

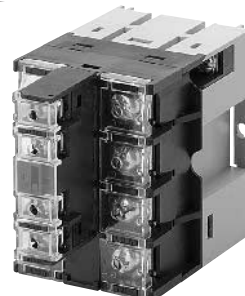
# Power Relays G7Z

## Multi-pole Power Relay for Carrying and Switching Contactor Current Range of 40 A at 440 VAC

- 40 A can be carried and switched on each of 4 poles.
- Possible to reach a maximum load capacity of 160 A when using 4-pole parallel connections.
- EN 60947-4-1 certification for mirror contact mechanisms has been obtained by using a combination of the relay and auxiliary contact blocks.
- Typical applications: high current or high inrush power supplies, commercial and industrial.
- RoHS compliant.

**Note:** Refer to *Precautions for Correct Use* on page 7.

**NEW**



## Model Number Structure

### Model Number Legend

#### Relay with Auxiliary Contact Block

G7Z- □ - □ □  
1 2 3

##### 1. Relay Contact Configuration

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

##### 2. Contact Configuration of Auxiliary Contacts

- 20: DPST-NO
- 11: SPST-NO/SPST-NC
- 02: DPST-NC

##### 3. Contact Mechanism of Auxiliary Contacts

- Z: Bifurcated crossbar contact

#### Auxiliary Contact Block

G73Z- □ □  
1 2

##### 1. Contact Configuration of Auxiliary Contacts

- 20: DPST-NO
- 11: SPST-NO/SPST-NC
- 02: DPST-NC

##### 2. Contact Mechanism of Auxiliary Contacts

- Z: Bifurcated crossbar contact

### Configuration

Classification	Structure	Contact configuration		Screw terminals (See notes 1 and 2)
		Relay	Auxiliary Contact Block	
Relay with Auxiliary Contact Block	4 poles + 2 poles	4PST-NO	DPST-NO	G7Z-4A-20Z
			SPST-NO/SPST-NC	G7Z-4A-11Z
			DPST-NC	G7Z-4A-02Z
		3PST-NO/SPST-NC	DPST-NO	G7Z-3A1B-20Z
			SPST-NO/SPST-NC	G7Z-3A1B-11Z
			DPST-NC	G7Z-3A1B-02Z
		DPST-NO/DPST-NC	DPST-NO	G7Z-2A2B-20Z
			SPST-NO/SPST-NC	G7Z-2A2B-11Z
			DPST-NC	G7Z-2A2B-02Z
Auxiliary Contact Block	2 poles	—	DPST-NO	G73Z-20Z
			SPST-NO/SPST-NC	G73Z-11Z
			DPST-NC	G73Z-02Z

**Note:** 1. Relay contact terminals are M5, and the coil terminals are M3.5.

2. Auxiliary contact block terminals are M3.5.

## Ordering Information

### ■ Relay with Auxiliary Contact Block

#### Relay with Auxiliary Contact Block (for Screw Terminals)

Contact configuration		Rated voltage	Model
Relay	Auxiliary contact block		
4PST-NO	DPST-NO	12, 24 VDC	G7Z-4A-20Z
	SPST-NO/SPST-NC	12, 24 VDC	G7Z-4A-11Z
	DPST-NC	12, 24 VDC	G7Z-4A-02Z
3PST-NO/SPST-NC	DPST-NO	12, 24 VDC	G7Z-3A1B-20Z
	SPST-NO/SPST-NC	12, 24 VDC	G7Z-3A1B-11Z
	DPST-NC	12, 24 VDC	G7Z-3A1B-02Z
DPST-NO/DPST-NC	DPST-NO	12, 24 VDC	G7Z-2A2B-20Z
	SPST-NO/SPST-NC	12, 24 VDC	G7Z-2A2B-11Z
	DPST-NC	12, 24 VDC	G7Z-2A2B-02Z

### ■ Accessories (Order Separately)

#### Auxiliary Contact Block

Contact configuration	Model
DPST-NO	G73Z-20Z
SPST-NO/SPST-NC	G73Z-11Z
DPST-NC	G73Z-02Z

## Specifications

### ■ Ratings

#### Coil Ratings

Rated voltage	Item	Rated current	Coil resistance	Must operate voltage	Must release voltage	Maximum voltage	Power consumption
				Percentage of rated voltage			
12 VDC		333 mA	39 Ω	75% max.	10% min.	110%	Approx. 3.7 W
24 VDC		154 mA	156 Ω				

- Note:**
1. Rated current and coil resistance were measured at a coil temperature of 23° C with coil resistance of ±15%.
  2. Operating characteristics were measured at a coil temperature of 23° C.
  3. The maximum allowable 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. There is, however, no continuous allowance.

### Contact Ratings

#### Relay

Item	Model	G7Z-4A-□Z, G7Z-3A1B-□Z, G7Z-2A2B-□Z		
		Resistive load	Inductive load cosφ = 0.3	Resistive load L/R = 1 ms
Contact structure		Double break		
Contact material		AgSnIn		
Rated load	NO	40 A at 440 VAC	22 A at 440 VAC	5 A at 110 VDC
	NC	25 A at 440 VAC	10 A at 440 VAC	5 A at 110 VDC
Rated carry current	NO	40 A	22 A	5 A
	NC	25 A	10 A	5 A
Maximum contact voltage		480 VAC		125 VDC
Maximum contact current	NO	40 A		
	NC	25 A		
Maximum switching capacity	NO	17,600 VA	9,680 VA	550 W
	NC	11,000 VA	4,400 VA	550 W
Minimum load		2 A at 24 VDC		

**Note:** The ratings for the auxiliary contact block mounted on the G7Z are the same as those for the G73Z auxiliary contact block.

#### Auxiliary Contact Block

Item	Model	G73Z-20Z, G73Z-11Z, G73Z-02Z		
		Resistive load	Inductive load cosφ = 0.3	Resistive load L/R = 1 ms
Contact structure		Double break		
Contact material		AgSnIn + Ag Rotary		
Rated load		1 A at 440 VAC	0.5 A at 440 VAC	5 A at 110 VDC
Rated carry current		1 A		
Maximum contact voltage		480 VAC		125 VDC
Maximum contact current		1 A		
Maximum switching capacity		440 VA	220 VA	110 W
Minimum load		1 mA at 5 VDC		

## ■ Characteristics

Item	Classification		Relay (See note 6.)	Auxiliary contact block
	Model		G7Z-4A-□Z, G7Z-3A1B-□Z, G7Z-2A2B-□Z	G73Z-20Z, G73Z-11Z, G73Z-02Z
Contact resistance (See note 2.)			100 mΩ max.	
Operating time (See note 3.)			50 ms max.	
Release time (See note 3.)			50 ms max.	
Maximum operating frequency	Mechanical	1,800 operations/h		
	Rated load	1,200 operations/h		
Insulation resistance (See note 4.)			1,000 MΩ min.	
Dielectric strength	Between coil and contacts	4,000 VAC, 50/60 Hz for 1 min		—
	Between contacts of different polarity	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	10 kV, 1.2 x 50 μs		—
	Between contacts of different polarity	10 kV, 1.2 x 50 μs		
	Between contacts of the same polarity	4.5 kV, 1.2 x 50 μs		
Vibration resistance	Destruction	10 to 55 to 10 Hz, 0.5-mm single amplitude (1.0-mm double amplitude)		
	Malfunction	NO: 10 to 55 to 10 Hz, 0.5-mm single amplitude (1.0-mm double amplitude) NC: 10 to 32 to 10 Hz, 0.5-mm single amplitude (1.0-mm double amplitude)		
Shock resistance	Destruction	Screw mounting: 800 m/s <sup>2</sup> , DIN Track mounting: 500 m/s <sup>2</sup>		
	Malfunction	NO: 100 m/s <sup>2</sup> NO: 25 m/s <sup>2</sup>		
Endurance	Mechanical	1,000,000 operations min. (at 1,800 operations/h, contact no load)		
	Electrical (See note 5.)	AC resistive load: 80,000 operations AC inductive load: 80,000 operations DC resistive load: 100,000 operations (at 1,200 operations/h, rated load)		
Minimum load			2 A at 24 VDC	1 mA at 5 VDC
Ambient operating temperature			-25 to 60° C (with no icing or condensation)	
Ambient operating humidity			5% to 85%	
Weight			Approx. 330 g	

**Note: 1.** The above values are initial values.

2. The contact resistance for the Relay (G7Z) was measured with 1 A at 5 VDC using the voltage drop method.  
The contact resistance for the auxiliary contact block (G73Z) was measured with 0.1 A at 5 VDC using the voltage drop method.
3. The operate time was measured with the rated voltage imposed with any contact bounce ignored at the ambient temperature of 23° C.
4. The insulation resistance was measured with a 1,000-VDC megohmmeter applied to the same places as those used for checking the dielectric strength.
5. The electrical endurance was measured at an ambient temperature of 23° C.
6. The specifications for the auxiliary contact block mounted on the G7Z are the same as those for the G73Z auxiliary contact block.

■ Approved Standards

**UL Standard: UL508, UL840 (File No. E41643)**

Model	Coil ratings	Contact ratings		Number of test operations
G7Z	12, 24 VDC	NO contact	40 A, 480 VAC, 60 Hz (Resistive)	80,000
			5 A, 120 VDC (Resistive)	100,000
			22 A, 480 VAC, 60 Hz (General Use)	100,000
			D300* (1-A current applied)	—
		NC contact	25 A, 480 VAC, 60 Hz (Resistive)	100,000
			5 A, 120 VDC (Resistive) 10 A, 480 VAC, 60 Hz (General Use) D300* (1-A current applied)	—

Note: Auxiliary contact ratings

Model	Contact ratings	
G73Z	NO contact	D300 (1-A current applied)
	NC contact	

**CSA Standard: CSA Certification by**

 **US: CSA C22.2 No. 14**

**EN Standard/TÜV Certification: EN 60947-4-1 (Certification No. R50079155)**

Model	Coil ratings	Contact ratings	
G7Z	12, 24 VDC	NO contact	AC-1: 40 A, 440 V, 50/60 Hz
			AC-3: 16 A, 440 V, 50/60 Hz
			DC-1: 5 A, 110 V
			*AC15: 0.5 A, 440 V, 50/60 Hz
		NC contact	*DC13: 0.5 A, 110 V
			AC-1: 25 A, 440 V, 50/60 Hz
G73Z	—	NO contact	DC-1: 5 A, 110 V
			*AC15: 0.5 A, 440 V, 50/60 Hz
		NC contact	*DC13: 0.5 A, 110 V
			DC13: 0.5 A, 110 V

Note: Auxiliary contact ratings

**Reference Information**

- UL 508: Industrial control devices
- UL 840: Insulation coordination including clearance and creepage distance for electrical devices
- CSA C22.2 No. 14: Industrial control devices
- EN 60947-4-1: Contactors

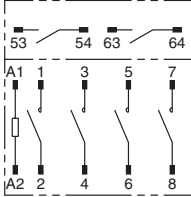
# Connections

## Terminal Arrangement/Internal Connections

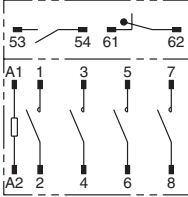
### Relay with Auxiliary Contact Block

Note: non-polarized coil.

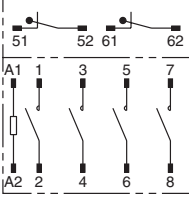
G7Z-4A-20Z



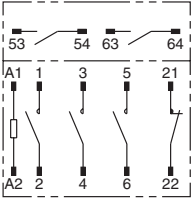
G7Z-4A-11Z



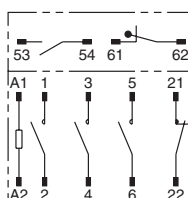
G7Z-4A-02Z



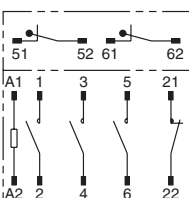
G7Z-3A1B-20Z



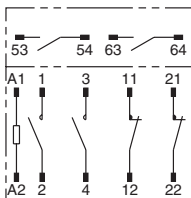
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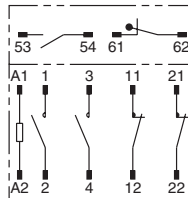
G7Z-3A1B-02Z



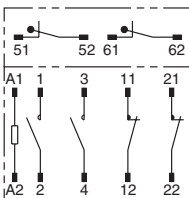
G7Z-2A2B-20Z



G7Z-2A2B-11Z

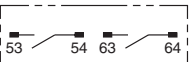


G7Z-2A2B-02Z

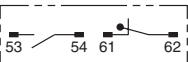


### Auxiliary Contact Block

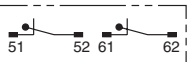
G73Z-20Z



G73Z-11Z



G73Z-02Z



# Dimensions

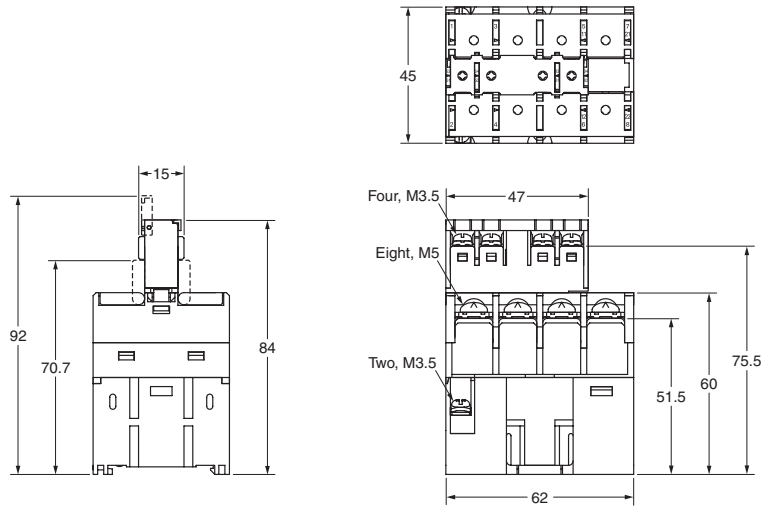
**Note:** All units are in millimeters unless otherwise indicated.

## Relay (12 VDC, 24 VDC) with Auxiliary Contact Block

4 Poles

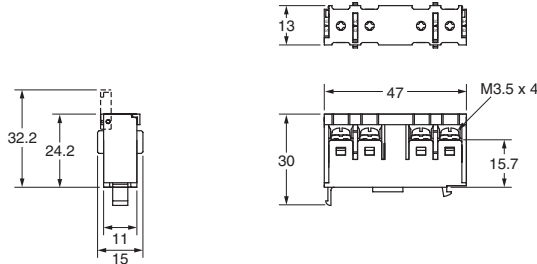


Mounting Hole Dimensions



**Note:** The dimensions are typical values.

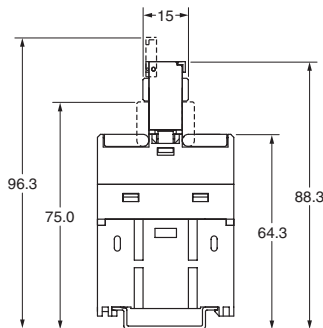
## Auxiliary Contact Block



**Note:** The dimensions are typical values.

## DIN Track Mounting Height

(when using the PFP-100N or PFP-50N mounting rail)



**Note:** The dimensions are typical values.

# Precautions

Be sure to read the common precautions provided in *Best Control Devices Catalog Version 17* before using the Relay.

**⚠ WARNING**

Take measures to prevent contact with charged parts when using the Relay for high voltages.



**⚠ Caution**

Do not touch the terminal section (charged parts) when power is being supplied. Always use the Relay with terminal covers mounted. Contact with charged parts may result in electric shock.



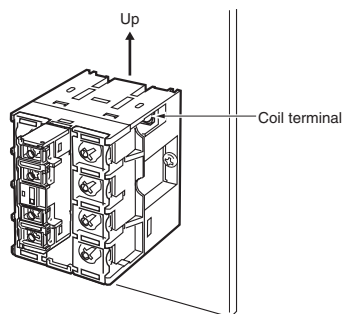
Do not touch the Relay when power is being supplied or right after the power has been turned OFF. The hot surface may cause burn injury.



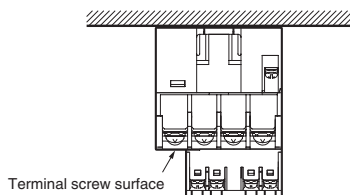
## ■ Precautions for Correct Use

### Installation

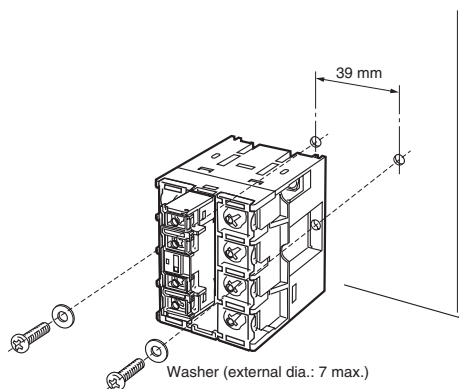
- Mount the G7Z with the coil terminal at the top.



- Do not use the Relay with the terminal screw surfaces facing down.

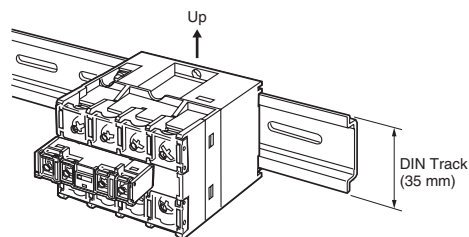


- To mount the Relay, secure M4 screws in two locations. Use a screw-tightening torque of 1.2 to 1.3 N•m.

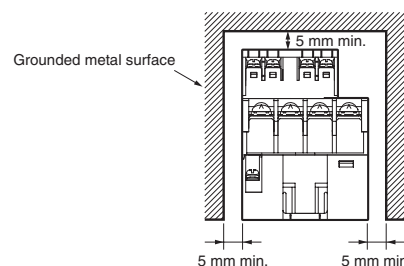


- The Relay can be mounted directly on a mounting rail (PTP) or a DIN Track (EN 50022-35 x 7.5, 15). The Relay cannot be mounted, however, to some reinforced rails (e.g., those produced by Kameda Denki or Toyogiken).

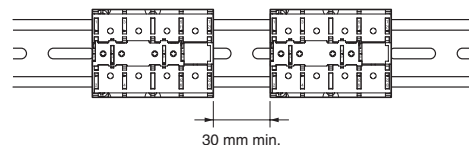
- Mount the Relay sideways when it is mounted on a rail.
- Use End Plates (PFP-M) on both sides of the Relay to make sure that it is properly secured.



- Provide at least 5 mm of space between the sides and top of the Relay and nearby grounded metal surfaces.



- Provide at least 30 mm of space between Relays when two or more Relays are mounted in a row.

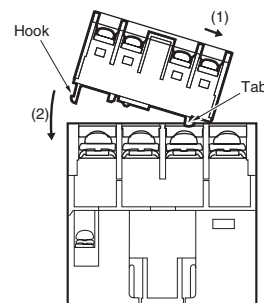


- The auxiliary contact block (G73Z) can be mounted on the Relay.

## Mounting and Removal

### Mounting

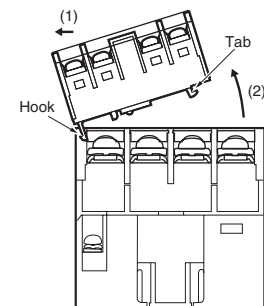
Insert the tab on the auxiliary contact block into the groove on the Relay and press down until the hook on the auxiliary contact block catches in the mounting hole on the Relay.



### Removing

Slide the auxiliary contact block, remove the auxiliary contact block tab from the groove on the Relay, and remove the auxiliary contact block hook from the Relay.

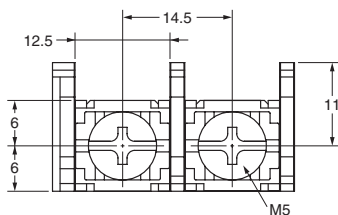
Be careful not to apply excessive force on the hook.



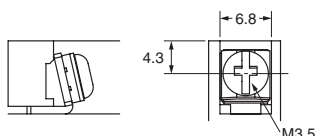
## Connecting

- Use round or open-end (Y-type) crimp terminals and connect the terminals with the appropriate tightening torque. Refer to the terminal section space in the following figure for the crimp terminal dimensions.

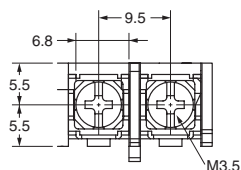
### Relay Contacts (Unit: mm)



### Relay Coil



### Auxiliary Contact Block



- One crimp terminal can be used for the Relay contact section (M5 screw). Two crimp terminals can be connected for the coil terminal and auxiliary contact block.

### Recommended Crimp Terminals and Wire

Location	Crimp terminals	Appropriate wire size
Contact section	5.5-5	2.63 to 6.64 mm <sup>2</sup> (AWG12, 10)
	8-5	6.64 to 10.52 mm <sup>2</sup> (AWG8)
Coil section	1.25-3.5	0.5 to 1.65 mm <sup>2</sup> (AWG20 to 16)

- Use the following tightening torque when tightening screws. Loose screws may result in fire caused by abnormal heat generated when the power is being supplied.  
M5 screws: 2.0 to 2.2 N•m  
M3.5 screws: 0.8 to 0.9 N•m
- Allow suitable slack on leads when wiring, and do not subject the terminals to excessive force.

## Microloads

The G7Z is used for switching power loads, such as current carry for device power supplies and heater loads. Use an auxiliary contact block (G73Z) if microloads are required for signal applications and operation status feedback.

## Operating Coil

### (Internal Connections of Coils)

#### DC Coil

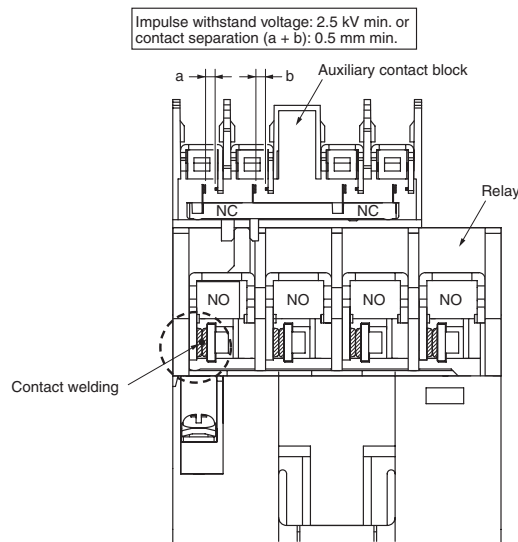


- If a transistor drives the G7Z, check the leakage current and connect a bleeder resistor if necessary.
- The must operate voltage is the minimum value for the Relay armature to operate and the contacts to turn ON. Therefore, fundamentally apply the rated voltage to the coils, taking into consideration the increases in coil resistance caused by voltage fluctuation and coil temperature rise.

## Mirror Contact Mechanism

By combining a Relay with an auxiliary contact block, all NC contacts of the auxiliary contact block will satisfy an impulse withstand voltage of more than 2.5 kV or maintain a gap of more than 0.5 mm when the coil is de-energized even if at least one NO contact (main contact) of the Relay is welded (according to EN 60947-4-1).

### Description of Mirror Contact Mechanism





# Warranty and Application Considerations

## Read and Understand this Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

## Application Considerations

### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS 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 OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

## Disclaimers

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty.

It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON *Warranty and Limitations of Liability*.

### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

# 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 time of shipment. 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 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.
- Buyer Remedy:** Seller's sole obligation hereunder shall be to replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product or, at Seller's election, to repay or credit Buyer an amount equal to the purchase price of the Product; provided that there shall be no liability for Seller or its affiliates unless Seller's analysis confirms that the Products were handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Seller before shipment.
- Limitation on Liability:** SELLER AND ITS AFFILIATES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. FURTHER, IN NO EVENT SHALL LIABILITY OF SELLER OR ITS AFFILIATES EXCEED THE INDIVIDUAL PRICE OF THE PRODUCT ON WHICH LIABILITY IS ASSERTED.
- Indemnities:** Buyer shall indemnify and hold harmless Seller, its affiliates and its employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Seller is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products.

### V. INFORMATION; ETC.

- Intellectual Property:** The intellectual property embodied in the Products is the exclusive property of Seller and its affiliates and Buyer shall not attempt to duplicate it in any way without the written permission of Seller. Buyer (at its own expense) shall indemnify and hold harmless Seller and defend or settle any action brought against Seller to the extent that it is based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
- Property/Confidentiality:** Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Seller. All information and materials supplied by Seller to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
- 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 description 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.

### VI. MISCELLANEOUS

- Waiver:** No failure or delay by Seller in exercising any right and no course of dealing between Buyer and Seller shall operate as a waiver of rights by Seller.
- Assignment:** Buyer may not assign its rights hereunder without Seller's written consent.
- Law:** These Terms are governed by Illinois law (without regard to conflict of laws). Federal and state courts in Illinois have exclusive jurisdiction for any dispute hereunder.
- Amendment:** These Terms constitute the entire agreement between Buyer and Seller relating to the Products, and no provision may be changed or waived unless in writing signed by the parties.
- Severability:** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision.

## Certain Precautions on Specifications and Use

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1. **Suitability for Use.** Seller shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in Buyer's application or use of the Product. At Buyer's request, Seller will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given:
  - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
  - (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.
  - (iii) Use in consumer products or any use in significant quantities.
  - (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this product.
2. **Programmable Products.** Seller shall not be responsible for the user's programming of a programmable product, or any consequence thereof.
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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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