Relays–and–terminal module RS type

Relays-and-terminal module RS4□, 6N

A very compact, space-saving terminal module containing four or six relays with one NO contact.

■ Features

- The RS series relays-and-terminal module consists of four or six plug-in relays (RB105, 1NO contact or RB011, 1NC contact) and a terminal module with screw terminals. This relays-and-terminal module is ideal for interfacing electronic control devices (such as PLCs or photoelectric sensors) with output devices (such as solenoid valves and magnetic contactors).
- The use of ultra-small, high-sensitive relays has realized a compact size of 34mm wide and 69mm long, including screw terminals (RS4N type).
- Input terminals are located in the upper part and output terminals in the lower part of the module to separate them from each other, thereby making wiring easy.
- The terminal module uses RB105 or RB101 card relays. For replacement, please specify the card relay type and coil voltage.
- Built-in coil-surge suppression diodes and operation indicator LEDs simplify circuit design and maintenance.
- The module is quickly-mountable on a DIN 35mm rail.
- The RS4N module includes two standard accessory jumper plates, which are convenient for common wiring of terminals.

RS4N

KKD06-058

■ Type number nomenclature

RS 4N-DE P

- **Connector side polarity (For RS6N type only)**
  - NPN type (+common): Blank
  - PNP type (-common): P
- **Rated voltage**
  - DC: 4.5V DC
  - DY: 5V DC
  - DA: 6V DC
  - DD: 9V DC
  - DB: 12V DC
  - DE: 24V DC
- **Output contact**
  - 4N: 4NO
  - 41: 3NO+1NC
  - 42: 2NO+2NC
  - 6N: 6NO
- **Relay and terminal**

■ Specifications

Type	RS4N, RS41, RS42, RS6N, RS6NP	
Contact	1NO	1NC
Contact resistance Contact material	30mΩ or less (before use) Silver alloy (Au-plated)	
Min. operating voltage and current	0.1V DC, 1mA	1V DC, 1mA
Rated thermal current	5A	
Max. make/break current	250V AC, 5A 30V DC, 5A	250V AC, 1A 30V DC, 1A
Operating time Release time Insulation resistance Dielectric strength: Between contact and coil Between contacts of same pole Between contacts of different pole Between coils of different pole	10ms. or less at rated voltage 10ms. or less at rated voltage 100MΩ (at 500V DC megger) 2000V AC 1 minute 750V AC 1 minute 2000V AC 1 minute 500V AC 1 minute	
Vibration: Malfunction durability Mechanical durability	10 to 55Hz, 1mm double amplitude 10 to 55Hz, 1.5mm double amplitude	
Shock: Malfunction durability Mechanical durability	100m/s² 1000m/s²	
Durability: Mechanical Electrical	20 million operations *See page 03/17*	
Ambient temperature	–25 to +55°C (no icing)	

■ Operating coil of card relays

Relay	Coil voltage	Pick-up voltage	Drop-out voltage	Power consumption	Coil resistance
RB105 (1NO)	4.5V DC 5V DC 6V DC 9V DC 12V DC 24V DC	70% or less of rated coil voltage	5% or more of rated coil voltage	200mW	100Ω 125Ω 180Ω 405Ω 720Ω 2880Ω
RB011 (1NC)	4.5V DC 5V DC 6V DC 9V DC 12V DC 24V DC			360mW	56Ω 70Ω 100Ω 225Ω 400Ω 1600Ω

■ Relay remover

To remove a relay from the terminal module, use the type TY3 relay remover sold separately. Pull the relay in a direction perpendicular to the terminal module surface.
Incorrectly removing or mounting a relay may damage the relay pins and pin jacks of the module.

TY3(RZ3A)

AF93-206

■ Ordering information

Specify the following:
1. Type number

■ Electrical durability

● NO output contact

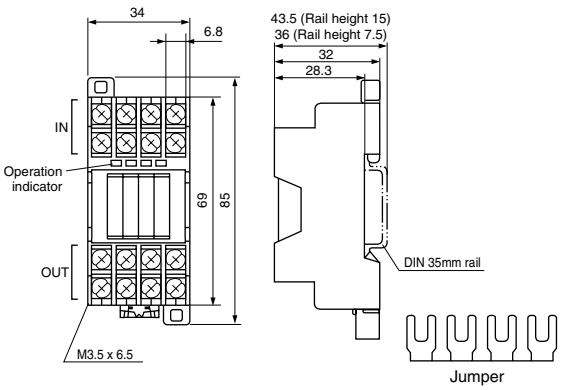
Voltage	Make current (A)	Break current (A)	Operations
220V AC (inductive load)	20 (cos ø = 0.7)	2 (cos ø = 0.3–0.4)	100,000
220V AC (resistive load)	3 (cos ø = 1.0)	3 (cos ø = 1.0)	130,000
24V DC (inductive load)	1 (T= 15ms)	1 (T= 15ms)	150,000
24V DC (resistive load)	5 (T= 1ms or less)	5 (T= 1ms or less)	100,000

● NC output contact

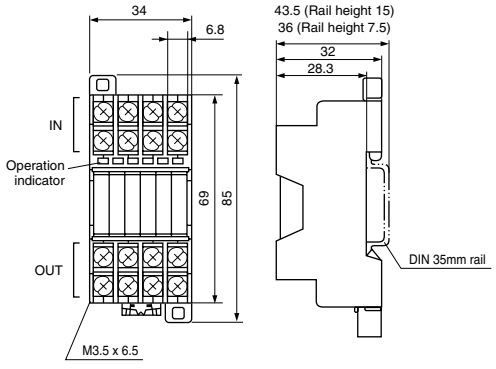
Voltage	Make current (A)	Break current (A)	Operations
220V AC (resistive load)	1 (cos ø = 1)	1 (cos ø = 1)	100,000
24V DC (resistive load)	1 (L/R= 0ms)	1 (L/R= 0ms)	120,000

■ Dimensions, mm

● RS4N (RS4A, RS4D)

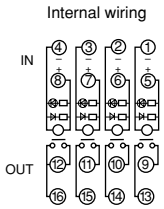


● RS6N (RS6A, RS6D)

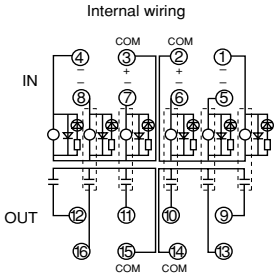


■ Wiring diagrams

● RS4N

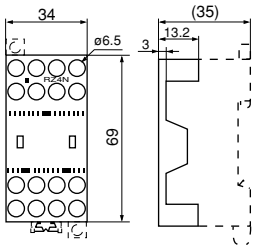


● RS6N



■ Finger protection cover

● RZ4N

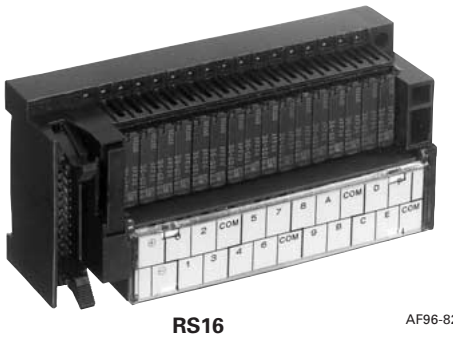


See page 03/23.

Relays–and–terminal module RS type

Relays-and-terminal module RS16

16-point relays-and-terminal module with the smallest width in its class



RS16 AF96-82

■ Features

- Most compact in its class
  Outside dimensions are 110mm (W), 52mm (D), and 37mm (H). The width is the smallest in this class.
- Push-to-set (quick-connect) terminals for easy wire connection
  A unique terminal structure enables quick and easy crimp terminal connections without removal of screws. (No more lost screws)
- Clear LEDs indicate relay output status.
  Each relay has an LED to indicate its ON/OFF status.
- A surge suppressing diode is provided for each relay coil.
- Terminal cover with label for marking device Nos.
- Built-in relay remover
- DIN rail quick mount and panel-surface mount using screws

■ Type number nomenclature

RS 16 E - DE 04 P

Relays and terminal

No. of poles
16: 16-pole

Input/output
E: DC input
Blank: Relay output

Rated voltage
DY: 5V DC
DE: 24V DC

Connector maker
04: Hirose Electric Co., Ltd.

Connector side polarity
Blank: NPN type (+common)
P: PNP type (-common)

■ Ordering information

Specify the following:
1. Type number

■ Types

Type	Input/output	No. of poles	Rated voltage	Connector side polarity
RS16-□04	Output	16(1NO×16)	5V DC	NPN type (+common)
RS16-□04P			24V DC	PNP type (-common)
RS16E-□04	Input			NPN type (+common)

Note: Enter the rated voltage code in the □ mark as follow. 5V DC: DY, 24V DC: DE

■ Ratings

● Operating coil

Rated voltage	Rated operational current (mA)	Coil resistance (Ω)	Pick-up voltage	Drop-out voltage	Power consumption (W)
24V DC	8.3	2,880±10%	70% or less	10% or more	0.2/1NO contact
5V DC	40	125±10%	of coil rated voltage	of coil rated voltage	3.2/16NO contacts

Note: An LED flows approx. 1mA. To calculate the power requirements, calculate the total coil and LED currents of all relays installed in the terminal module.

● Contact

Terminal relay type		RS16 (output)	RS16E (input)
Rated current	220V AC (Res. load)	2A	–
	220V AC (Ind. load)	2A	–
	24V DC (Res. load)	2A	1A
	24V DC (Ind. load)	2A	1A
Rated thermal current*		2A	1A
Electrical durability (operations)		200,000 at 200V AC, 2A 300,000 at 24V DC, 2A	
Mechanical durability (operations)		20,000,000	

Note * The contact current rating of the RB105 relay used in this module is 5A. The thermal current rating of this terminal module, however, is 2A or 1A due to limitations of the terminal module (RS16) rating.

■ Performance data

Operating time		10ms or less
Release time		10ms or less
Vibration	Malfunctions durability	10–55Hz 1mm double amplitude
	Mechanical durability	10–55Hz 1mm double amplitude
Operating ambient temperature		-25–55°C(no icing)
Operating ambient humidity		35-85%RH
Terminal screw size		M3
Tightening torque		0.5–0.7N • m
Mounting		Rail mounting (screw mounting also available)
Applicable crimp terminal		R1.25–3 (Max. 6mm wide)
Applicable wire size		Max. ϕ1.4
LED color	Operation indication	Red
	Power source indication	Green
Coil surge suppressor		Diode
Insulation resistance (before use)		100MΩ (500V DC megger)
Dielectric strength	Between contact and coil	2000V AC, 1 minutes
	Between open contacts	750V AC, 1 minutes
	Between contacts of opposite polarity	2000V AC, 1 minutes
Mass		200g

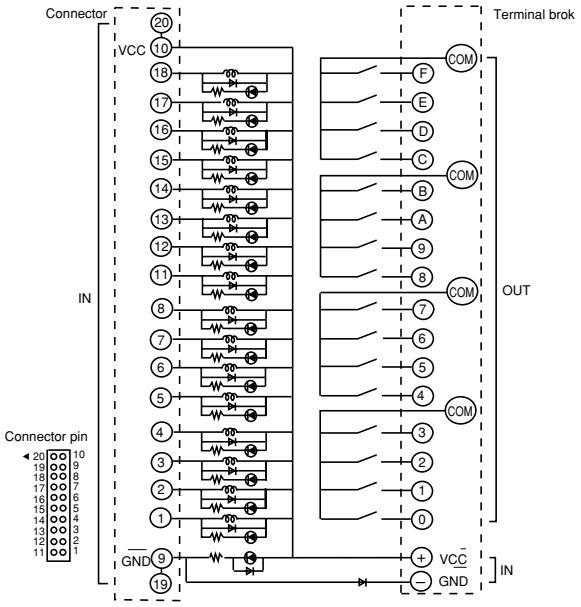
■ Cable types

Type		Cable length	Type (Ordering code)
Cable with applicable crimp terminal (ring)		1,000mm	RS910B1-0104
		2,000mm	RS910B1-0204
		3,000mm	RS910B1-0304
Cable with connectors (1:2)	FUJI ELECTRIC FA PLC	1,000mm	RS910F2-0104
		2,000mm	RS910F2-0204
		3,000mm	RS910F2-0304
	Mitsubishi electric Corp. PLC	1,000mm	RS910M2-0104
		2,000mm	RS910M2-0204
		3,000mm	RS910M2-0304
	OMRON PLC	1,000mm	RS910T2-0104
		2,000mm	RS910T2-0204
		3,000mm	RS910T2-0304
Cable with connectors (1:1)	Multicore cable	1,000mm	AUX014-201(LP914-201)
		2,000mm	AUX014-202(LP914-202)
		3,000mm	AUX014-203(LP914-203)
	Flat cable	1,000mm	AUX024-201(LP924-201)
		2,000mm	AUX024-202(LP924-202)
		3,000mm	AUX024-203(LP924-203)

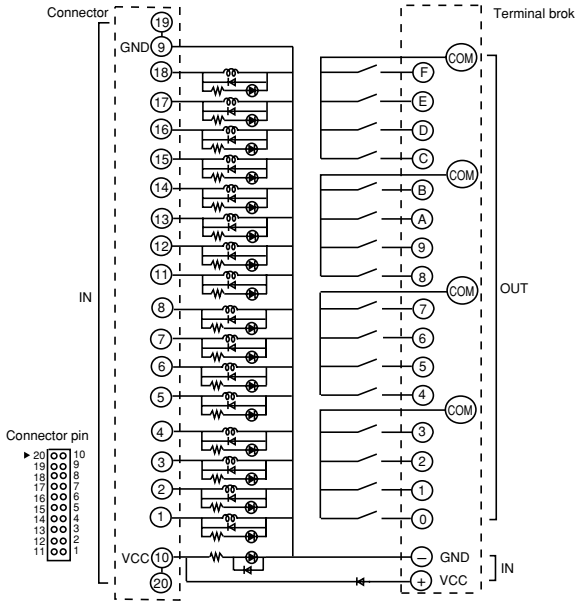
Note: The ordering codes of the cables with connectors (1:1) differ from the type.
The ordering codes are in parentheses.

■ Wiring diagrams

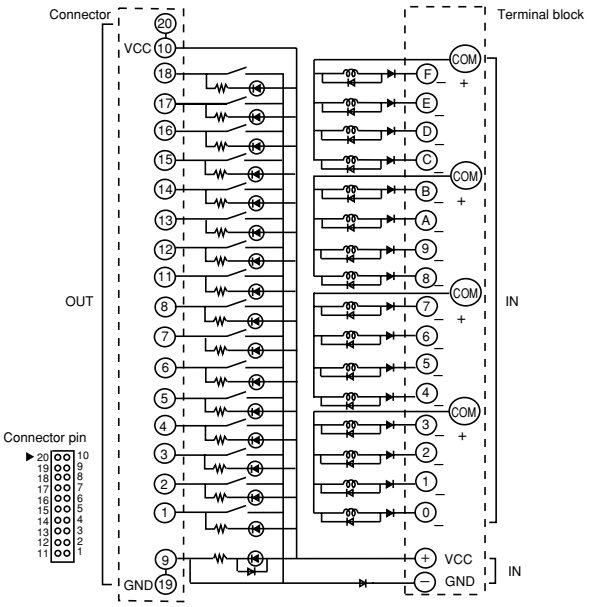
● RS16-DE04 (Output, NPN type)



● RS16-DE04P (Output, PNP type)

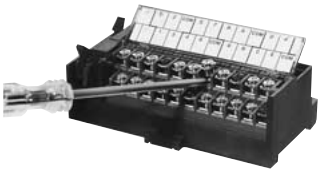


● RS16E-DE04 (Input, NPN type)



■ How to use a push-to-set terminal (Quick-connect terminal)

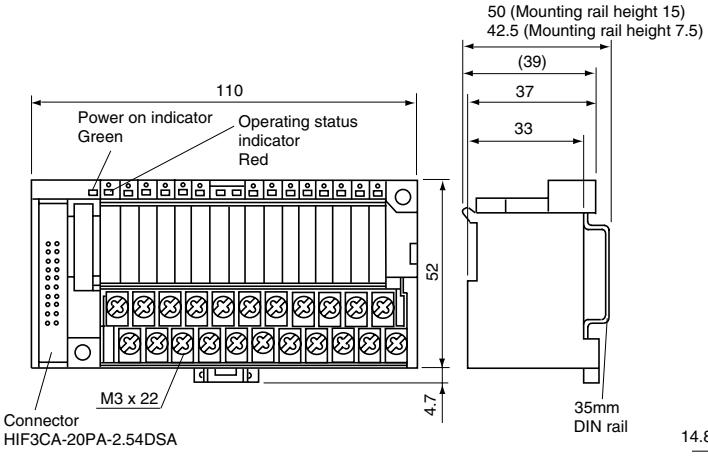
Lift the screw head up with a screw driver tip.

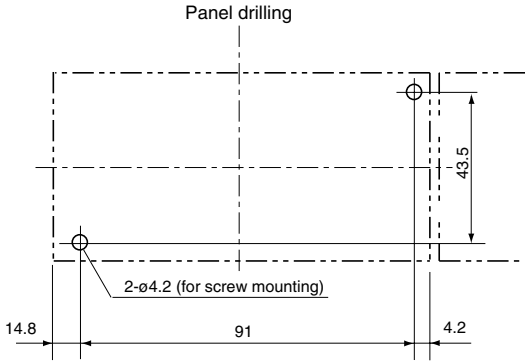


Insert the crimp terminal of the wire into the slot under the screw.

Use a screwdriver to tighten the screw.

■ Dimensions, mm



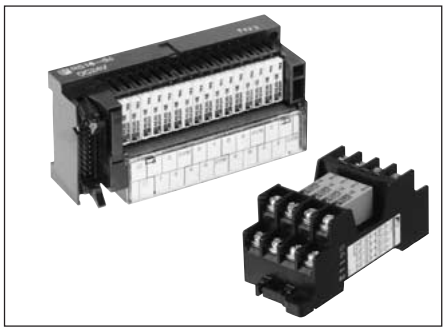


Relays–and–terminal module
RS type

Relays-and-terminal module with SSR output

■ **Features**

- SSR output (AC and DC)
  Provided with a miniature SSR with the same dimensions as the RB-series miniature card relay resulting in a longer service life and making it ideal for highly frequent switching.
- Slim 34-mm body
  Slim 34-mm design for all models up to 16-pole models allowing significant space savings within the panel.
- Both surface mounting and DIN rail mounting are possible
- Provided with operation indicators
- Easy relay maintenance with special socket (type TP04)
- RZ4N finger protector also available. (Sold separately.)



■ **Type number nomenclature**

RS 4 A - DE

Rated voltage
DY: 5V DC
DB: 12V DC
DE: 24V DC

Output
A: SSR (AC output)
D: SSR (DC output)

No. of poles
4: 4-pole
6: 6-pole
16: 16-pole

Relays and terminal

■ **Types**

Type (Ordering code)	Replace the □mark by the rated voltage (code)	Output
RS4A-□	5V DC: DY, 12V DC: DB	SSR (AC output)
RS4D-□	24V DC: DE	SSR (DC output)
RS6A-□		SSR (AC output)
RS6D-□		SSR (DC output)
RS16A-□		SSR (AC output)
RS16D-□		SSR (DC output)

■ **Ordering information**
Specify the following:
1. Type number

■ **Specifications**

Type		**RS4A, RS6A**	**RS16A**	**RS4D, RS6D**	**RS16D**
		DC input-AC output		DC input-DC output	
Main circuit (output)	Rated insulation voltage	250V		250V	
	Rated voltage Vn	100–240V AC		24V DC	
	Operating voltage range	70–250V AC		16.8–26.4V DC	
	Rated frequency	50/60Hz		-	
	Rated thermal current	0.3A	0.15A	0.3A	0.15A
	Leakage current at OFF state (max)	1mA or less		0.1mA or less	
	Minimum load current	20mA		1mA	
	Voltage drop at ON state (max)	1.6V or less		1V or less	
	Zero-cross function	–		–	
	Surge-on current	15A (20ms, 1 shot)		3A (10ms, 1 shot)	
Control circuit (input)	Isolation method	Phototriac		Photocoupler	
	Rated voltage Vn	5V DC / 12V DC / 24V DC		5V DC / 12V DC / 24V DC	
	Operating voltage range	3.5–5.5V DC / 8.4–13.2V DC / 16.8–26.4V DC		3.5–5.5V DC / 8.4–13.2V DC / 16.8–26.4V DC	
	Pick-up voltage	70%Vn or less		70%Vn or less	
	Drop-out voltage	10%Vn or more		10%Vn or more	
	Input impedance	Approx.390Ω / Approx.1kΩ / Approx.2.7kΩ		Approx.390Ω / Approx.1kΩ / Approx.2.7kΩ	
General specification	Ambient temperature (operate)	-25 – +55˚C (no icing)		-25 – +55˚C (no icing)	
	Ambient temperature (storage)	-25 – +80˚C (no condensation)		-25 – +80˚C (no condensation)	
	Relative humidity	35 – 85%RH		35 – 85%RH	
	Dielectric strength	Between input and output terminals 2000V AC 1 min.		Between input and output terminals 2000V AC 1 min.	
	Insulation resistance	Over 100MΩ at 500V DC megger		Over 100MΩ at 500V DC megger	
	Operating time	1ms or less		1ms or less	
	Release time	1/2 cycle +1ms or less		1ms or less	
	Vibration resistance	10 – 55Hz, 1.5mm double amplitude	1mm	10 – 55Hz, 1.5mm double amplitude	1mm
	Shock resistance	100m/s^2		100m/s^2	
	Mass	Approx. 64g	Approx. 200g	Approx. 64g	Approx. 200g

■ Dimensions, mm

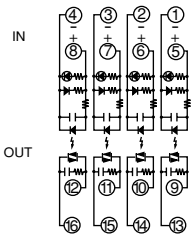
● RS4A, 4D
Same as RS6N
See page 03/17

● RS6A, 6D
Same as RS16
See page 03/17

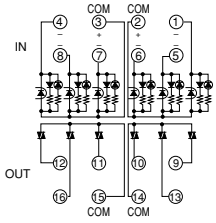
● RS16A, 16D
Same as RS4N
See page 03/21

■ Wiring diagrams

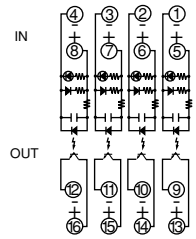
● RS4A



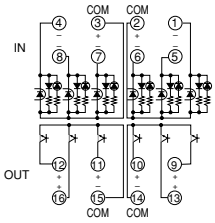
● RS6A



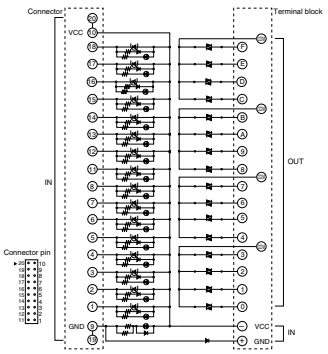
● RS4D



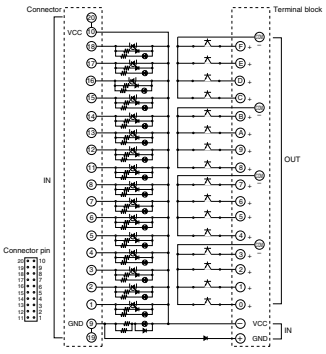
● RS6D



● RS16A



● RS16D



RZ finger protection cover for RS series relays-and-terminal module


KKD06-061

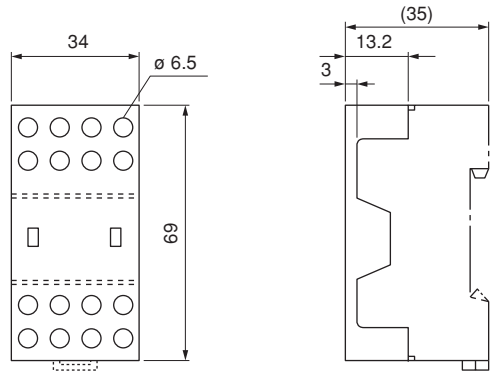
■ Features

- Ensures safety and prevent dust
  This cover prevent persons from touching, by mistake, live conductor parts of the terminal module and receiving an electric shock. The cover also protect relays from dust.
- Hold the relay remover
  The cover surface has two holes to hold the type TY3 relay remover. When the remover is not being used, it can be attached to the cover so that it is not lost.
- The cover is quick-mount
  The cover can be quickly mounted on or removed from the TP04 socket used with RS series relays-and-terminal module.
- The cover can be mounted at any time
  The cover can be mounted on or removed from the socket at any time before or after wiring the terminals.
- Crimp terminal is also available
  It is possible to use a crimp terminal as well as terminal jumper for wiring.

■ Type

Type	Used with
RZ4N	RS4N, 4-pole relays-and-terminal module RS6N, 6-pole relays-and-terminal module

■ Dimensions, mm



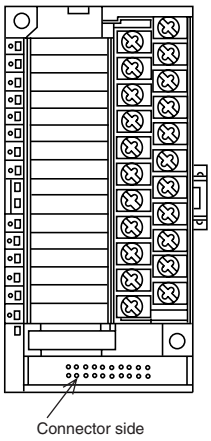
Mass: Approx. 3.2g

■ Notes on use

● Mounting direction

This product can be mounted in any direction. However, to mount the product in a direction which each relay is horizontal, it is recommended that the product will be mounted so that the cable connector is positioned at the bottom. This position ensures the optimal vibration resistance of the relay.

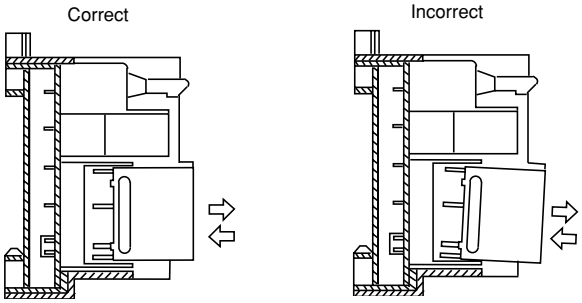
Use optional end clamps (TS-XT) as needed to prevent the relays-and-terminal module from failing off and to ensure correct positioning of the relays.



● Installing and removing a relay

Installing a relay: While holding the relay perpendicular to the socket, insert the relay into the socket as shown below. Incorrect insertion may bend the relay terminals or damage the socket.

Removing a relay: Use the accessory remover to remove the relay from the socket.



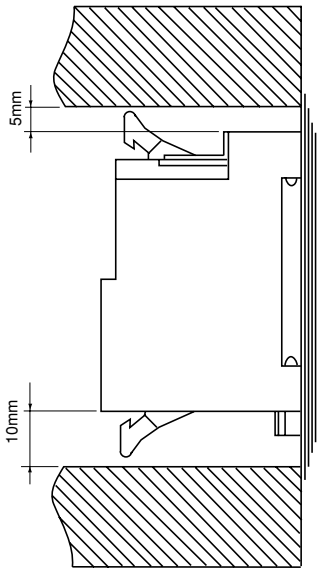
● Component relay

This product uses the RB105 series of card relays as components. When replacing a relay, use a relay of the same type with the same voltage rating as that of the original.

● Make spaces between nearby devices

When mounting this product on a panel, be sure there is adequate space between the product and nearby devices and cable ducts, as shown in the figure at right.

This space enables operation of the connector-ejecting levers.



● Applicable cable connectors

Use Fuji Electric's connectors for cable connections (optional). Use of any other connector may damage the module connector or cause faulty connections.