OMRON

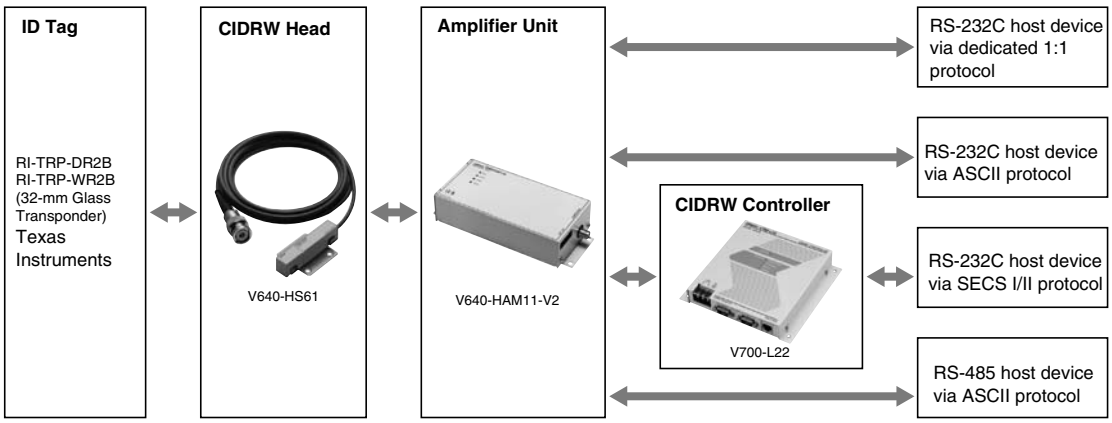
Electromagnetic Inductive RFID System
V640 for Semiconductor Industry

Enables reading and writing transponders for various Semiconductor applications, such as FOUPs (Front-Opening Unified Pods), reticles, and pods.

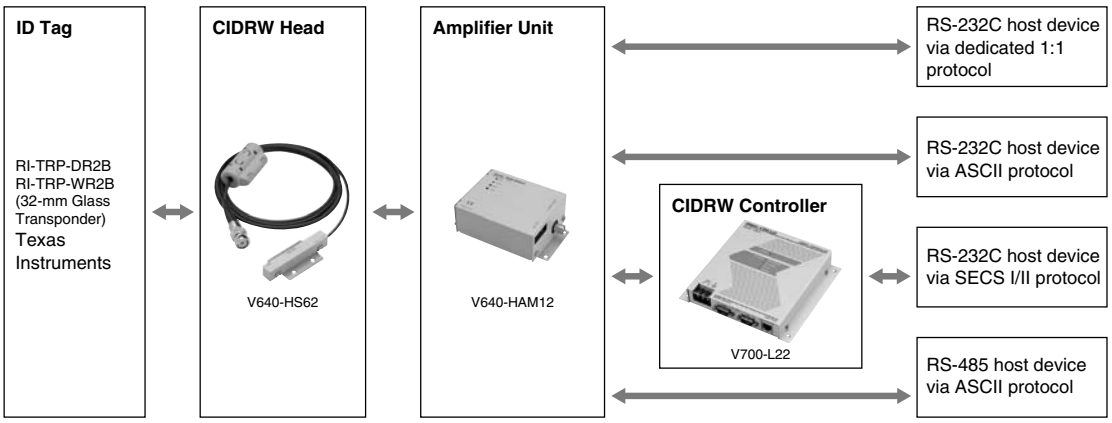
- Conforms to Carrier Reader/Writer-related SEMI standards; SEMI E99, E4, and E5.
- Antenna dimensions conform to SEMI E15.1.
- Reads/writes data embedded in a 32-mm Glass Multipage Transponder (RI-TRP-DR2B/-WR2B).
- Noise measurement function for detecting proper placement of Antenna.
- Shielded antenna reduces influence of surrounding metal.
- Lineup incudes compact models designed for long-range communications.
- CE marking/FCC approvals

System Configuration

■ Standard Models



■ Long-range Communications Model



Note: 1. Use of the V700-L11 ID Link Unit enables the Amplifier Unit to be removed/installed while the CIDRW System remains turned ON in the event of a malfunction or during maintenance.

2. Use the V700-L22 CIDRW Controller when using SECS communications protocol.

3. Refer to the *User's Manual* (V640-HAM11-V2: Cat. No. Z167; V640-HAM12: Cat. No. Z218) for details.

Ordering Information

■ List of Models

Name	Model		Specifications/Design	
CIDRW Head	V640-HS61		50 × 30 × 12 mm (including mounting plate)	2-meter cable
	V600-HS62		65 × 30 × 12 mm (including mounting plate)	1.9-meter cable
Amplifier Unit	V640-HAM11-V2		80 × 185 × 43 mm	RS-232C interface RS-485 interface 24 VDC
	V640-HAM12		80 × 125 × 43 mm	
CIDRW Controller	V700-L22		150 × 167 × 28 mm	24 VDC RS-232C interface (Compatible with SECS I/II protocol.)
ID Link Unit	V700-L11		110 × 65 × 64 mm	24 VDC RS-232C interface RS-485 interface
Accessories	V640-A90		Connector accessories for the V640 Amplifier Unit Power Supply Connector (1) Power Supply Connector Pins (3) RS-485 Port Connector (1) (See Note.)	

Note: V640-A90 includes all of these accessories as a set. To purchase individual accessories, contact the manufacturers below directly.

To Purchase Individual Accessories		
Name	**Model**	**Manufacturer**
Power Supply Connector	1-178288-3	Tyco Electronics
Power Supply Connector Pins	175217-3	
RS-485 Port Connector	MSTB2.5/2-STF-5.08	Phoenix Contact Inc.

Specifications

■ CIDRW Head

Item	V640-HS61 	V640-HS62 
Transmission frequency	134 kHz	
Insulation resistance	20 MΩ min. (at 100 VDC) between the connector terminals and the case	
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the connector terminals and the case (leakage current: 5 mA max.)	
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s^2 acceleration with 10 sweeps of 8 min each in X, Y, and Z directions	
Shock resistance	150-m/s^2 acceleration for 3 times each in X, Y, and Z directions (18 times in total)	
Ambient operating temperature	0 to 40°C (with no icing)	
Ambient operating humidity	35% to 85% (with no condensation)	
Ambient storage temperature	−15 to 65°C (with no icing)	
Ambient storage humidity	35% to 85% (with no condensation)	
Degree of protection	IEC60529: IP20	
Cable	2-m (3-mm dia.) coaxial cable	1.9-m (3-mm dia.) coaxial cable
Case	ABS/epoxy resin, stainless-steel mounting fixture	
Weight	Approx. 70 g	Approx. 100 g

■ Amplifier Unit

Item	V640-HAM11-V2 	V640-HAM12 
Host interface	RS-232C (via dedicated 1:1 protocol or 1:N protocol) or RS-485	
Power supply voltage	24 VDC (max. fluctuation 20.4 to 26.4 VDC)	
Power consumption	3 W max.	
Insulation resistance	20 MΩ min. (at 100 VDC) between the power supply terminals and the frame ground terminal	
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the power supply terminals and the frame ground terminal (leakage current: 5 mA max.)	
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s^2 acceleration with 10 sweeps of 8 min each in X, Y, and Z directions	
Shock resistance	150-m/s^2 acceleration for 3 times each in X, Y, and Z directions (18 times in total)	
Ambient operating temperature	0 to 40°C (with no icing)	
Ambient operating humidity	35% to 85% (with no condensation)	
Ambient storage temperature	−15 to 65°C (with no icing)	
Ambient storage humidity	35% to 85% (with no condensation)	
Degree of protection	IEC60529: IP20	
Case	SECC (coated)	
Ground	Ground at a resistance of less than 100 Ω.	
Weight	Approx. 500 g	Approx. 400 g

■ CIDRW Controller

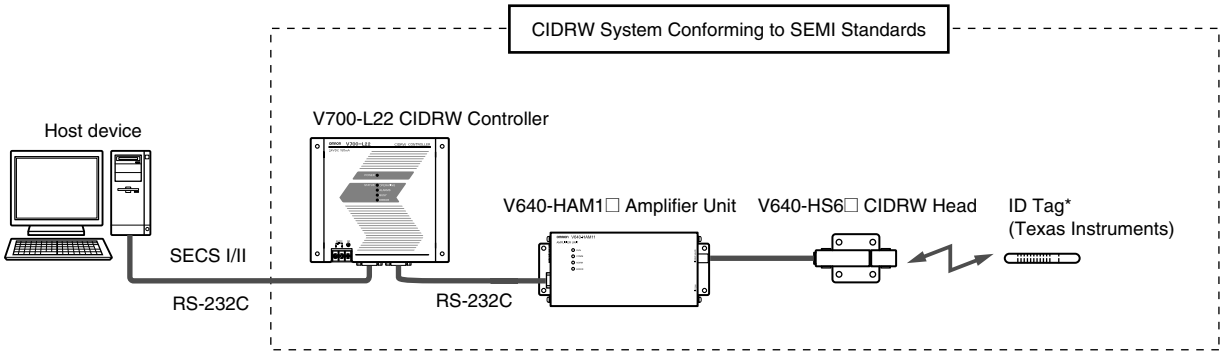
Item	V700-L22 
Host interface	RS-232C
Power supply voltage	24 VDC (max. fluctuation 20.4 to 26.4 VDC)
Power consumption	150 mW max.
Insulation resistance	50 MΩ min. (at 500 VDC) between the power supply terminals and the frame ground terminal
Dielectric strength	500 VAC (50/60 Hz, 1 minute) between the power supply terminals and the ground terminal (leakage current: 3.5 mA max.)
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s^2 acceleration with 10 sweeps of 8 min each in X, Y, and Z directions
Shock resistance	150-m/s^2 acceleration for 3 times each in X, Y, and Z directions (18 times in total)
Ambient operating temperature	0 to 40°C (with no icing)
Ambient operating humidity	10% to 85% (with no condensation)
Ambient storage temperature	–15 to 65°C (with no icing)
Ambient storage humidity	10% to 95% (with no condensation)
Degree of protection	IEC60529: IP20
Ground	Ground at a resistance of less than 100 Ω.
Weight	Approx. 580 g

■ ID Link Unit

Item	V700-L11 
Host interface	RS-232C or RS-485
Power supply voltage	24 VDC (max. fluctuation 20.4 to 26.4 VDC)
Power consumption	10 W max.
Insulation resistance	50 MΩ min. (at 500 VDC) between the power supply terminals and the frame ground terminal
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the power supply terminals and the frame ground terminal (leakage current: 5 mA max.)
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s^2 acceleration with 10 sweeps of 8 min each in X, Y, and Z directions
Shock resistance	150-m/s^2 acceleration for 3 times each in X, Y, and Z directions (18 times in total)
Ambient operating temperature	0 to 40°C (with no icing)
Ambient operating humidity	35% to 85% (with no condensation)
Ambient storage temperature	–15 to 50°C (with no icing)
Ambient storage humidity	35% to 85% (with no condensation)
Degree of protection	IEC60529: IP20
Ground	Ground at a resistance of less than 100 Ω. If grounding is not performed properly, transmission specifications may be adversely affected by the surrounding environment.
Weight	Approx. 200 g

Applicable SEMI Standards

■ CIDRW System Conforming to SEMI Standards



The Carrier ID Reader Writer (CIDRW) System is an RFID system that conforms to SEMI standards. The V700-L22 CIDRW Controller, the V640-HAM1□ Amplifier Unit, the V640-HS6□ CIDRW Head, and a Texas Instruments ID Tag can be used to configure a Carrier ID Reader Writer (CIDRW) System that conforms to the following standards:

- SEMI E99 CARRIER ID READER/WRITER FUNCTIONAL STANDARD
- SEMI E5 EQUIPMENT COMMUNICATIONS STANDARD 2 MESSAGE CONTENT (SECS-II)
- SEMI E4 EQUIPMENT COMMUNICATIONS STANDARD 1 MESSAGE TRANSFER (SEC- I)

Note: SEMI: Semiconductor Equipment and Materials International (Refer to SEMI for standards information. (SEMI URL: http//:www.semi.org/))
SECS: SEMI Equipment Communications Standard
Refer to the *User's Manual* (V640-HAM11-V2: Cat. No. Z167; V640-HAM12: Cat. No. Z218) for details.
V700-L22 conforms to SEMI E99-0303 (issued in March 2003).

* The following table lists the ID Tags (manufactured by Texas Instruments) that can be read/written by the V640 RFID System.

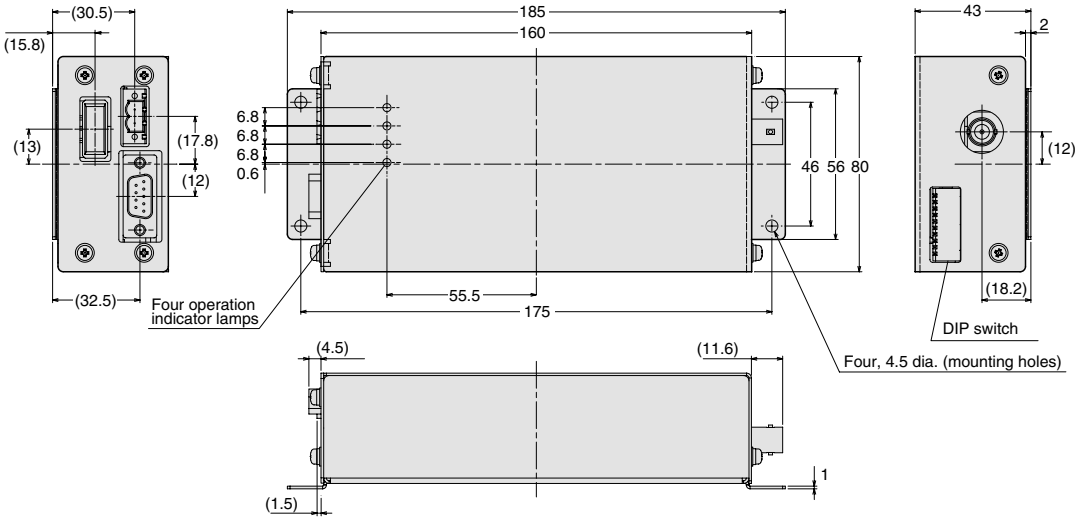
Amplifier Unit	CIDRW Head	ID Tag (Texas Instruments)
V640-HAM11-V2	V640-HS61	RI-TRP-DR2B
V640-HAM12	V640-HS62	RI-TRP-WR2B

Dimensions

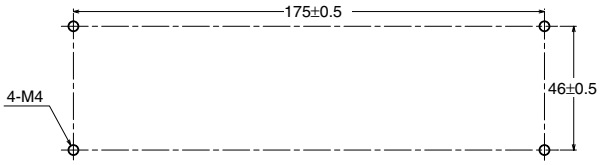
Note: All units are in millimeters unless otherwise indicated.

Amplifier Unit

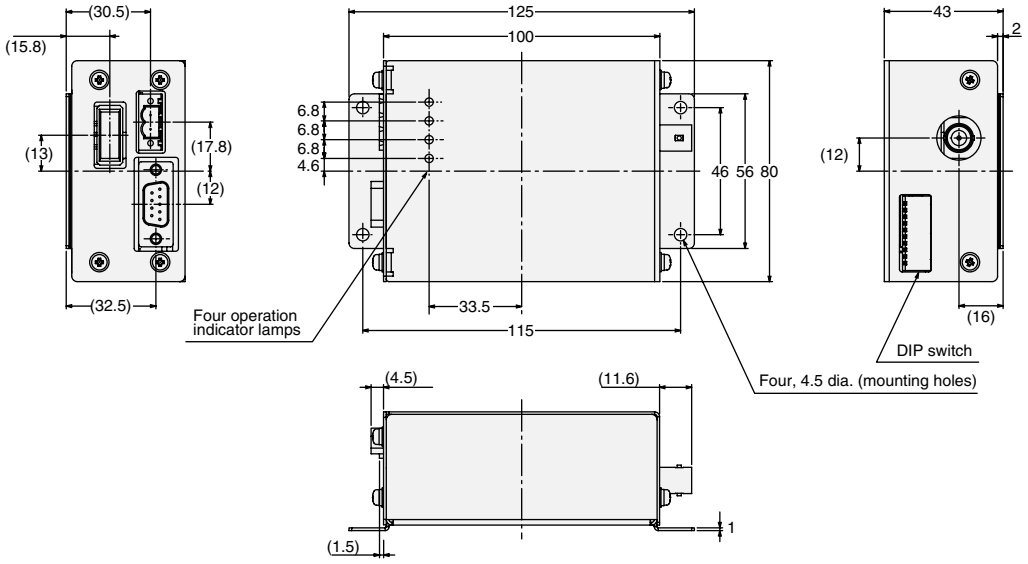
V640-HAM11-V2



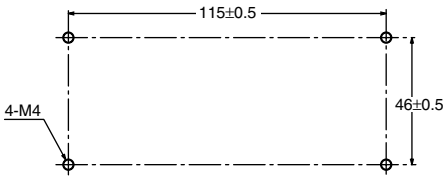
Mounting Hole Dimensions



V640-HAM12

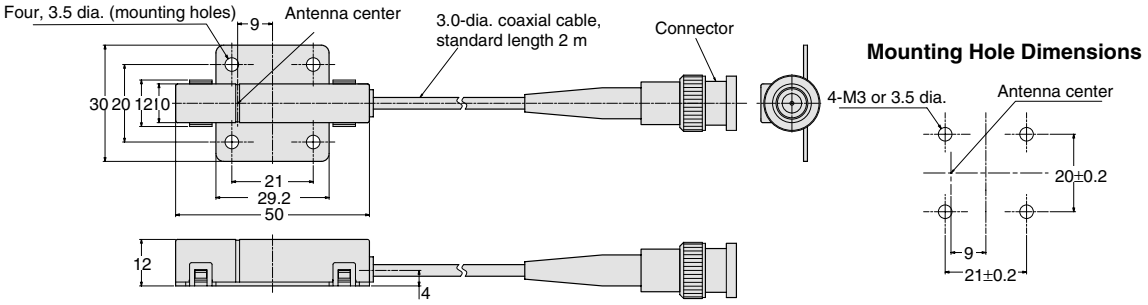


Mounting Hole Dimensions

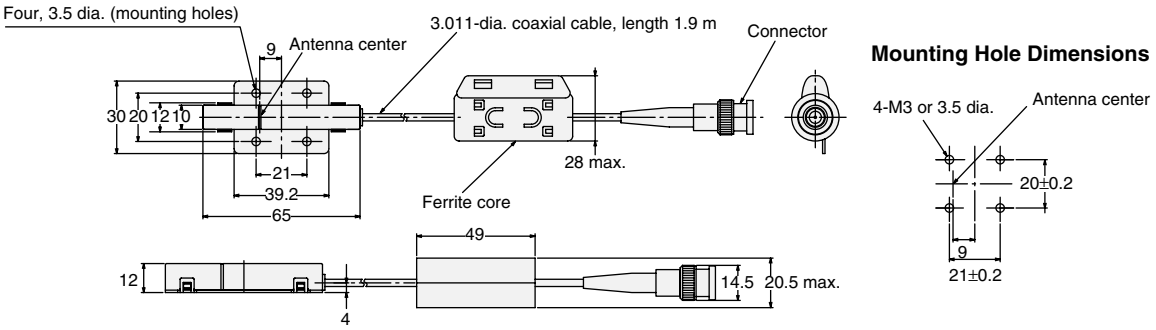


CIDRW Head

V640-HS61

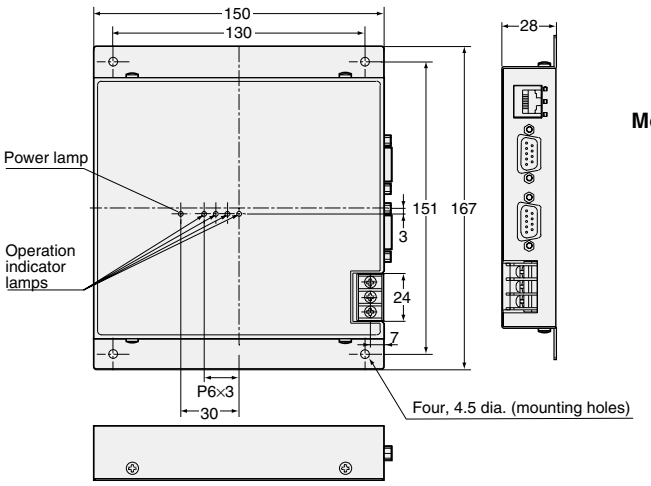


V640-HS62



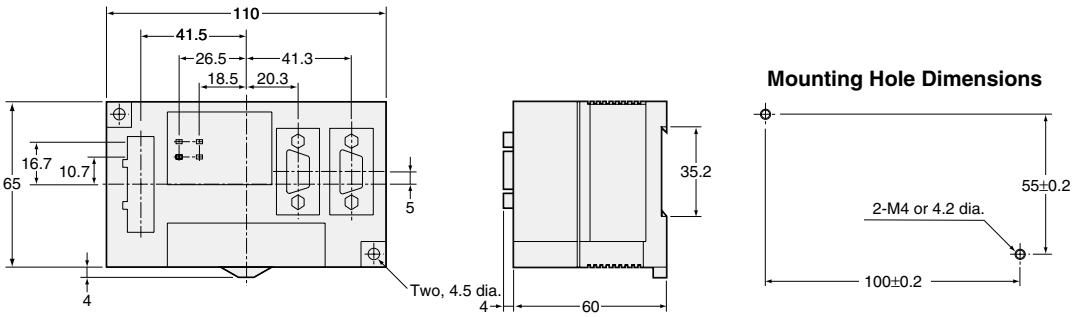
CIDRW Controller

V700-L22



ID Link Unit

V700-L11



READ AND UNDERSTAND THIS DOCUMENT

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

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 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.

SUITABILITY FOR USE

THE PRODUCTS CONTAINED IN THIS DOCUMENT ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.

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 product.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
- Nuclear 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.

Please know and observe all prohibitions of use applicable to the products.

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 PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PERFORMANCE DATA

Performance data given in this document 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.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the product may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

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

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

COPYRIGHT AND COPY PERMISSION

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. Z191-E1-04 **In the interest of product improvement, specifications are subject to change without notice.**

OMRON Corporation

Industrial Automation Company

Sensing Devices Division H.Q.
Industrial Sensors Division
Shiokoji Horikawa, Shimogyo-ku,
Kyoto, 600-8530 Japan
Tel: (81)75-344-7022/Fax: (81)75-344-7107

Printed in Japan
0906-0.3M (1103) (M)