

# Screwless Relay Terminal Block (Common type , 16/32-point)

## ABL Series INSTRUCTION MANUAL

TCD220011AC



Thank you for choosing our Autonics product.

**Read and understand the instruction manual and manual thoroughly before using the product.**

**For your safety, read and follow the below safety considerations before using. For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.**

Keep this instruction manual in a place where you can find easily.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Follow Autonics website for the latest information.

### 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.

### 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

### Sold Separately

- 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.

ABL - ① ② ③ ④ - ⑤ ⑥

<b>① Connector type</b> H: Hirose connector	<b>③ Number of relay</b> 16: 16-point 32: 32-point	<b>⑤ Input logic</b> N: NPN (+COM) P: PNP (-COM)
<b>② Wire connection</b> C: Common	<b>④ Relay type</b> PA: APAN3124 [MATSUSHITA (Panasonic)] TN: NYP24W-K [TAKAMISAWA (Fujitsu)]	<b>⑥ Varistor</b> N: None

### Specifications

Model	ABL-HC16□-□IN	ABL-HC32□-□IN
<b>Applied relay</b> <sup>(01)</sup>	PA: APAN3124 [MATSUSHITA (Panasonic)] / TN: NYP24W-K [TAKAMISAWA (Fujitsu)]	
<b>Output method</b>	1a	1a
<b>Power supply</b>	≤ 24 VDC≐ ±10%	≤ 24 VDC≐ ±10%
<b>Current consumption</b>	PA: ≤ 7.4 mA <sup>(02)</sup> or ≤ 10.1 mA <sup>(03)</sup> TN: ≤ 7.8 mA <sup>(02)</sup> or ≤ 10.5 mA <sup>(03)</sup>	PA: ≤ 7.4 mA <sup>(02)</sup> or ≤ 10.1 mA <sup>(03)</sup> TN: ≤ 7.8 mA <sup>(02)</sup> or ≤ 10.5 mA <sup>(03)</sup>
<b>Relay output rated spec.</b>	250 VAC~ 50/60 Hz 2A (2A / 1-point, 8A / 1COM), 24 VDC≐ 2A (2A / 1-point, 8A / 1COM)	250 VAC~ 50/60 Hz 2A (2A / 1-point, 8A / 1COM), 24 VDC≐ 2A (2A / 1-point, 8A / 1COM)
<b>No. of connector pins</b>	20	40
<b>Connector for controller side</b>	20-pin Omron (XG4A-2031)	40-pin Omron (XG4A-4031)
<b>No. of relay points</b>	16	32
<b>Output connection</b>	8-point/1COM	8-point/1COM
<b>Terminal type</b>	Screwless	Screwless
<b>Terminal pitch</b>	≥ 5 mm	≥ 5 mm
<b>Indicator</b>	Power indicator: red, operating indicator: blue	Power indicator: red, operating indicator: blue
<b>Varistor</b>	None	None
<b>Input logic</b>	NPN / PNP model	NPN / PNP model
<b>Material</b>	CASE, BASE, COVER: PC, terminal pin: copper+PA66	CASE, BASE, COVER: PC, terminal pin: copper+PA66
<b>Approval</b>	CE	CE
<b>Unit weight (packaged)</b>	PA: ≈ 173 g (≈ 220 g), TN: ≈ 185 g (≈ 232 g)	PA: ≈ 345 g (≈ 438 g), TN: ≈ 370 g (≈ 463 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 per a relay including LED current.  
 (03) It is current consumption including LED current for power part to (02).

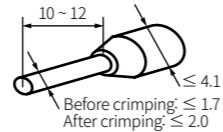
<b>Insulation resistance</b>	≥ 1,000 MΩ (500 VDC≐ megger)
<b>Dielectric strength (coil-contact)</b>	3,000 VAC~ 50/60 Hz for 1 minute
<b>Dielectric strength (same polarity contact)</b>	PA: 1,000 VAC~ 50/60 Hz for 1 minute TN: 750 VAC~ 50/60 Hz for 1 minute
<b>Vibration</b>	0.75mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours
<b>Vibration (malfunction)</b>	0.75mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 10 min
<b>Shock</b>	300 m/s <sup>2</sup> (≈ 30 G) in each X, Y, Z direction for 3 times
<b>Shock (malfunction)</b>	150 m/s <sup>2</sup> (≈ 15 G) in each X, Y, Z direction for 3 times
<b>Ambient temperature</b>	-15 to 55 °C, storage: -25 to 65 °C (no freezing or condensation)
<b>Ambient humidity</b>	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)

<b>Applicable wire - solid</b> <sup>(01)</sup>	Ø 0.6 to 1.25 mm
<b>Applicable wire - stranded</b> <sup>(01)(02)</sup>	AWG 22-18 (0.30 to 0.80 mm <sup>2</sup> )
<b>Stripped length</b>	8 to 10 mm

(01) Use the cable of copper conductor in 60 °C temperature class.  
 (02) When using the stranded wire, use End Sleeve (wire ferrule).

### Wire Ferrule Specifications

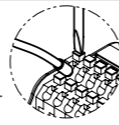
- Unit: mm, Use the UL approved wire ferrule.



### Wiring

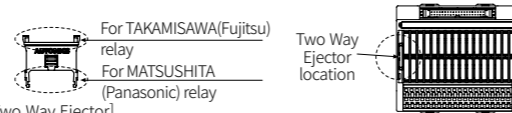
- Connecting  
Insert the wire ferrule into the terminal hole.

- Removing  
1. Put the (-) screwdriver at the groove on the clamp lever and press it.  
2. Pull the cable to disassemble.



### Replacing Relay

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



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

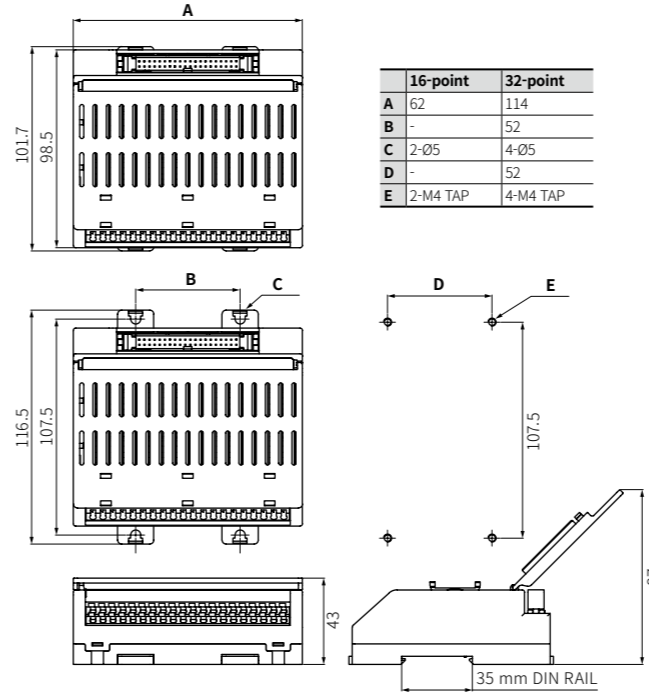


[Disassembling relay using Two Way Ejector]

[Inserting relay]

### Dimensions

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

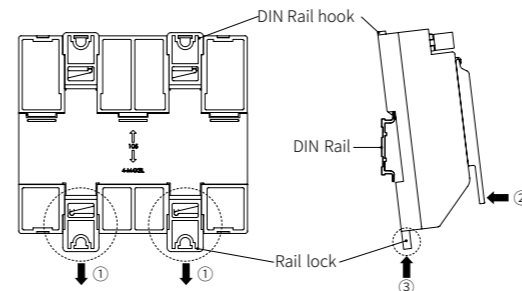


### Installation

#### ■ DIN Rail

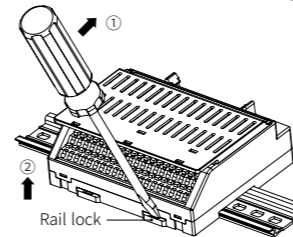
- Mounting

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



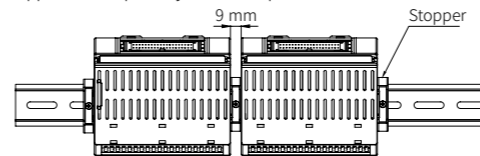
- Removing

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



#### ■ Example

- When two or more terminal blocks are installed  
: Use a stopper (sold separately) to make space between devices.



#### ■ Panel

With the DIN rail lock at the top/bottom of the body, the product can be installed on panel with screw.

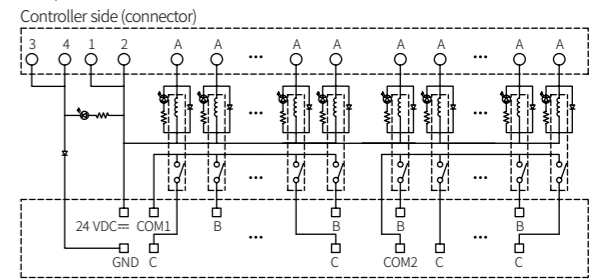
It is recommended to use M4×10 mm of spring washer screws. If you use flat washer, its diameter should be Ø 9 mm.

Tighten the screw with the tightening torque of 1.0 to 1.5 N·m.

### Wire Connection

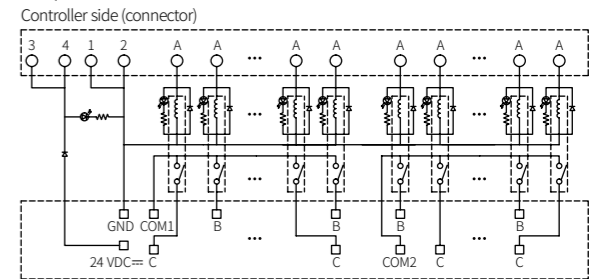
#### ■ Wire connection

- 16-point NPN



Terminal side

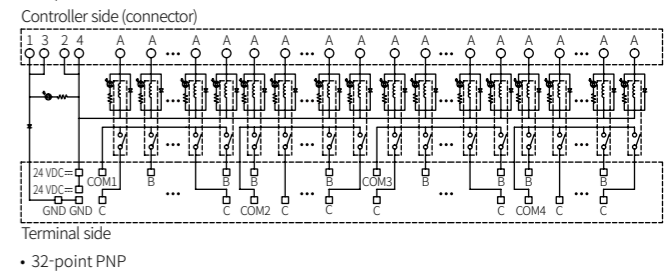
- 16-point PNP



Terminal side

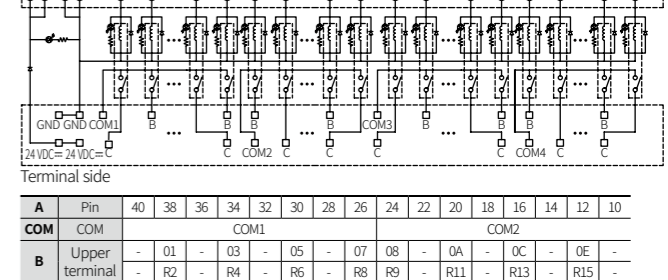
A	Pin	20	18	16	14	12	10	8	6	19	17	15	13	11	9	7	5
<b>COM</b>	COM	COM1								COM2							
<b>B</b>	Upper terminal	-	01	-	03	-	05	-	07	08	-	0A	-	0C	-	0E	-
	Lower terminal	-	R2	-	R4	-	R6	-	R8	R9	-	R11	-	R13	-	R15	-
<b>C</b>	Low terminal	00	-	02	-	04	-	06	-	09	-	0B	-	0D	-	0F	-
	High terminal	R1	-	R3	-	R5	-	R7	-	R10	-	R12	-	R14	-	R16	-

- 32-point NPN



Terminal side

- 32-point PNP



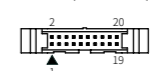
Terminal side

A	Pin	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10
<b>COM</b>	COM	COM3								COM4							
<b>B</b>	Upper terminal	-	11	-	13	-	15	-	17	18	-	1A	-	1C	-	1E	-
	Lower terminal	-	R18	-	R20	-	R22	-	R24	R25	-	R27	-	R29	-	R31	-
<b>C</b>	Low terminal	10	-	12	-	14	-	16	-	19	-	1B	-	1D	-	1F	-
	High terminal	R17	-	R19	-	R21	-	R23	-	R26	-	R28	-	R30	-	R32	-

#### ■ Hirose connector pin arrangement

- 20-pin connector

Omron (XG4A-2031)



- 40-pin connector

Omron (XG4A-4031)

