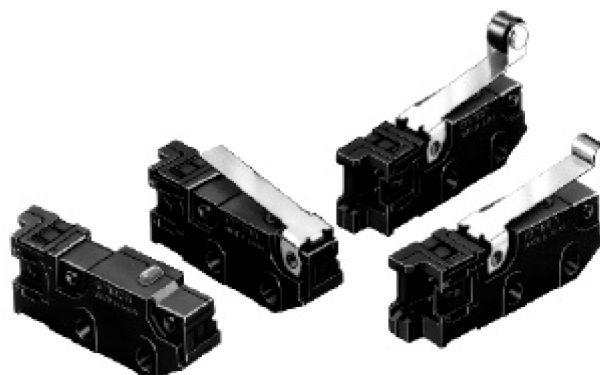




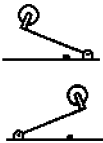
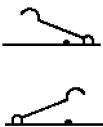
# Subminiature Snap Action Switch D3M

## Saves Wiring Effort, Production Steps, and Time

- Easy wiring ensured through the Quick-Connect Terminals
- External actuator mounts in either of two directions
- Horizontal layout of terminals saves mounting space
- Same internal mechanism as the OMRON SS Subminiature Snap Action Switch
- RoHS Compliant



## Ordering Information

Actuator	Actuator mounting position	Contact type	Model
Pin plunger 	—	SPST-NC	D3M-01
		SPST-NO	D3M-01-3
Hinge lever 	High ratio operating position	SPST-NC	D3M-01K1
		SPST-NO	D3M-01K1-3
	Standard operating position	SPST-NC	D3M-01L1
		SPST-NO	D3M-01L1-3
Hinge roller lever 	High ratio operating position	SPST-NC	D3M-01K2
		SPST-NO	D3M-01K2-3
	Standard operating position	SPST-NC	D3M-01L2
		SPST-NO	D3M-01L2-3
Simulated roller lever 	High ratio operating position	SPST-NC	D3M-01K3
		SPST-NO	D3M-01K3-3
	Standard operating position	SPST-NC	D3M-01L3
		SPST-NO	D3M-01L3-3

## ■ Connectors

Refer to *Wiring* under the Precautions section of this data sheet.

# Specifications

## ■ Characteristics

Permissible operating speed (see note 1)		0.1 mm/s to 1 m/s
Permissible operating frequency	Mechanical	400 operations/min max.
	Electrical	60 operations/min max.
Insulation resistance		100 MΩ min. at 500 VDC
Contact resistance (initial value)		100 mΩ max. including connector and 50-mm AWG28 lead wire resistance
Dielectric strength	Between terminals of the same polarity	1,000 VAC at 50/60 Hz for 1 min
	Between charged metal part and ground	1,500 VAC at 50/60 Hz for 1 min
	Between non-charged metal part and each terminal	1,500 VAC at 50/60 Hz for 1 min
Vibration resistance	Malfunction (See Note 2.)	10 to 55 Hz, 1.5-mm double amplitude for 1 ms max. with contacts closed or open.
Shock resistance	Destruction	1,000 m/s <sup>2</sup> (approx. 100G)
	Malfunction (See Note 2.)	300 m/s <sup>2</sup> (approx. 30G) for 1 ms max. with contacts closed or open.
Life expectancy	Mechanical	500,000 operations (at full-stroke operating speed of 10 mm/s at a frequency of 60 operations/min)
	Electrical	200,000 operations (at full-stroke operating speed of 10 mm/s at a frequency of 30 operations/min)
Enclosure rating		IP00
Degree of protection against electric shock		Class I
Proof tracking index (PTI)		175
Ambient temperature	Operating	-25°C to 85°C (with no icing)
Ambient humidity	Operating	85% max.
Weight		Approx. 2 g (pin plunger model)

**Note:** 1. The permissible operating speed applies to pin plunger models.

2. If a lever actuator model is used, the above vibration resistance conditions will apply when the actuator is in the maximum over-travel position.

## ■ Operating Characteristics

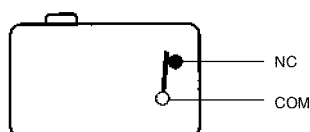
Characteristics	Part number						
	D3M-01 D3M-01-3	D3M-01K1 D3M-01K1-3	D3M-01L1 D3M-01L1-3	D3M-01K2 D3M-01K2-3	D3M-01L2 D3M-01L2-3	D3M-01K3 D3M-01K3-3	D3M-01L3 D3M-01L3-3
Max. operating force (OF)	153 gf	51 gf	102 gf	51 gf	102 gf	51 gf	102 gf
Min. reset force (RF)	25 gf	6 gf	10 gf	6 gf	10 gf	6 gf	10 gf
Min. pretravel (PT)	0.6 mm	—	—	—	—	—	—
Min. overtravel (OT)	0.4 mm	1.2 mm	0.7 mm	1.2 mm	0.7 mm	1.2 mm	0.7 mm
Max. movement differential (MD)	0.1 mm	0.8 mm	0.6 mm	0.8 mm	0.6 mm	0.8 mm	0.6 mm
Max. free position (FP)	—	14.0 mm	11.5 mm	19.7 mm	17.2 mm	16.2 mm	13.6 mm
Operating position (OP)	8.4±0.3 mm	10.0±0.8 mm	9.2±0.6 mm	15.7±0.8 mm	14.9±0.6 mm	12.2±0.8 mm	11.3±0.6 mm

**Note:** 1. A tolerance of ±0.4 mm applies to all of the above dimensions unless otherwise specified.

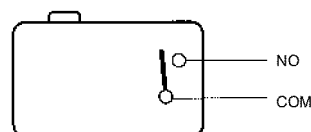
2. The operating characteristics apply when each actuator is moved in the direction indicated by the arrow and "A."

## ■ Contact Form

SPST-NC



SPST-NO



## Approved Standards

EN61058-1

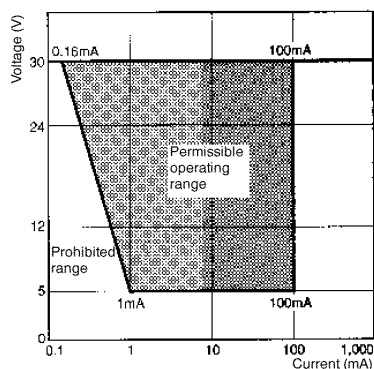
UL1054

CSA C22.2 No. 55

## Ratings

Rated voltage	Resistive load
30 VDC	0.1 A

Use the D3M in the following permissible operating range.



## Minimum Applicable Load (Level N)

Voltage	Resistive load
5 VDC	1 mA

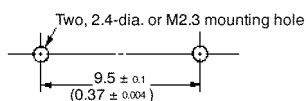
Refer to *Minimum Load* under the Precautions section of this data sheet.

## Dimensions

Unit: mm (inch)

## Mounting Dimensions for All Models

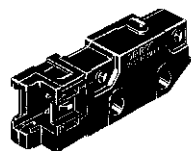
Use M2.3 screws, flat washers, and spring washers to mount the D3M securely. Make sure that the tightening torque applied to each screw is within a range from 2.3 to 2.7 kgf • cm.



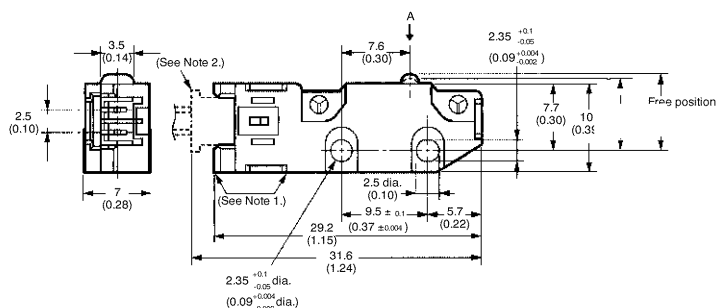
## Pin Plunger

D3M-01

D3M-01-3

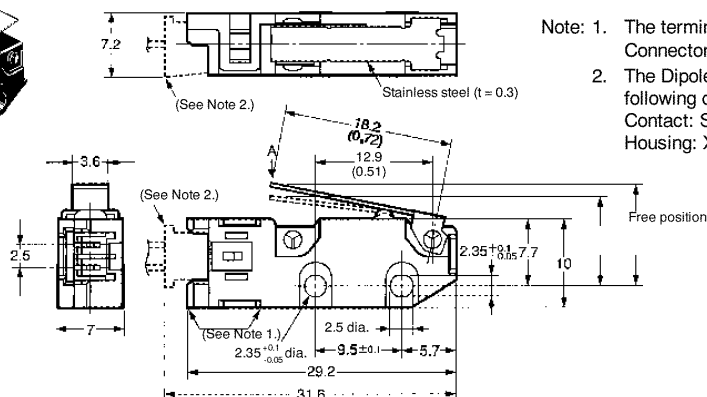
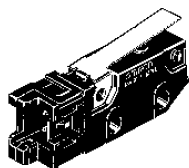


- Note: 1. The terminals connect to JST's Dipole XA Connector.  
2. The Dipole XA Connector consists of the following components.  
Contact: SAX-001T-P0.6  
Housing: XAP-02V-1(13)



## ■ Hinge Lever

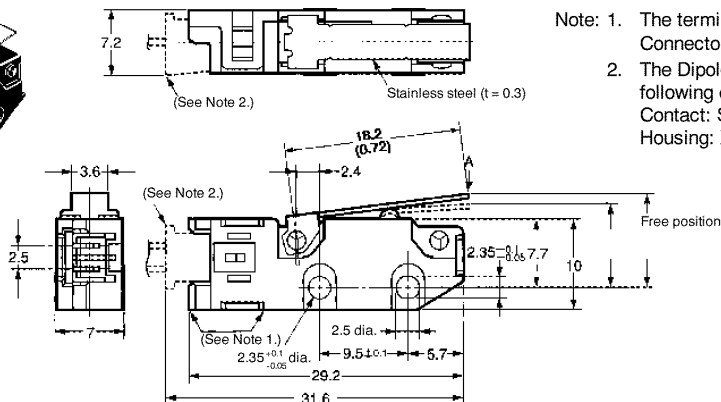
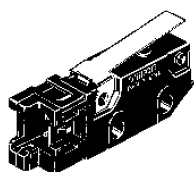
D3M-01K1  
D3M-01K1-3



- Note: 1. The terminals connect to JST's Dipole XA Connector.  
2. The Dipole XA Connector consists of the following components.  
Contact: SAX-001T-P0.6  
Housing: XAP-02V-1(13)

## ■ Hinge Lever

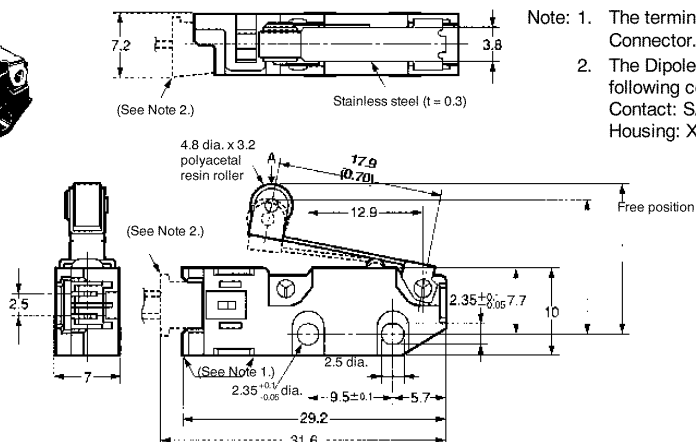
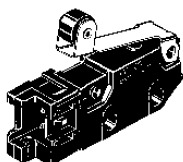
D3M-01L1  
D3M-01L1-3



- Note: 1. The terminals connect to JST's Dipole X Connector.  
2. The Dipole XA Connector consists of the following components.  
Contact: SAX-001T-P0.6  
Housing: XAP-02V-1(13)

## ■ Hinge Roller Lever

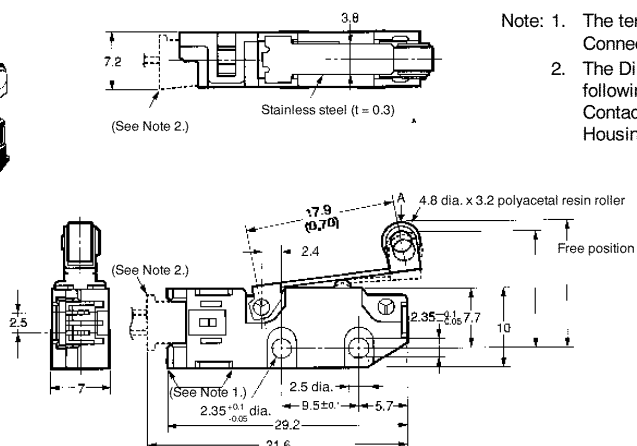
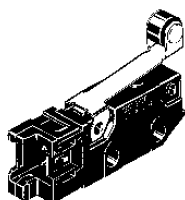
D3M-01K2  
D3M-01K2-3



- Note: 1. The terminals connect to JST's Dipole XA Connector.  
2. The Dipole XA Connector consists of the following components.  
Contact: SAX-001T-P0.6  
Housing: XAP-02V-1(13)

## ■ Hinge Roller Lever

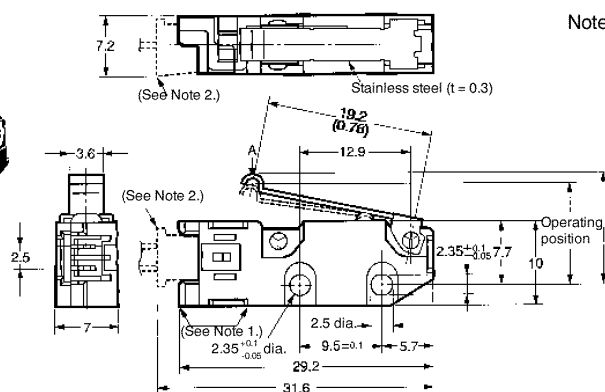
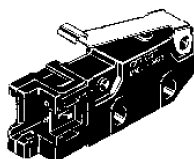
**D3M-01L2**  
**D3M-01L2-3**



- Note: 1. The terminals connect to JST's Dipole XA Connector.
2. The Dipole XA Connector consists of the following components.
- Contact: SAX-001T-P0.6
- Housing: XAP-02V-1(13)

## ■ Simulated Roller Lever

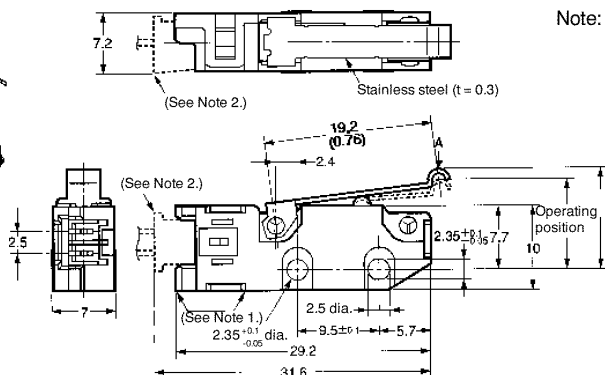
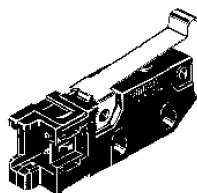
**D3M-01K3**  
**D3M-01K3-3**



- Note: 1. The terminals connect to JST's Dipole XA Connector.  
2. The Dipole XA Connector consists of the following components.  
Contact: SAX-001T-P0.6  
Housing: XAP-02V-1(13)

## ■ Simulated Roller Lever

**D3M-01L3**  
**D3M-01L3-3**



- Note: 1. The terminals connect to JST's Dipole XA Connector.
2. The Dipole XA Connector consists of the following components.
- Contact: SAX-001T-P0.6
- Housing: XAP-02V-1(13)

# Precautions

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## ■ Mounting

To avoid an electric shock or a fire, be sure to turn OFF the D3M before mounting, removing, wiring, or servicing.

Make sure that the surface to which the D3M is mounted is flat. If the surface is not flat, the housing may distort, and the D3M may malfunction, or the housing may crack.

## ■ Operating Stroke

Make sure that the dog is separated from the actuator when the actuator is in the free position and that the actuator is pressed appropriately when the D3M is actuated. The actuator must not be pressed excessively to reach the maximum overtravel position, or the D3M may be damaged.

Make sure the actuator is pressed in the direction where the D3M is actuated.

## ■ Minimum Load

If the load causes inrush current, even though the D3M is in operation within the permissible operating range, the life of the D3M may be shortened. In this case, insert a contact protection circuit.

The minimum applicable load is on the basis of level N, that is, a reliable rate of 60% ( $\lambda_{60}$ ), in accordance with JIS C5003.

This rate ( $\lambda_{60} = 0.5 \times 10^{-6}/\text{operations}$ ) means that the D3M is expected to have operational failure at least once per 2,000,000 operations.

## ■ Wiring

The terminals connect to JST's Dipole XA Connector.

The Dipole XA Connector consists of the following components.

Contact: SAX-001T-P0.6

Housing: XAP-02V-1

OMRON does not sell the Dipole XA Connector. Contact the following.

J.S.T. Corporation (U.S.A.)

Tel: (1)847-473-1957

Fax: (1)847-473-0144

### — Caution —

The voltage and current applied to the D3M must be within the rated ranges when it is turned ON, turned OFF, and in operation, or the service life of the D3M may be shortened. Also note that if inappropriate voltage and current are applied, the D3M may radiate heat and burn.

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# 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.
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- 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.
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- 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.

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- 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.
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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 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

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.

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 OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
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6. **RoHS Compliance.** Where indicated, our products currently comply, to the best of our knowledge as of the date of this publication, with the requirements of the European Union's Directive on the Restriction of certain Hazardous Substances ("RoHS"), although the requirements of RoHS do not take effect until July 2006. These requirements may be subject to change. Please consult our website for current information.

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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.

**OMRON**®

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