Relay Terminal Block (4/16-point)

ABS Series

PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Screw type connection for stable and reliable connection
- Compact, space-saving design
- Switch between independent and load common output with jumper bar
- Operation status indicator (blue LED)
- DIN rail mount and screw mount installation
- Convenient relay removal with ejector clip and release lever
- Relay protection cover

※ Autonics CH/CO series I/O terminal block cables are recommended for best performance

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

01. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.(e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
    Failure to follow this instruction may result in personal injury, economic loss or fire.
02. **Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
    Failure to follow this instruction may result in explosion or fire.
03. **Do not connect, repair, or inspect the unit, remove connector, or change Relay while connected to a power source.**
    Failure to follow this instruction may result in fire or electric shock.
04. **Do not disassemble or modify the unit.**
    Failure to follow this instruction may result in fire or electric shock.

⚠ Caution Failure to follow instructions may result in injury or product damage.

01. **Use the unit within the rated specifications.**
    Failure to follow this instruction may result in fire or product damage.
02. **Use a dry cloth to clean the unit, and do not use water or organic solvent.**
    Failure to follow this instruction may result in fire or electric shock.
03. **Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
    Failure to follow this instruction may result in fire or product damage.
04. **Do not use the product when a screw of terminal is loosened.**
    Failure to follow this instruction may result in fire or product damage.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Check the polarity of power or COMMON before connecting PLC or other controllers.
- Do not touch the unit immediately after the load power is supplied or cut.
  It may cause burn by high temperature.
- 24VDC⎓ power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise. Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.). In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

Product Components

- Product
- Instruction manual
- Two Way Ejector
- 4-point model: 4-pin 7.62 mm pitch jumper bar (JB-7.62-04)
  16-point model: 8-pin 7.62 mm pitch jumper bar (JB-7.62-08)

Sold Separately

- 7.62 mm pitch jumper bar (4-pin: JB-7.62-04, 8-pin: JB-7.62-08)
- I/O cable CH/CO Series

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

ABS - ❶ ❷ ❸ - ❹ ❺

❶ Connector type
S: Screw
H: Hirose connector

❷ Number of relay
04: 4-point
16: 16-point

❸ Relay type
PA: APAN3124 [MATSUSHITA (Panasonic)]
TN: NYP24W-K [TAKAMISAWA (Fujitsu)]

❸ Input logic
C: No COM
N: NPN (+COM)
P: PNP (-COM)

❺ Varistor
N: None

Specifications

Model	ABS-S04□-CN	ABS-H16□-□
Applied relay 01)	PA: APAN3124 [MATSUSHITA (Panasonic)] / TN: NYP24W-K [TAKAMISAWA (Fujitsu)]	
Output method	1a	1a
Power supply	≤ 24 VDC⎓ ±10 %	≤ 24 VDC⎓ ±10 %
Current consumption	PA: ≤ 8 mA 02) TN: ≤ 8.5 mA 02)	PA: ≤ 8 mA 02) or ≤ 13 mA 03) TN: ≤ 8.5 mA 02) or ≤ 13.5 mA 03)
Relay output rated spec. 04) 05)	250 VAC~ 50/60 Hz 3A, 30 VDC⎓ 3A	250 VAC~ 50/60 Hz 3A, 30 VDC⎓ 3A
No. of connector pins	-	20
Connector for controller side	-	20-pin Hirose (HIF3BA-20PA-2.54DSA)
No. of relay points	4	16
Terminal type	Screw	Screw
Terminal pitch	7.62 mm	7.62 mm
Indicator	Operation indicator: blue	Power indicator: red, operating and disconnection indicator: blue
Varistor	None	None
Input logic	-	NPN / PNP model
Material	CASE, BASE: MPPO, terminal pin: brass	CASE: MPPO, BASE: PA66 (G25%), terminal pin: brass
Approval	CE KC cULus EAC 06)	CE KC cULus EAC 06)
Unit weight (packaged)	PA: ≈ 68 g (≈ 104 g) TN: ≈ 71 g (≈ 107 g)	PA: ≈ 224 g (≈ 307 g) TN: ≈ 235 g (≈ 318 g)

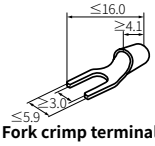
01) For the detailed information about each relay, please refer to 'Power Relay' or data sheet from the manufacturer.
02) It is current consumption for a relay including LED current.
03) It is current consumption including LED current for power part to 2).
04) This value is rated with resistive load.
05) When connecting loads to output part, please connect loads of same power type.
Connecting loads of different power type may cause safety issues.
06) 30 VDC⎓ of rated load voltage is not subjected to UL Listed.

Insulation resistance	≥ 1,000 MΩ (500 VDC⎓ megger)
Dielectric strength (coil-contact)	3,000 VAC~ 50/60 Hz for 1 minute
Dielectric strength (same polarity contact)	PA: 1,000 VAC~ 50/60 Hz for 1 minute TN: 750 VAC~ 50/60 Hz for 1 minute
Vibration	0.75mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours
Vibration (malfunction)	0.75mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 min
Shock	500 m/s² (≈ 50 G) in each X, Y, Z direction for 3 times
Shock (malfunction)	147 m/s² (≈ 15 G) in each X, Y, Z direction for 3 times
Ambient temperature	-15 to 55 °C, storage: -25 to 65 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)

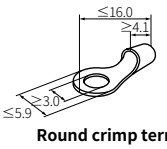
Applicable wire - stranded	AWG 22-16 (0.30 to 1.25 mm²)
Tightening torque	0.5 to 0.6 N·m

Crimp Terminal Specifications

• Unit: mm, Use the UL approved crimp terminal.



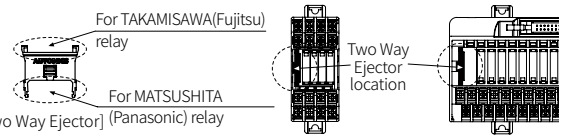
Fork crimp terminal



Round crimp terminal

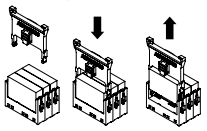
Replacing Relay

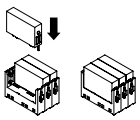
1. Disassemble a relay by using Two Way Ejector for relay replacement inside the product.



[Two Way Ejector]

2. After checking the location of the relay socket, insert the relay to be replaced.

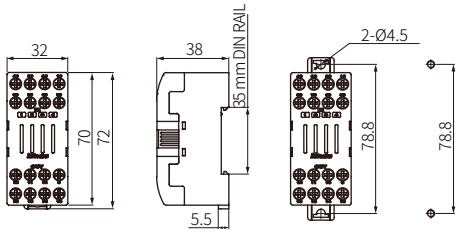

[Disassembling relay using Two Way Ejector]


[Inserting relay]

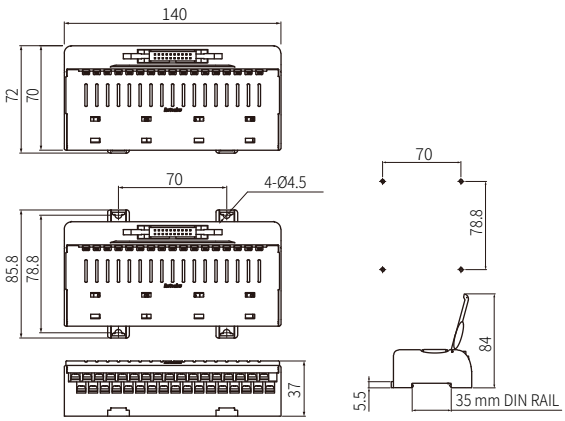
Dimensions

• Unit: mm, For the detailed drawings, follow the Autonics website.

■ 4-point



■ 16-point

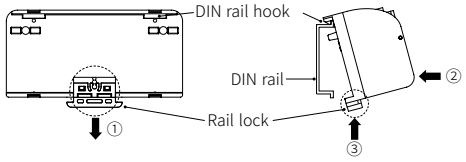


Installation

■ DIN Rail

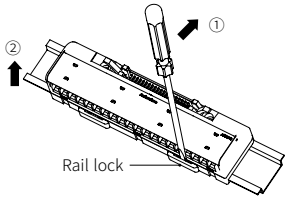
• Mounting

1. Pull the Rail lock on the rear of the product to the direction ①.
2. Hang DIN rail hook on the rear of the product onto DIN rail.
3. Push the product to the direction ②, and push the Rail lock to the direction ③ to fix onto the DIN rail.



• Removing

1. Insert a tool such as screwdriver into the hole of Rail lock.
2. Push the tool to the direction ① and pull the Rail lock.
3. Lift bottom of the product to the direction ② and remove the product from DIN rail.

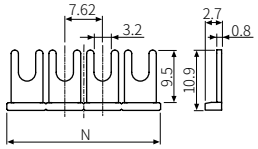


■ Panel

Product with the mounting hole can be installed on panel with screw.
It is recommended to use M4×15 mm of spring washer screws.
If you use flat washer, its diameter should be Ø 6 mm.
Tighten the screw with the tightening torque of 0.7 to 1.0 N·m.

7.62 mm Pitch Jumper Bar

1. Using a nipper, cut the notches on the jumper bar as much as you need.
2. Loosen the screws which are needed to be common.
3. Insert the jumper bar under the loosen screws.
4. Tighten the screws.

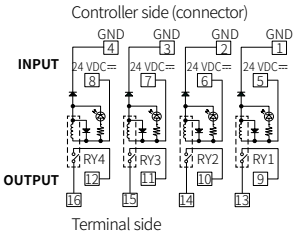


Model	The number of jumper pins	N
JB-7.62-04	4	29.5
JB-7.62-08	8	60.0

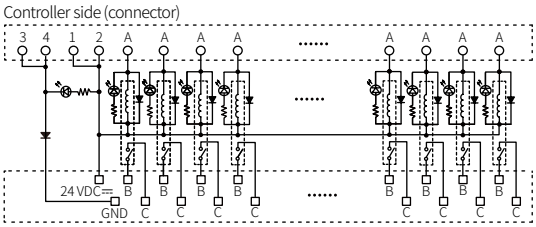
Wire Connection

■ Wire connection

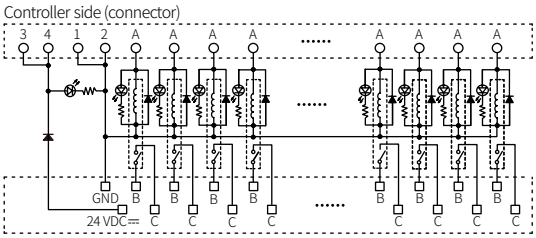
• 4-point



• 16-point NPN



• 16-point PNP

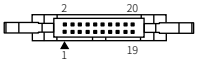


A	Pin	20	18	16	14	12	10	8	6	19	17	15	13	11	9	7	5
B	Upper terminal	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
		R1+	R2+	R3+	R4+	R5+	R6+	R7+	R8+	R9+	R10+	R11+	R12+	R13+	R14+	R15+	R16+
C	Low terminal	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
		R1-	R2-	R3-	R4-	R5-	R6-	R7-	R8-	R9-	R10-	R11-	R12-	R13-	R14-	R15-	R16-

■ Hirose connector pin arragement

• 20-pin connector

Hirose (HIF3BA-20PA-2.54DSA)



Relay: APAN3124 [MATSUSHITA (Panasonic)]

■ Coil specifications

All values in the table are measured at 20 °C with a tolerance of ±10 %.

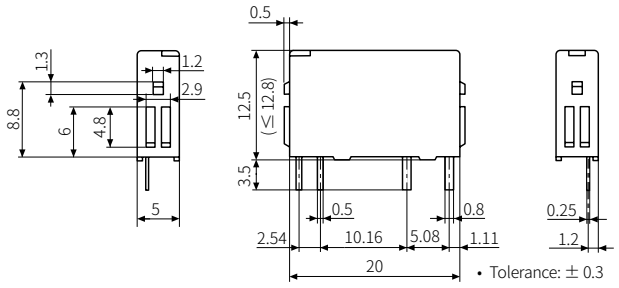
Rated voltage	Operate voltage	Release voltage	Rated current	Coil resistance	Power consumption
24 VDC⎓	≥ 70 % of rated voltage	≤ 5 % of rated voltage	7.5 mA	3,200 Ω	180 mW

■ Contact specifications

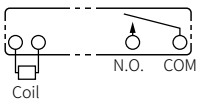
Manufacture	MATSUSHITA (Panasonic)	
Contact arrangement	1 Form A (SPST-1a)	
Contact material	Au-clad AgNi type	
Contat resistance (initial)	30 mΩ (6 VDC⎓ 1 A)	
Rated load	5 A 250 VAC～	5 A 30 VDC⎓
Max. switching capacity	1,250 VA	150 W
Min. switching capacity	100 mVDC⎓ 100 uA	
Max. switching voltage	250 VAC～	110 VDC⎓
Max. switching current	5 A	
Insulation resistance	≥ 1,000 MΩ (500 VDC⎓ megger)	
Dielectric strength (contact-coil)	3,000 VAC～ 50/60 Hz for 1 minute	
Dielectric strength (open contacts)	1,000 VAC～ 50/60 Hz for 1 minute	
Surge voltage	6,000 V	
Operate time	≤ 10 ms	
Release time	≤ 5 ms	
Vibration	3.5 mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 1 hour	
Vibration (malfunction)	2.5 mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 minute	
Shock	980 m/s^2 (≈ 100 G) in each X, Y, Z direction for 3 times	
Shock (malfunction)	147 m/s^2 (≈ 15 G) in each X, Y, Z direction for 3 times	
Mechanical life expectancy	≥ 20,000,000 operations (at 180 operations/min)	
Electrical life expectancy	≥ 100,000 operations (3 A 250 VAC～, 30 VDC⎓ resistive load)or ≥ 50,000 operations (5 A 250 VAC～, 30 VDC⎓ resistive load, at 20 operations/min)	
Ambient temperature	-40 to 90 °C (a non freezing or condensation environment)	
Ambient humidity	5 to 85 %RH (a non freezing or condensation environment)	
Weight	≈ 3 g	

■ Dimensions

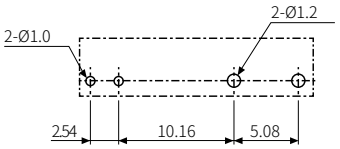
• unit: mm



• Circuit diagram (bottom view)



• PCB pattern



It was written based on the data provided by each manufacturer, but there is room for change, so be sure to check the manufacturer's data.

Relay: NYP24W-K [TAKAMISAWA (Fujitsu)]

■ Coil specifications

All values in the table are measured at 20 °C with a tolerance of ±10 %.

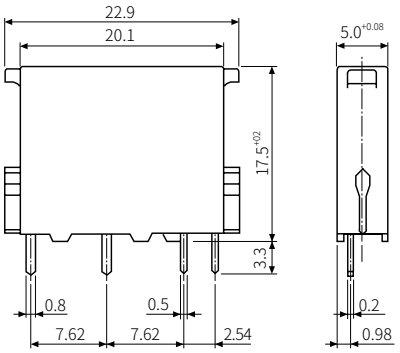
Rated voltage	Operate voltage	Release voltage	Rated current	Coil resistance	Power consumption
24 VDC⎓	16.1 VDC⎓	2.4 VDC⎓	5 mA	4,800 Ω	120 mW

■ Contact specifications

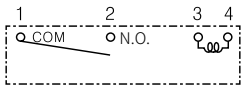
Manufacture	TAKAMISAWA (Fujitsu)	
Contact arrangement	1 Form A (SPST-1a)	
Contact material	Gold overlay silver alloy	
Contat resistance (initial)	≤ 30 mΩ (6 VDC⎓ 1 A)	
Rated load	3 A 250 VAC~	3 A 30 VDC⎓
Max. switching capacity	750 VA	90 W
Min. switching capacity	5 VDC⎓ 1 mA	
Max. switching voltage	270 VAC~	150 VDC⎓
Max. switching current	5 A	
Insulation resistance	≥ 1,000 MΩ (500 VDC⎓ megger)	
Dielectric strength (contact-coil)	3,000 VAC~ 50/60 Hz for 1 minute	
Dielectric strength (open contacts)	750 VAC~ 50/60 Hz for 1 minute	
Surge voltage	5,080 V	
Operate time	≤ 10 ms	
Release time	≤ 5 ms	
Vibration	5.0 mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 1 hour	
Vibration (malfunction)	1.5 mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 minute	
Shock	1,000 m/s^2 (≈ 100 G) in each X, Y, Z direction for 3 times	
Shock (malfunction)	100 m/s^2 (≈ 10 G) in each X, Y, Z direction for 3 times	
Mechanical life expectancy	≥ 20,000,000 operations (at 180 operations/min)	
Electrical life expectancy	≥ 100,000 operations (3 A 250 VAC~, 30 VDC⎓ resistive load)or ≥ 50,000 operations (5 A 250 VAC~, 30 VDC⎓ resistive load, at 20 operations/min)	
Ambient temperature	-40 to 90 °C (a non freezing or condensation environment)	
Ambient humidity	35 to 80 %RH (a non freezing or condensation environment)	
Weight	≈ 3.5 g	

■ Dimensions

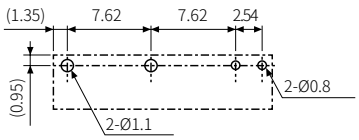
• unit: mm



• Circuit diagram (bottom view)



• PCB pattern



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