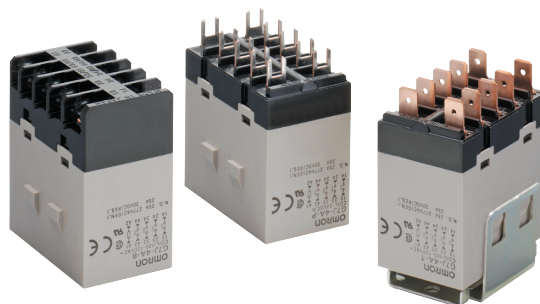


# General Purpose Relay G7J

- Ideal for 3-phase motor control applications and resistive and inductive loads.
- No contact chattering for momentary voltage drops up to 50% of rated voltage.
- Withstands more than 4 kV between contacts that are of different polarity and between the coil and contacts.
- Flame-resistant materials (UL94V-0) used for all insulation.
- Push-to-test button on all models lets user check contact operation.
- Class B coil insulation available.



## Ordering Information

| Type                    | Contact form    | Model                   |                         |                         |
|-------------------------|-----------------|-------------------------|-------------------------|-------------------------|
|                         |                 | Quick-connect terminal  | Screw terminal          | PCB terminal            |
| PCB mounting            | 4PST-NO         | —                       | —                       | G7J-4A-P, G7J-4A-PZ     |
|                         | 3PST-NO/SPST-NC | —                       | —                       | G7J-3A1B-P, G7J-3A1B-PZ |
|                         | DPST-NO/DPST-NC | —                       | —                       | G7J-2A2B-P              |
| W-bracket<br>(see note) | 4PST-NO         | G7J-4A-T, G7J-4A-TZ     | G7J-4A-B                |                         |
|                         | 3PST-NO/SPST-NC | G7J-3A1B-T, G7J-3A1B-TZ | G7J-3A1B-B, G7J-3A1B-BZ |                         |
|                         | DPST-NO/DPST-NC | G7J-2A2B-T              | G7J-2A2B-B              |                         |

**Note:** The G7J relays require a W-bracket for mounting. Order the bracket separately below. To order a relay and bracket packed together, add “-W1” to the part number before the coil voltage suffix. For example, G7J-2A2B-B-W1-AC100/120.

### Model Number Legend

To Order: Select the part number and add the desired coil voltage rating (e.g., G7J-3A1B-B-AC100/120).

G7J -  -  -

1      2      3

**1. Contact Form**

4A: 4PST-NO  
3A1B: 3PST-NO/SPST-NC  
2A2B: DPST-NO/DPST-NC

**2. Terminal Shape**

P: PCB terminals  
B: Screw terminals  
T: Quick-connect terminals (#250 terminal)

**3. Contact Structure**

Z: Bifurcated contact  
None: Single contact

**Note:** For bifurcated contact type, output is 1NO (4PST-NO) or 1NC (3PST-NO/SPST-NC).

## Accessories

| Types      | Applicable relays  | Model          |
|------------|--|----------------|
| W-brackets | G7J-4A-B, G7J-3A1B-B(Z), G7J-2A2B-B, G7J-4A-T(Z), G7J-3A1B-T, G7J-2A2B-T | R99-04-FOR-G5F |

## Typical Applications

Compressors for air conditioners and heater switching controllers.

Switching controllers for power tools or motors.

Lamp controls, motor drivers, and power supply switching controllers in copy machines, facsimile machines, and other office equipment.

Power controllers for packers or food processing equipment.

Power controllers for inverters.

# Specifications

## ■ Contact Data

| Load                    | Resistive load (p.f. = 1)   |   |
|-------------------------|---|---|
|                         | NO  | NC  |
| Rated load              | 25 A @ 220 VAC (1 A @ 220 VAC) / 25 A @ 30 VDC  | 8 A @ 220 VAC (1 A @ 220 VAC)/ 8 A @ 30 VDC |
| Rated carry current     | 25 A (1 A)  | 8 A (1 A)                                   |
| Max. switching voltage  | 250 VAC, 125 VDC  |   |
| Max. switching current  | 25 A (1 A)  | 8 A (1A)                                    |
| Max. switching capacity | 5,500 VA, 750 W DC  | 1,760 VA, 240 W DC                          |
| Min. permissible load   | 100 mA @ 24 VDC (10 mA @ 24 VDC) at 60 operations/minute, 23°C ambient temperature (See note 2) |   |

Note: 1. The values in parentheses indicate values for a bifurcated contact.

2. P level:  $\lambda_{60} = 0.1 \times 10^{-6}$ /operations

## ■ Coil Data

| Rated voltage (VAC) | Rated current (mA) | Coil resistance ( $\Omega$ ) | Must operate       | Must release | Max. voltage | Power consumption     |
|---------------------|--------------------|------------------------------|--------------------|--------------|--------------|-----------------------|
|                     |                    |                              | % of rated voltage |              |              |                       |
| AC                  | 24                 | 75                           | 75% max.           | 15% min.     | 110% @ 23°C  | Approx. 1.8 to 2.6 VA |
|                     | 50                 | 36                           |                    |              |              |                       |
|                     | 100/120            | 18 to 21.60                  |                    |              |              |                       |
|                     | 200/240            | 9 to 10.80                   |                    |              |              |                       |
| DC                  | 12                 | 167                          | 72                 | 10% min.     |              | Approx. 2.0 W         |
|                     | 24                 | 83                           |                    |              |              |                       |
|                     | 48                 | 42                           |                    |              |              |                       |
|                     | 100                | 20                           |                    |              |              |                       |

Note: 1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/-20% for AC rated current and  $\pm 15\%$  for DC coil resistance. The values given for AC rated current apply at 50 Hz or 60 Hz.

2. Performance characteristic data are measured at a coil temperature of 23°C.

## ■ Characteristics

|                                    |   |  |
|------------------------------------|---|--|
| Contact resistance (See note 2)    | 50 m $\Omega$ max.  |  |
| Operating time (See note 3)        | 50 ms max.  |  |
| Release time (See note 3)          | 50 ms max.  |  |
| Operating frequency                | Mechanical  | 1,800 operations/hour max.   |
|                                    | Electrical  | 1,800 operations/hour max.   |
| Insulation resistance (See note 4) | 1,000 M $\Omega$ minimum at 500 VDC                                     |  |
| Dielectric strength                | 4,000 VAC, 50/60 Hz for 1 minute between coil and contacts              |  |
|                                    | 4,000 VAC, 50/60 Hz for 1 minute between contacts of different polarity |  |
|                                    | 2,000 VAC, 50/60 Hz for 1 minute between contacts of the same polarity  |  |
| Impulse withstand voltage          | 10,000 V between coil and contact with 1.2 x 50 $\mu$ s impulse wave    |  |
| Vibration                          | Mechanical durability   | 10 to 55 Hz, 1.50 mm double amplitude  |
|                                    | Malfunction durability  | NO: 10 to 55 Hz, 1.50 mm double amplitude<br>NC: 10 to 26 Hz, 1.50 mm double amplitude |
| Shock                              | Mechanical durability   | 1000 m/s <sup>2</sup> (Approx. 100 G)  |
|                                    | Malfunction durability  | NO: 100 m/s <sup>2</sup> (Approx. 10 G)<br>NC: 20 m/s <sup>2</sup> (Approx. 2 G)       |
| Service life                       | Mechanical  | 1 million operations minimum at 1,800 operations/hour                                  |
|                                    | Electrical  | 100,000 operations minimum at 1,800 operations/hour at rated load (@ 23°C)             |
| Ambient temperature                | Operating   | -25° to 60°C with no icing or condensation   |
| Humidity                           | Operating   | 5% to 85% RH   |
| Weight                             | PCB terminal  | Approx. 140 g  |
|                                    | Screw terminal  | Approx. 165 g  |

Note: 1. Data shown are of initial value.

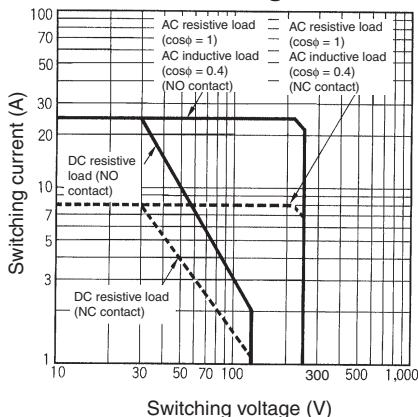
2. Measured with 1A @ 5 VDC using the voltage drop method.

3. Measured with rated voltage imposed, ignoring any contact bounce, at ambient temperature = 23°C.

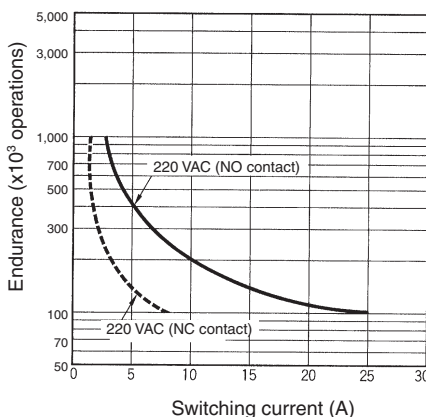
4. Measured with a 500-VDC megger applied to the same places as those used for checking the dielectric strength.

# Engineering Data

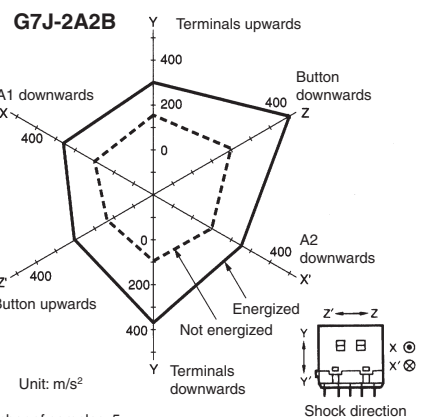
## Maximum Switching Power



## Endurance



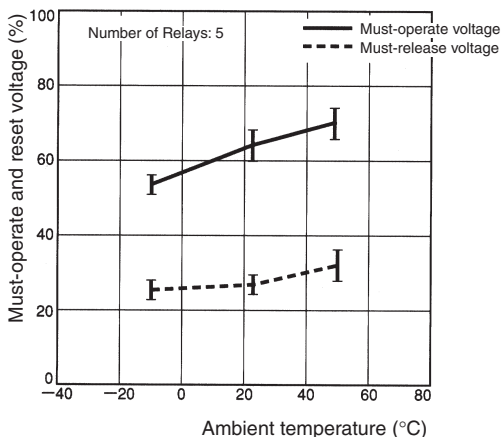
## Malfunctioning Shock



Number of samples: 5  
 Measurement conditions: Increase and decrease the specified shock gradually imposed in  $\pm X$ ,  $\pm Y$ , and  $\pm Z$  directions three times each with the Relay energized and not energized to check the shock values that cause the Relay to malfunction.  
 Criteria: There must not be any contact separation for 1 ms or greater with a shock of  $100 m/s^2$  imposed when the coil is energized or with a shock of  $20 m/s^2$  when the coil is not energized.

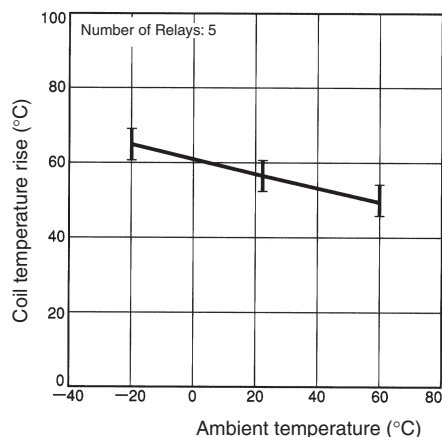
## Ambient Temperature vs. Must-operate and Must-release Voltage

G7J 100 to 120 VAC

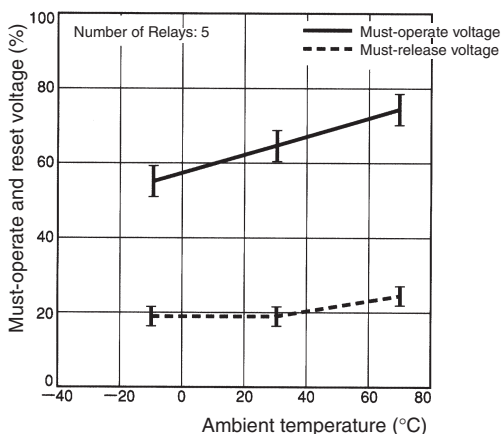


## Ambient Temperature vs. Coil Temperature Rise

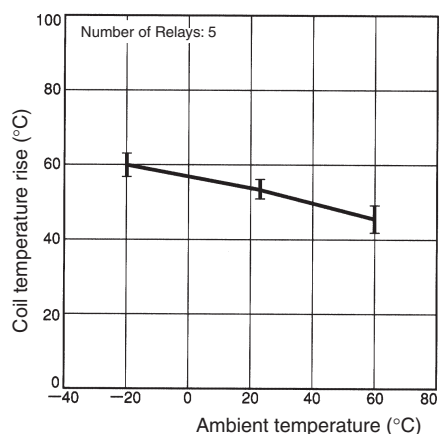
G7J-4A 100 to 120 VAC



G7J 24 VDC



G7J-4A 24 VDC



## Motor Load Performance

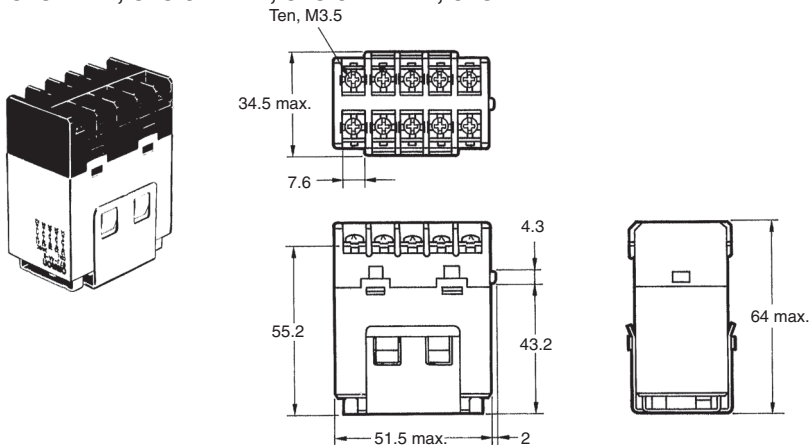
| Item      | G7J-4A-P, G7J-3A1B-P, G7J-4A-B, G7J-3A1B-B, G7J-4A-T, G7J-3A1B-T                          |
|-----------|---|
| Load      | 3 $\phi$ , 220 VAC, 2.7 kW (with a inrush current of 78 A and a breaking current of 13 A) |
| Endurance | Electrical: 100,000 operations min.   |

# Dimensions

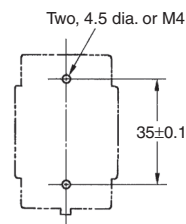
Note: All units are in millimeters unless otherwise indicated

## Screw Terminals with W-bracket

G7J-4A-B, G7J-3A1B-B, G7J-3A1B-BZ, G7J-2A2B-B

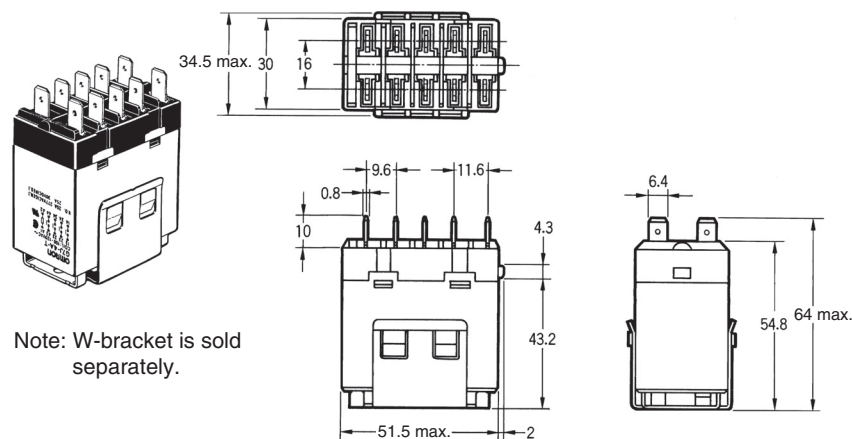


### Mounting Holes

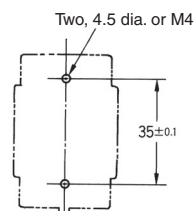


## Quick-connect Terminals with W-bracket

G7J-4A-T, G7J-4A-TZ, G7J-3A1B-T, G7J-2A2B-T



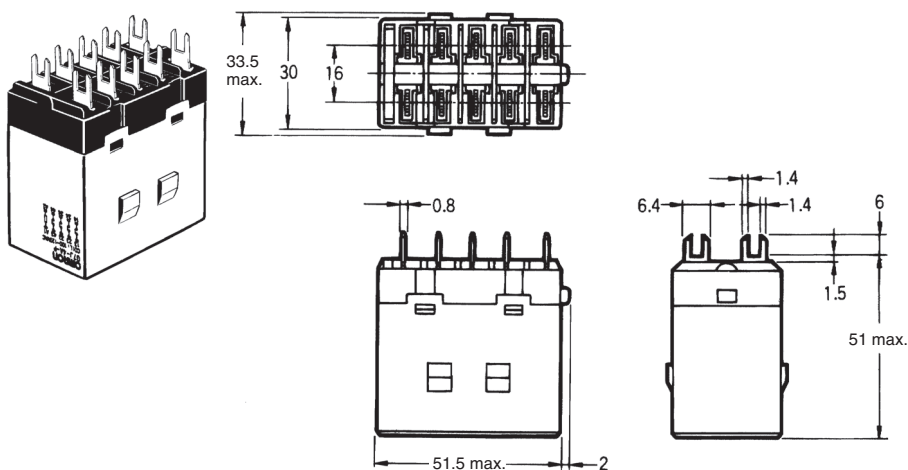
### Mounting Holes



Note: W-bracket is sold separately.

## PCB Terminals with PCB Mounting

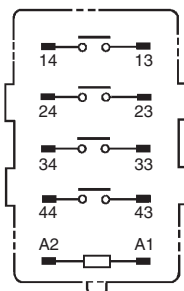
G7J-4A-P, G7J-4A-PZ, G7J-3A1B-P, G7J-3A1B-PZ, G7J-2A2B-P



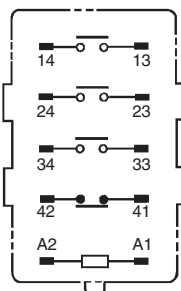
### Mounting Dimensions

## Terminal Arrangement/Internal Connections

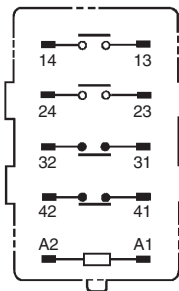
G7J-4A-P  
G7J-4A-B  
G7J-4A-T



G7J-3A1B-P  
G7J-3A1B-B  
G7J-3A1B-T



G7J-2A2B-P  
G7J-2A2B-B  
G7J-2A2B-T

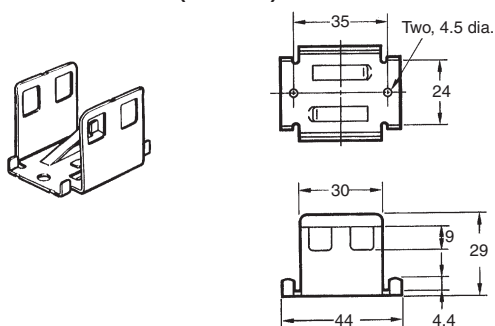


The coil has no polarity.

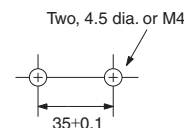
**Note:** Terminals 43 and 44 of the G7J-4A-P(T) and contacts 41 and 42 of the G7J-3A1B-P(B) are bifurcated contacts.

## Accessories (Order Separately)

R99-04 W-bracket (for G5F)



### Mounting Holes



## Approvals

**Note:** 1. The rated values approved by each of the safety standards may be different from the performance characteristics individually defined in this catalog.  
2. In the interest of product improvement, specifications are subject to change without notice.

UL Recognized (File No. E41643) / CSA Certified (File No. LR 35535) - - Ambient Temp = 40°C

| Coil ratings                  | Contact ratings |                              | Number of test operations |
|-------------------------------|-----------------|------------------------------|---------------------------|
| 24 to 265 VAC<br>6 to 110 VDC | NO contact      | 25 A 277 VAC, Resistive      | 30,000                    |
|                               |                 | 25 A 120 VAC, General Use    |                           |
|                               |                 | 25 A 277 VAC, General Use    |                           |
|                               |                 | 25 A 240 VAC, General Use    |                           |
|                               |                 | 1.5 kW 120 VAC, Tungsten     |                           |
|                               |                 | 1.5 hp 120 VAC               | 6,000                     |
|                               |                 | 3 hp 240/265/277 VAC         |                           |
|                               |                 | 3-phase 3 hp 240/265/277 VAC |                           |
|                               |                 | 3-phase 5 hp 240/265/277 VAC |                           |
|                               |                 | 20FLA/120LRA 120 VAC         |                           |
|                               |                 | 17FLA/102LRA 277 VAC         |                           |
|                               |                 | TV-10 120 VAC                | 25,000                    |
|                               |                 | 25 A 30 VDC, Resistive       | 30,000                    |
|                               |                 | *1 A 277 VAC, General Use    | 6,000                     |
|                               | NC contact      | 8 A 277 VAC, Resistive       | 30,000                    |
|                               |                 | 8 A 120 VAC, General Use     |                           |
|                               |                 | 8 A 277 VAC, General Use     |                           |
| 8 A 30 VDC, Resistive         |                 |                              |                           |
| *1 A 277 VAC, General Use     |                 | 6,000                        |                           |

**Note:** \*These ratings are bifurcated contact ratings.

**Reference**

UL approval: UL508 for industrial control devices  
 UL1950 for information processing equipment including business machines  
 CSA approval: CSA C22.2 No. 14 for industrial control devices  
 CSA C22.2 No. 950 for information processing equipment including business machines

**VDE - EN60255-1-00: 1997 and EN60255-23: 1996(File No. 5381UG)**

| Model             | Coil ratings                       | Contact ratings               |                              |
|-------------------|------------------------------------|-------------------------------|------------------------------|
|                   |                                    | NO contact                    | NC contact                   |
| G7J-4A-B(P) (T)   | 6, 12, 24, 48, 100 VDC             | 25 A 240 VAC $\cos\phi = 0.4$ | 8 A 240 VAC $\cos\phi = 0.4$ |
| G7J-2A2B(P) (T)   | 24, 50, 100 to 120, 200 to 240 VAC | 25 A 240 VAC $\cos\phi = 1$   | 8 A 240 VAC $\cos\phi = 1$   |
| G7J-3A1B-B(P) (T) |                                    | 25 A 30 VDC $L/R \geq 1$      | 8 A 30 VDC $L/R \geq 1$      |

**Note:** Add the suffix “-KM” to the model number when ordering.

**KEMA - EN60947-4-1 and IEC947-4-1 for contacts (File No. 2001291.02)**

| Model                                  | Coil ratings   | Contact ratings - NO contact   |
|--|--|--|
| G7J-4A-B(P) (T) (Z)<br>G7J-2A2B(P) (T) | 200 to 240 VAC   | Class AC1: 25 A at 220 VAC<br>11.5 A at 380 to 480 VAC                                 |
| G7J-3A1B-B(P) (T) (Z)                  | 6, 12, 24, 48, 100 VDC<br>24, 50, 100 to 120, 200 to 240 VAC | Class AC3: 11.5 A at 220 VAC and 8.5 A at 380 to 480 VAC<br>*Class AC1: 1 A at 220 VAC |

**Note:** Add the suffix “-KM” to the model number when ordering. \*This rating is the bifurcated contact rating.

# Precautions

**Note:** Be sure to read the precautions and information common to all relays, contained in the Technical User's Guide, “Electromechanical Relays - Technical Information”, for correct use.

## Correct Use

### Installation

PCB Terminal-equipped Relays weigh approximately 140 g. Be sure that the PCB is strong enough to support them. We recommend dual-side through-hole PCBs to reduce solder cracking from heat stress.

Mount the G7J with its test button facing downwards. The Relay may malfunction due to shock if the test button faces upwards. Be careful not to press the test button by mistake because the contacts will go ON if the test button is pressed.

Be sure to use the test button for test purposes only. The test button is used for Relay circuit tests, such as a circuit continuity test. Do not attempt to switch the load with the test button. If a voltage is applied to the coil, the test button will retract in an ON state (i.e., an excited state).

### Micro Loads

The G7J is used for switching power loads, such as motor, transformer, solenoid, lamp, and heater loads. Do not use the G7J for switching minute loads, such as signals. Use a Relay with a bifurcated contact construction for switching micro loads, in which case, however, only SPST-NO or SPST-NC output is obtained.

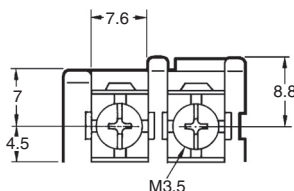
### Soldering PCB Terminals

Be sure to solder the PCB terminals manually only. In the case of automatic soldering, some flux may stick to the test button and the G7J. As a result, the G7J may malfunction.

The G7J is not of enclosed construction. Therefore, do not wash the G7J with water or any detergent.

### Connecting

Refer to the following diagram when connecting a wire with a screw terminal to the G7J.



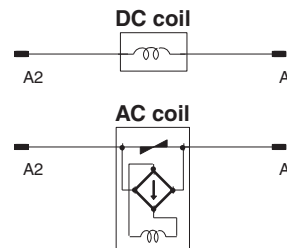
Allow suitable slack on leads when wiring, and do not subject the terminals to excessive force.

Tightening torque: 0.98 N·m

Do not impose excessive external force on the G7J in the horizontal or vertical directions when inserting the G7J to the Faston receptacle or pulling the G7J out from the Faston receptacle. Do not attempt to insert or pull out more than one G7J Unit together.

Do not solder the tab terminals.

### Operating Coil Internal Connections of Coils



If a transistor drives the G7J, check the leakage current, and connect a bleeder resistor if necessary.

The AC coil is provided with a built-in full-wave rectifier that prevents contact chatter during a voltage drop. This circuit allows the relays to withstand, with no vibration or shock, voltage drops to the coil of up to 50% of the rated coil voltage for 1 second max.

If a triac, such as an SSR, drives the AC coil of the G7J, the G7J may not release. Be sure to perform a trial operation with the G7J and the triac before applying them to actual use.

# Omron Electronic Components, LLC

## Terms and Conditions of Sales

### I. GENERAL

- Definitions:** The words used herein are defined as follows.
  - Terms:** These terms and conditions
  - Seller:** Omron Electronic Components LLC and its subsidiaries
  - Buyer:** The buyer of Products, including any end user in section III through VI
  - Products:** Products and/or services of Seller
  - Including:** Including without limitation
- Offer; Acceptance:** These Terms are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of Products by Seller. Seller hereby objects to any Terms proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Distributor:** Any distributor shall inform its customer of the contents after and including section III of these Terms.

### II. SALES

- Prices; Payment:** All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at the time the purchase order is accepted by Seller. Payments for Products received are due net 30 days unless otherwise stated in the invoice. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.
- Discounts:** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (a) the invoice is paid according to Seller's payment terms and (b) Buyer has no past due amounts owing to Seller.
- Interest:** Seller, at its option, may charge Buyer 1.5% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- Orders:** Seller will accept no order less than 200 U.S. dollars net billing.
- Currencies:** If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
- Governmental Approvals:** Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
- Taxes:** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
- Financial:** If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- Cancellation; Etc:** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
- Force Majeure:** Seller shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
- Shipping; Delivery:** Unless otherwise expressly agreed in writing by Seller:
  - All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buyer;
  - Delivery and shipping dates are estimates only; and
  - Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- Claims:** Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier or any claim related to pricing or other charges must be presented in detail in writing to Seller within 30 days of receipt of shipment.

### III. PRECAUTIONS

- Suitability:** IT IS THE BUYER'S SOLE RESPONSIBILITY TO ENSURE THAT ANY OMRON PRODUCT IS FIT AND SUFFICIENT FOR USE IN A MOTORIZED VEHICLE APPLICATION. BUYER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING APPROPRIATENESS OF THE PARTICULAR PRODUCT WITH RESPECT TO THE BUYER'S APPLICATION INCLUDING (A) ELECTRICAL OR ELECTRONIC COMPONENTS, (B) CIRCUITS, (C) SYSTEM ASSEMBLIES, (D) END PRODUCT, (E) SYSTEM, (F) MATERIALS OR SUBSTANCES OR (G) OPERATING ENVIRONMENT. Buyer acknowledges that it alone has determined that the Products will meet their requirements of the intended use in all cases. Buyer must know and observe all prohibitions of use applicable to the Product/s.
- Use with Attention:** The followings are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible use of any Product, nor to imply that any use listed may be suitable for any Product:
  - Outdoor use, use involving potential chemical contamination or electrical interference.

- Use in consumer Products or any use in significant quantities.
  - Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - Systems, machines, and equipment that could present a risk to life or property.
- Prohibited Use:** NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
  - Motorized Vehicle Application:** USE OF ANY PRODUCT/S FOR A MOTORIZED VEHICLE APPLICATION MUST BE EXPRESSLY STATED IN THE SPECIFICATION BY SELLER.
  - Programmable Products:** Seller shall not be responsible for the Buyer's programming of a programmable Product.

### IV. WARRANTY AND LIMITATION

- Warranty:** Seller's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Seller (or such other period expressed in writing by Seller). SELLER MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT ALL OTHER WARRANTIES, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS.
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- Performance Data:** Performance data is provided as a guide in determining suitability and does not constitute a warranty. It may represent the result of Seller's test conditions, and the users must correlate it to actual application requirements.
- Change In Specifications:** Product specifications and descriptions may be changed at any time based on improvements or other reasons. It is Seller's practice to change part numbers when published ratings or features are changed, or when significant engineering changes are made. However, some specifications of the Product may be changed without any notice.
- Errors And Omissions:** The information on Seller's website or in other documentation has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.
- Export Controls:** Buyer shall comply with all applicable laws, regulations and licenses regarding (a) export of the Products or information provided by Seller; (b) sale of Products to forbidden or other proscribed persons or organizations; (c) disclosure to non-citizens of regulated technology or information.

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  - (ii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
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