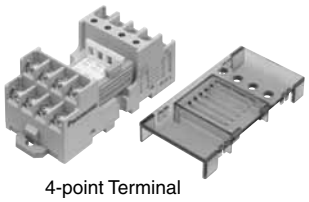
Slim, Space-saving, 4-point Unit Relay

RT-3 UNIT RELAY 4-POINT TERMINAL
(PhotoMOS Power type)

RT-3 Unit relay



4-point Terminal
(PhotoMOS Power type)

Mountable relay

PhotoMOS Power type

RoHS compliant

FEATURES

1. Space-saving type with four independent points on a base measuring 33 × 67 mm 1.299 × 2.638 inch. Contributes to a more compact control panel.
2. PhotoMOS Power type, for high reliability and long life, are installed.
This type is equipped with PhotoMOS Power type which have a reputation for high reliability and long life. Helps make devices maintenance-free.
3. Can be mounted on a DIN rail or mounted directly (by screws).
4. Equipped with an LED display to allow easy confirmation of operation.
5. Possible to select relay for use in the 4-point terminal in accordance with load.

TYPES

1. RT-3 Unit relay

Contact arrangement	Type	Rated input voltage	Part No.
1 Form A × 4	DC only (Equipped with AQZ102)	12 V DC	RT3SP1-12V
		24 V DC	RT3SP1-24V
	AC/DC dual use (Equipped with AQZ204)	12 V DC	RT3SP2-12V
		24 V DC	RT3SP2-24V

Standard packing: Carton: 1 pc.; Case: 20 pcs.
Notes: 1. Only for use with PhotoMOS Power standard type relays. Cannot be equipped with PA relays.
2. Please inquire other contact arrangement.

2. 4-point Terminal

Type	Rated input voltage	Part No.
PhotoMOS Power type	12 V DC	RT3BB12V
	24 V DC	RT3BB24V

Standard packing: Carton: 1 pc.; Case: 20 pcs.

3. Mountable relays for 4-point Terminal (per relay, at 25°C 77°F, initial)

Possible relays		Output			
Type	Part No.	Maximum load voltage	Recommended load voltage	Continuous load current	Peak load current
PhotoMOS Power type (DC only)	AQZ102	60V DC	0 to 30V DC	2.00A	9.0A
	AQZ105	100V DC	0 to 50V DC	1.50A	6.0A
	AQZ107	200V DC	0 to 100V DC	0.70A	3.0A
	AQZ104	400V DC	0 to 200V DC	0.40A	1.5A
PhotoMOS Power type (AC/DC dual use)	AQZ202	60V (peak)	0 to 12V AC/0 to 30V DC	1.80A	9.0A
	AQZ205	100V (peak)	0 to 24V AC/0 to 50V DC	1.20A	6.0A
	AQZ207	200V (peak)	0 to 48V AC/0 to 100V DC	0.60A	3.0A
	AQZ204	400V (peak)	0 to 125V AC/0 to 200V DC	0.30A	1.5A
	AQZ404 (1 Form B type)	400V (peak)	0 to 125V AC/0 to 200V DC	0.30A	1.5A

Notes: 1. Peak load current is limited to “100 ms, 1 shot”.
2. The ratings per point in the table above also apply during 4-point simultaneous operation.
3. Please use a load current that is within the range of the data given below in “REFERENCE DATA 2. Load current vs. ambient temperature characteristics”.
4. Be very careful regarding the polarity on the output side when equipped with AQZ10∗ (dedicated PhotoMOS power DC type).
5. Never equip a product with a relay other than those given above. Doing so can cause product malfunction, breakdown, and breakdown of connected devices.

RATING

1. Input ratings (per relay)

Part No.	Rated input voltage	Operate voltage (at 25°C 77°F)	Release voltage (at 25°C 77°F)	Input current (during application of rated input voltage) (at 25°C 77°F)	Allowable variation of rated input voltage (at –20°C to +55°C –4°F to +131°F)
RT3SP1-12V	12 V DC	Max. 9.5 V DC (5.1 V typ.)	Min. 3.0 V DC (5.0 V typ.)	6.2 mA typ.	90% to 110% of rated input voltage
RT3SP2-12V					
RT3SP1-24V	24 V DC	Max. 15.0 V DC (6.8 V typ.)	Min. 3.5 V DC (6.5 V typ.)	6.7 mA typ.	
RT3SP2-24V					

Note: This product has a built-in input current limiting resistor; therefore, it is not necessary to externally connect a resistor to the input. The input voltage can be applied directly.

2. Output ratings (per relay, at 25°C 77°F)

Part No.	Equipped relay	Maximum load voltage	Recommended voltage	Continuous load current	Peak load currant
RT3SP1-12V	AQZ102 (DC only)	60 V (DC)	0 to 30 V (DC)	2 A (DC)	9 A (100 ms 1 shot)
RT3SP1-24V					
RT3SP2-12V	AQZ204 (AC/DC dual use)	400 V (DC, AC peak value)	0 to 200 V (DC) 0 to 125 V (AC)	0.3 A (DC, AC peak value)	1.5 A (100 ms 1 shot)
RT3SP2-24V					

Notes: 1. During 4-point simultaneous operation, the rating per point is also as shown above.
2. The load current varies depending on ambient temperature. Refer to the "REFERENCE DATA 2. Load current vs. ambient temperature characteristics".

SPECIFICATIONS

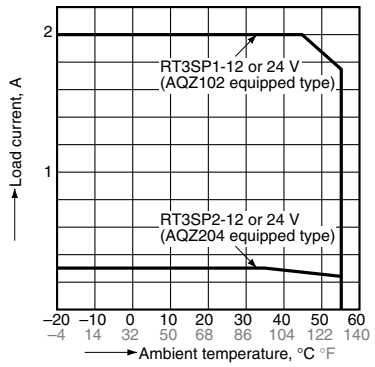
Item		Specifications	Condition
Breakdown voltage	Between input and output	2,000 Vrms	for 1 min.
	Between different terminals (between relays, both ways)	1,500 Vrms	for 1 min.
Insulation resistance		Min. 100 MΩ (Measurement at same location as "Breakdown voltage" section.)	Using 500 V DC megger
Vibration resistance		10 to 55 Hz at double amplitude 1 mm .039 inch	In vertical, horizontal and longitudinal directions
Shock resistance		Min. 196 m/s²	In vertical, horizontal and longitudinal directions
Ambient temperature		–20°C to +55°C –4°F to +131°F	Not freezing and condensing
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 {3 to 5 kgf·cm}	
Cross connection protecting diode		1 A, inverse voltage 400 V	
Unit 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.

REFERENCE DATA

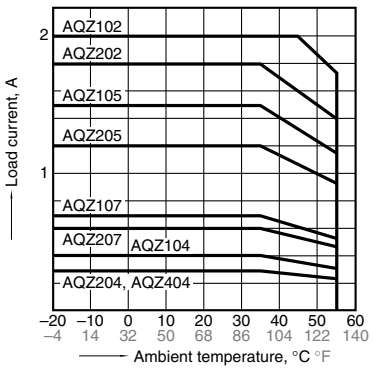
1. Load current vs. ambient temperature characteristics (1)

Allowable ambient temperature: –20°C to +55°C –4°F to +131°F



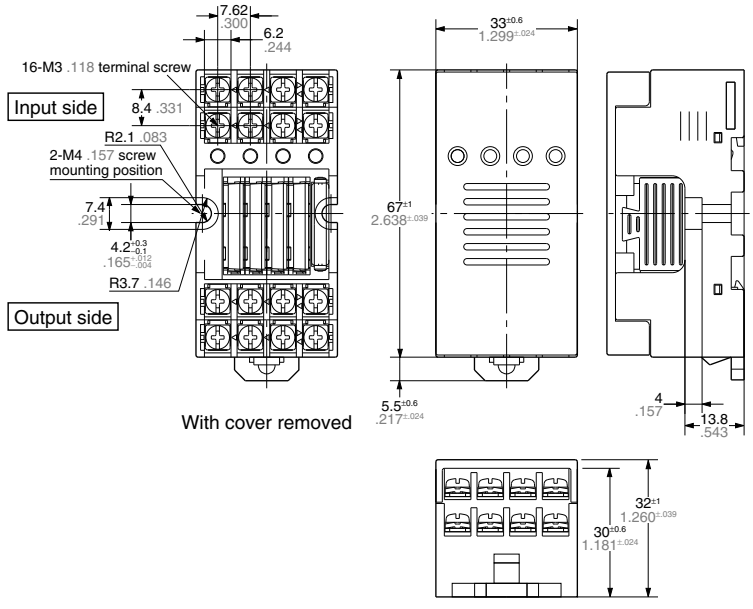
2. Load current vs. ambient temperature characteristics (2)

Allowable ambient temperature: –20°C to +55°C –4°F to +131°F



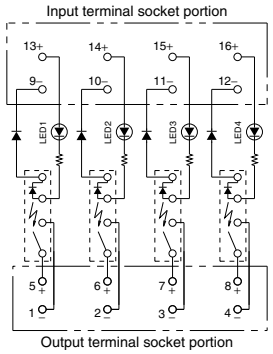
DIMENSIONS (mm inch)

1. External dimensions



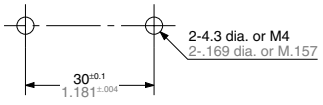
General tolerance: ±0.3 ±.012

2. Schematic



Note: The polarities of the output terminal socket are for the DC only type (equipped with AQZ10∗)

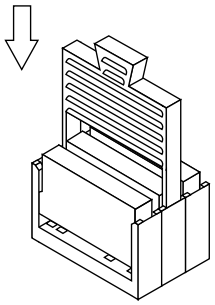
3. Mounting hole pattern



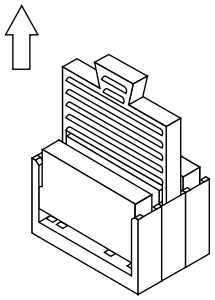
CAUTIONS FOR USE

RT-3 UNIT RELAY 4-POINT TERMINAL

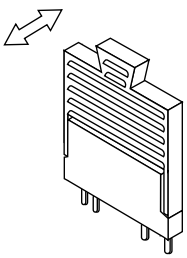
1. Never install modules (relays) into this product other than those designated. Doing so will cause malfunction, breakdown, and breakdown of the connected product.
2. If a unit is dropped be sure to check its external appearance and characteristics before using it.
3. The operation and return voltage values when equipped with PA relays are based on the relay terminals being face down. (RT-3 Unit relay (PA type), 4-point Terminal)
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.



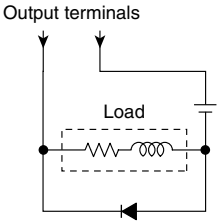
(3) Slide the removal key off of the module.



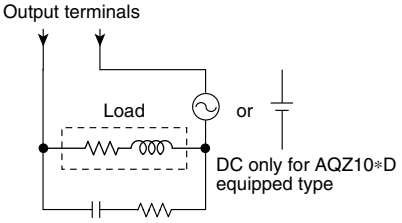
7. Wiring and circuit configuration
1) Perform wiring according to the internal schematic. Take care not to make any mistakes.
In particular, with the RT-3 Unit relay (PA relay type) and 4-point terminal, be careful of the polarity on the output side when equipped with AQZ10∗D (DC type). Also, with the RT-3 Unit relay (PhotoMOS Power type), be careful of the polarity on the output side of the DC type (RT3SP1-∗∗V 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 1.65mm²

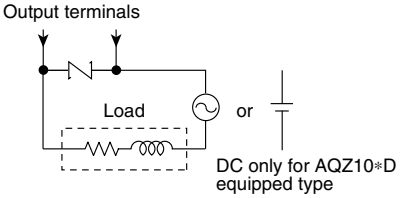
3) When the load is inductive, limit spike voltages generated from the load to less than the maximum load voltage.
Typical circuits are shown below.
(1) Add a clamp diode to the load.



(2) Add an R-C snubber to the load.



(3) Add a varistor between the output terminals.

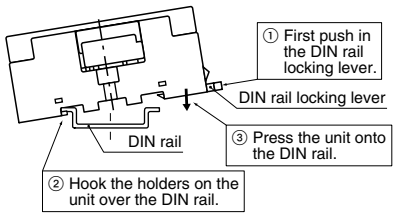


4) Even if spike voltages generated from the load are limited by a clamp diode or R-C snubber, inductances in long circuit wires will still create spike voltages. Keep wires as short as possible to minimize inductance.

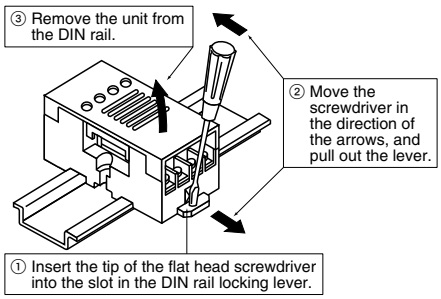
8. Installation

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.



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 carton and case 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.

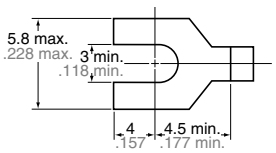
10. When equipped with PhotoMOS Power voltage drive type [RT-3 Unit relay (PA relay type), 4-point Terminal]

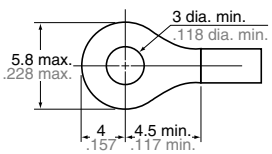
Since the PhotoMOS Power voltage sensitive type does not require the current-controlling resistance on the input side, it can be used together with PA relays on RT-3 unit relay (PA relay type). When connecting PhotoMOS Power voltage sensitive types, since it will be a close connection, it will be necessary to be careful of load currents. Be sure to refer to the information given regarding "Load currents vs ambient temperature characteristics" in the precautions given for use of 4-point 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 3L	R1.25 to 3

ACCESSORIES

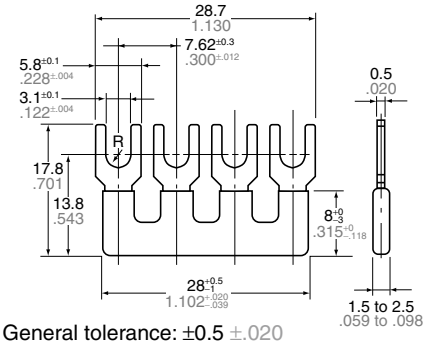
Short circuit plate for RT-3 Unit relay

Use when you want to bridge terminals.

< With insulator >

AY3802

External dimensions (mm inch)

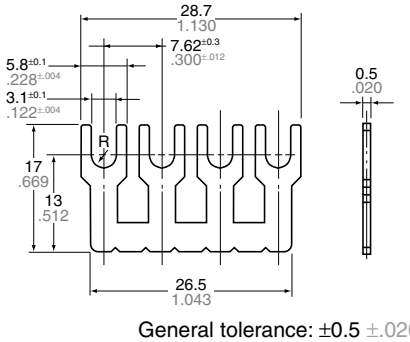


General tolerance: ±0.5 ±.020

< Without insulator >

AY3803

External dimensions (mm inch)



General tolerance: ±0.5 ±.020