

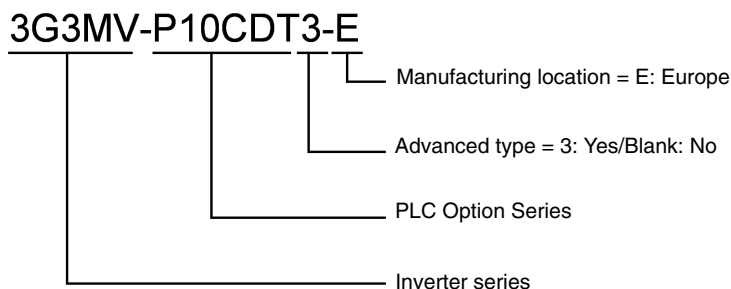
PLC Option for 3G3MV 3G3MV-P10CDT(3)-E

On-board Micro PLC for 3G3MV AC Inverters

- Fully featured Omron PLC embedded into the Inverter via dual port RAM (up to 200 transfers per second).
- Eliminates point-to-point wiring.
- Complete control of Inverter parameters and analog & digital I/O.
- Main monitors, control bits and words are directly mapped to DM (19 words) and IR (320 bits) registers.
- Single point programming.
- Programmed using Omron CX-Programmer software.
- Encoder input, interrupt inputs and pulse outputs included.
- Real-time clock and calendar available.



Model Number Structure



Ordering Information

Stock Note: Shaded models are normally stocked.

Type	Model
Advanced type (RS-422/485 communications, real-time clock, battery)	3G3MV-P10CDT3-E
Standard type	3G3MV-P10CDT-E

Accessories

Stock Note: Shaded models are normally stocked.

Item	Model
Drive Wizard support tool software	Drive Wizard (internet download)
CX-Programmer software	WS02-CXPC1-EV□□
CX-Programmer programming cable	CS1W-CN226

■ Manuals (Order Separately)

Note: All manuals are available for PDF download from www.idmcontrols.com and www.knowledge.omron.com.

Stock Note: Shaded models are normally stocked.

Item	Model
3G3MV-P10CDT(3)-E PLC option user manual	I01E-EN-□□
3G3MV Inverter user manual	I527-E3-□
CX-Programmer user manual	W414-E3-□□

Specifications

■ Ratings

Item	3G3MV-P10CDT-E	3G3MV-P10CDT3-E
Instruction length	1 step/1 instruction 1 to 5 words/1 instruction	
Program capacity	4096 words	
Max. number of I/O points	10	
Inputs	6 (1 bi-directional pulse in put 5 kHz or unidirectional 20 kHz)	
Outputs	4 (1 relay/3 sinking transistor)	
Input specifications	External 24 VDC supply for I/O: +10% /-15% ON: Min. 17 VDC, 5 mA; 1 to 8 ms OFF: Max. 5 VDC, 1.1 mA; 1 to 80 ms (Default is 10 ms)	
Transistor output specifications	NPN type (sinking) 4.5 VDC - 40 mA 26.4 VDC - 200 mA Min. 0.5 mA, Max. 0.9 A for 10 ms 0.1 mA leakage 20 μs ON-response	
Relay output specifications	250 VAC, 2A Min. 5 VDC, 1 mA 15 ms response 150,000 operations (24 VDC resistive load) 100,000 operations (240 VAC inductive cos = 0.4)	
Power sensing	ON = 20 VDC OFF = 17 VDC 100 ms response	
Instruction execution time	< 8 μsec	
Inputs as high speed counter	AB differential phase (up/down) counter: 5 kHz Single pulse mode counter: 20 kHz	
Inputs as an interrupt input	50 μs response time	
Outputs as pulse outputs	Frequency output: 10 Hz to 10 kHz PWM output: 0.1 to 999.9 Hz, 0% to 100% duty ratio	
DP-RAM update cycle	5 ms asynchronous with PLC cycle, up to 8 parameters per transfer Response is between 1 PLC cycle and 24 ms (if operator panel is connected)	
Power supply voltage	No external power supply needed	
Ambient operating temperature	14 to 122°F (-10 to 50°C)	
Storage temperature	-4 to 158°F (-20 to 70°C)	
Humidity	90% RH or less (non-condensing)	

■ Characteristics

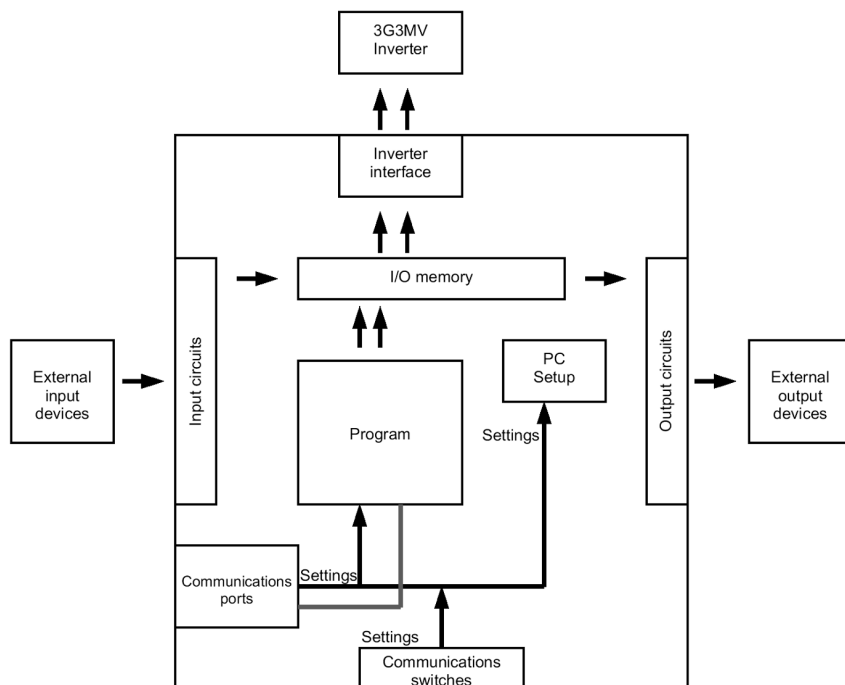
Item	3G3MV-P10CDT-E	3G3MV-P10CDT3-E
PLC core	CPM2C-S	
Control method	Stored program method	
I/O control method	Cyclic scan method	
Programming language	Ladder chart method	
I/O LED signaling	Yes	
Programming tool	CX-Programmer	
Basic programming capabilities	Word arithmetics, timers, counters, PID functions	
Direct HMI connection	Yes	
Peripheral port	Yes	
Communication protocols	HostLink, No-protocol	
RS-232C port	Yes	
RS-422/485 port	No	Yes
Real time clock	No	Yes, with permanent calendar
Memory backup	Flash memory and capacitor	Flash memory and battery
Backup battery	No	Yes, permanent storage (DM, HR, SR, CNT) and clock work for 10 years
Dimensions (mm)	128 x 68 x 38 (H x W x D)	
Vibration resistance	10-20 Hz: 9.8 m/s ² 20-60 Hz: 2 m/s ²	
3G3MV Inverter power range	0.2 to 7.5 kW	
3G3MV inverter control type	Open loop vector	
Connection to 3G3MV inverter	Dual port RAM	
Conformance to EC directives	<u>Electromagnetic Compatibility Directive (EMC)</u> EMS (Electromagnetic Susceptibility): EN61800-3 EMI (Electromagnetic Interference): EN50081-2/EN55011 <u>Low Voltage Directive (LVD)</u> Safety standard: EN50178, 1997	

Recommended Applications

- OEM accounts - Installations where repetitive wiring and installation can be reduced.
- Pumping - Tank fill, flow control, metering, irrigation.
- Material handling - Conveying, winding/unwinding, packaging.
- Commercial automation - Car wash, washing machines, door control.
- Factory automation - Simple positioning, sequencing, process automation.
- Replacement for relays, contactors and other micro PLCs

Connections

■ Block Diagram

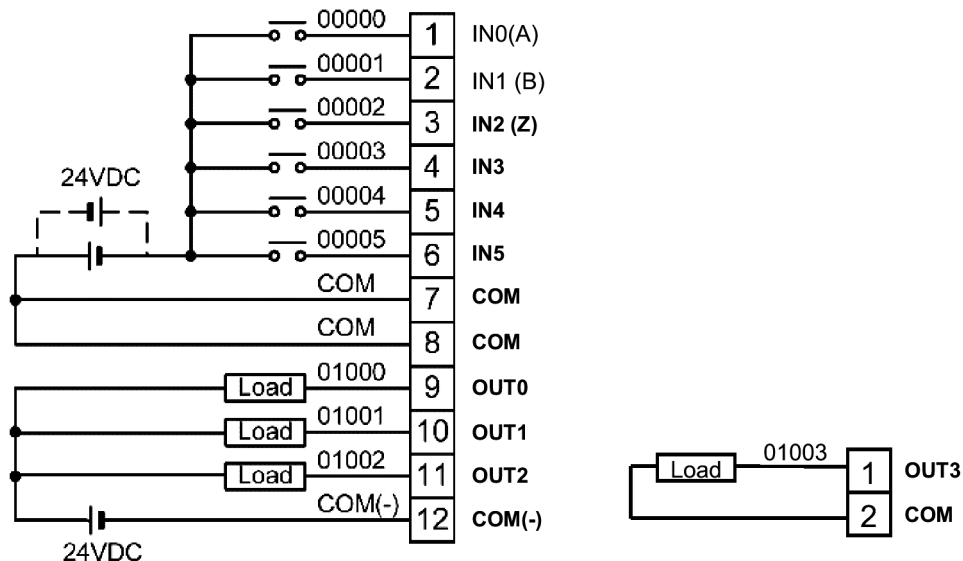


■ DP-RAM Cycle

Cycle time	Initial Processing
	<i>Inverter DP-RAM initial processing</i>
	Common processing
	External counter refresh (unused)
	CompoBus IN refresh (unused)
	<i>Inverter DP-RAM IN refresh</i>
	Program execution processing
	Cycle time calculation processing
	DeviceNet I/O refresh (unused)
	CompoBus OUT refresh (unused)
	I/O refresh
	<i>Inverter DP-RAM OUT refresh</i>
	<i>Inverter MODBUS (explicit transfer)</i>
	DeviceNet message communications (unused)
	RS-232C port service
	Peripheral port service

- Note:**
1. Inverter I/O is shown in bold italic print.
 2. All directly mapped registers update every 5-24 msec (DP-RAM cycle and inverter processing)

Terminal Arrangement



- Note:**
1. Only basic insulation is provided for the control circuit terminals. Additional insulation may be necessary in the end product.
 2. These circuits are not separated from hazardous circuits by protective separation.
 3. When wiring the RS-422/485 communication cable, make sure to use shielded cable with twisted wires.

Advanced Type Communications Terminal (Port 0)

Pin	RS-422	RS-485
1	R- (RDA)	--
2	R+ (RDB)	--
3	Shield	Shield
4	S- (SDA)	S/R- (S/RDA)
5	S+ (SBD)	S/R+ (S/RDB)

Standard & Advanced Type Communication Terminals (Port 1)

Pin	Function
1	Peripheral
2	
3	
4	RS-232C TX
5	5 V
6	Peripheral
7	Ground
8	RS-232C RX
9	RS-232C CTS
10	RS-232C RTS

Standard & Advanced Type Relay Output Terminals

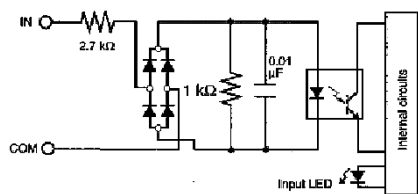
Pin	Signal
1	OUT01003 A
2	OUT01003 B

3G3MV Inverter Terminals Available to PLC

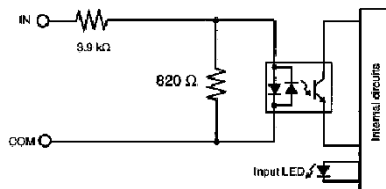
Terminal	Function
S3	Multifunction input 3
S4	Multifunction input 4
S5	Multifunction input 5
S6	Multifunction input 6
S7	Multifunction input 7
SC	Multifunction input common
FR	Analog input 1
FC	Analog input common

Input Circuits

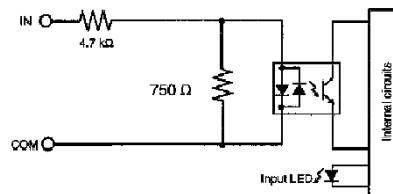
IN00000 to IN00001



IN00002 to IN00004

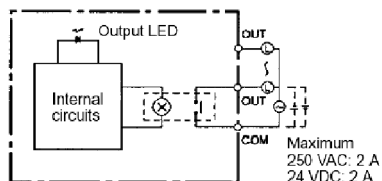


IN00005

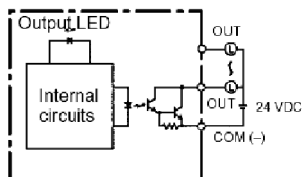


Output Circuits

Relay Outputs

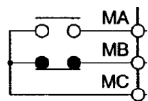


Transistor Outputs

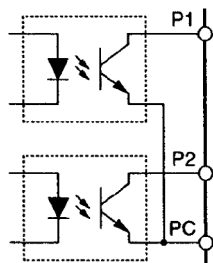


3G3MV Inverter Output Circuits

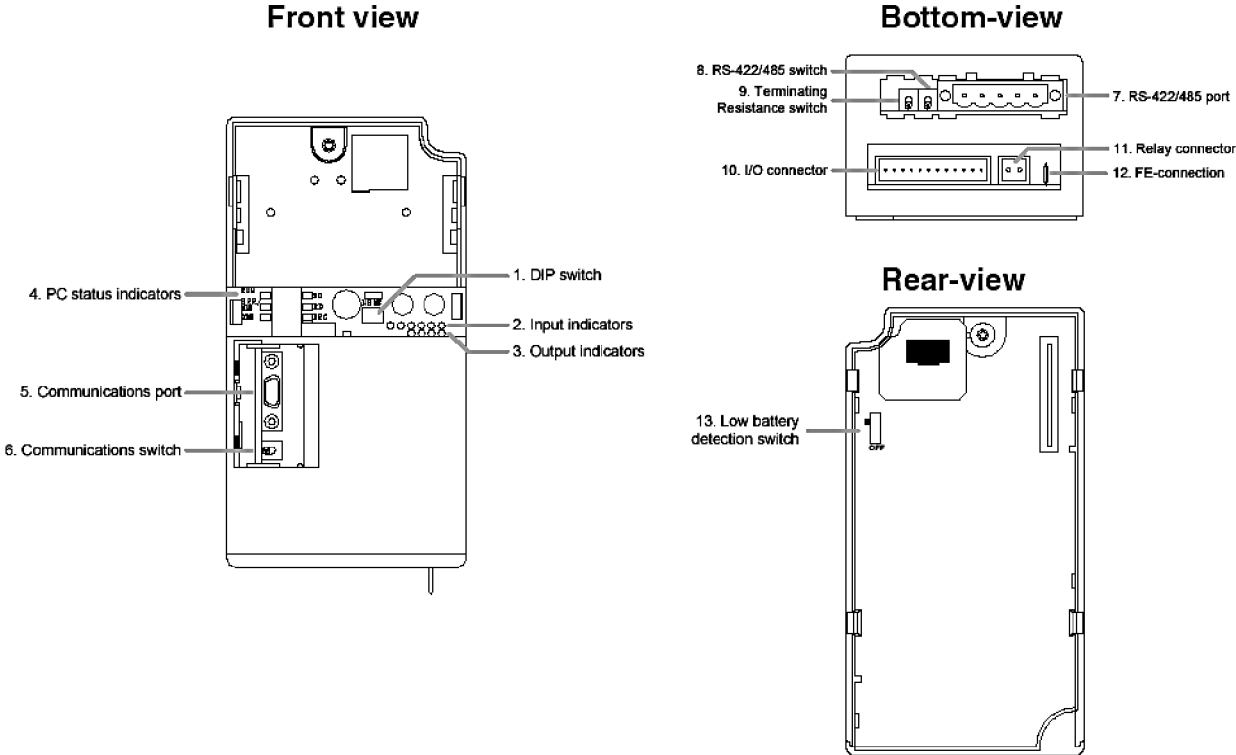
Relay Outputs



Transistor Outputs

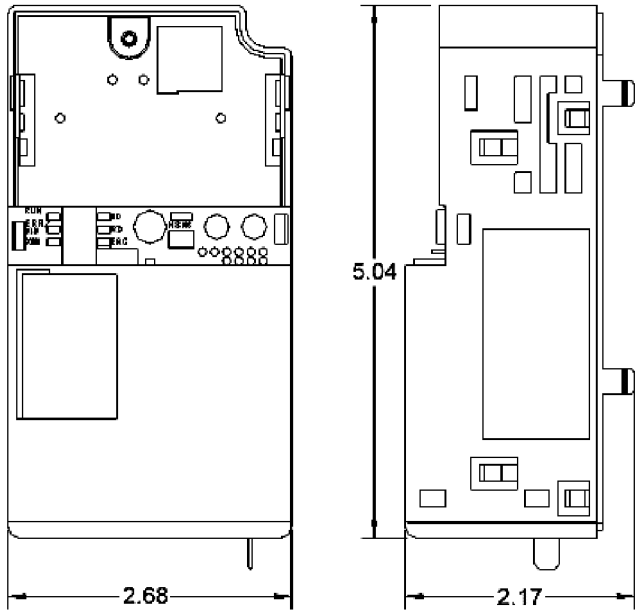


Unit Components



Dimensions

Unit: Inch



Safety Precautions

Note: The following precautions are common for all 3G3MV- P10CDT models and must be observed to ensure safety.

■ Precautions for Safe Use

Operating and Storage Conditions

- Do not use in locations affected by excessive vibration or shock, or in locations subject to exposure to water or oil.
- Do not use the product in locations subject to dust, corrosive gases, or direct sunlight.
- Separate the input signal devices, input signal cables, and the product from the source of noise or high-tension cables producing noise.
- Separate the product from the source of static electricity when using the product in an environment where a large amount of static electricity is produced (e.g., forming compounds, powders, or fluid materials being transported by pipe).
- Organic solvents (such as paint thinner), as well as very acidic or basic solutions might damage the outer casing of the product.
- Use the product within the ratings specified for temperature and humidity.
- Do not use the product in locations where condensation may occur due to high humidity or where temperature changes are severe.
- Store at the specified temperature. If the product has been stored below the rated temperature, allow the product to stand at room temperature for at least 3 hours before use.
- Operation, maintenance, or inspection must be performed after turning OFF the power supply, confirming that the CHARGE indicator (or status indicators) are OFF, and after waiting for the time specified on the front cover. Not doing so may result in electrical shock.
- Do not damage, pull on, apply stress to, place heavy objects on, or pinch the cables. Doing so may result in electrical shock.
- Do not allow metal fragments or lead wire scraps to fall inside this product. This may occasionally cause electric shock, fire or malfunction.
- Loose screws may occasionally result in fire or malfunction. Tighten the terminal screws securely.
- There may occasionally be a risk of explosion. Do not use the product where flammable or combustion gases are present.

Usage Precautions

- It is extremely important that a PLC, and all PLC Units, be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human life. You must consult with your OMRON representative before applying a PLC system to the above-mentioned applications.
- Never disassemble, repair or modify the product. This may occasionally cause electric shock, fire or malfunction.
- Do not touch the inside of the Inverter. Doing so may result in electrical shock.
- Make sure that the voltage applied is within the specified range; otherwise the internal elements of the product may be damaged.
- The load current must be within the rated current.
- Pay attention to terminal polarity to ensure correct wiring.
- Make sure that the fluctuation of the supply voltage is within the permissible range.
- Do not touch the rotating parts of the motor under operation. Doing so may result in injury.

- Always ground the system with 100 Ω or less when installing the system, to protect against electrical shock.
- Always turn OFF the power supply to the PLC before attempting any of the following. Performing any of the following with the power supply turned on may lead to electrical shock:
 - Assembling any devices or racks.
 - Connecting or disconnecting any connectors, cables or wiring.
 - Setting DIP switches or rotary switches.

Safety Precautions

- The Unit refreshes I/O even when the program is stopped (i.e., even in PROGRAM mode). Confirm safety thoroughly in advance before changing the status of any part of memory allocated to I/O or the Inverter. Any changes to the data allocated to any of these may result in unexpected operation of the loads connected to the Unit or Inverter. Any of the following operations may result in changes to memory status.
 - Transferring I/O memory data from a Programming Device to the Unit.
 - Changing present values in memory with a Programming Device.
 - Force-setting/-resetting bits with a Programming Device.
 - Transferring I/O memory from a host computer or from another PLC on a network.
- Do not attempt to take any Unit apart while the power is being supplied. Doing so may result in electric shock.
- Do not touch any of the terminals or terminal blocks while the power is being supplied. Doing so may result in electric shock.
- Execute online edit only after confirming that no adverse effects will be caused by extending the cycle time. Otherwise, the input signals may not be readable.
- Confirm safety at the destination node before transferring a program to another node or changing contents of the I/O memory area. Doing either of these without confirming safety may result in injury.

Certain Terms and Conditions of Sale

Note: Please contact Omron Canada, Inc. for Canadian Terms and Conditions.

1. ACCEPTANCE

No order issued by Buyer as a result of this quotation or otherwise shall be binding on Seller unless in writing or by virtue of Seller's performance and thereupon shall become a binding contract under the terms and conditions set forth herein and/or in Seller's acceptance form. No changes or revisions stated by Buyer in its purchase order, or otherwise, shall be binding upon Seller if in conflict with the terms stated or referred to herein and/or in Seller's acceptance unless expressly agreed to in writing subsequent to Seller's acceptance.

Acceptance of Buyer's purchase order is subject to review of Buyer's credit status. Seller, at any time prior to shipment of goods, reserves the right to require security for payment. Buyer agrees that security may take the form of a security interest in the goods sold and agrees to execute a Financing Statement should Seller decide such security is warranted.

2. PRICES

Buyer agrees that if Buyer hereafter makes any change in the quantities scheduled for shipment from those shown on the face hereof the price of such units or parts may be changed to meet the Seller's price applicable to the changed quantities scheduled.

Prices stated herein do not include any tax, excise, duty or levy now or hereafter enacted or imposed by any governmental authority on the manufacture, sale, delivery and/or use of any item delivered. All such assessments are for Buyer's account and Seller will add all such assessments to the price stated if no proper exemption certificate is received relieving Seller of the responsibility for paying or collecting such assessments.

Unless otherwise agreed in writing by Seller, all prices are FOB Seller's plants.

Title and risk of loss to all articles sold by Seller to Buyer shall pass to Buyer upon delivery thereof by Seller to a carrier for shipment to Buyer subject to any security interest retained by Seller.

3. DELAYS

Seller shall not be liable or responsible for damage, loss, delays or defaults in deliveries due to Acts of God or the public enemy, laws, regulations or orders of the federal, state or local governments or their agencies, fires, accidents, strikes or labor troubles, riots or insurrection, unusually severe weather, or material or transportation shortages. Seller shall also not incur liability or responsibility for delays in obtaining materials or supplies due to such causes or for other causes beyond Seller's control, nor shall Buyer cancel or have the right to cancel its purchase order because of delays or defaults in deliveries due to such causes.

4. WARRANTY

Seller warrants to Buyer (defined for the purposes of this section only as the first purchaser for use) that all products furnished under this order and which are manufactured by Seller will conform to final specifications, drawings, samples, and other written descriptions approved in writing by Seller and will be in effect for a period of twelve (12) months after delivery to Buyer. But if the Seller installs the equipment by contract, said twelve (12) months shall run from the completion of installation, provided installation is not unreasonably delayed by Buyer. A unit placed with the buyer on consignment and then later purchased will be under warranty for twelve (12) months from the time the Seller receives notification of the Buyers intent to purchase said consigned item. The foregoing in its entirety is subject to the provision that in no case will the total warranty period extend beyond eighteen (18) months from date Seller ships equipment from point of manufacture.

The liability of Seller hereunder is limited to replacing or repairing at Seller's factory or on the job site, at Seller's sole option, any part or parts which have been returned to the Seller and which are defective or do not conform to such specifications, drawings or other written descriptions provided that such part or parts are returned by the Buyer within ninety (90) days after such defect is discovered. Consumables or items with a useful life affected by factors other than defective equipment such as air filters, fuses, or light bulbs are not covered by this warranty. Parts replaced or repaired in the warranty period shall carry the unexpired portion of the original warranty. Warranty service will be provided during normal working hours. Additional charges will be assessed to Buyer for service outside normal hours or for additional costs incurred in order to comply with local labor contracts. All items returned to Seller for repair or replacement must be sent freight prepaid to its factory and will be returned to Buyer, freight collect. Buyer must obtain Seller's Returned Goods Authorization prior to returning items. The above conditions must be met if warranty is to be valid. Seller will not be liable for any damage done by unauthorized repair work, unauthorized replacement parts, from any misapplication of the item, or for damage due to accident, abuse or Act of God.

In no event shall the Seller be liable for loss, damage or expense directly or indirectly arising from the use of the units, or from any other cause, except as expressly stated in this warranty. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. SELLER DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OF THE GOODS OR OF THE FITNESS OF THE GOODS FOR ANY INTENDED PURPOSE. Seller is not liable for and Buyer waives any right of action it has or may have against Seller for any consequential or special damages arising out of any breach of warranty and for any damages Buyer may claim for damage to any property or injury or death to any person arising out of its purchase or the use, operation or maintenance of the product. Seller will not be liable for any labor subcontracted or performed by Buyer for preparation of item under warranty for return to Seller's factory or for preparation work for field repair or replacement. Invoicing of Seller for labor either performed or subcontracted by Buyer will not be considered as a liability by the Seller.

Seller's obligation under this warranty are conditioned upon timely receipt of all payments in strict accordance with payment terms, time being of the essence of this regard. During the time which Seller has not received any amount overdue, Seller shall have no obligation under this warranty; the expiration date of the warranty shall not be extended upon payment of the overdue amount.

This warranty may be modified only by a writing signed by an officer of the Seller and shall extend to the Buyer as defined in this section to no one else. Accessories supplied by Seller but manufactured by others carry any warranty the manufactures of such accessories have made to Seller and which can be passed on to Buyer.

5. PATENT PROTECTION

Seller agrees to hold Buyer and its customers harmless only against infringement of patents covering the material or part in the form sold by Seller provided Buyer or its customer promptly notifies Seller of any claim or litigation and tenders, to the extent of Buyer's ability to do so, the defense thereof to Seller. Buyer agrees to hold Seller harmless from any liability of Seller for infringement of patents by reason of manufacture according to Buyer's specific design or by reason of the incorporation of said part in a more comprehensive assembly than sold by Seller provided Seller promptly notifies Buyer of any claim or litigation and tenders; to the extent of Seller's ability to do so, the defense thereof to Buyer and/or the government where government contracts are involved.

6. CANCELLATION OR CHANGES

Buyer shall have the right by written order to make changes in specifications or delivery schedules once agreed upon. If such changes alter the amount due under the purchase order of the time required for performance, an equitable adjustment of the price and/or time for performance shall be made. Changes, engineering or otherwise, affecting the function or performance of the articles ordered shall not be made without consent of Seller in writing. Cancellations for the convenience of the Federal Government may be affected and cancellation charges paid as required by applicable Federal statutes or regulations. If either Buyer or Seller should be declared a bankrupt or insolvent or if a receiver should be appointed for all or a substantial portion of the assets of either party by court of competent jurisdiction, or if there should be filed in any such court and not dismissed within thirty (30) days any application or petition for adjudication of such insolvency or bankruptcy, or for the appointment of such a receiver, or involving the resetting or extension, however termed, of the obligations of Buyer or Seller, or if either Buyer or Seller should make an assignment of all or a substantial portion of its property for the benefit of its creditors, then upon the happening of any such events, the other party may cancel any order placed by Buyer with Seller immediately by notice in writing sent to the opposite party by registered mail at its last known business address, or by personal service upon such party.

7. APPLICABLE LAW

Any provision which Buyer is required to insert in this order by virtue of any valid federal or state law, or any valid rule or regulation issued thereunder, if specifically submitted in writing by Buyer to Seller before its acceptance of the order and if approved by Seller in writing, shall be deemed embodied herein by reference when this order is accepted.

Notwithstanding the above, this quotation or acceptance and any resulting agreement shall be governed by and interpreted in accordance with the laws of the State of Texas.

8. DRAWINGS

Seller's prints or drawings attached hereto or heretofore or hereafter furnished by Seller to Buyer in connection with the obtaining or performance of Buyer's purchase order are the property of the Seller and represent a proprietary article in which Omron IDM Controls, Inc. retain any and all patent and other rights, including exclusive rights of use and/or sale. Possession of such prints or drawings does not convey any permission to manufacture the article or articles shown therein, such permission to be granted only by specific authorization in writing signed by an officer or other authorized agent of Omron IDM Controls, Inc.

Seller grants no license, express or implied, by virtue of drawings or materials provided by Seller, other than the right of Buyer to use the specific materials provided in the form delivered by Seller.

In the event drawing approval is required to commence fabrication, price and delivery schedule is subject to readjustment if approval is not received by Seller within thirty (30) days after Seller's submittal.

9. SPECIFICATIONS

a. If Seller's model number appears on the face hereof; notwithstanding any correspondence from Buyer referencing contrary information, then only Seller's specifications and/or drawings for such model shall be applicable to the articles furnished under such order.

b. If only Buyer's part number appears on the face hereof; notwithstanding any correspondence from Buyer confirming that number, then only such specifications as have been agreed upon in writing by Buyer and Seller prior to the date hereof shall be applicable to the articles furnished under such order.

10. ERRORS

Stenographic or clerical errors in this quotation are subject to correction.

11. PAYMENT

Payment terms are net cash thirty (30) days after shipment. Absent contrary agreement, partial shipments will be payable as they occur. When the equipment is ready for delivery, if Buyer fails to provide shipping instructions or otherwise withholds direction for the delivery of the equipment, the equipment will be placed in storage, shipment will be considered accomplished and the 30-day payment period will begin. Payment in full will then be required before actual shipment to Buyer can be made. At the end of the 30-day period, an extra charge of 3 percent per month will begin covering the cost of storage, insurance and the use of capital.

Certain Precautions on Specifications and Use

1. Suitability of Use. Seller shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Good in the Buyer's application or use of the Good. At Buyer's request, Seller will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Good. This information by itself is not sufficient for a complete determination of the suitability of the Good 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 this Good, nor is it intended to imply that the uses listed may be suitable for this Good:

(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) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Good.

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

2. Programmable Products. Seller shall not be responsible for the user's programming of a programmable Good, or any consequence thereof.

3. 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 Seller's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Seller's Warranty and Limitations of Liability.

4. 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 part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Good may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Seller's representative at any time to confirm actual specifications of purchased Good.

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

Complete "Terms and Conditions of Sale" for product purchase and use are on Omron's website at www.omron.com/oei – under the "About Us" tab, in the Legal Matters section. Please contact Omron Canada for Canadian Terms and Conditions

ALL DIMENSIONS SHOWN ARE IN INCHES.

To convert inches into millimeters, multiply by 25.4. To convert grams into ounces, multiply by 0.03527.

OMRON
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4/04

Specifications subject to change without notice

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