

# G9TB

AC Power Latching Relay

## 120 A Compact and high power latching relay

- High power switching: 120 A, 276 VAC
- Compact size: 37 mm × 43 mm × 22 mm
- Low temperature-rise
- High overcurrent capability, conforming to IEC62055-31 UC3



RoHS Compliant

**NEW**

### Model Number Structure

G9TB-  1  A    -  E  
           1  2  3  4  5

- |  |                    |                 |
|--|--------------------|-----------------|
| 1. Relay Function  | 2. Number of poles | 3. Contact Form |
| U: Single-winding latching<br>K: Double-winding latching | 1: 1-Pole          | A: SPST-NO      |
| 4. Terminal shape  | 5. Classification  |                 |
| TH: M8 securing screw<br>TW: Welding terminals           | E: High capacity   |                 |

### Application Examples

- Smart Meter
- PV Inverter
- Lighting control
- EV Charger

### Ordering Information

| Classification    | Contact Form | Terminal Shape    | Enclosure rating | Model        | Rated coil voltage | Minimum packing unit |
|-------------------|--------------|-------------------|------------------|--------------|--------------------|----------------------|
| Single coil       | SPST-NO      | M8 securing screw | Flux protection  | G9TB-U1ATH-E | 12 VDC             | 25 pcs/tray          |
|                   |              | Welding terminals |                  | G9TB-U1ATW-E |                    |                      |
| M8 securing screw |              | G9TB-K1ATH-E      |                  | 12 VDC       |                    |                      |
| Welding terminals |              | G9TB-K1ATW-E      |                  |              |                    |                      |

Note. When ordering, add the rated coil voltage to the model number.

Example: G9TB-U1ATH-E DC12

      Rated coil voltage

However, the notation of the coil voltage on the product case as well as on the packing will be marked as [ ] VDC.

### Ratings

#### ● Coil

##### Single-winding Latching Type

| Item | Rated Voltage (V) | Rated current (mA) | Coil resistance (Ω) | Must set voltage   | Must reset voltage | Max. voltage | Power consumption |                |
|------|-------------------|--------------------|---------------------|--------------------|--------------------|--------------|-------------------|----------------|
|      |                   |                    |                     | % of rated voltage |                    |              | Set coil (W)      | Reset coil (W) |
| DC   | 12                | 225                | 53.3                | 80% max.           | 80% max.           | 110% max.    | Approx. 2.7       |                |

##### Double-winding Latching Type

| Item | Rated Voltage (V) | Rated current (mA) |            | Coil resistance (Ω) |            | Must set voltage | Must reset voltage | Max. voltage | Power consumption |                |
|------|-------------------|--------------------|------------|---------------------|------------|------------------|--------------------|--------------|-------------------|----------------|
|      |                   | Set coil           | Reset coil | Set coil            | Reset coil |                  |                    |              | Set coil (W)      | Reset coil (W) |
|      |                   | % of rated voltage |            |                     |            |                  |                    |              |                   |                |
| DC   | 12                | 451                | 451        | 26.6                | 26.6       | 80% max.         | 80% max.           | 110% max.    | Approx. 5.4       | Approx. 5.4    |

Note 1. The rated current and coil resistance were measured at a coil temperature of 23°C with tolerances of ± 10%.

Note 2. The operating characteristics are measured at a coil temperature of 23°C.

Note 3. The maximum permissible voltage is the maximum value of the fluctuation range for the Relay coil operating power supply and was measured at an ambient temperature of 23°C.

#### ● Contacts

| Item                   | Model Load | G9TB-U1A□ -E/G9TB-K1A□ -E |                         |
|------------------------|------------|---------------------------|-------------------------|
|                        |            | Resistive load            | Inductive load (PF=0.5) |
| Contact type           |            | SPST-NO                   |                         |
| Contact material       |            | Ag Alloy                  |                         |
| Rated load             |            | 120 A at 276 VAC          | 100 A at 276 VAC        |
| Rated carry current    |            | 120 A                     |                         |
| Max. switching voltage |            | 276 VAC                   |                         |
| Max. switching current |            | 120 A                     | 100 A                   |

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## Characteristics

| Item                          |                                       | G9TB-U1A□-E  | G9TB-K1A□-E |
|-------------------------------|---------------------------------------|--|-------------|
| Contact resistance *1         |                                       | 0.4 mΩ max.  |             |
| Set time *2                   |                                       | 25 ms max.   | 20 ms max.  |
| Reset time *2                 |                                       | 25 ms max.   | 20 ms max.  |
| Minimum pulse width           |                                       | 100 ms   |             |
| Maximum pulse width           |                                       | 1,000 ms   |             |
| Insulation resistance *3      |                                       | 1,000 MΩ min.  |             |
| Dielectric strength           | Between coil and contacts             | 4,000 VAC, 50/60 Hz for 1 min  |             |
|                               | Between contacts of the same polarity | 2,000 VAC, 50/60 Hz for 1 min  |             |
| Impulse withstand voltage     | Between coil and contacts             | 8 kV   |             |
| Vibration resistance          | Destruction                           | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)  |             |
|                               | Malfuction                            | 10 to 55 to 10 Hz, 0.75 mm single amplitude (1.5 mm double amplitude)  |             |
| Shock resistance              | Destruction                           | 1,000 m/s <sup>2</sup>   |             |
|                               | Malfuction                            | 100 m/s <sup>2</sup>   |             |
| Durability                    | Mechanical                            | 100,000 operations min. (at 7,200 operations/h)  |             |
|                               | Electrical *4                         | 10,000 operations typical, resistive load 120 A, 276 VAC (operation: ON for 10 sec, OFF for 20 sec)  |             |
|                               |                                       | 5,000 operations, resistive load 100 A, 276 VAC and then<br>5,000 operations, inductive load (PF=0.5) 100 A, 276 VAC (operation: ON for 10 sec, OFF for 20 sec) *5 |             |
| Ambient operating temperature |                                       | -40 to 85°C (with no icing or condensation)  |             |
| Ambient operating humidity    |                                       | 5 to 85%   |             |
| Weight                        |                                       | Approx. 70 g   |             |

Note. The values given above are initial values.

\*1. Measurement conditions: 24 VDC, 1 A, voltage drop method.

\*2. Measurement conditions: Rated operating voltage applied, not including contact bounce.  
Ambient temperature: 23°C

\*3. Measurement conditions: The insulation resistance was measured with a 500 VDC megohm meter at the same locations as the dielectric strength was measured.

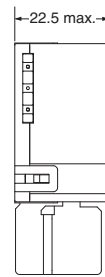
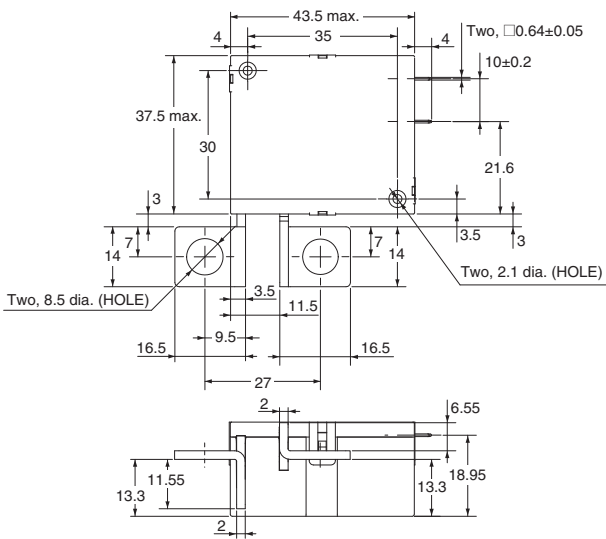
\*4. Contact your OMRON sales representative for Electrical Durability technical data.

\*5. The characteristic meets IEC62055-31 test requirement.

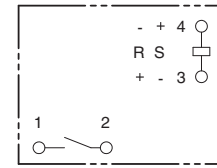
### Dimensions

(Unit: mm)

#### G9TB-U1ATH-E

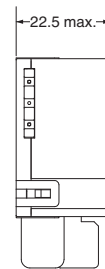
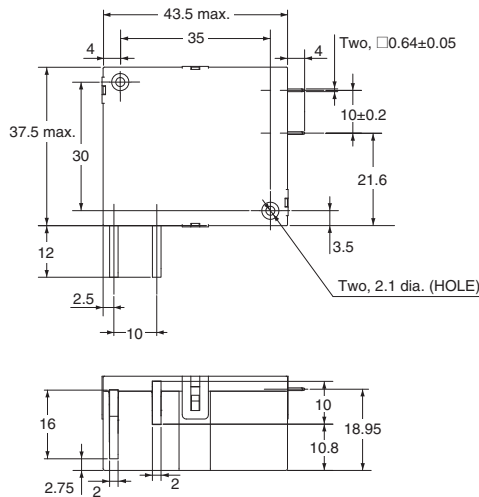


Terminal arrangement/Internal Connections (TOP VIEW)

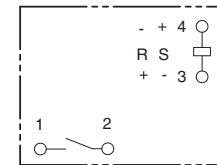


Check carefully the coil polarity of the Relay.

#### G9TB-U1ATW-E

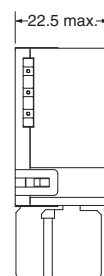
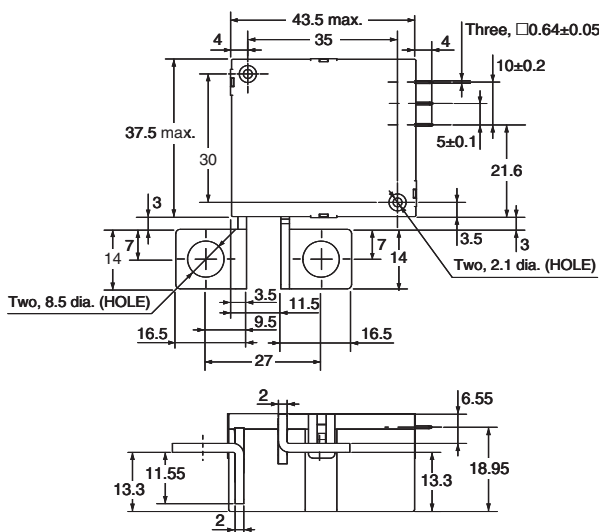


Terminal arrangement/Internal Connections (TOP VIEW)

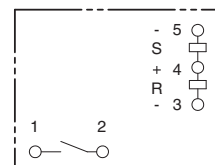


Check carefully the coil polarity of the Relay.

#### G9TB-K1ATH-E

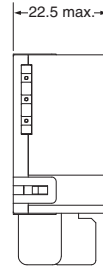
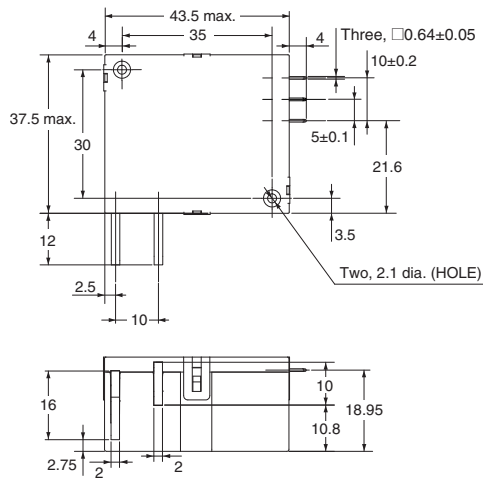


Terminal arrangement/Internal Connections (TOP VIEW)

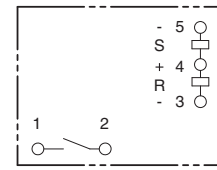


Check carefully the coil polarity of the Relay.

## G9TB-K1ATW-E



Terminal arrangement/Internal Connections (TOP VIEW)



Check carefully the coil polarity of the Relay.

- Note 1. Relay is delivered as "set" status unless specified otherwise. However, the status may change due to the shock from transportation or mounting operations. Therefore, it is recommended the relay should be set to the expected status via a power supply before being used.
- Note 2. In order to maintain "set" or "reset" status, the energizing voltage to coil & the pulse width shouldn't lower then the rated value.
- Note 3. Do not energize both of set and reset coil simultaneously.
- Note 4. Energizing time longer than 1,000 ms should be avoided.

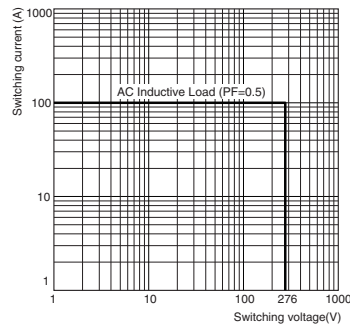
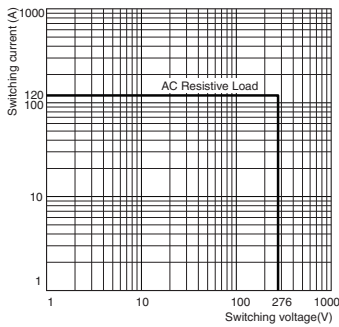
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## Engineering Data

### ● Maximum Switching Capacity

G9TB-U1A□ -E

G9TB-K1A□ -E



## Safety Precautions

- Please refer to "PCB Relays Common Precautions" for correct use.

|             |
|-------------|
| Correct Use |
|-------------|

### ●Installation

- The relay contacts are polarized. Incorrect wiring may cause a failure to break the circuit. Wire the Relay with care.
- Install the Relays in locations that are as dry as possible and have as little dust, dirt, and harmful gas.
- Using the Relay under high temperature, high humidity, or harmful gas may deteriorate its performance characteristics due to condensation or corrosive materials, resulting in failure or burn damage to the Relay.

### ●Wiring

- Be sure to tighten all screws to the appropriate torque given below.
- Loose screws may result in burning due to abnormal heat generation during energization.
- M8 screws : 8.82 to 9.80 N·m
- Use a spring washer in order to prevent deformation and it from loosening.
- Allow suitable slack on leads when wiring, and do not apply excessive force to the terminals.

### ●Relay Service Life

- The electrical durability of these Relays is specified as the number of load switching operations under a resistive load and OMRON-specified standard testing conditions.  
The coil drive circuit, ambient environment, switching frequency, or load conditions (e.g., inductive load or capacitor load) may reduce the service life and possibly lead to failure to break. Always confirm the service life in the actual equipment.

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.  
• Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

**Note: Do not use this document to operate the Unit.**

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