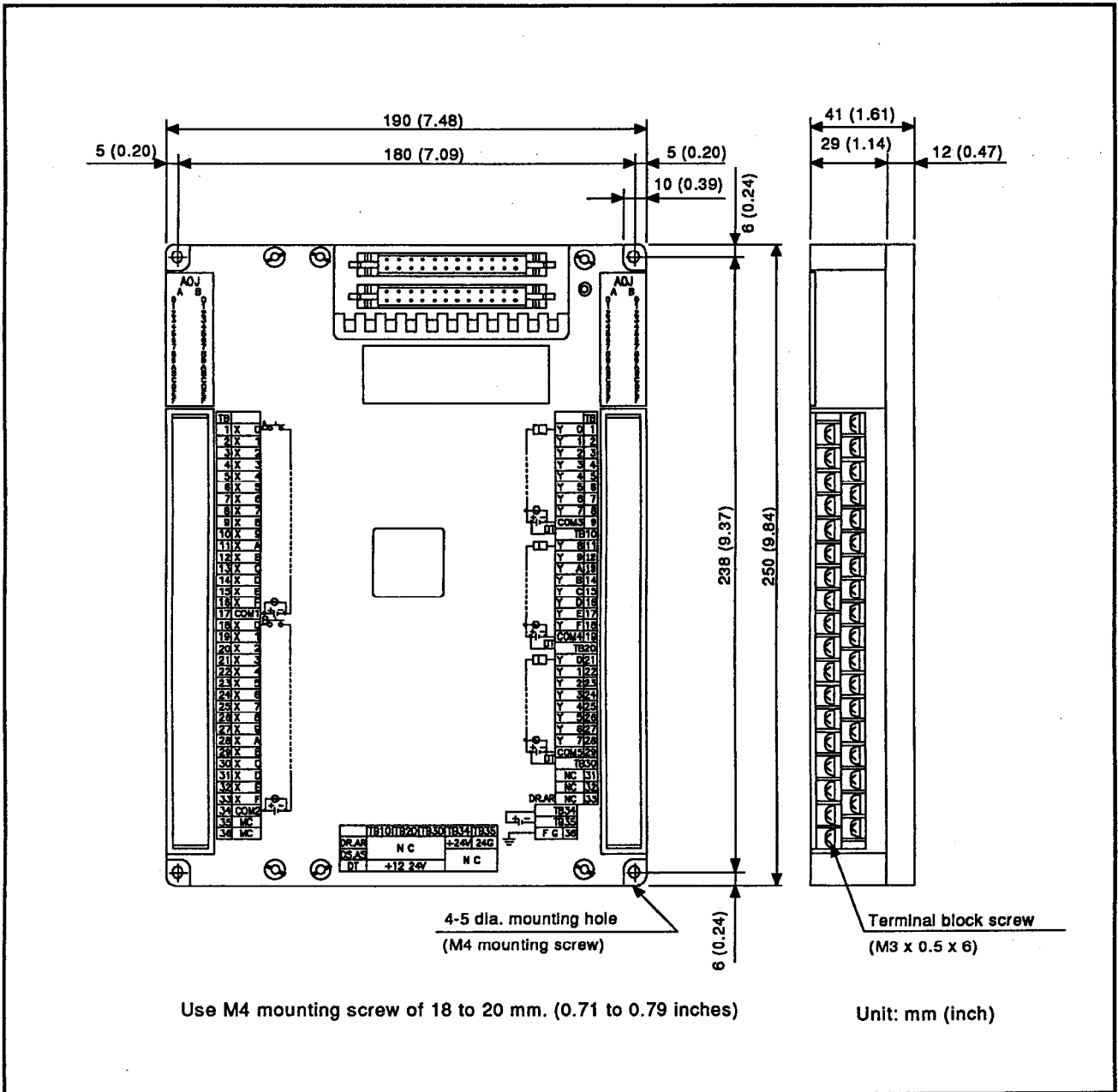
1.1.1 I/O unit

- (1) E32 □, E24 □, E28 □□ I/O units

The figure below shows a dimensional outline drawing of Type E32 □ input unit. These dimensions also apply to Type E24 □ output unit and Type E28 □□ I/O unit.

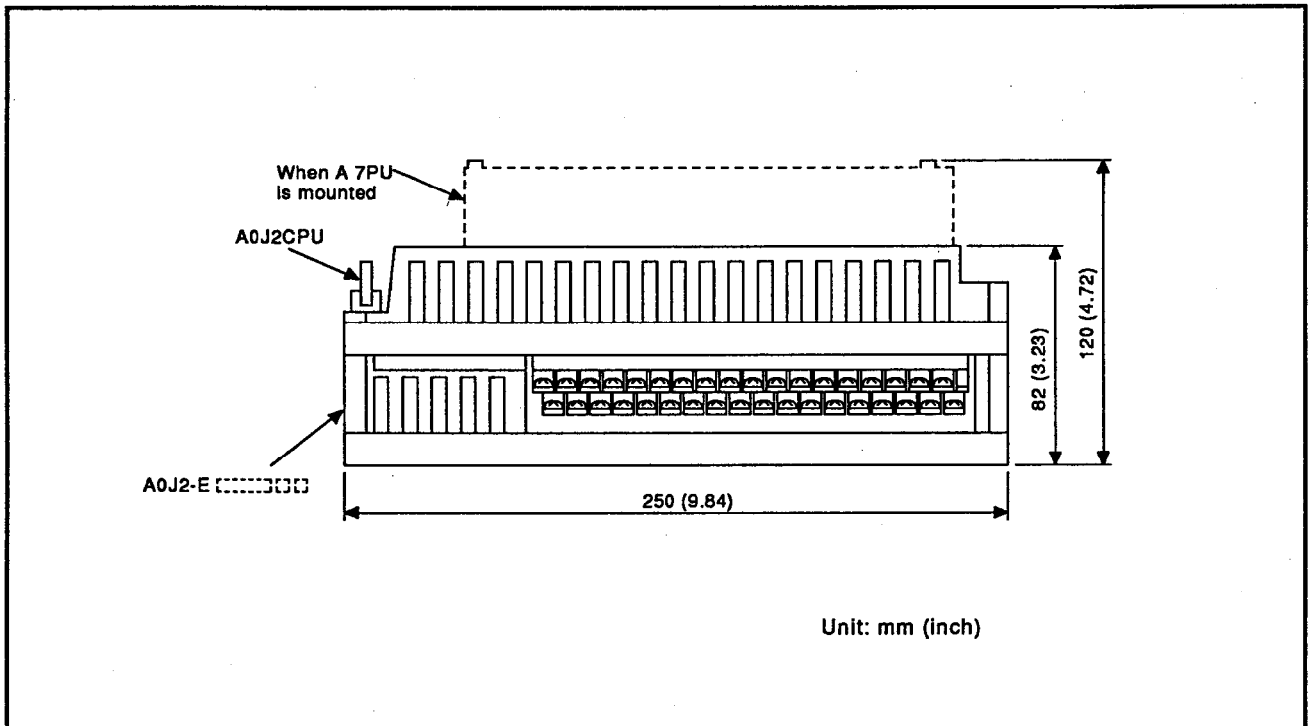


(2) Type E56 I/O unit

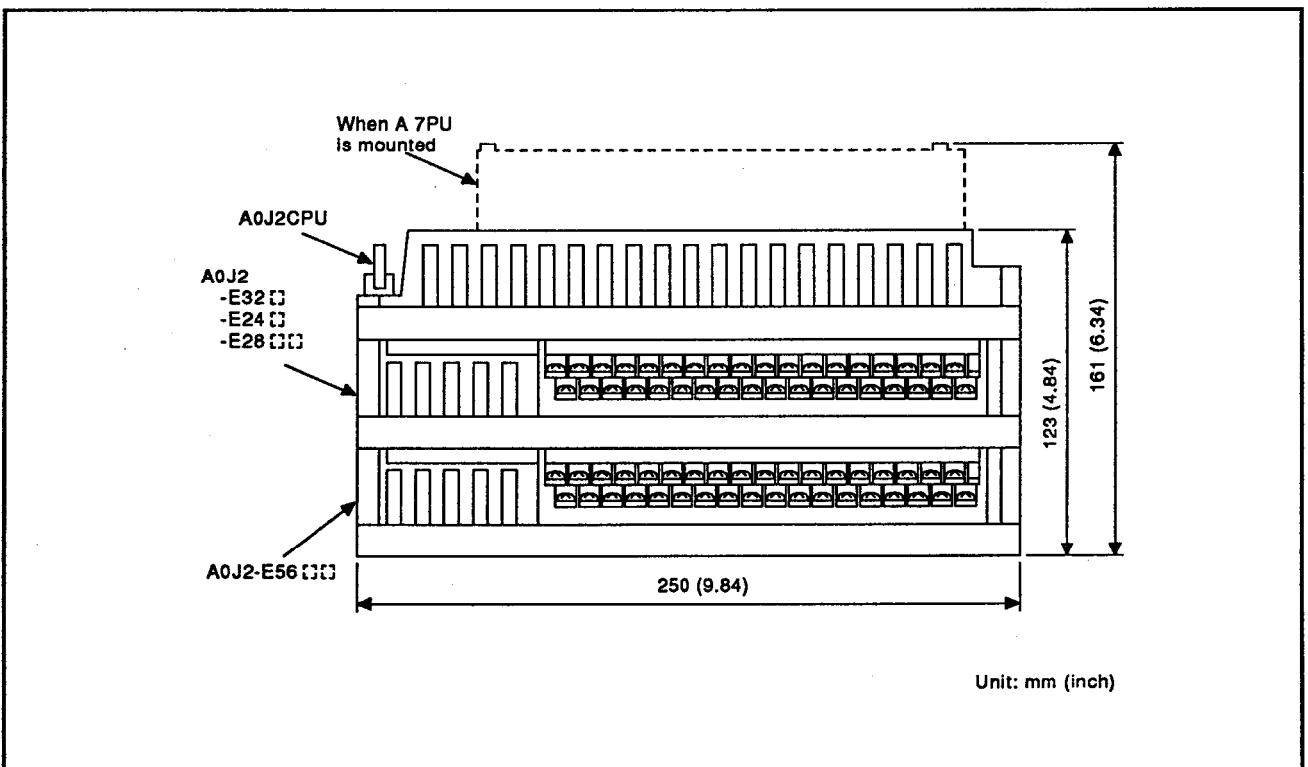


1.1.2 Unit-to-unit mounting

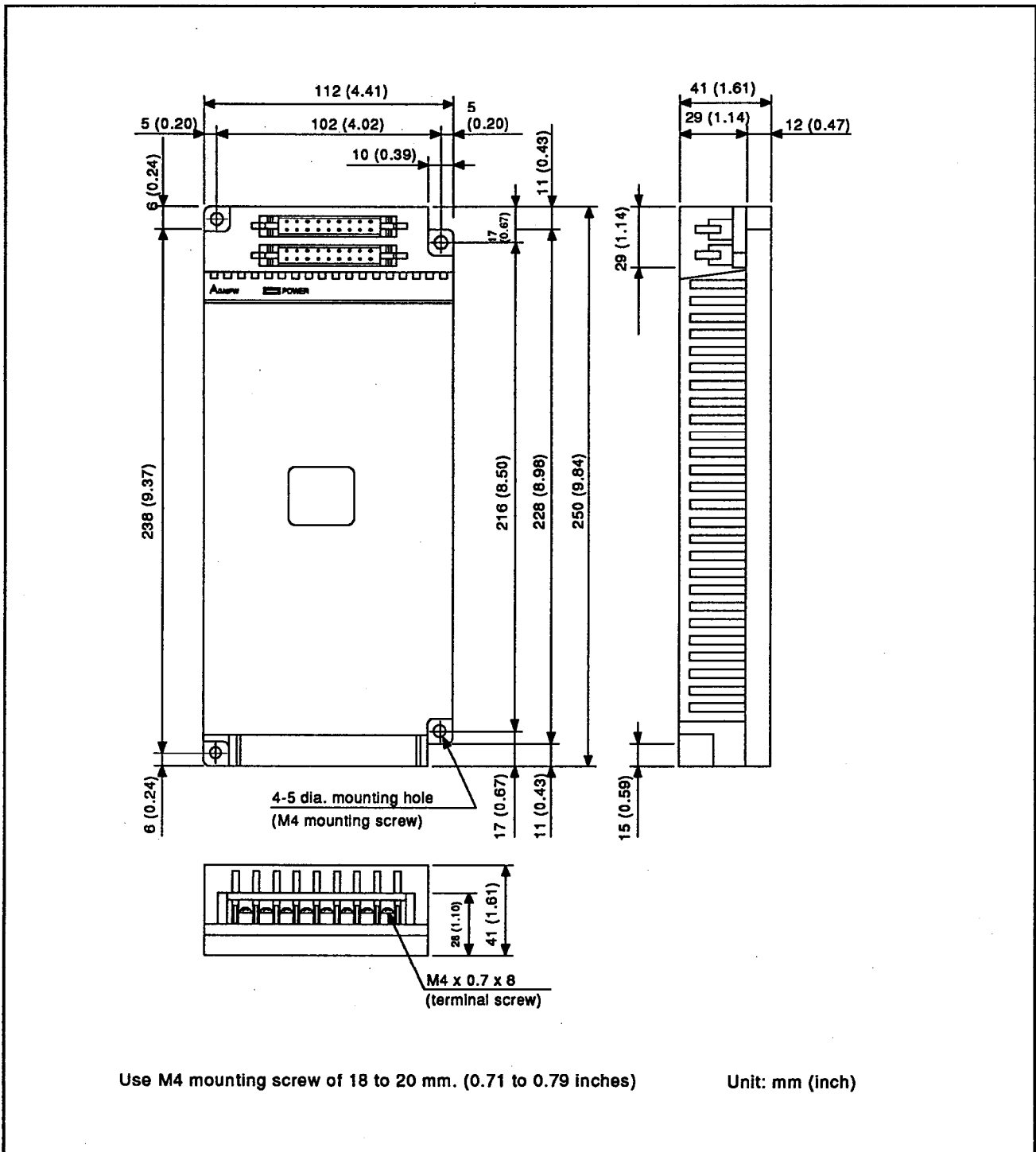
- (1) Mounting the A0J2CPU unit onto Type A0J2-E I/O unit (1 unit)



- (2) Mounting the A0J2CPU unit onto Type A0J2-E I/O unit (2 units)



1.2 Extension Power Supply Unit



APPENDIX 2 I/O UNIT TERMINAL LABELS

The following shows the terminal labels for the A0J2 I/O units. Especially for the unit-to-unit mounting method, the silkscreen indication of the inner I/O unit cannot be seen. Therefore, cut off the following terminal label and attach in onto the terminal block cover.

Type A0J2-

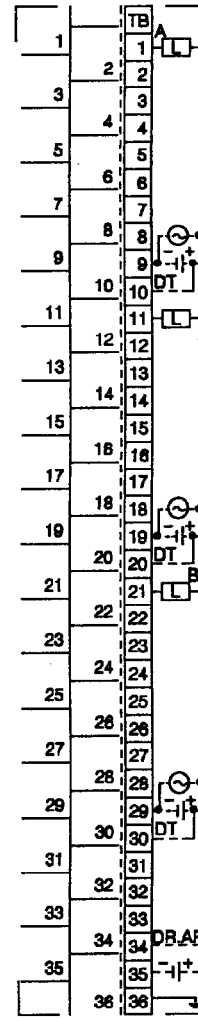
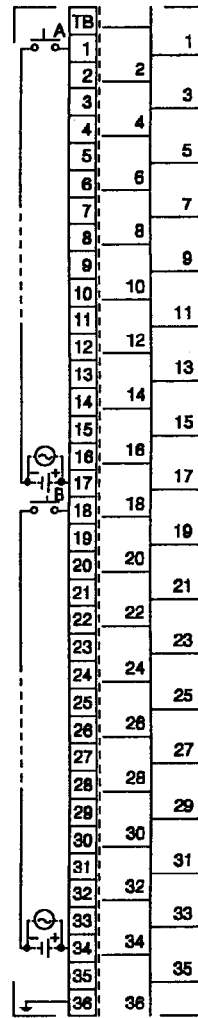
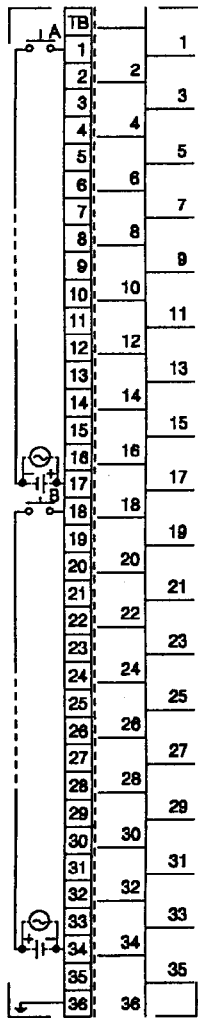
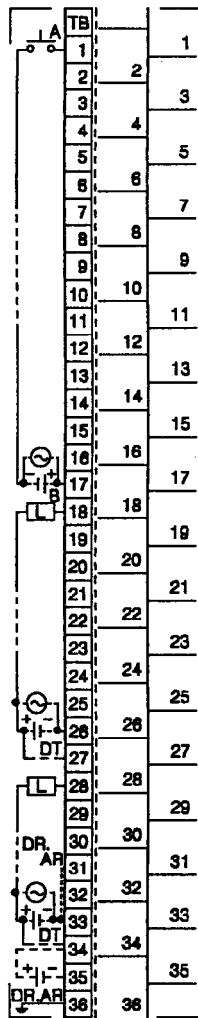
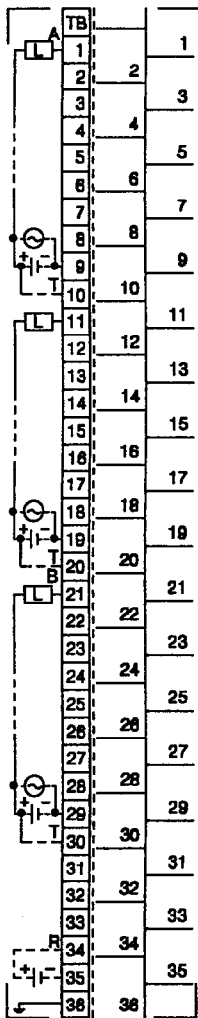
E24

E28

E32

E56 left

E56 right







Type A0J2E-

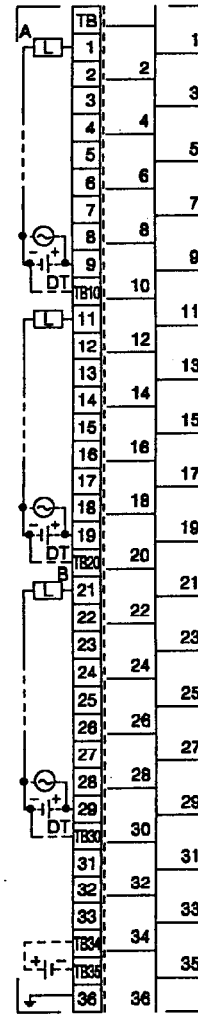
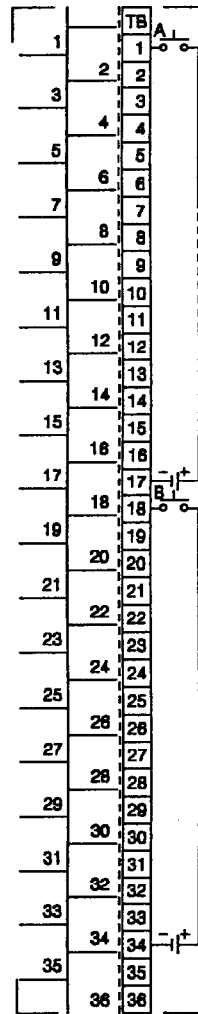
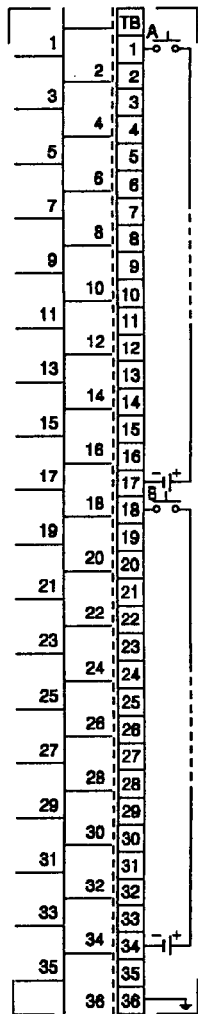
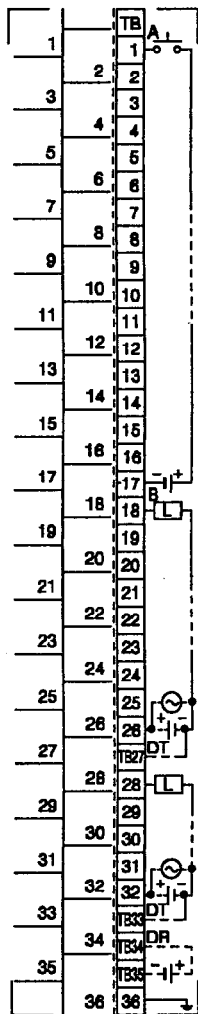
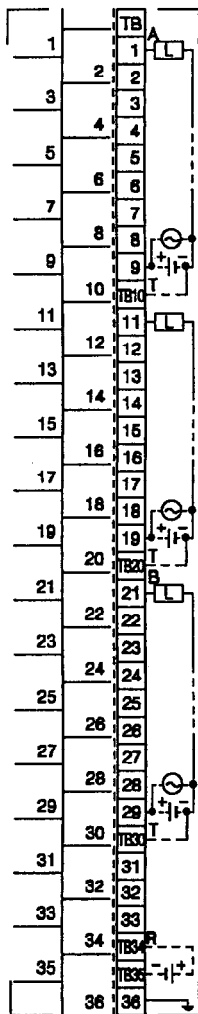
E24

E28

E32

E56 left

E56 right





**IMPORTANT**

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

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

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

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

# WARRANTY

Please confirm the following product warranty details before starting use.

## 1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the dealer or Mitsubishi Service Company. Note that if repairs are required at a site overseas, on a detached island or remote place, expenses to dispatch an engineer shall be charged for.

### [Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

### [Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
  1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
  2. Failure caused by unapproved modifications, etc., to the product by the user.
  3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
  4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
  5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
  6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
  7. Any other failure found not to be the responsibility of Mitsubishi or the user.

## 2. Onerous repair term after discontinuation of production

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not possible after production is discontinued.

## 3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

## 4. Exclusion of chance loss and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, chance losses, lost profits incurred to the user by Failures of Mitsubishi products, damages and secondary damages caused from special reasons regardless of Mitsubishi's expectations, compensation for accidents, and compensation for damages to products other than Mitsubishi products and other duties.

## 5. Changes in product specifications

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

## 6. Product application

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

Note that even with these applications, if the user approves that the application is to be limited and a special quality is not required, application shall be possible.

When considering use in aircraft, medical applications, railways, incineration and fuel devices, manned transport devices, equipment for recreation and amusement, and safety devices, in which human life or assets could be greatly affected and for which a particularly high reliability is required in terms of safety and control system, please consult with Mitsubishi and discuss the required specifications.

# Type A0J2 (Input/Output unit)

## User's Manual

MODEL	A0J2-I/O-USERS-E
MODEL CODE	13J602
IB(NA)-66068-N(0312)MEE	

 **mitsubishi electric corporation**

HEAD OFFICE : 1-8-12, OFFICE TOWER Z 14F HARUMI CHUO-KU 104-6212, 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.