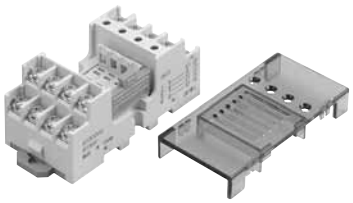
Panasonic
ideas for life

IN ACCORDANCE WITH LOAD, CHOOSE EITHER PA RELAY OR THE POWER PHOTOMOS RELAY VOLTAGE SENSITIVE TYPE

4-POINT TERMINAL (AY3)



RoHS Directive compatibility information
http://www.nais-e.com/

FEATURES

• Two types of relays can be used depending on load conditions.
Possible relays:
(1) PA relays
(2) Power PhotoMOS relay voltage sensitive type
• Space-saving type with four independent points on a base measuring 33 × 67 mm 1.299 × 2.638 inch. This contributes to a more compact control panel.
• Can be mounted on a DIN rail or mounted directly (by screw).
• Equipped with an LED display to allow easy confirmation of operation.
• Incorporates a surge protector.
Incorporates an absorber circuit for coil surges. This protects the circuitry of the controller and prevents operation errors.
• Relay installation and removal can be easily accomplished with the removal key accessory.
• Includes a cover as standard equipment for increased safety.
• The unit color is titanium gray.

Possible relays

PA relays

Power PhotoMOS
(Voltage sensitive type)

FEATURES

1. PA relays, which have high-sensitivity Au clad twin contacts, can be installed in 4-POINT TERMINAL.
PA relays, 5 mm .197 inch wide, can be installed in 4-POINT TERMINAL. PA relays feature high sensitivity (12 V type: 120 mW, 24 V type: 180 mW) and twin contacts with Au-cladding. This ensures high reliability even under minute loads.

2. Power PhotoMOS relays voltage sensitive type, for high reliability and long life, can be installed in 4-POINT TERMINAL.
Power PhotoMOS relay voltage sensitive type have a reputation for high reliability and long life.
This contributes to making devices maintenance free.

TYPES

Rated input voltage	Part No.	Packing quantity	
		Inner carton	Outer carton
12,24V DC	AY30000	1 pc.	20 pcs.

POSSIBLE RELAYS

Product Name	Part No.
PA relay	APA3311, APA3312
Power PhotoMOS relay voltage sensitive type	AQZ10*D (DC only)
	AQZ20*D (AC/DC dual use)

Note: Never install relays into this product other than those given above.
Doing so will cause malfunction, breakdown, and breakdown of the connected product.

RATINGS

1. Input ratings (per relay)

Rated input voltage	Allowable variation of rated input voltage	Allowable input voltage
12, 24V DC	12V DC±10%, 24V DC±10%	0.2A

Note: The input current value above is the allowable current when no relay is installed. Please note that input current is determined by the type of relay installed.

1) Input rating when PA relay installed in 4-POINT TERMINAL (per relay, at 20°C 68°F)

Type	Rated voltage input	Operate voltage (Initial)	Release voltage (Initial)	Input current (during application of rated input voltage)
APA3311	12V DC	Max. 9.5V DC (Relay max. 8.4V + include diode max. 1.1V)	Min. 1.0V (Relay max. 0.6V + include diode max. 0.4V)	Approx. 11.5mA (Relay 10mA + LED 1.5mA)
APA3312	24V DC	Max. 17.9V DC (Relay max. 16.8V + include diode max. 1.1V)	Min. 1.6V (Relay max. 1.2V + include diode max. 0.4V)	Approx. 10.5mA (Relay 7.5mA + LED 3mA)

2) Input rating when Power PhotoMOS relay voltage sensitive type installed in 4-POINT TERMINAL (per relay, at 25°C 77°F)

Type	Rated voltage input	Operate voltage (Initial)	Release voltage (Initial)	Input current (during application of rated input voltage)
AQZ∗0∗D	12, 24V DC	Max. 5.1V DC (Relay max. 4.0V + include diode max. 1.1V)	Min. 1.2V (Relay max. 0.8V + include diode max. 0.4V)	Approx. 10.0mA (Relay 7.0mA + LED 3mA)

2. Output rating (per relay)

Allowable load voltage	Allowable load current
600V (DC), 600V (AC peak value)	3A

Note: The value above is the allowable value when no relay is installed.
Please note that limitations apply to the load voltage and current depending on the type of relay installed.

1) Output rating when PA relay installed in 4-POINT TERMINAL (per relay, at 20°C 68°F)

Specification	Item	Performance
Contact rating	Rated control capacity	3 A 250 V AC, 3 A 30 V DC
	Maximum allowable contact power (resistive load)	750 VA (AC), 90 W (DC)
	Maximum allowable contact voltage	250 V AC, 30 V DC
	Maximum allowable contact current	3 A
	Minimum load (ref. value)	100 mV 100 μA
Expected life (Min. operations)	Electrical (resistive load)	3×10^4: 3 A 250V AC, 3 A 30V DC 10^5: 2 A 250V AC, 2 A 30V DC
	Mechanical (at 180 cpm)	2×10^7

Notes: 1. During 4-point operation, the rating of each relay is also as shown above.

2) Output rating when Power PhotoMOS relay voltage sensitive type installed in 4-POINT TERMINAL (per relay, at 25°C 77°F)

Possible relays		Maximum load voltage, DC	Continuous load current, DC	Possible relays		Maximum load voltage (DC, AC peak value)	Continuous load current (DC, AC peak value)
Type	Part No.			Type	Part No.		
DC only	AQZ102D	60V	1.8A	AC, DC dual use	AQZ202D	60V	1.35A
	AQZ105D	100V	1.15A		AQZ205D	100V	0.9A
	AQZ107D	200V	0.55A		AQZ207D	200V	0.45A
	AQZ104D	400V	0.30A		AQZ204D	400V	0.225A

Notes: 1. During 4-point operation, the rating of each relay is also as shown above.
2. The load current varies depending on ambient temperature. Refer to the Load current vs. ambient temperature characteristic data.

PERFORMANCE

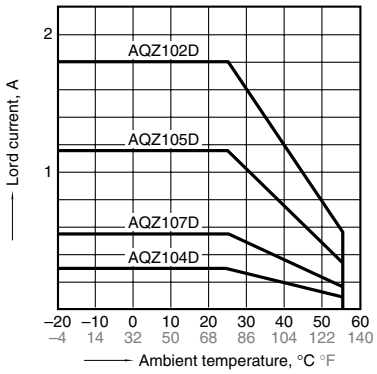
Item		Performance
Breakdown voltage	Between input and output	2,000 Vrms for 1 min.
	Between same terminals	1,000 Vrms for 1 min.
	Between different terminals (between relays, both ways)	1,500 Vrms for 1 min.
Insulation resistance		Min. 100 MΩ (Using 500 V DC megger, measuring same place as breakdown voltage.)
Vibration resistance (destructive)		10 to 55 Hz at double amplitude 1 mm .039 inch
Vibration resistance (functional)		10 to 55 Hz at double amplitude 1 mm .039 inch
Shock resistance (destructive)		Min. 196 m/s^2
Shock resistance (functional)		Min. 98 m/s^2
Ambient temperature		–20°C to +55°C –4°F to +131°F
Ambient humidity		35% to 85% R.H. (Not condensing)
Storage temperature		–30°C to +80°C –22°F to +176°F (Not freezing and condensing)
Terminal screw fasten torque		0.3 to 0.5 N·m
Coil surge absorber		Diode (1A, 400V)
Cross connection protecting diode		1.5 A, inverse voltage 40 V
Weight		Approx. 100 g 3.53 oz

Notes: 1. The value of breakdown voltage and insulation resistance is the initial one.
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. Take care under this condition.
3. Below 0°C 32°F, condensing water can freeze and cause socket contact failures and other problems. Take care under this condition.

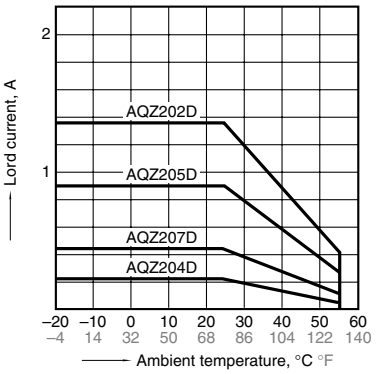
4-POINT TERMINAL (AY3)

DATA

1. Lord current vs. ambient temperature characteristics (DC only)

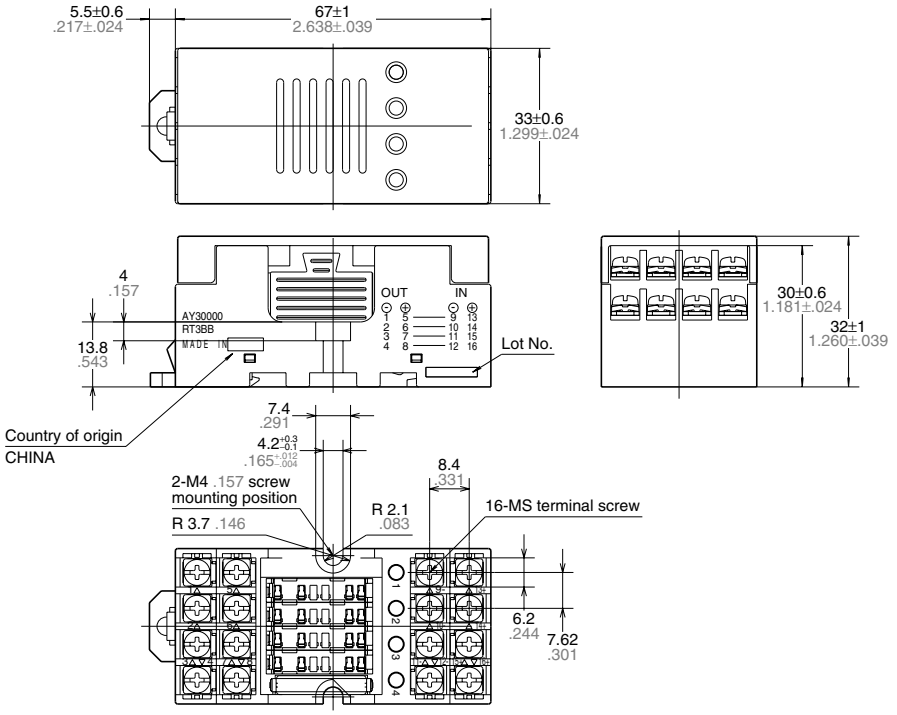


2. Lord current vs. ambient temperature characteristics (AC/DC dual use)

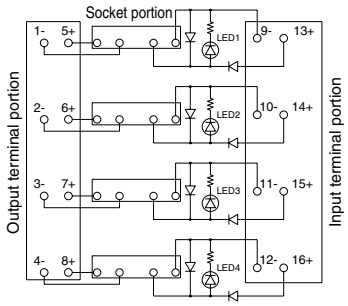


DIMENSIONS

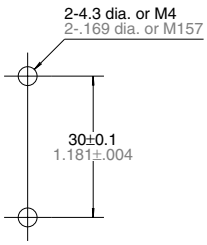
mm inch



Schematic



Panel cutout



General tolerances ±0.3 ±.012

CAUTIONS FOR USE

1. Never install modules (relays) into this product other than those designated. Doing so will cause malfunction, breakdown, and breakdown of the connected product.

2. Physical Impact

If a unit is dropped be sure to check its external appearance and characteristics before using it.

3. The operation and return voltage values when equipped with PA relays are based on the relay terminals being face down.

4. Switching lifetime (PA relay)

This characteristic depends on the relay and is effected by coil driving circuit, load type, activation frequency, activation phase, ambient conditions and other factors.

Also, be especially careful of loads such as those listed below.

(1) When used for AC load-operating and the operating phase is synchronous, rocking and fusing can easily occur due to contact shifting.

(2) Frequent switching under load condition

When high frequently switched under load condition that can cause arc at the contacts, nitrogen and oxygen in the air is fused by the arc energy and HNO_3 is formed. This can corrode metal materials. Three countermeasures for these are listed here.

1. Incorporate an arc-extinguishing circuit.
2. Lower the operating frequency
3. Lower the ambient humidity

5. Operating environment

1) Keep the product as far way 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.

2) 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 gasoline, thinner, and alcohol, or strong alkaline substances such as ammonia and caustic soda.

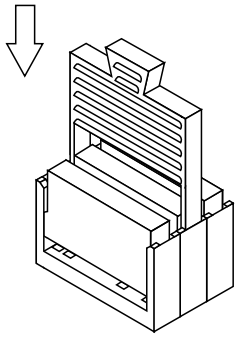
3) Do not use the product in areas where it may be exposed to flammable gases, corrosive gases, excessive dust, or moisture, or areas where it may be subjected to strong vibration or shock.

6. Installing and removing the module

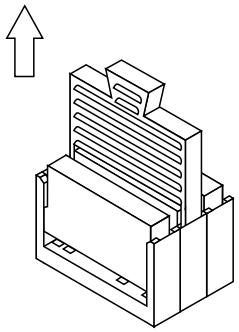
1) Firmly insert the module into the socket with the terminals going in the direction of the blade receptacles.

2) The module can be easily removed using the removal key.

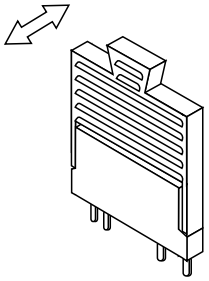
(1) Insert the removal key into the socket slots.



(2) Pull the removal key up to remove the module.



(3) Slide the removal key off of the module.



7. Wiring and circuit configuration

1) Perform wiring according to the internal schematic. Take care not to make any mistakes.

In particular, with the RT-3 relay (PA relay type) and 4-point terminal, be careful of the polarity on the output side when equipped with AQZ10∗D (DC type). Also, with the RT-3 relay (Power PhotoMOS relay type), be careful of the polarity on the output side of the DC type (AY3400∗ for type equipped with AQZ102).

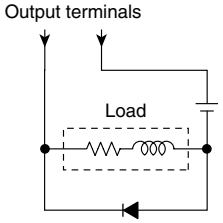
2) We recommend the use of wire-pressed terminals for connection to the terminal portion.

• Example of applicable wire-pressed terminal

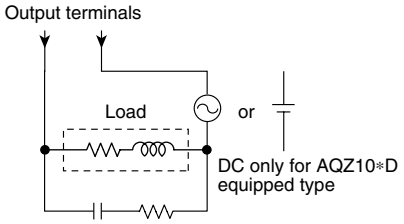
Company Name	Part Name	Applicable wire-pressed terminal
J.S.T. Mfg Co., Ltd.	1.25 to C3A	0.25 to 1.65mm^2

3) When the load is inductive, limit spike voltages generated from the load to less than the maximum load voltage. Typical circuits are shown below.

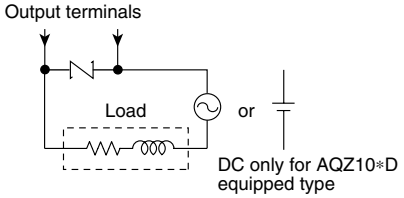
Add a clamp diode to the load.



Add an R-C snubber to the load.



Add a varistor between the output terminals.

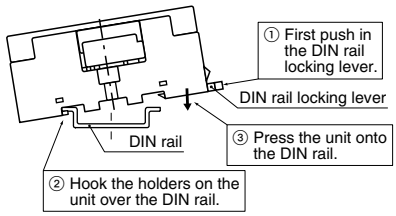


4) Even if spike voltages generated from the load are limited by a clamp diode or R-C snubber, inductances in long circuit wires will still create spike voltages. Keep wires as short as possible to minimize inductance.

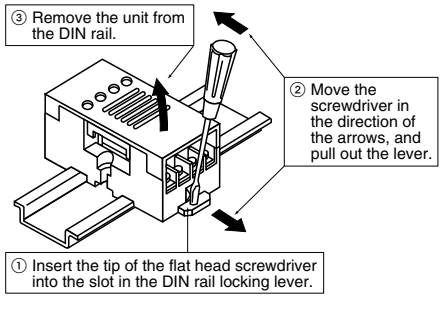
8. Installation

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 gently.



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



CAUTIONS FOR USE

9. 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.

10. When equipped with Power PhotoMOS relay voltage drive type

Since the Power PhotoMOS relay voltage drive type does not require the current-controlling resistance on the input side, it can be used together with PA relays on 4-point unit relays (PA relay types) or RT-2 relay terminals.

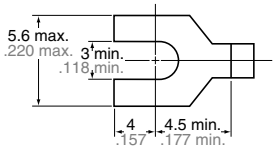
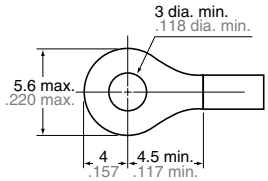
When connecting Power PhotoMOS relay voltage drive types, since it will be a close connection, it will be necessary to be careful of load currents. Be sure to refer to the information given regarding load currents and ambient temperature characteristics in the precautions given for use of RT-2 relay terminals.

TERMINAL BLOCK

We recommend using wire-pressed terminals for connection to the terminal portion.

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

mm inch

		
Company Name	Part Name	Part Name
J.S.T. Mfg Co., Ltd.	1.25 to C3A	1.25 to 3
NICHIFU	1.25Y to 3N	1.25 to 3
Nippon Tanshi Co., Ltd.	VD1.25 to 3	R1.25 to 3

ACCESSORIES

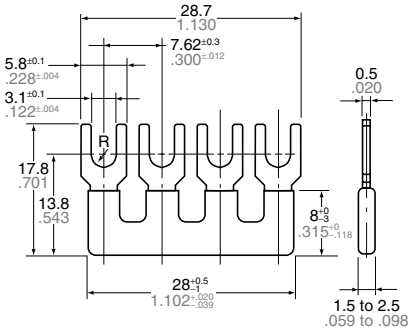
mm inch

Short circuit plate

Use when you want to bridge terminals.

< With insulator >

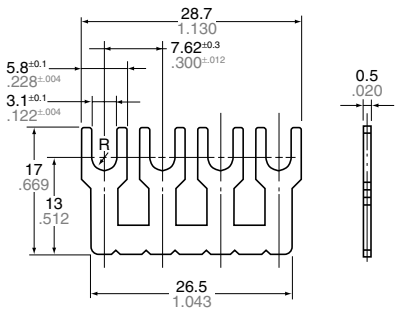
AY3802



General tolerance ±0.5 ±.020

< Without insulator >

AY3803



General tolerance ±0.5 ±.020