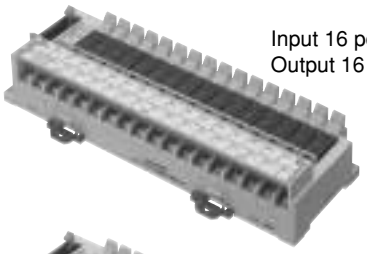
NAiS

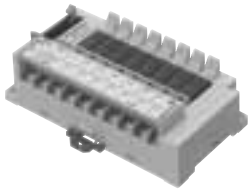
INTERFACE RELAY TERMINAL THAT REDUCES WIRING AND SAVES SPACE

PC RELAY TERMINAL/ PC TERMINAL

PC Relay Terminal (PC relays mounted)

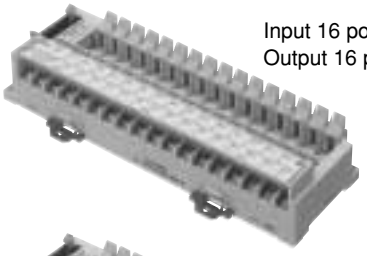


Input 16 points
Output 16 points

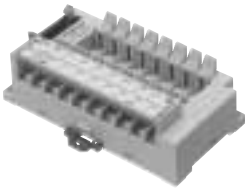


Input 8 points
Output 8 points

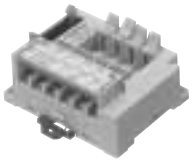
PC Terminal



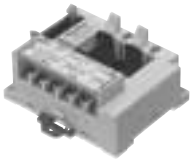
Input 16 points
Output 16 points



Input 8 points
Output 8 points



Input 4 points
Output 4 points



Output 2 points

FEATURES

- **Easy connecting and simplified wiring**
  Connection to the various programmable controllers is performed with the one-touch connector. Wiring efficiency is improved and wiring within panels is greatly simplified.
- **Space saving**
  By integrating the interface relay and terminal, a 16-point type is still compact.
  (W)205 × (D)67 × (H)38.5 mm
  (W)8.071× (D)2.638× (H)1.516 inch.
  Helps reduce the size of control panels.
- **Wide range of I/O points for easy expansion**
  Complete lineup includes 16, 8, and 4-point input types and 16, 8, 4, and 2-point output types. A single cable allows for expansion up to a maximum of 16 points.
- **High sensitive and reliable PC relays are mounted**
  The PC relay terminal is a PC terminal (terminal block) that is equipped with a highly reliable, 12.5 mm .492 inch height, slim PC relay for use as an interface relay. With a high sensitivity of 200 mW and highly reliable Au clad contacts, the PC relay is compatible with a wide range of loads from super small loads to those as large as 5A. Also, single-action removal and installation of the relay are performed with the provided lever. This greatly simplifies relay maintenance and replacement of the SSR.
- **PC terminal allows installation of interface relay or SSR depending on load**
  The PC terminal is not equipped with a relay. However, depending on the load, you can install any of the various types of relays or an SSR. 2 or 4 points are also available for the output.
- **Relay and SSR types are available for interfacing**
  These components can be used together with the highly sensitive, highly reliable PC relay or the equal-sized SSR (AQ-C solid-state relay) depending on the application and load conditions. This helps support changes or expansions in the overall circuit.
- **Built-in LED operation indication**
  The PC terminal is equipped with an LED display for simple confirmation of operation.
- **Surge absorbing circuit**
  The PC terminal contains a built-in coil surge absorbing circuit. Protects the programmable controller circuitry and prevents incorrect operation.
- **Equipped with AXM connector**
  The component is equipped with the AXM connector (conforms to MIL standards) that performs all the wiring at once (long lever type).
- **DIN rail mountable to support two mounting methods**
  This two-way type can be either DIN rail mounted or mounted directly for added flexibility.
- **Simple removal and installation to DIN rails**
  DIN rail mounting hooks maintain the released position for easy installation and removal.
- **Various cable types available**

ORDERING INFORMATION

Ex. RT — [1] [I] — [D] [16] — [12V] — [S]

Input or Output	Input or Output	Voltage type	No. of I/O points	Rated voltage	Types of connector
1: PC terminal 1S: PC Relay terminal	I: Input O: Output	A: AC (PC terminal only) D: DC	16: 16 points 08: 8 points 04: 4 points (PC terminal only) 02: 2 points (PC terminal only)	12V: 12 V 24V: 24 V 100V: 100/110 V 200V: 200/220 V	S: S type (Standard pitch) M: M type (Half pitch)

TYPES

1. PC relay terminal

PC relay terminal is the PC terminal equipped with a PC relay.

Types of connector	Input or output	No. of I/O points	Normal operating voltage	PC Relay Terminal part no.	Packing quantity	
					Inner carton	Outer carton
S type	Input	16	12 V DC	RT1S-ID16-12V-S	1 pc.	10 pcs.
			24 V DC	RT1S-ID16-24V-S		
		8	12 V DC	RT1S-ID08-12V-S		
			24 V DC	RT1S-ID08-24V-S		
	Output	16	12 V DC	RT1S-OD16-12V-S		
			24 V DC	RT1S-OD16-24V-S		
		8	12 V DC	RT1S-OD08-12V-S		
			24 V DC	RT1S-OD08-24V-S		
M type	Input	8	12 V DC	RT1S-ID08-12V-M		
			24 V DC	RT1S-ID08-24V-M		
	Output	16	12 V DC	RT1S-OD16-12V-M		
			24 V DC	RT1S-OD16-24V-M		

2. PC Terminal

Not equipped with a relay. Install a separately-solid PC relay or AQ-C solid state relay for interfacing.

Types of connector	Input or output	No. of I/O points	Normal operating voltage	PC Relay Terminal part no.	Packing quantity	
					Inner carton	Outer carton
S type	Input	16	100/110 V AC	RT1-IA16-100V-S	1 pc.	10 pcs.
			200/220 V AC	RT1-IA16-200V-S		
			12 V DC	RT1-ID16-12V-S		
			24 V DC	RT1-ID16-24V-S		
		8	100/110 V AC	RT1-IA08-100V-S		
			200/220 V AC	RT1-IA08-200V-S		
			12 V DC	RT1-ID08-12V-S		
			24 V DC	RT1-ID08-24V-S		
		4	100/110 V AC	RT1-IA04-100V-S		
			200/220 V AC	RT1-IA04-200V-S		
			12 V DC	RT1-ID04-12V-S		
			24 V DC	RT1-ID04-24V-S		
	Output	16	12 V DC	RT1-OD16-12V-S		
			24 V DC	RT1-OD16-24V-S		
		8	12 V DC	RT1-OD08-12V-S		
			24 V DC	RT1-OD08-24V-S		
		4	12 V DC	RT1-OD04-12V-S		
			24 V DC	RT1-OD04-24V-S		
		2 (DSP relay only)	12 V DC	RT1-OD02-12V-S		
			24 V DC	RT1-OD02-24V-S		
M type	Input	8	100/110 V AC	RT1-IA08-100V-M		
			200/220 V AC	RT1-IA08-200V-M		
			12 V DC	RT1-ID08-12V-M		
			24 V DC	RT1-ID08-24V-M		
	Output	16	12 V DC	RT1-OD16-12V-M		
			24 V DC	RT1-OD16-24V-M		

COMBINATION WITH INTERFACE RELAYS AND SSR

PC terminal				Types of relay			SSR
				PC relay (1a)	DSP relay		
					1a1b	2a	
S type (Standard pitch)	Input	16 points	AC				Available
			DC	Available			Available
		8 points	AC				Available
			DC	Available			Available
		4 points	AC				Available
			DC	Available			Available
	Output	16 points	DC	Available			Available
		8 points	DC	Available			Available
		4 points	DC	Available			Available
		2 points	DC		Available	Available	
M type (Half pitch)	Input	8 points	AC				Available
			DC	Available			Available
	Output	16 points	DC	Available			Available

RATINGS (PC Relay Terminal)

1. Relay coil specifications (per PC relay)

Rated coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Rated exciting current (±10%) (at 20°C 68°F)	Coil resistance (±10%) (at 20°C 68°F)	Rated consumption power	Max. continuous voltage (at 60°C 140°F) V DC
12 V DC	less than 70% of nominal voltage	more than 5% of nominal voltage	17 mA	720 Ω	200 mW	14.4
24 V DC			8.3 mA	2,880 Ω	200 mW	28.8

2. Contacts (per PC relay)

Specification	Item	Performance
Contact rating	Rated control capacity (resistive load)	5 A 250 V AC, 5 A 30 V DC
	Maximum allowable contact power (resistive load)	1,250 VA (AC), 150 W (DC)
	Maximum allowable contact voltage	250 V AC, 30 V DC
	Maximum allowable contact current	5 A
	Minimum load (ref. value)	100 mV 100 μA
Expected life (minimum operations)	Electrical (resistive load)	5×10^5: 2 A 250V AC 5×10^5: 2 A 30V DC 10^5: 5 A 250V AC 10^5: 5 A 30V DC
	Mechanical (at 180 cpm)	2×10^7

Note: The contact ratings and expected life values given are for when the relay is used separately. Depending on the number of I/O points on the PC relay terminal, use within the temperature derating characteristics (see data page). When using the SSR, see the Interface Relays and SSR* pages.

PERFORMANCE (PC Relay Terminal/PC terminal)

Item			Input	Output
Initial Insulation resistance (Min.)	Between connector terminals		100 MΩ (excluding battery)	100 MΩ (excluding battery)
	Between unlike poles on the terminals		100 MΩ (at 500 V DC megger)	100 MΩ (at 500 V DC megger)
	Between connector unlike poles (for input)		100 MΩ (excluding battery, at 250 V DC megger)	—
	Between like poles on the terminals (for output)		—	100 MΩ (at 250 V DC megger)
Initial breakdown voltage (Min.)	Between connector terminals		2,000 Vrms (excluding battery)	2,000 Vrms (excluding battery)
	Between unlike poles on the terminals		1,500 Vrms for	1,500 Vrms
	Between connector unlike poles (for input)		250 Vrms	—
	Between like poles on the terminals (for output)		—	1,000 Vrms
Vibration resistance		Destructive	10 to 55 Hz at double amplitude 1 mm .039 inch	10 to 55 Hz at double amplitude 1 mm .039 inch
		Functional	10 to 55 Hz at double amplitude 1 mm .039 inch	10 to 55 Hz at double amplitude 1 mm .039 inch
Shock resistance		Destructive	Min. 196 m/s² {20G}	Min. 196 m/s² {20G}
		Functional	Min. 98 m/s² {10G}	Min. 98 m/s² {10G}
Superimposed power noise			Min. 1,000 V*	Min. 1,000 V*
Superimposed I/O noise			Min. 1,000 V*	Min. 1,500 V*
Ambient temperature			0°C to +55°C +32°F to +131°F	0°C to +55°C +32°F to +131°F
Ambient humidity			35% to 85% R.H. (Not condensing)	35% to 85% R.H. (Not condensing)
Storage temperature			–30°C to +80°C –22°F to +176°F (Not freezing and condensing)	–30°C to +80°C –22°F to +176°F (Not freezing and condensing)
Terminal screw fasten torque			0.8 N·m {8 kgf·cm}	0.8 N·m {8 kgf·cm}
Coil surge absorber			Diode (1 A, 400 V)	Diode (1 A, 400 V)
Cross connection protecting diode			1 A, inverse voltage 40 V	1.5 A, inverse voltage 40 V

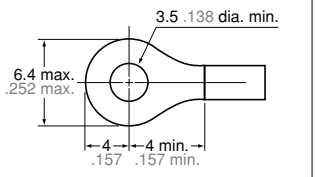
*According to in-house measurement.

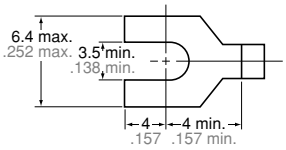
Notes: 1. The value of breakdown voltage and insulation resistance is initial.
2. Condensing occurs when the unit relay is exposed to sudden temperature change in a high temperature and high humidity atmosphere. This may cause some troubles like insulation failure of the socket or the print circuit board.
3. Below 0°C 32°F, condensing water can freeze and cause socket contact failures and other problems.

TERMINAL BLOCK

- Applicable electrical wire
  0.25 to 1.65 mm² .01 to .065 inch
- Applicable wire-pressed terminals

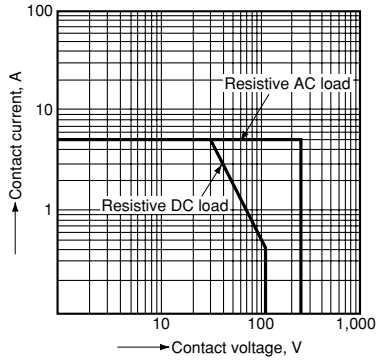
mm inch



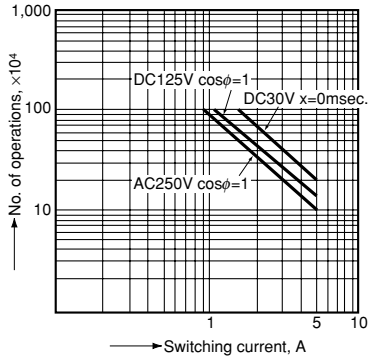


DATA (PC terminal with PC relays mounted on)

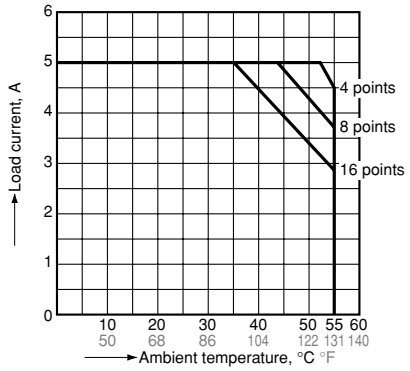
1. Maximum value for switching capacity (Output)



2. Life curve (Output)



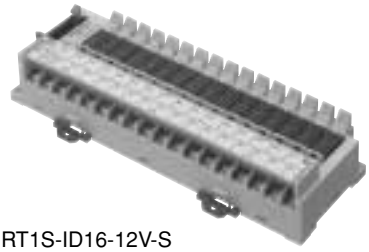
3. Load current vs. ambient temperature (Output)



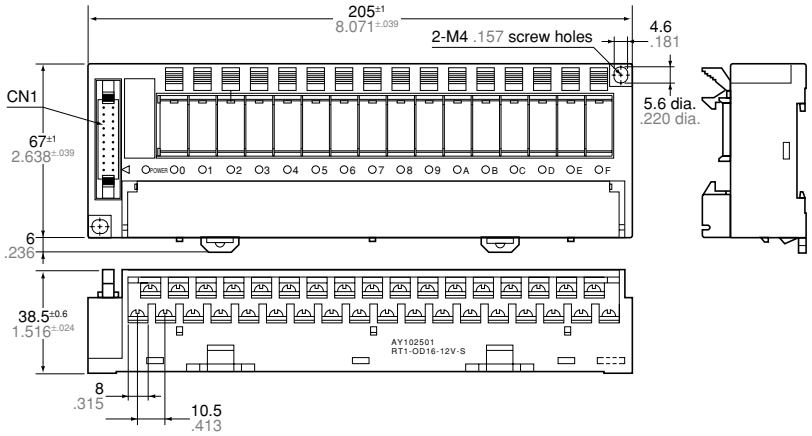
DIMENSIONS

mm inch

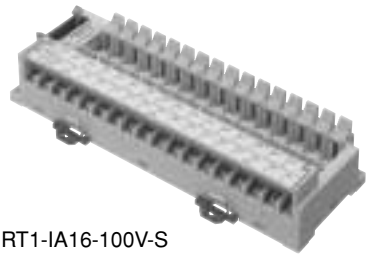
1. -(1) PC relay terminal S type input 16 points



RT1S-ID16-12V-S
RT1S-ID16-24V-S

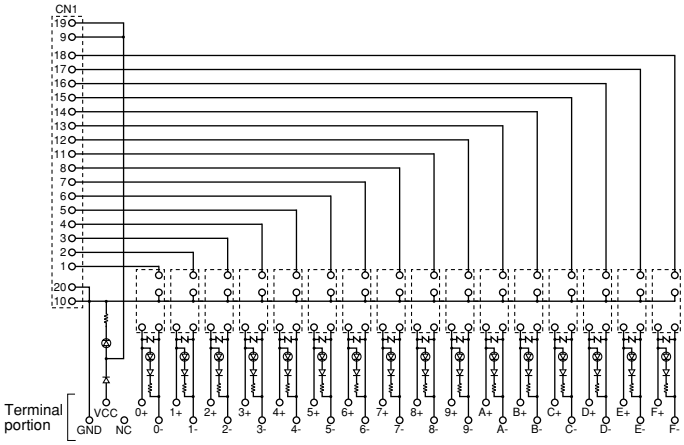


1. -(2) PC terminal S type input 16 points

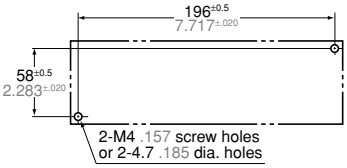


RT1-IA16-100V-S
RT1-IA16-200V-S
RT1-ID16-12V-S
RT1-ID16-24V-S

Terminal layout and schematic (for AC) (PC terminal only)



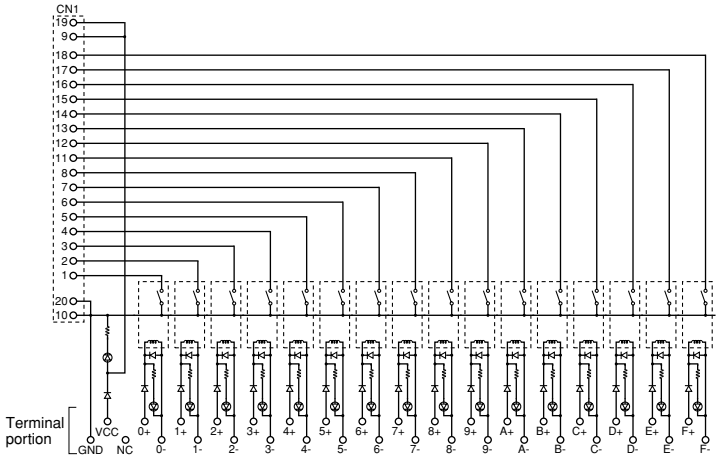
Panel cutout



Connector pin layout

Terminal layout and schematic (for DC)

The figure below is of the PC relay terminal. A relay is not equipped on the PC terminal.

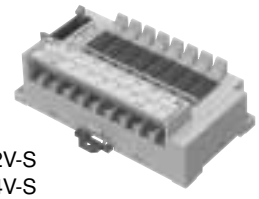


General tolerance: ±0.3 ±.012

Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.
The dimensions given in the diagram are the same for the PC relay terminal and PC terminal. However, a relay is not equipped on the PC terminal.

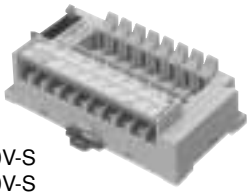
mm inch

2.-(1) PC relay terminal S type input 8 points

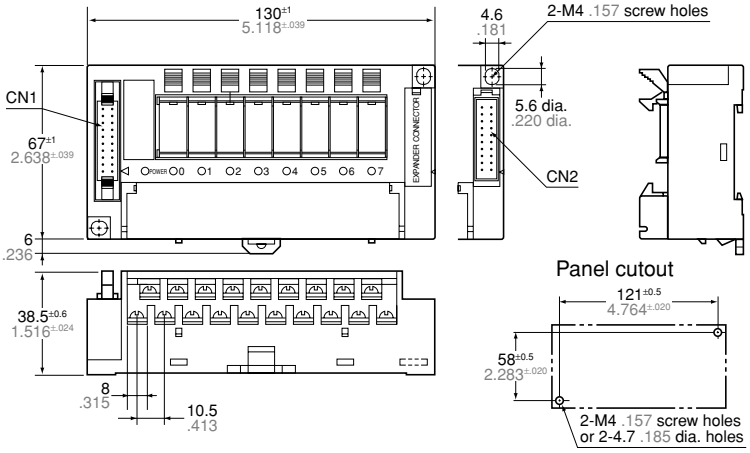


RT1S-ID8-12V-S
RT1S-ID8-24V-S

2.-(2) PC terminal S type input 8 points

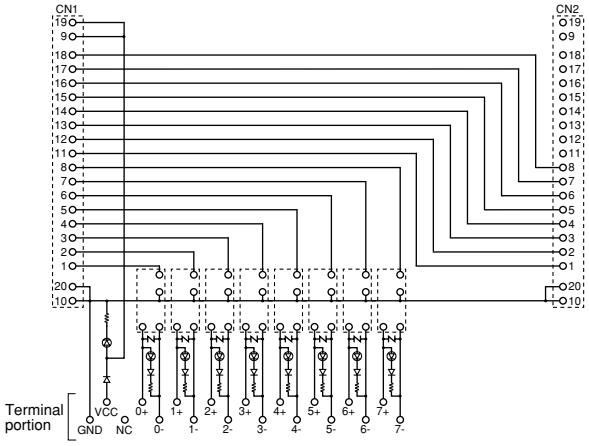


RT1-IA08-100V-S
RT1-IA08-200V-S
RT1-ID08-12V-S
RT1-ID08-24V-S



Connector pin layout

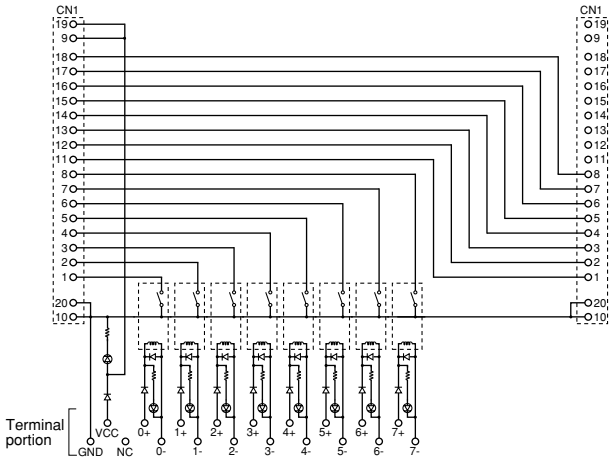
Terminal layout and schematic (for AC) (PC terminal only)



Connector pin layout

Terminal layout and schematic (for DC)

The figure below is of the PC relay terminal. A relay is not equipped on the PC terminal.



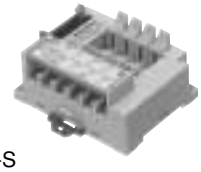
General tolerance: ±0.3 ±.012

Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.
The dimensions given in the diagram are the same for the PC relay terminal and PC terminal. However, a relay is not equipped on the PC terminal.

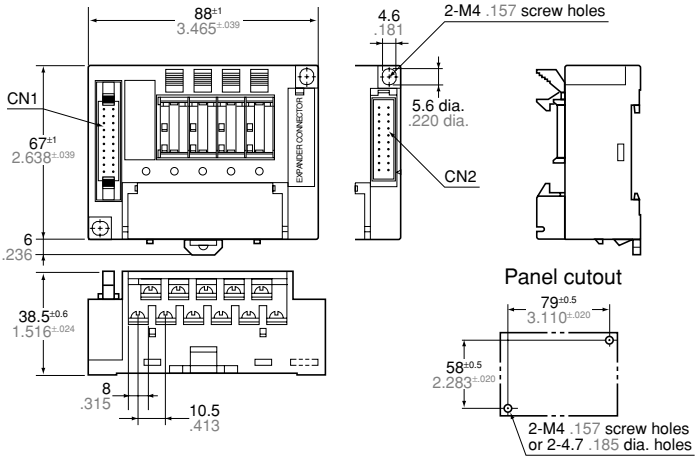
RT-1

3. PC terminal S type input 4 points

mm inch

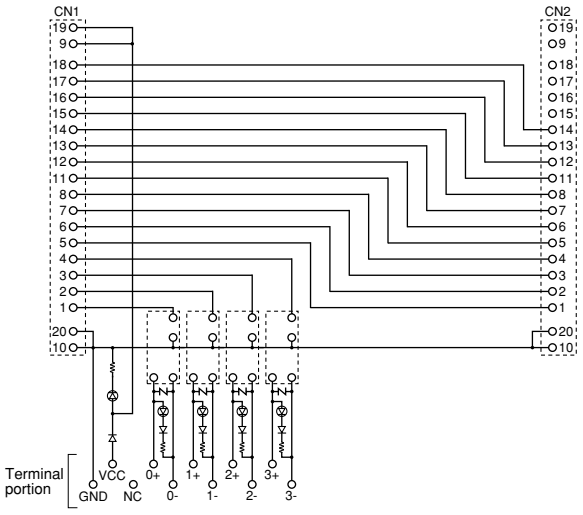


RT1-IA04-100V-S
RT1-IA04-200V-S
RT1-ID04-12V-S
RT1-ID04-24V-S

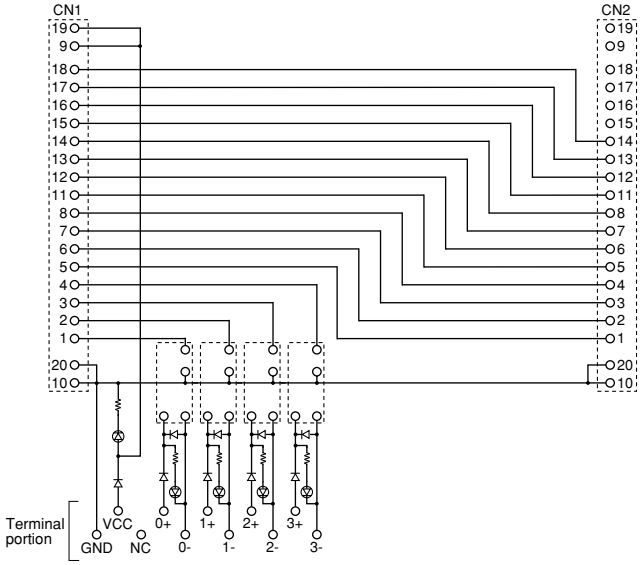


Connector pin layout

Terminal layout and schematic (for AC)



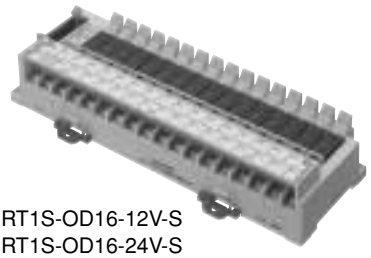
Terminal layout and schematic (for DC)



Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.

General tolerance: ±0.3 ±.012

4. -(1) PC relay terminal S type output 16 points

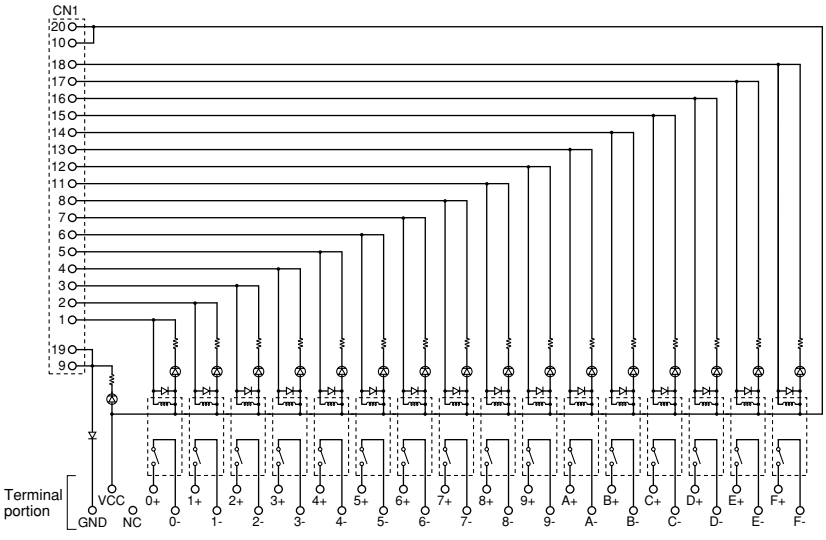


RT1S-OD16-12V-S
RT1S-OD16-24V-S

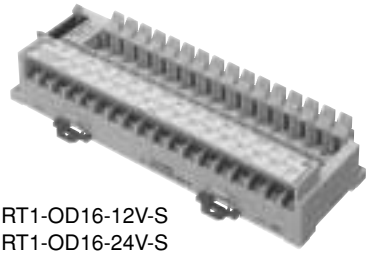
Connector pin layout

Terminal layout and schematic

The figure below is of the PC relay terminal. A relay is not equipped on the PC terminal.



4. -(2) PC terminal S type output 16 points



RT1-OD16-12V-S
RT1-OD16-24V-S

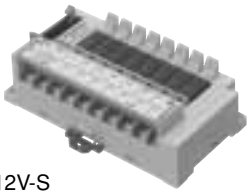
Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.
The dimensions given in the diagram are the same for the PC relay terminal and PC terminal. However, a relay is not equipped on the PC terminal.

General tolerance: ±0.3 ±.012

Dimensions and Panel cutouts are the same as those of S type input 16 points type.

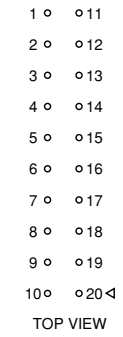
5. -(1) PC relay terminal S type output 8 points

mm inch



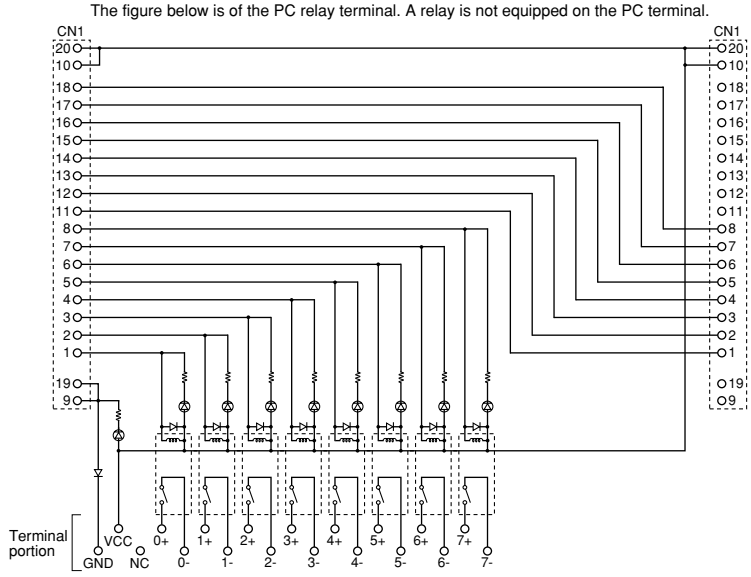
RT1S-OD08-12V-S
RT1S-OD08-24V-S

Connector pin layout

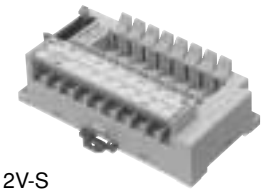


Terminal layout and schematic

The figure below is of the PC relay terminal. A relay is not equipped on the PC terminal.



5. -(2) PC terminal S type output 8 points



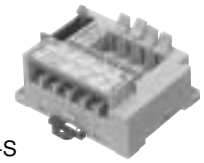
RT1-OD08-12V-S
RT1-OD08-24V-S

Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.
The dimensions given in the diagram are the same for the PC relay terminal and PC terminal. However, a relay is not equipped on the PC terminal.

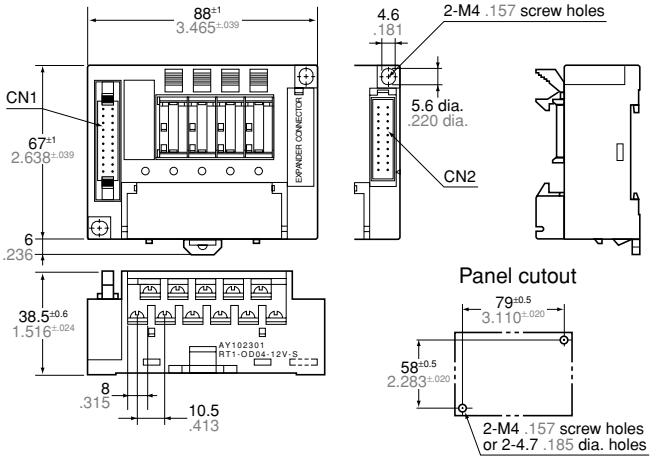
General tolerance: ±0.3 ±.012

Dimensions and Panel cutouts are the same as those of S type input 8 points type.

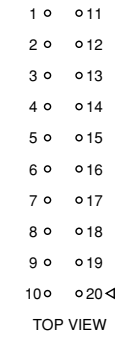
6. PC terminal S type output 4 points



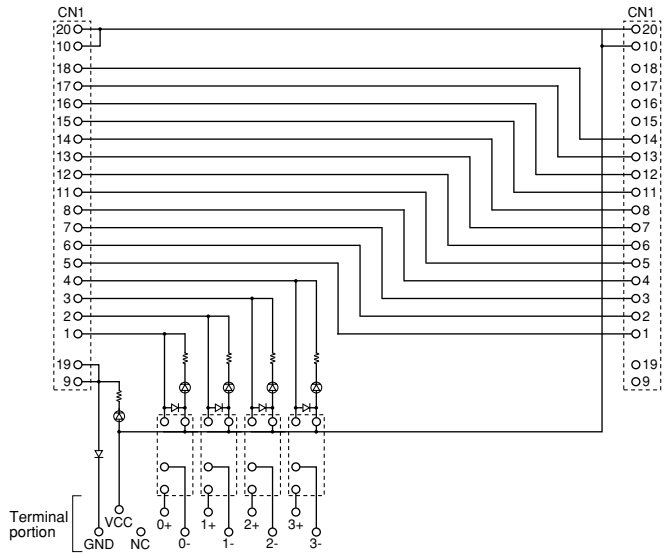
RT1-OD04-12V-S
RT1-OD04-24V-S



Connector pin layout



Terminal layout and schematic

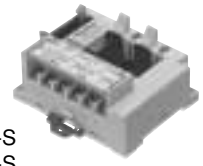


Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.

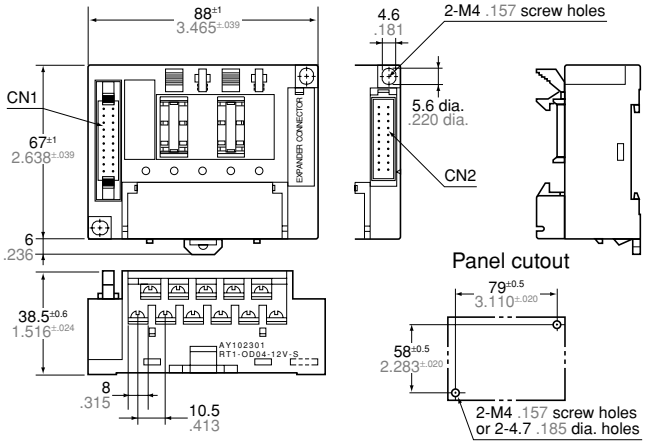
General tolerance: ±0.3 ±.012

7. PC terminal (1a1b, 2a) S type output 2 points

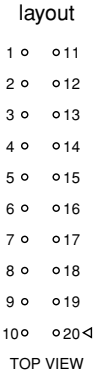
mm inch



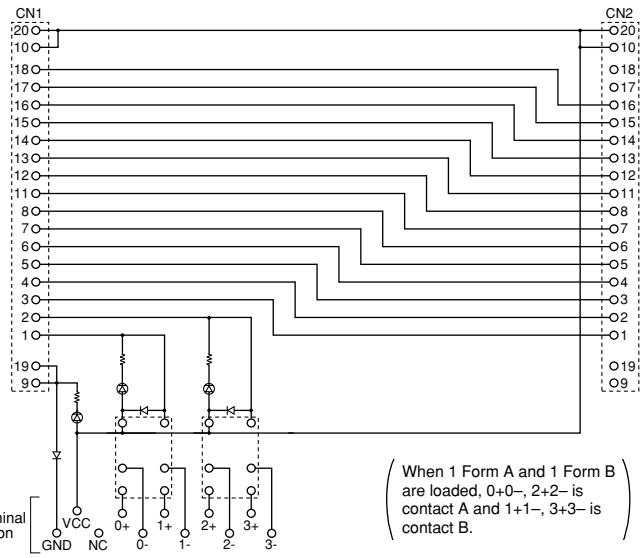
RT1-OD02-12V-S
RT1-OD02-24V-S



Connector pin layout



Terminal layout and schematic

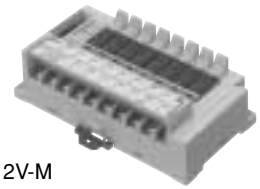


When 1 Form A and 1 Form B are loaded, 0+0–, 2+2– is contact A and 1+1–, 3+3– is contact B.

Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.

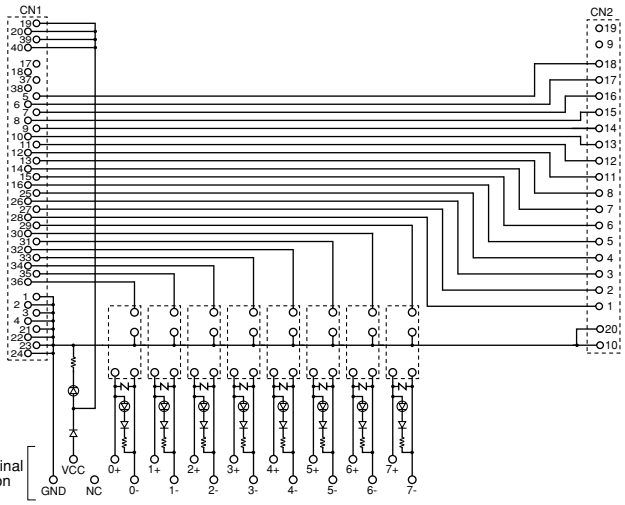
General tolerance: ±0.3 ±.012

8. -(1) PC relay terminal M type input 8 points

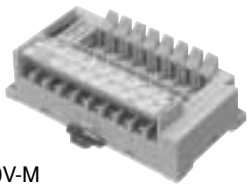


RT1S-ID08-12V-M
RT1S-ID08-24V-M

Terminal layout and schematic (for AC) (PC terminal only)

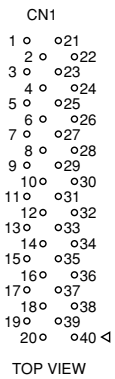


8. -(2) PC terminal M type input 8 points



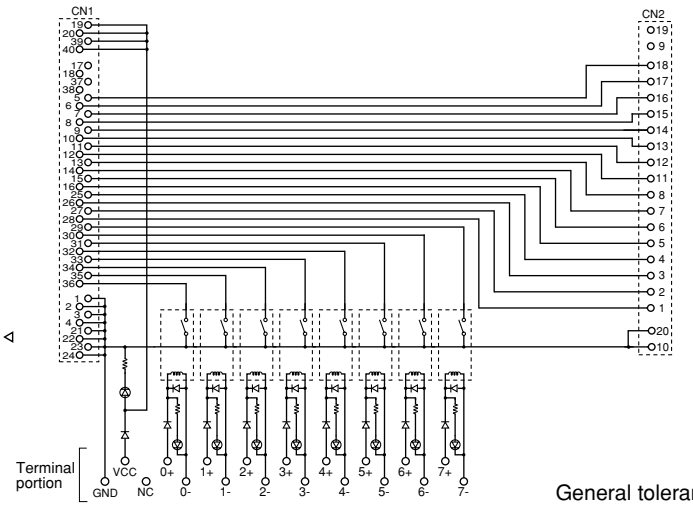
RT1-IA08-100V-M
RT1-IA08-200V-M
RT1-ID08-12V-M
RT1-ID08-24V-M

Connector pin layout

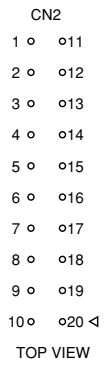


Terminal layout and schematic (for DC)

The figure below is of the PC relay terminal. A relay is not equipped on the PC terminal.



Connector pin layout



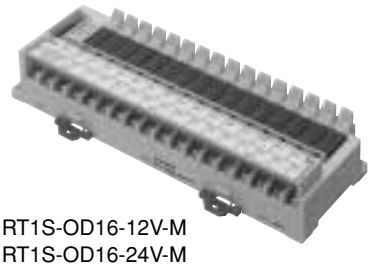
Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.
The dimensions given in the diagram are the same for the PC relay terminal and PC terminal. However, a relay is not equipped on the PC terminal.

General tolerance: ±0.3 ±.012

Dimensions and Panel cutouts are the same as those of PC relay terminal S type input 8 points type. However, be aware that only the connector is different for the S and M types.

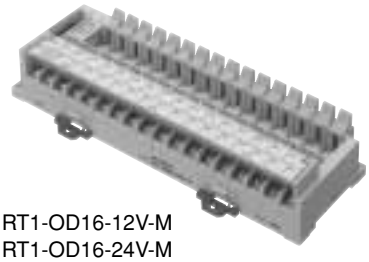
9. -(1) PC relay terminal M type input 16 points

mm inch



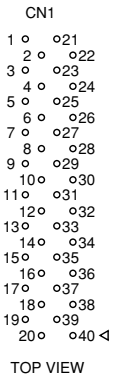
RT1S-OD16-12V-M
RT1S-OD16-24V-M

9. -(2) PC terminal M type input 16 points



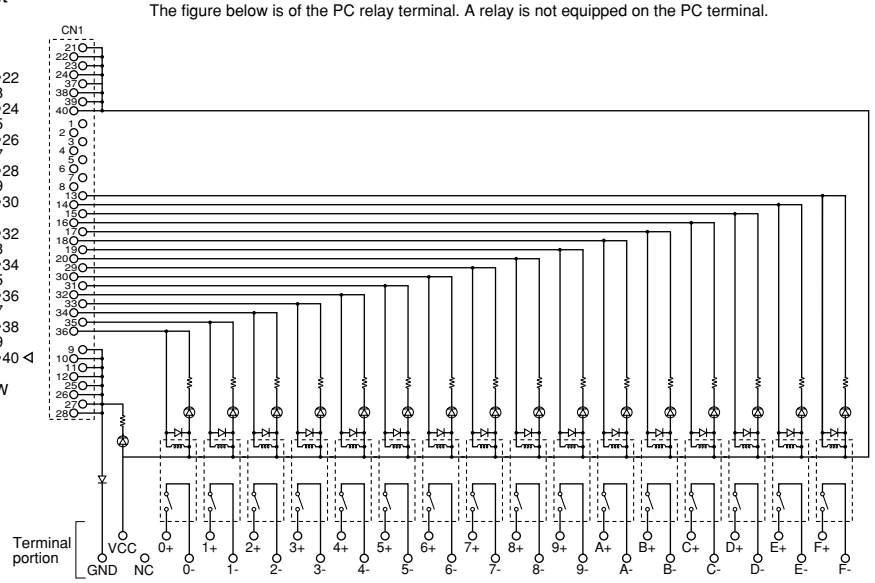
RT1-OD16-12V-M
RT1-OD16-24V-M

Connector pin layout



Terminal layout and schematic (for DC)

The figure below is of the PC relay terminal. A relay is not equipped on the PC terminal.



Note: Above terminal number is not marked on the terminal itself.
Wiring should be done according to the △ mark.
The dimensions given in the diagram are the same for the PC relay terminal and PC terminal. However, a relay is not equipped on the PC terminal.

General tolerance: ±0.3 ±.012

Dimensions and Panel cutouts are the same as those of PC relay terminal S type 8 points type. However, be aware that only the connector is different for the S and M types.

CAUTIONS FOR USE

1. Part number

PC relay terminal is a terminal device on which PC relays are mounted.

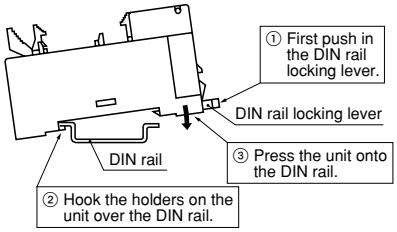
Ex.) Part No. of PC terminal
RT1-OD16-24V-S
Part No. of PC relay terminal
RT1S-OD16-24V-S

'S' is inserted to denote PC relay terminal.

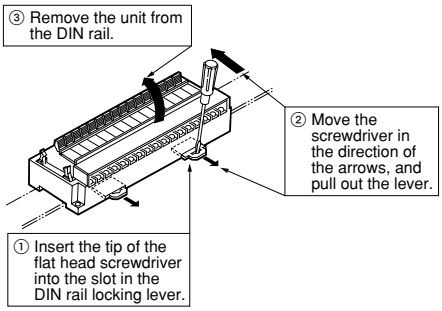
2. Installation

1) Perform mounting hole cutout according to the panel cutout drawings.

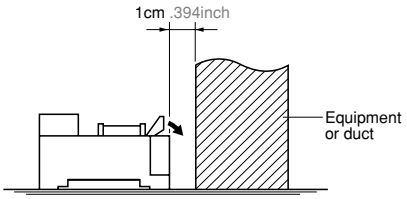
2) When installing the unit on a DIN rail, use the DIN rail locking lever on the side of the unit. Installation is accomplished by simply fitting the unit onto the rail and pressing.



To remove the unit from the DIN rail, use a flat head screwdriver to pull out the DIN rail locking lever.



3) When installing the PC terminal to the control panel, leave at least a 1 cm space between the PC terminal and neighboring equipment or ducts in order to ensure a space where the relay removal levers can operate.



4) Be careful not to drop or shock the unit. Excessive shock such as dropping may cause damage or malfunction.

3. Wiring and circuit configuration

1) Make all connections according to the schematic. DC specifications have polarity. The upper stage of the PC terminal is positive, and the lower stage is negative.

2) The "NC" terminal indicated in the schematic has no electrical connections. It can be used as a relay terminal.

3) When wiring power lines or power cables, twisted pair treatment (standed wire treatment) should be done in order to improve noise resistance.

4) When the load output device is an inductive load type, installing a diode and surge absorber to both ends of the load is recommended.

5) In order to improve noise resistance, class 3 grounding of the control panel is recommended.

6) Do not pass the wiring over the surface of the case. (When unavoidable, keep the wire at least 3 cm 1.181 inch away from the surface of the case.)

7) Turn off the power before connecting/disconnecting connector cables.
When connecting cables, align the cable connector 'Black triangle' mark with the mark of the PC terminal main unit and connect it. Incorrect insertion may cause malfunctions.

4. Installing and removing the interface relay and SSR

1) Turn the terminals of the interface relay and SSR in the same direction as the jack support and insert them securely.

2) The interface relay and SSR can be easily removed by lowering the removal levers to the outside. When the levers are forcibly put down, the interface relay and SSR may jump out. Put your hand on the relay or SSR lightly and operate the levers.

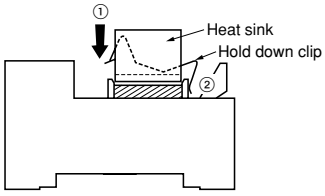
5. Continuous parallel operation of interface relay and SSR

When performing a continuous parallel operation of the interface relay and SSR, use them according to the "load current vs. ambient temperature characteristic drawing" and "Input voltage vs. ambient temperature characteristic drawing".

6. Installing and removing the heat sink

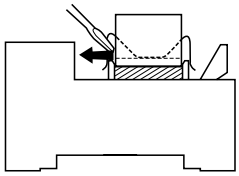
1) Install the heat sink according to the following drawing (Fig.1). Remove it according to the following drawing (Fig.2).

2) Do not apply silicone grease to the heat sink. It may cause insufficient contact of the jack support.



Installation (Fig.1)
① Hold one side of the heat sink.
② Press it down and hold the other side of it.

Removal (Fig.2)
Insert a pair of tweezers of thin screwdriver and remove the spring in the direction of the arrow.



7. Operating environment

1) Use the product at ambient operating temperature between 0°C and 55°C 32°F and 131°F. (When installing in the control panel, take heat release into due consideration. Installing of the product at 90 degrees to the control panel is recommended. When installing the product horizontally or placing it on a heating unit, use a cooking fan.)

2) Keep the supply voltage within the range of 90% to 110%V of the rated voltage.

3) Keep the product as far away as possible from power cables, high tension equipment, power equipment, equipment with transmitting devices such as amateur radios, or equipment which generates a large switching surge.

4) The main unit is made of resin; therefore, do not use it in areas where it may come in contact with (or be exposed to) organic solvents such as benzine, thinner, and alcohol, or strong alkaline substances such as ammonia and caustic soda.

5) Do not use the product in areas where it may be exposed to flammable gases, corrosive gases, excessive dust, or moisture, or areas where it may be subjected to strong vibration or shock.

8. Transporting and storage

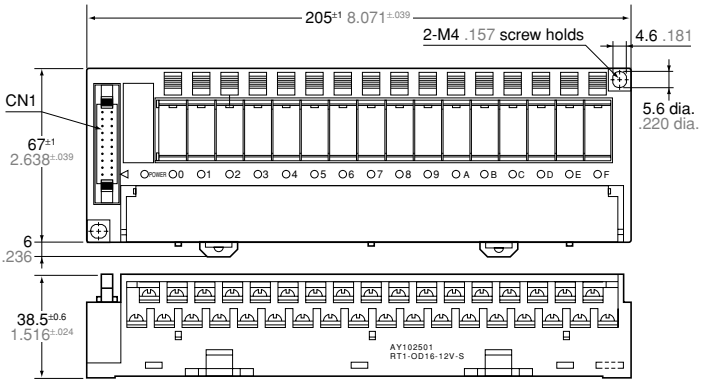
1) If the product is subjected to extreme vibration while being transported, the relays may become detached, the lead may become bent, and the unit may become damaged. Handle the inner and outer boxes with care.

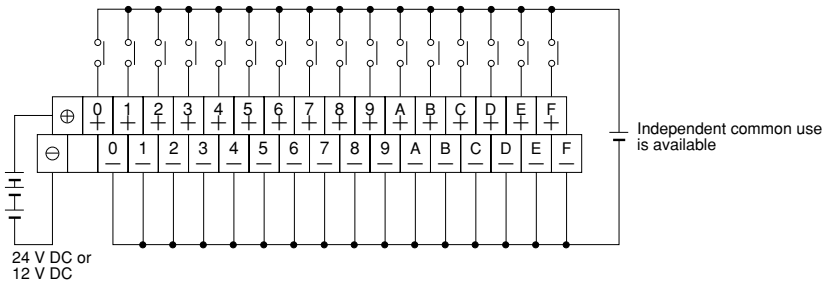
2) If the product is stored in an extremely adverse environment, visible defects and deterioration of performance characteristics may result. We recommend the following storage conditions.

- Temperature: 5 to 30°C 41 to 86°F
- Humidity: Max. 60% R.H.
- Environment: No hazardous substances such as sulfurous acid gases and little dust.

9. Precautions regarding wiring

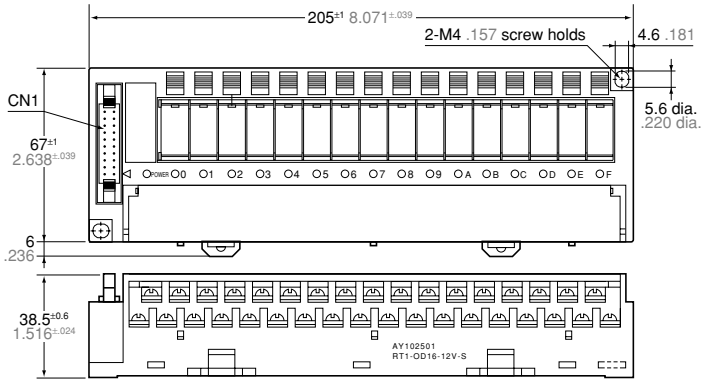
1) For input

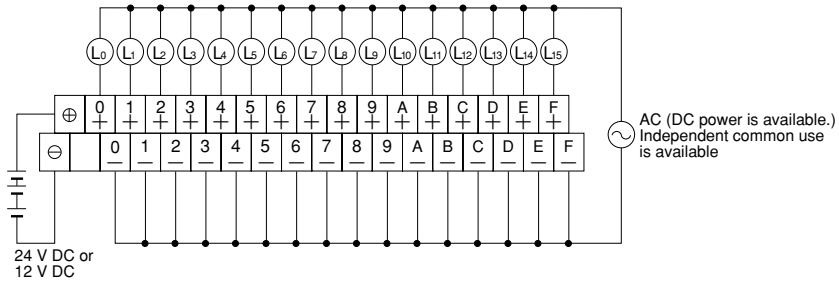




• The voltage specifications (relay and terminal) are provided. When using the PC relay terminal, supply power to terminals (O+ to F+, O- to F-) according to the voltage specifications (relay and terminal). For DC specifications, pay attention to the polarity. A short-circuit plate is also available.
• Supply the rated voltage (24 V DC or 12 V DC) of the input circuit on the controller (PC etc.) to the power input terminals ((+), (–)). Use a noiseless power supply.
• When a 1-to-2 cable connector is connected to the input terminal, use an input-only cable connector. If an output cable connector is used, it may cause damage or malfunction.

2) For output





• The voltage specifications (relay and terminal) are provided. Either 12 V DC or 24 V DC can be selected using the connecting controller. Since terminals (O+ to F+, O- to F-) are output contacts, supply power according to the load. A 4-point short-circuit plate is also prepared.
• The power input terminals ((+), (–)) are used as a drive power supply for the relay and as an extra power supply for the output transistor of the controller. Match the voltage specifications of the controller to those of this unit. Use a noiseless power supply.
• When a 1-to-2 cable connector is connected to the output terminal, use an output-only cable connector. If an input cable connector is used, it may cause damage or malfunction.

CONNECTING GENERAL PURPOSE POWER RELAYS

1. The main unit can be connected to general purpose power relays. (NC relay, HC relay, HL relay)

Connecting NC, HC and HL relays to the PC terminals allows the load switching of high capacity, application to C contact and application to multi-electrode contacts.

1) When an HC relay is connected to the output 8-point or 4-point PC terminal, it can be connected from the expansion connector. For connection from the expansion connector, our AZW bulk wire pressure welding socket is recommended. For the wiring, see the schematic of each terminal.

2) When the output terminal jumper relay is installed and the voltage output from a controller (PC etc.) is taken out to the terminal screw terminal, the PC terminal can be connected to the HC and HL terminal sockets (the effect is the same as Fig. 1).

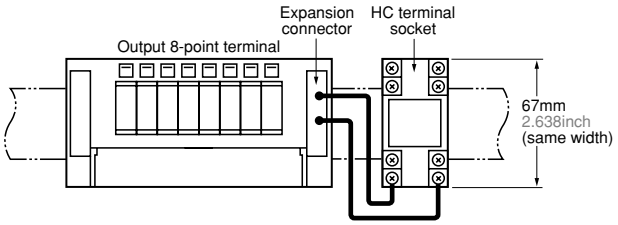


Fig. 1

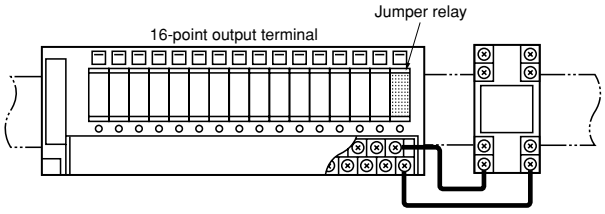


Fig. 2

Note: Set the current capacity per output of a controller (PC, etc.) to more than the rated current of the HC or HL relay.

EXPANSION OF PC TERMINAL

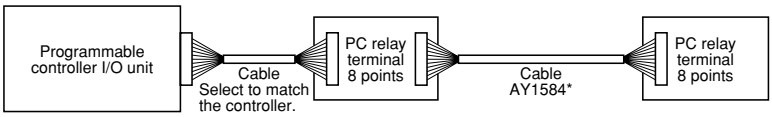
1. When expanding the PC terminal, remove the expansion connector cover (EXPANDER CONNECTOR).

2. An expansion cable is available.

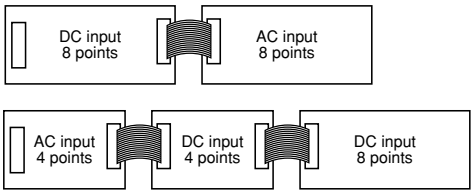
See page 46.

3. Example of expansion

1) The number of I/O points can be increased to 16 points.



2) Since the AC input terminal can be expanded to the DC input terminal and vice versa, the number of DC and AC input points can be divided within the range of 16 points.
Example:



4. Power supply when expanding

When expanding the PC terminal, be sure to supply power to the expansion PC terminal block screw terminals (+)(–)(see the drawing shown below).

Even when power is supplied to the expanded PC terminal, it will not operate. The Power LED lights up only for the expansion PC terminal and it does not light for the expanded PC terminal.