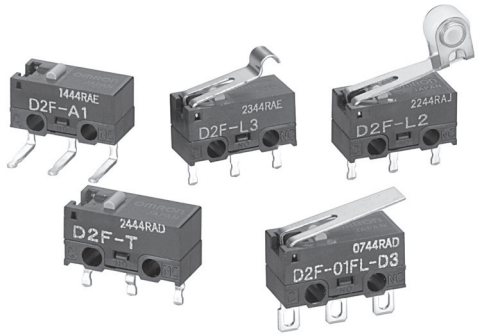
Snap Action Switch
D2F

Subminiature Snap Action Switch

- Switches 3 A loads (general-purpose), 1 A loads (low force general-purpose) and 0.1 A loads(microvoltage/ microcurrent)
- Long life span assured by high-precision dual spring reverse-action mechanism
- Flux penetration prevented by using an insert terminal and allowing a height difference at the case bottom
- Ideal for a wide range of applications including appliances, office equipment, audio and communications equipment
- RoHS Compliant



Ordering Information

Actuator	Contact type	Model	Contact OF	Model					
				Terminal type					
				PCB	Self-supporting	Solder	Compact Solder	Right-angle	Left-angle
Pin plunger 	Microvoltage/ current	Low force	75 g	**D2F-01F**	**D2F-01F-T**	**D2F-01F-D3**	**D2F-01F-D**	**D2F-01F-A**	**D2F-01F-A1**
		Standard	150 g	**D2F-01**	**D2F-01-T**	**D2F-01-D3**	**D2F-01-D**	**D2F-01-A**	**D2F-01-A1**
	General-purpose	Low force	75 g	**D2F-F**	**D2F-F-T**	**D2F-F-D3**	**D2F-F-D**	**D2F-F-A**	**D2F-F-A1**
		Standard	150 g	**D2F**	**D2F-T**	**D2F-D3**	**D2F-D**	**D2F-A**	**D2F-A1**
Hinge lever 	Microvoltage/ current	Low force	25 g	**D2F-01FL**	**D2F-01FL-T**	**D2F-01FL-D3**	**D2F-01FL-D**	**D2F-01FL-A**	**D2F-01FL-A1**
		Standard	80 g	**D2F-01L**	**D2F-01L-T**	**D2F-01L-D3**	**D2F-01L-D**	**D2F-01L-A**	**D2F-01L-A1**
	General-purpose	Low force	25 g	**D2F-FL**	**D2F-FL-T**	**D2F-FL-D3**	**D2F-FL-D**	**D2F-FL-A**	**D2F-FL-A1**
		Standard	80 g	**D2F-L**	**D2F-L-T**	**D2F-L-D3**	**D2F-L-D**	**D2F-L-A**	**D2F-L-A1**
Simulated roller lever 	Microvoltage/ current	Low force	40 g	**D2F-01FL3**	**D2F-01FL3-T**	**D2F-01FL3-D3**	**D2F-01FL3-D**	**D2F-01FL3-A**	**D2F-01FL3-A1**
		Standard	80 g	**D2F-01L3**	**D2F-01L3-T**	**D2F-01L3-D3**	**D2F-01L3-D**	**D2F-01L3-A**	**D2F-01L3-A1**
	General-purpose	Low force	40 g	**D2F-FL3**	**D2F-FL3-T**	**D2F-FL3-D3**	**D2F-FL3-D**	**D2F-FL3-A**	**D2F-FL3-A1**
		Standard	80 g	**D2F-L3**	**D2F-L3-T**	**D2F-L3-D3**	**D2F-L3-D**	**D2F-L3-A**	**D2F-L3-A1**
Roller lever 	Microvoltage/ current	Low force	40 g	**D2F-01FL2**	**D2F-01FL2-T**	**D2F-01FL2-D3**	**D2F-01FL2-D**	**D2F-01FL2-A**	**D2F-01FL2-A1**
		Standard	80 g	**D2F-01L2**	**D2F-01L2-T**	**D2F-01L2-D3**	**D2F-01L2-D**	**D2F-01L2-A**	**D2F-01L2-A1**
	General-purpose	Low force	40 g	**D2F-FL2**	**D2F-FL2-T**	**D2F-FL2-D3**	**D2F-FL2-D**	**D2F-FL2-A**	**D2F-FL2-A1**
		Standard	80 g	**D2F-L2**	**D2F-L2-T**	**D2F-L2-D3**	**D2F-L2-D**	**D2F-L2-A**	**D2F-L2-A1**

Model Number Legend

D2F-□ □ □ □
1 2 3 4

1. Ratings
None: General loads
01: Micro loads (0.1 A at 30 VDC)

2. Maximum Operating Force
None: 1.47 N {150 gf}
F: 0.74 N {75 gf}
Note: These OF values are for the pin plunger models.

3. Actuator
None: Pin plunger
L: Hinge lever
L2: Hinge roller lever
L3: Simulated roller lever

4. Terminals
None: PCB terminals/straight terminals
-T: Self-clinching PCB terminals
-A: Right-angled PCB terminals
-A1: Left-angled PCB terminals
-D3: Solder terminals
-D: Compact solder terminals

Specifications

■ Characteristics

Operating speed	1 to 500 mm/second (pin plunger models)
Operating frequency	Mechanical: 200 operations per minute max. Electrical: 30 operations per minute max.
Contact resistance	General Purpose: 30 mΩ max. (Standard force versions) 50 mΩ max. (Low force versions) Microload: 100 mΩ max.
Insulation resistance	100 MΩ min. at 500 VDC
Dielectric strength (See note 2)	600 VAC, 50/60 Hz for 1 minute between terminals of same polarity 1,500 VAC, 50/60 Hz for 1 minute between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal parts
Vibration resistance (See note 3)	Malfunction: 10 to 55 Hz, 1.5 mm double amplitude
Shock resistance (See note 3)	Destruction: 1,000 m/s^2 (approx. 100G) max. Malfunction: 300 m/s^2 (approx. 30 g min.) max.
Degree of protection	IEC IP40
Degree of protection against electric shock	Class I
Proof tracking index (PTI)	175
Ambient operating temperature	-25° to 65°C (at 60% RH) with no icing
Ambient operating Humidity	85% max. (for 5° to 35°C)
Service life (Consult Omron for test conditions)	Mechanical: 1 million operations min. at 60 operations/minute. Electrical: 30,000 operations min. at 30 operations/minute.
Weight	Approx. 0.5 g (pin plunger models)

Note: 1. Data shown are of initial value.

2. The dielectric strength shown in the table indicates a value for models with a separator.

3. For pin plunger models, the values are measured at the free position and total travel position. For the lever models, they are measured at the total travel position.

■ Ratings

Rated Voltage	**Resistive load**			
	Microvoltage/current (D2F-01 models)		**General-purpose (D2F models)**	
	Low force	**Standard**	**Low force**	**Standard**
125 VAC	—	—	1 A	3 A
30 VDC	0.1 A	0.1 A	0.5 A	2 A

Note: 1. When using an inductive load or motor load, consult OMRON.

2. The ratings apply under the following test conditions: Ambient Temperature = 20±2°C, Ambient Humidity = 65±5%, Operating frequency = 30 operations/min.

■ Approvals

UL Recognized, CSA Certified

Rated voltage	**D2F**		**D2F-01**
	Standard Force	**Low Force**	
125 VAC	3 A	1A	- - -
30 VDC	2 A	0.5 A	0.1 A

Note: The rated values approved by each of the safety standards (e.g.UL,CSA) may be different from the performance characteristics individually defined in this catalog.

■ Contact Specifications

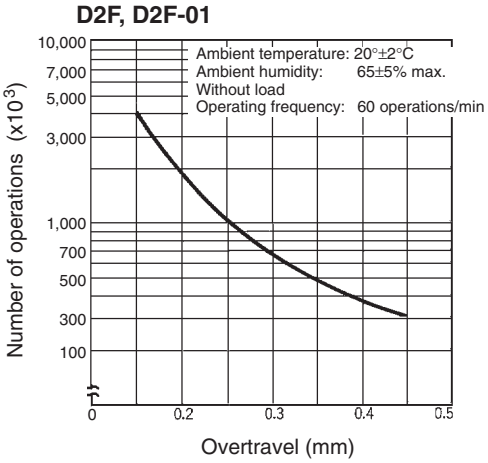
Item	**D2F**	**D2F-01**
Specification	Crossbar	
Material	Silver alloy	Gold alloy
Gap (Standard value)	0.25 mm	
Minimum Applicable Load (See note)	100 mA at 5 VDC	1 mA at 5VDC

Note: Minimum applicable loads are indicated by N standard reference values. This value represents the failure rate at a 60% (λ_{60}) reliability level (JIS C5003).

The equation $\lambda_{60}=0.5 \times 10^{-6}$/operations indicates that a failure rate of 1/2,000,000 operations can be expected at a reliability level of 60%.

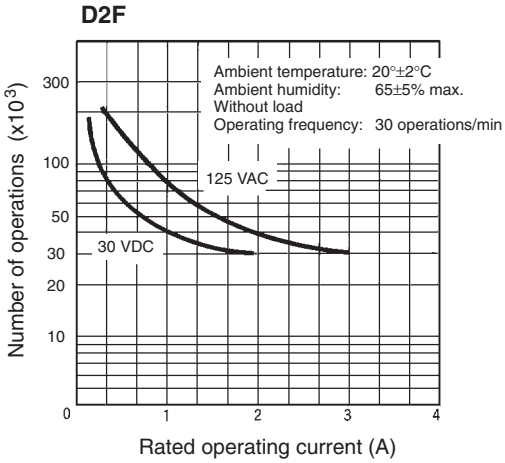
Engineering Data

■ Mechanical Service Life



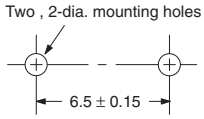
Note: Values are for pin plunger actuator type.

■ Electrical Service Life

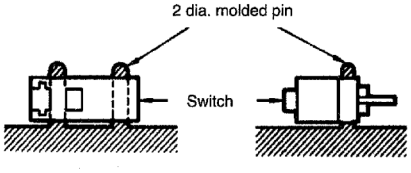


■ Mounting

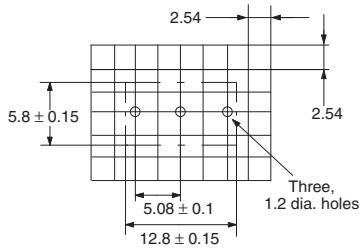
All switches may be panel mounted using M2 mounting screws with plane washers or spring washers to securely mount the switch. Tighten the screws to a torque of 0.08 to 0.1 N·m.



Use of molded components is recommended for mounting purposes

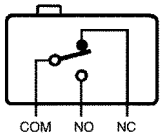


■ PCB Layout (reference)



■ Structure

Contact Form (SPDT)

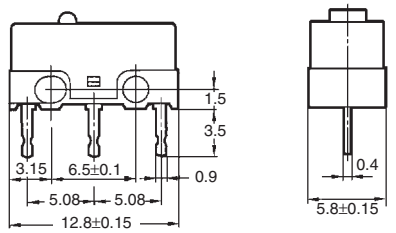


Dimensions

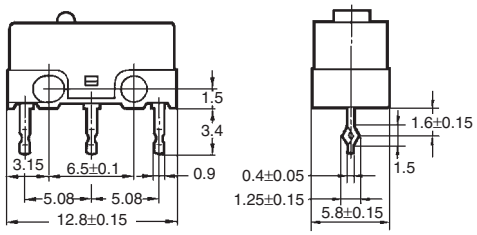
■ Terminals

Note: Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions

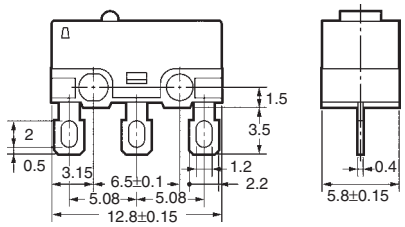
PCB terminals
D2F



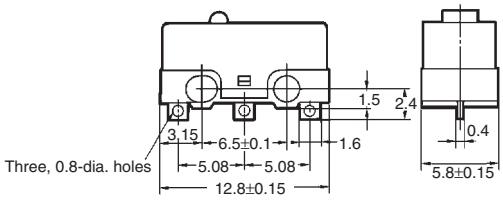
Self-supporting terminals
D2F-T



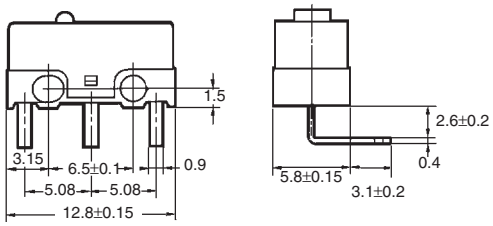
Solder terminals
D2F-D3



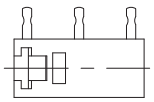
Compact solder terminals
D2F-D



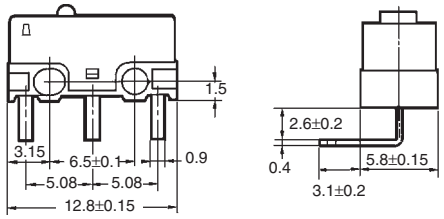
Right-angle PCB terminals
D2F-A



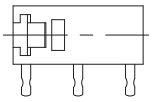
(Top view)



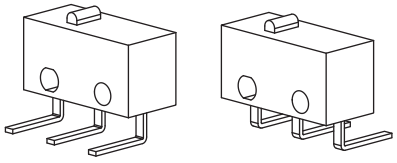
Left-angle PCB terminals
D2F-A1



(Top view)



Note: Angled terminal directions are shown below.



Left-angled terminal

Right-angled terminal

■ Dimensions and Operating Characteristics

Note: 1. Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions

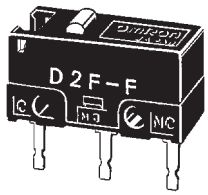
2. Omitted dimensions are the same as pin plunger type.

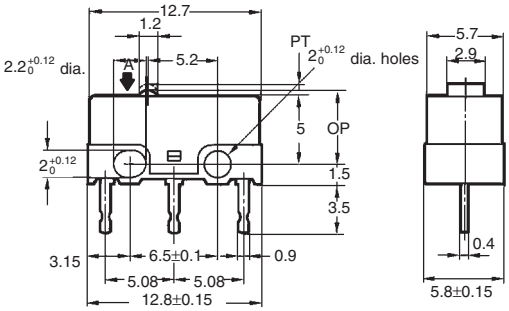
3. The following illustrations and dimensions are for models with PCB terminals. Refer to "Terminals" for models with self-supporting, solder and right / left angle terminal specifics.

4. The operating characteristics are for operation in the A direction(⬇)

Pin Plunger Models

D2F-□
D2F-01-□
D2F-F-□
D2F-01F-□

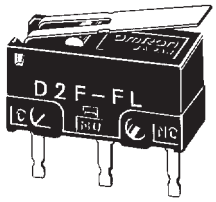


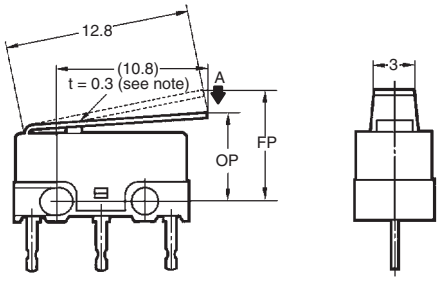


Characteristics	D2F-□ D2F-01-□	D2F-F-□ D2F-01F-□
OF max.	150 g	75 g
RF min.	20 g	5 g
PT max.	0.5 mm	0.5 mm
OT min.	0.25 mm	0.25 mm
MD max.	0.12 mm	0.12 mm
OP	5.5 ± 0.3 mm	5.5 ± 0.3 mm
FP max.	—	—

Hinge Lever Models

D2F-L-□
D2F-01L-□
D2F-FL-□
D2F-01FL-□



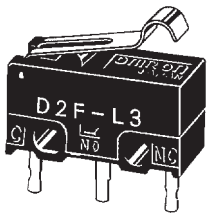


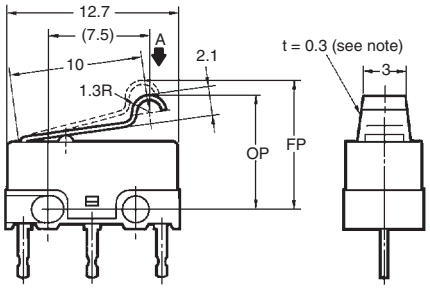
Note: Stainless-steel lever

Characteristics	D2F-L-□ D2F-01L-□	D2F-FL-□ D2F-01FL-□
OF max.	80 g	25 g
RF min.	5 g	2 g
PT max.	—	—
OT min.	0.55 mm	0.55 mm
MD max.	0.5 mm	0.5 mm
OP	6.8 ± 1.5 mm	6.8 ± 1.5 mm
FP max.	10 mm	10 mm

Simulated Roller Lever Models

D2F-L3-□
D2F-01L3-□
D2F-FL3-□
D2F-01FL3-□



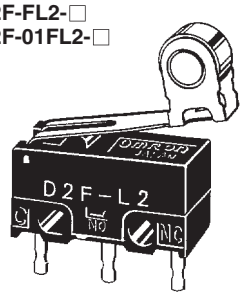


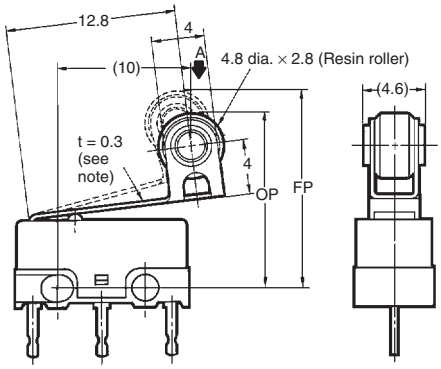
Note: Stainless-steel lever

Characteristics	D2F-L3-□ D2F-01L3-□	D2F-FL3-□ D2F-01FL3-□
OF max.	80 g	40 g
RF min.	5 g	2 g
PT max.	—	—
OT min.	0.5 mm	0.5 mm
MD max.	0.45 mm	0.45 mm
OP	8.5 ± 1.2 mm	8.5 ± 1.2 mm
FP max.	13 mm	13 mm

Hinge Roller Lever Models

D2F-L2-□
D2F-01L2-□
D2F-FL2-□
D2F-01FL2-□





Note: Stainless-steel lever

Characteristics	D2F-L2-□ D2F-01L2-□	D2F-FL2-□ D2F-01FL2-□
OF max.	80 g	40 g
RF min.	5 g	2 g
PT max.	—	—
OT min.	0.55 mm	0.55 mm
MD max.	0.5 mm	0.5 mm
OP	13 ± 2.0 mm	13 ± 2.0 mm
FP max.	16.5 mm	16.5 mm

Precautions

Be sure to read the precautions and information common to all Snap Action and Detection Switches, contained in the Technical User's Guide, "Snap Action Switches, Technical Information" for correct use.

■ Correct Use

Mounting

Turn OFF the power supply before mounting or removing the switch, wiring the switch, or performing maintenance or inspection. Failure to do so may result in electric shock or burning.

Mount the switch onto a flat surface. Mounting on an uneven surface may cause deformation of the switch, resulting in faulty operation or breakage of the housing.

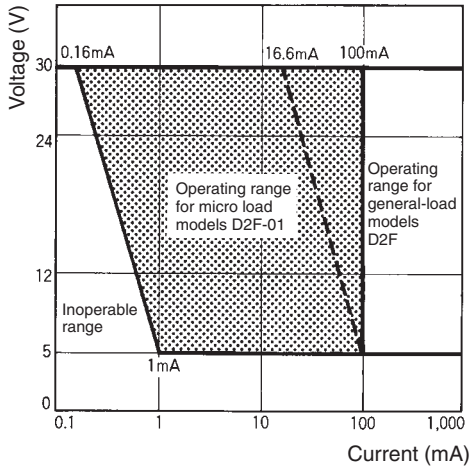
Allow sufficient insulation distance between terminals, terminal traces and between terminals and ground.

Operating Stroke Setting

Take particular care in setting the operating stroke for the pin plunger models. Make sure that the operating stroke is 70% to 100% of the rated OT distance. Do not operate the actuator exceeding the OT distance, otherwise the service life of the switch maybe decreased.

Using Microloads

Using a model for ordinary loads to switch microloads may result in faulty operation. Instead, use the models that are designed for microloads and that operate in the following range;



However, even when using microload models within the operating range shown above, if inrush current or inductive voltage spikes occur when the contact is opened or closed, it may increase contact wear and so decrease the service life. Therefore, insert a contact protection circuit where necessary.

■ Cautions

Terminal Connection

When soldering a lead wire to the terminal, first insert the lead wire conductor into the terminal hole and then perform soldering.

Make sure that the capacity of the soldering iron is 30 W maximum and that the temperature of the soldering tip is approximately 300 °C. (350 °C maximum.) Complete soldering within 3 s. After soldering, do not apply external force to the soldered area for about 1 minute.

Using a switch with improper soldering may result in abnormal heating, possibly resulting in a burn.

Applying the soldering iron for more than 3 s or using an iron that is rated for more than 30 W may deteriorate the switch characteristics.

When soldering the lead wire to the PCB terminal, pay careful attention so that the flux and solder liquid level does not exceed the PCB level.

Omron Electronic Components, LLC

Terms and Conditions of Sales

I. GENERAL

1. Definitions: The words used herein are defined as follows.
   (a) Terms: These terms and conditions
   (b) Seller: Omron Electronic Components LLC and its subsidiaries
   (c) Buyer: The buyer of Products, including any end user in section III through VI
   (d) Products: Products and/or services of Seller
   (e) Including: Including without limitation
2. 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.
3. Distributor: Any distributor shall inform its customer of the contents after and including section III of these Terms.

II. SALES

1. 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.
2. 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.
3. 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.
4. Orders: Seller will accept no order less than 200 U.S. dollars net billing.
5. 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.
6. Governmental Approvals: Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
7. 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.
8. 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.
9. Cancellation; Etc: Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
10. 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.
11. Shipping; Delivery: Unless otherwise expressly agreed in writing by Seller:
    (a) 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;
    (b) Delivery and shipping dates are estimates only; and
    (c) Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. 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

1. Suitability: IT IS THE BUYER'S SOLE RESPOINSIBILITY 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.
2. 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:
   (a) Outdoor use, use involving potential chemical contamination or electrical interference.
   (b) Use in consumer Products or any use in significant quantities.
   (c) 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.
   (d) Systems, machines, and equipment that could present a risk to life or property.
3. 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.
4. Motorized Vehicle Application: USE OF ANY PRODUCT/S FOR A MOTORIZED VEHICLE APPLICATION MUST BE EXPRESSLY STATED IN THE SPECIFICATION BY SELLER.
5. Programmable Products: Seller shall not be responsible for the Buyer's programming of a programmable Product.

IV. WARRANTY AND LIMITATION

1. 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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V. INFORMATION; ETC.

1. 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.
2. 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.
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5. 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.
6. 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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1. 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.
2. Assignment: Buyer may not assign its rights hereunder without Seller's written consent.
3. Law: These Terms are governed by Illinois law (without regard to conflict of laws). Federal and state courts in Cook County, Illinois have exclusive jurisdiction for any dispute hereunder.
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Certain Precautions on Specifications and Use

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   (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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