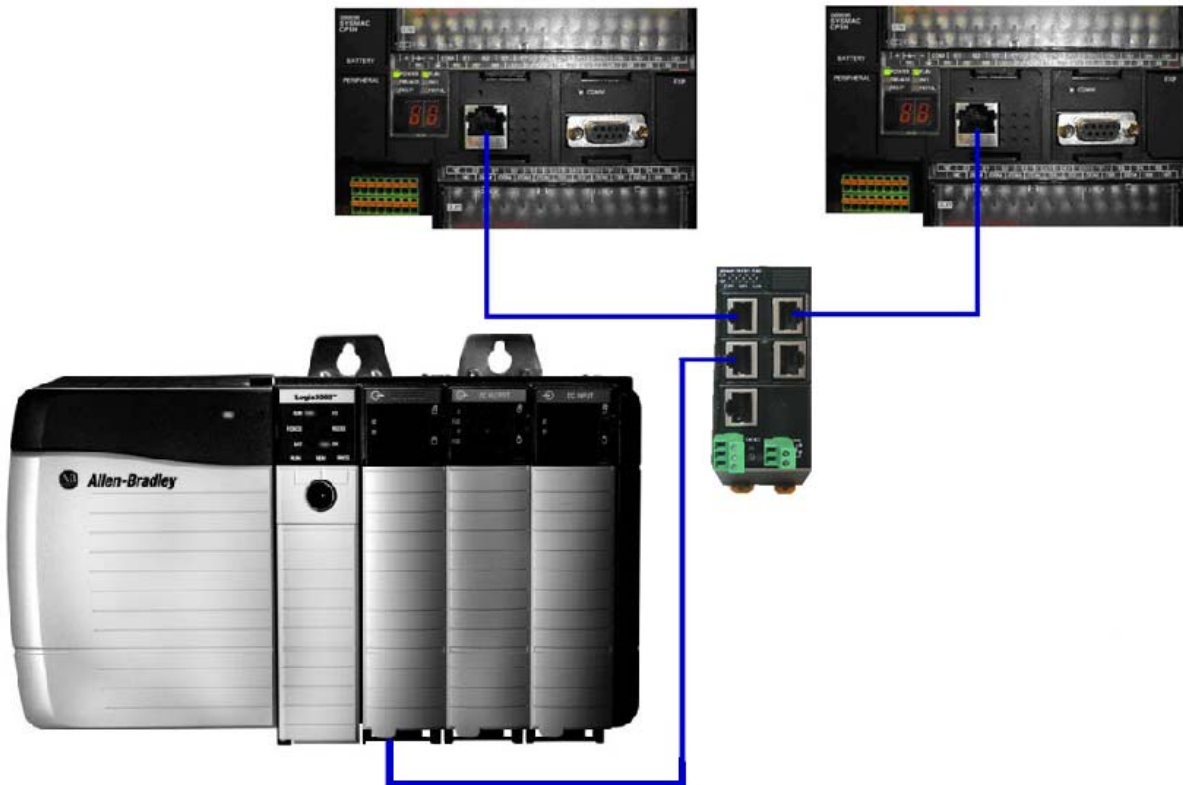


# Omron CP1W-EIP61

## CP1L / CP1H EtherNet/IP Adapter

### Allen-Bradley ControlLogix or CompactLogix

### Communications Setup Guide



## Section 1: Introduction

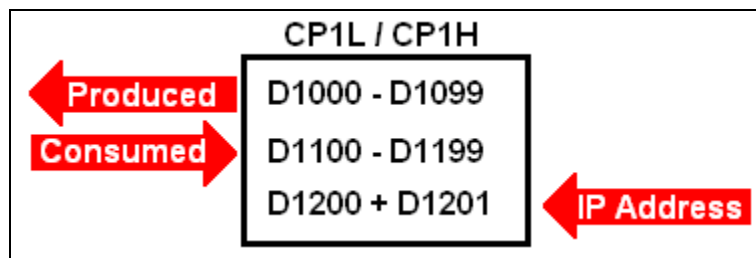
This document explains the steps necessary to connect an Allen-Bradley CompactLogix or ControlLogix PLC to an Omron CP1L or CP1H PLC using a CP1W-EIP61 EtherNet/IP adapter.

The CP1W-EIP61 supports the Implicit Messaging (Datalink) function of EtherNet/IP, but does not support Explicit Messaging to data areas of the PLC, or to the program area of the PLC.

The adapter mounts in an Option Board Slot on the front of a CP1L or CP1H PLC, and can be used in all CP1L or CP1H PLCs with an available Option Board Slot. The CP1W-EIP61 is not supported by the CP1E PLC.

### Normal Mode:

In normal operation, the CP1W-EIP61 adapter allows an Originator PLC to connect to an Omron CP1L or CP1H PLC, and share up to 100 words of data in each direction with the Originator PLC. Assemblies are provided to produce and consume 20 bytes (10 words), 40 bytes (20 words) 100 bytes (50 words) or 200 bytes (100 words) of PLC data.



**CP1W-EIP61 Fixed Addressing**

## IO Block Mode:

In IO Block Mode, special assemblies have been provided to allow the Originator PLC to directly read the inputs and directly control the outputs of the CP1L or CP1H. The maximum IO configuration of a CP1L or CP1H can be used, and the IO mapped directly over EtherNet/IP, without the need of Omron programming software to program or configure the CP1L or CP1H PLC. In this case, the CP1L or CP1H PLC functions as an IO block.

While this configuration is flexible and easy to configure, it should be used in applications that do not require high speed IO. The typical response time of an input or output on a CP1L or CP1H using the CP1W-EIP61 in IO Block Mode when viewed from the Originator PLC is approximately 175 ms, using a 10 ms RPI for EtherNet/IP. This can be reduced by using CX Programmer to change the Peripheral Servicing Time as shown in section 5.


In IO Block Mode, the user can choose if the CP1L or CP1H PLC outputs should be turned off upon loss of communications to the Originator PLC, or if the output state should be maintained. This is done through the CP1W-CIF61 configuration Web Page.

The IO Assemblies for IO Block Mode are 120 and 121.

The Input and Output connection size for IO Block Mode is fixed at 40 bytes in and 40 bytes out, regardless of the actual amount of IO connected to the CP1L or CP1H. The IO mapping of the CP1L or CP1H IO into the Originator PLC follows the channel IO layout of the CP1L or CP1H PLC, as shown below. Consult the CP1L or CP1H Operations manual for details on the IO mapping for different CP1L or CP1H configurations.

### IO Mapping for IO Block Mode

Input Bytes	00 + 01	02 + 03	04 + 05	...	38 + 39
PLC Channel	000	001	002		019



Output Bytes	00 + 01	02 + 03	04 + 05	...	38 + 39
PLC Channel	100	101	102		119

## Section 2: Throughput benchmark Data:

Shown below are the average response times for produced and consumed data connections between an Allen-Bradley ControlLogix PAC, and a CP1L / CP1H PLC using a CP1W-EIP61.

These values are based upon a 10 ms RPI setting, and an increased Peripheral Servicing time in the CP1L / CP1H. Other factors such as network bandwidth, PLC scan time, etc may affect the actual throughput.

The Datalink function of EtherNet/IP is a Producer / Consumer model function, as opposed to a Command and Response model. This makes the throughput from a single node not significantly different from the throughput of multiple nodes. Therefore, the data shown below holds true for 1 CP1L / CP1H PLC connected to 1 ControlLogix series PLC, or multiple CP1L / CP1H PLCs connected to 1 ControlLogix series PLC.

	20 Bytes	100 Bytes	200 Bytes
Produced	25 ms	35 ms	45 ms
Consumed	25 ms	35 ms	45 ms

### Average Response Times

## Section 3: Additional Documentation:

Additional literature can be obtained from [www.omron247.com](http://www.omron247.com).

**W450** CP1H Operation Manual

**W451** CP1L / CP1H Programming Manual

**W462** CP1L Operation Manual

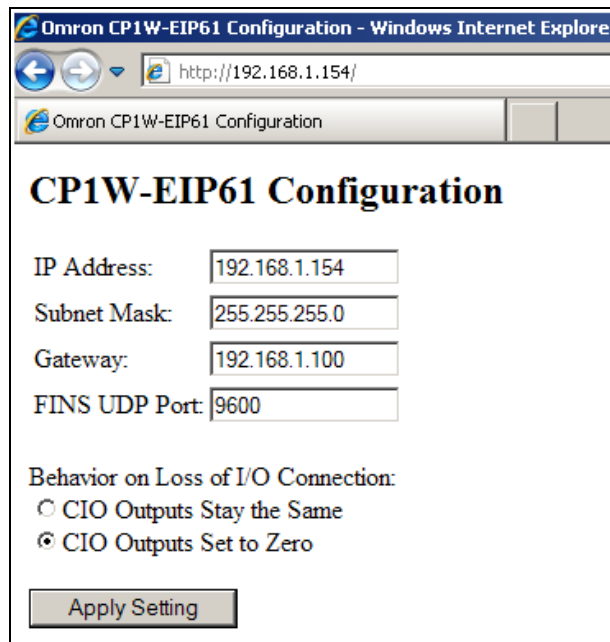
**V227** W4S Ethernet Switch

## Section 4: EtherNet/IP Adapter Setup

The CP1W-EIP61 is assigned a default IP address of 192.168.250.11. The IP address can be changed using a web browser pointed to the IP address of the adapter. A static IP address must be assigned to the PC's Ethernet card for this purpose. Simply enter the IP address of the adapter (192.168.250.11) in the web browser's address field to access the configuration page. Enter the desired new IP address (192.168.1.154 shown as an example), subnet mask, and default gateway (if applicable).

When using the CP1W-EIP61 in 'IO Block Mode', select the state of the outputs if the IO Connection to the Originator PLC is lost.

When finished, click **Apply Setting**.



The screenshot shows a web browser window titled "Omron CP1W-EIP61 Configuration - Windows Internet Explorer". The address bar contains "http://192.168.1.154/". The page content includes the title "CP1W-EIP61 Configuration" and the following fields:

IP Address:	<input type="text" value="192.168.1.154"/>
Subnet Mask:	<input type="text" value="255.255.255.0"/>
Gateway:	<input type="text" value="192.168.1.100"/>
FINS UDP Port:	<input type="text" value="9600"/>

Behavior on Loss of I/O Connection:

- CIO Outputs Stay the Same
- CIO Outputs Set to Zero

At the bottom, there is an "Apply Setting" button.

If the IP address is forgotten, use CX Programmer to view the IP address in D1200 + D1201 in the following format:

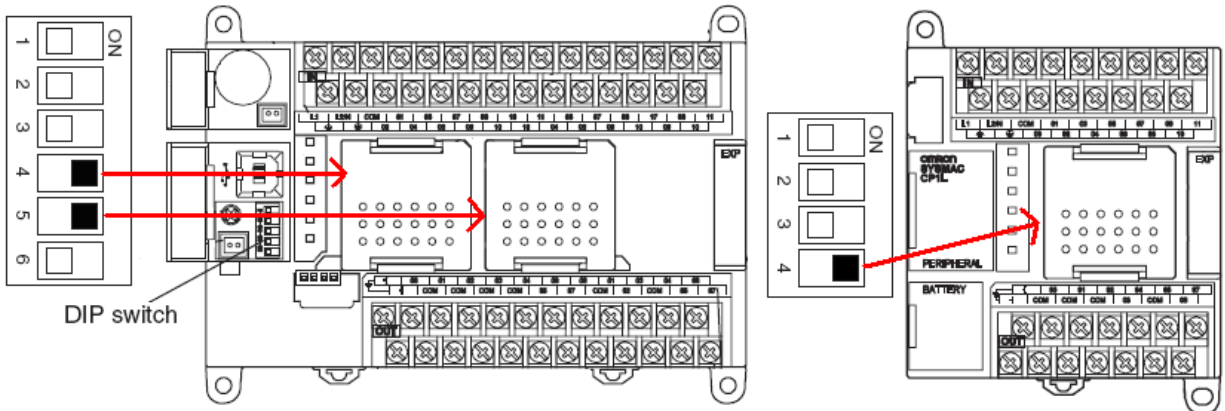
D1200 1<sup>st</sup> and 2<sup>nd</sup> Octets in Hexadecimal: Ex. D1200 = C0A8 = 192.168

D1201 3<sup>rd</sup> and 4<sup>th</sup> Octets in Hexadecimal: Ex. D1201 = 019A = 1.154

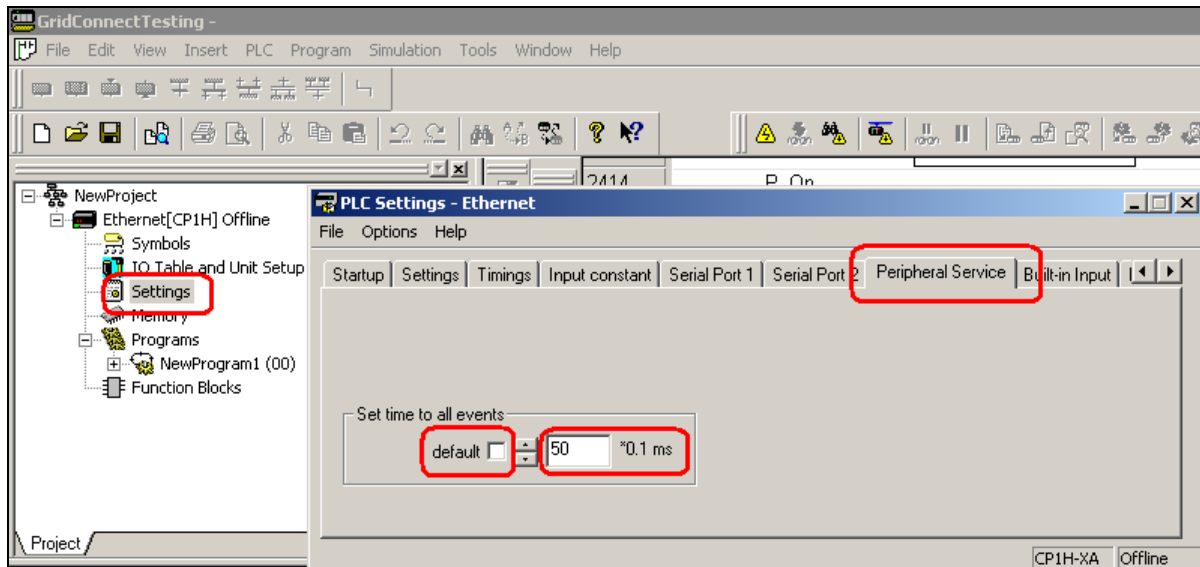
So, the IP address would be 192.168.1.154 based on the above values.

## Section 5: PLC Setup

The CP1W-EIP61 adapter uses the Toolbus (high speed binary) protocol. To configure the PLC port, simply turn ON the appropriate DIP switch on the CP1L or CP1H PLC. For CP1L PLCs with 1 Option Board, use DIP Switch 4. For CP1L PLCs with 2 Option Board Slots, or CP1H PLCs, use DIP Switch 4 for Slot 1, and DIP Switch 5 for Slot 2.



To maximize the throughput of the CP1W-EIP61, the amount of time per PLC scan that is allowed for servicing communications ports should be increased. This is accessed through the PLC Settings in CX Programmer. On the Peripheral Service tab, uncheck the 'default' option, and enter 50 (5.0 ms). Transfer these settings to the PLC and cycle power to apply the changes.

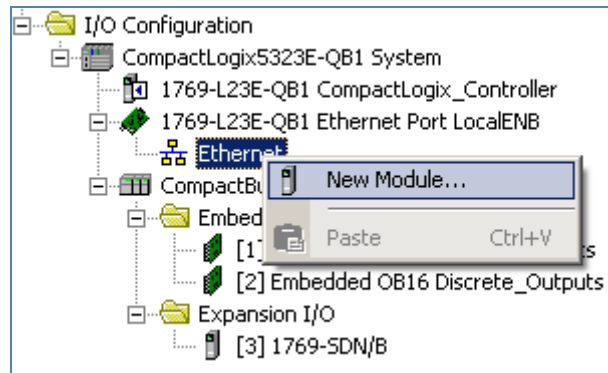


## **Section 6: Establishing a Connection: Example**

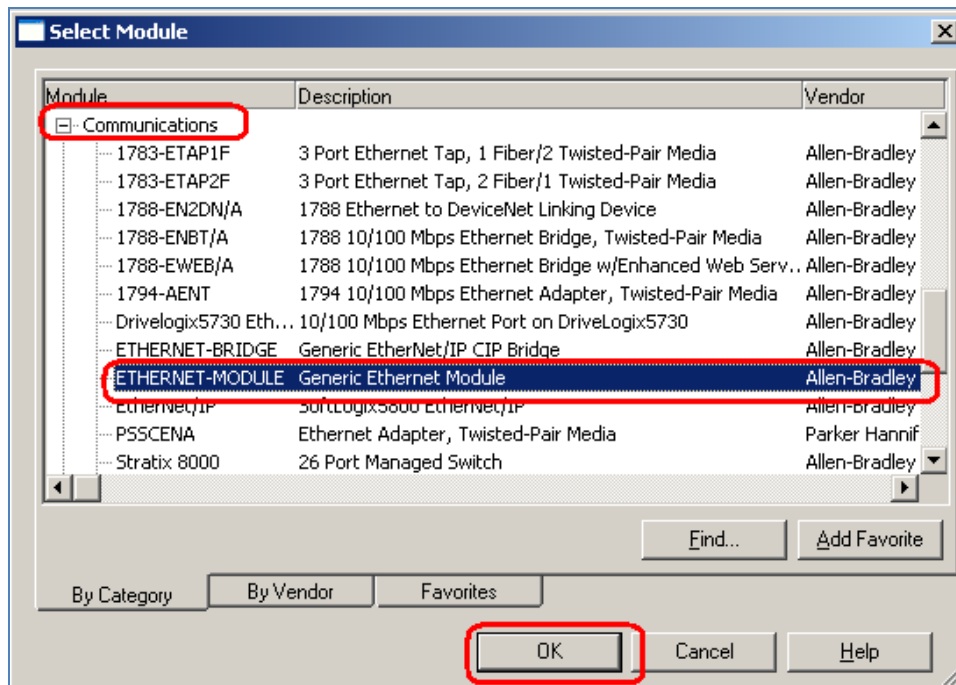
A connection will be established between a CompactLogix PLC and a CP1L or CP1H with a CP1W-EIP61, using IO Block Mode.. A ControlLogix would be nearly identical.

1. Plug the CP1W-EIP61 adapter the CP1L or CP1H, set the DIP Switch as shown in section 5, and apply power to the CP1L or CP1H.
2. Connect the CompactLogix, CP1W-EIP61, and PC to an Ethernet Switch.
3. Open the project file or create a new project file for the CompactLogix in RSLogix 5000.
4. Configure the IP address of the CompactLogix as 192.168.1.77 using RSLogix 5000 (as an example IP Address).
5. Configure the IP address of the CP1W-EIP61 as 192.168.1.154 through the Web Page interface, as shown previously in Section 4.

6. Right click on the Ethernet module in the CompactLogix, and click **New Module**.

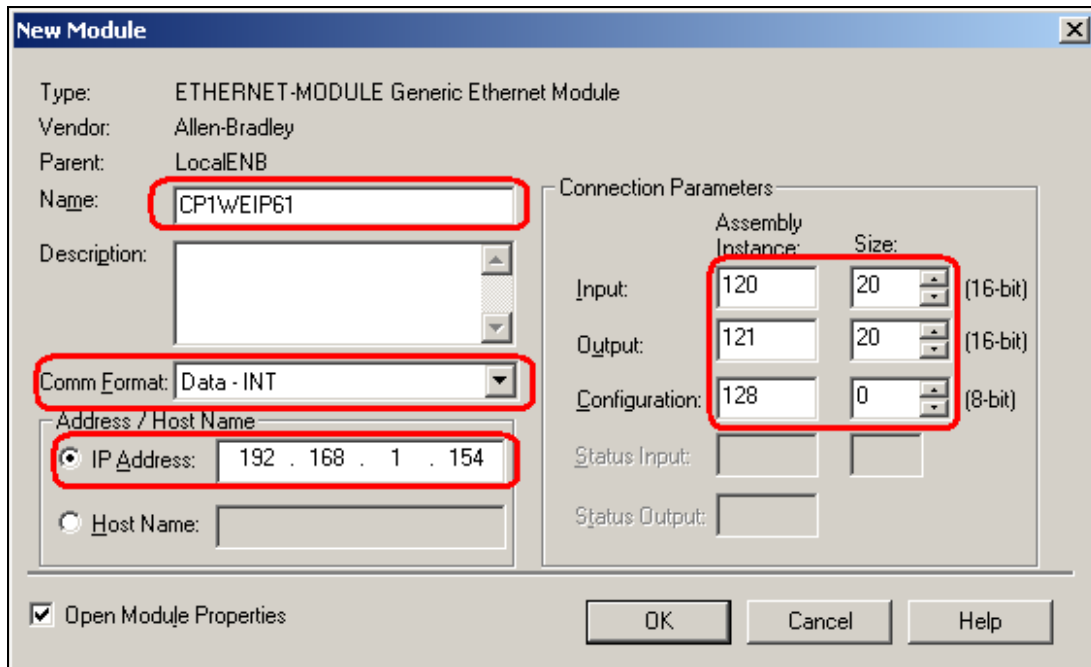


7. In the **Communications** group, select **ETHERNET-MODULE Generic Ethernet Module**, and click **OK**.

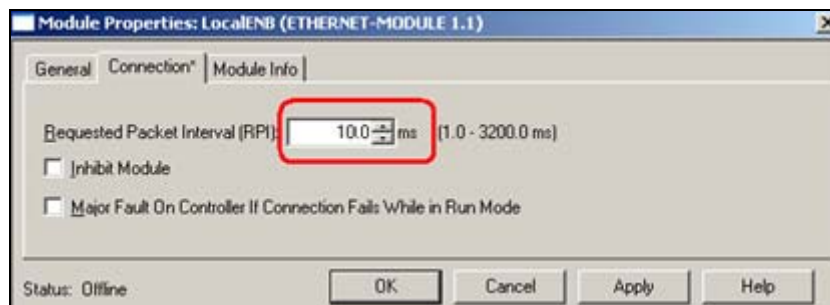




8. Configure the connection as shown, and click **OK**.



9. Configure the RPI for 10 ms, and click **OK**.



Tags will have been created automatically for the CP1WEIP61 connection as shown below.

### Input Data Points

[-CP1WEIP61:I	
[-CP1WEIP61:I.Data	
[-CP1WEIP61:I.Data[0]	
	-CP1WEIP61:I.Data[0].0
	-CP1WEIP61:I.Data[0].1
	-CP1WEIP61:I.Data[0].2
	-CP1WEIP61:I.Data[0].3
	-CP1WEIP61:I.Data[0].4

### Output Data Points

[-CP1WEIP61:O	
[-CP1WEIP61:O.Data	
[-CP1WEIP61:O.Data[0]	
	-CP1WEIP61:O.Data[0].0
	-CP1WEIP61:O.Data[0].1
	-CP1WEIP61:O.Data[0].2
	-CP1WEIP61:O.Data[0].3
	-CP1WEIP61:O.Data[0].4

The first input point on the CP1L or CP1H (Omron address 0.00) will be mapped to CP1WEIP61:I.Data[0].0.

The first output point on the CP1L or CP1H (Omron address 100.00) will be mapped to CP1WEIP61:O.Data[0].0.

10. Download the project to the CompactLogix processor using RSLogix 5000.
11. Using RSLogix 5000 to monitor the PLC data, verify the operation of the CP1L or CP1H in IO Block Mode.

# Terms and Conditions of Sale

1. **Offer; Acceptance.** These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
2. **Prices; Payment Terms.** All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
3. **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 (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
4. **Interest.** Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
5. **Orders.** Omron will accept no order less than \$200 net billing.
6. **Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for 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 Omron or required to be collected directly or indirectly by Omron 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 Omron.
8. **Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron 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, Omron 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 Omron against all related costs or expenses.
10. **Force Majeure.** Omron 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 Omron:
  - a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
  - b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
  - c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
  - d. Delivery and shipping dates are estimates only; and
  - e. Omron 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 Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
13. **Warranties.** (a) **Exclusive Warranty.** Omron'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 Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) **Limitations.** OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) **Buyer Remedy.** Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses 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. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://www.omron247.com> or contact your Omron representative for published information.
14. **Limitation on Liability; Etc.** OMRON COMPANIES 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 Omron Companies exceed the individual price of the Product on which liability is asserted.
15. **Indemnities.** Buyer shall indemnify and hold harmless Omron Companies and their 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 Omron 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. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
16. **Property; Confidentiality.** Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron 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.
17. **Export Controls.** Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (iii) disclosure to non-citizens of regulated technology or information.
18. **Miscellaneous.** (a) **Waiver.** No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) **Assignment.** Buyer may not assign its rights hereunder without Omron's written consent. (c) **Law.** These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) **Amendment.** These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) **Severability.** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) **Setoff.** Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) **Definitions.** As used herein, "including" means "including without limitation"; and "Omron Companies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

## Certain Precautions on Specifications and Use

1. **Suitability of Use.** Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron 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) Use in consumer products or any use in significant quantities.
  - (iii) 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.
  - (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 OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
3. **Performance Data.** Data presented in Omron Company websites, catalogs and other materials 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 user must correlate it to actual application requirements. Actual performance is subject to the Omron'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 Product 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 Omron's representative at any time to confirm actual specifications of purchased Product.
5. **Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.



---

**OMRON INDUSTRIAL AUTOMATION • THE AMERICAS HEADQUARTERS**

Schaumburg, IL USA • 847.843.7900 • 800.556.6766 • [www.omron247.com](http://www.omron247.com)

**OMRON CANADA, INC. • HEAD OFFICE**

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • [www.omron247.com](http://www.omron247.com)

**OMRON ELECTRONICS DE MEXICO • HEAD OFFICE**

México DF • 52.55.59.01.43.00 • 001.800.556.6766 • [mela@omron.com](mailto:mela@omron.com)

**OMRON ELECTRONICS DE MEXICO • SALES OFFICE**

Apodaca, N.L. • 52.81.11.56.99.20 • 001.800.556.6766 • [mela@omron.com](mailto:mela@omron.com)

**OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE**

São Paulo, SP, Brasil • 55.11.2101.6300 • [www.omron.com.br](http://www.omron.com.br)

**OMRON ARGENTINA • SALES OFFICE**

Cono Sur • 54.11.4783.5300

**OMRON CHILE • SALES OFFICE**

Santiago • 56.9.9917.3920

**OTHER OMRON LATIN AMERICA SALES**

54.11.4783.5300

---

**OMRON EUROPE B.V.** • Wegalaan 67-69, NL-2132 JD, Hoofddorp, The Netherlands. • Tel: +31 (0) 23 568 13 00

Fax: +31 (0) 23 568 13 88 • [www.industrial.omron.eu](http://www.industrial.omron.eu)