

Two-circuit Limit Switch WL-N/NWL

Two-circuit limit switches that can be selected to match the operating environment and application

- Wide variety of head shapes, including Roller Lever, Plunger, Flexible Rod, and Fork Lock Lever Switches.
- You can select the optimum actuator shape for the workpiece shape and movement from a variety of actuators.
- In addition to general detection, we also have environment resistant models for harsh environments, sputter resistant models for welding processes, and long-life models for high-frequency use.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

⚠ Be sure to read *Safety Precautions* on page 62 to 67 and *Safety Precautions for All Limit Switches*.

Features

General-purpose Switches

A Wide Range of Models

You can select the optimum product for the workpiece shape and movement from a variety of actuators, including Roller Lever, Plunger, Flexible Rod, and Fork Lock Lever Switches.

Environment-resistant Switches

Six environment resistant models are available

Airtight Switches, Hermetic Switches, Heat-resistant Switches, Low-temperature Switches, Corrosion-proof Switches, and Weather-proof Switches are available.

You can select the model based on the onsite environment.

Spatter-prevention Switches

Ideal for Welding Sites

Uses stainless steel and plastic materials that prevent the adhesion of spatter.

They can be used to reduce problems caused by zinc power generated during welding.

Long-life Switches

Long-life Models for High-frequency Applications

A mechanical durability of over 30 million cycles is achieved by improving slidability and the wear resistance of the head.

Features Common

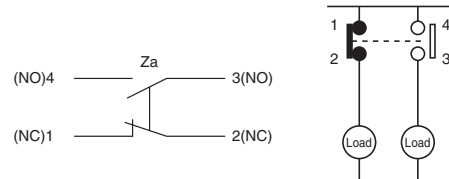
DPDB Operation

The two-circuit double-break structure ensures circuit braking.

- Basic/Retention type Switches (WL-N)



- High-sensitivity/High-precision Switches (WL)



Degree of Protection; IP67

Models with Connectors to Reduce Wiring

A neon lamp or LED indicates the operating status. This makes startup checks and maintenance easy.

Sensor I/O Connector Models to Match Wiring Specifications

Direct-wire types and pre-wired types are available for easy replacement of limit switches.




Ordering Information





General-purpose Switches

Standard Switches




Switches with Roller Lever Actuators

Basic Switches

Actuator	Roller lever: R38 	Roller lever: R50 	Roller lever: R63 
Pretravel (PT)	Model	Model	Model
15±5°	WLCA2-N	WLCA2-7-N	WLCA2-8-N
25±5°	WLCA2-2-N	—	—
20° max.	WLCA2-2N-N	—	—

Actuator	Adjustable roller lever 	Adjustable rod lever: 25 to 140 mm 	Adjustable rod lever: 350 to 380 mm 	Rod spring lever 
Pretravel (PT)	Model	Model	Model	Model
15±5°	WLCA12-N	WLCL-N	WLCAL4-N	WLCAL5-N
25±5°	WLCA12-2-N	WLCL-2-N	—	—
20° max.	WLCA12-2N-N	WLCL-2N-N	—	—

High-sensitivity Switches





Actuator	Roller lever: R38 	Adjustable roller lever 	Adjustable rod lever: 25 to 140 mm 
Load	Model	Model	Model
Standard load	WLG2	WLG12	WGLL
Microload	WL01G2	WL01G12	WL01GL




High-precision Switches

Actuator	Roller lever: R38 
Load	Model
Standard load	WLGCA2
Microload	WL01GCA2

Switches with Plunger Actuators



Basic Switches



Actuator	Sealed Top Plunger 	Sealed Top-roller plunger 	Sealed Top-ball plunger 	Top-roller plunger 
Pretravel (PT)	Model	Model	Model	Model
1.7 mm max.	WLD18-N	WLD28-N	WLD38-N	WLD2-N

Actuator	Horizontal plunger 	Horizontal-roller plunger 	Horizontal-ball plunger 
Pretravel (PT)	Model	Model	Model
2.8 mm max.	W LSD-N	W LSD2-N	W LSD3-N

Switches with Flexible Rod Actuators





Basic Switches

Actuator	Coil spring (spring diameter: 6.5) 	Coil spring (spring diameter: 4.8) 
Pretravel (PT)	Model	Model
20±10 mm	WLNJ-N	WLNJ-30-N

Actuator	Resin rod (rod diameter: 8) 	Steel wire (wire diameter: 1) 
Pretravel (PT)	Model	
40±20 mm	WLNJ-2-N	WLNJ-S2-N

Switches with Fork Lock Lever Actuator








Retention type Switches

Actuator	Fork lock lever 	Fork lock lever 	Fork lock lever 	Fork lock lever 
Pretravel (PT)	Model	Model	Model	Model
55° max.	WLCA32-41-N	WLCA32-42-N	WLCA32-43-N	WLCA32-44-N

Individual Parts


Switches without Levers, Heads, and Actuators

General-purpose Parts

Actuator	Operating characteristics	Set	Switches without levers	Heads (with Actuators)	Actuator only *
			Model	Model	Model
Roller lever 	Basic	WLCA2-N	WLRCA2-N	WL-1H1100-N	WL-1A100
		WLCA2-2-N	WLRCA2-2-N	WL-3H1100-N	
	High-sensitivity	WLCA2-2N-N	WLRCA2-2N-N	WL-1H1100-N	
Adjustable roller lever 	Basic	WLCA12-N	WLRCA2-N	WL-1H2100-N	WL-2A100
		WLCA12-2-N	WLRCA2-2-N	WL-3H2100-N	
	High-sensitivity	WLCA12-2N-N	WLRCA2-2N-N	WL-1H2100-N	
Variable rod lever 	Basic	WLCL-N	WLRCL-N	WL-4H4100-N	WL-4A100
		WLCL-2-N	WLRCA2-2-N	WL-3H4100-N	
	High-sensitivity	WLCL-2N-N	WLRCA2-2N-N	WL-1H4100-N	
Fork lock lever 	Basic	WLCA32-41-N	WLRCA32-N	WL-5H5100-N	WL-5A100
		WLCA32-42-N		WL-5H5102-N	WL-5A102
		WLCA32-43-N		WL-5H5104-N	WL-5A104
WLCA32-44-N		WL-5H5104-N		WL-5A104	
Top plunger 	Basic	WLD18-N	—	WL-7H100-N	—
		WLD28-N		WL-7H400-N	—
		WLD38-N		WL-7H300-N	—
Horizontal plunger 	Basic	WLS-D-N	—	WL-8H100-N	—
		WLS-D2-N		WL-8H200-N	—
		WLS-D3-N		WL-8H300-N	—
Flexible rod 	Basic	WLNJ-N	—	WL-9H100-N	—
		WLNJ-30-N		WL-9H200-N	—
		WLNJ-2-N		WL-9H300-N	—
		WLNJ-S2-N		WL-9H400-N	—

* The same Actuators can be used for both WL and WL-N Switches.

Spatter-prevention Parts

Actuator	Lever Specifications	Item	Set Model Numbers	Switches without levers	Heads (with Actuators)	Actuator only *
				Model	Model	Model
Roller lever 	Allen-head bolt lever	Basic	WLCA2-LES-N	WLRCA2-LES-N	—	WL-1A103S
			WLCA2-LDS-N	WLRCA2-LDS-N		
	Double nut lever	Basic	WLCA2-LEAS-N	WLRCA2-LES-N	—	WL-1A105S
			WLCA2-LDAS-N	WLRCA2-LDS-N		
	High-sensitivity	WLG2-LDAS	WLRG2-LDS			

* The same Actuators can be used for both WL and WL-N Switches.

Dimensions and Operating Characteristics

(Unit: mm)

General-purpose and Environment-resistant Switches

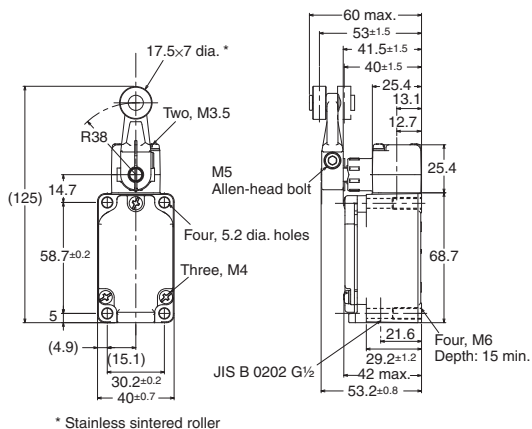
Standard Switches

Switches with Roller Lever Actuators

Basic Switches

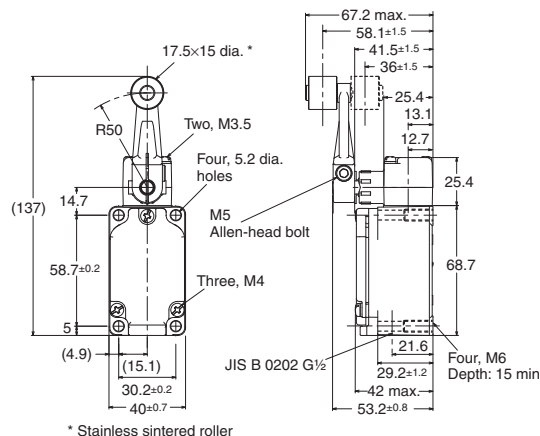
Roller lever R38

WLCA2-N
WLCA2-2-N
WLCA2-2N-N



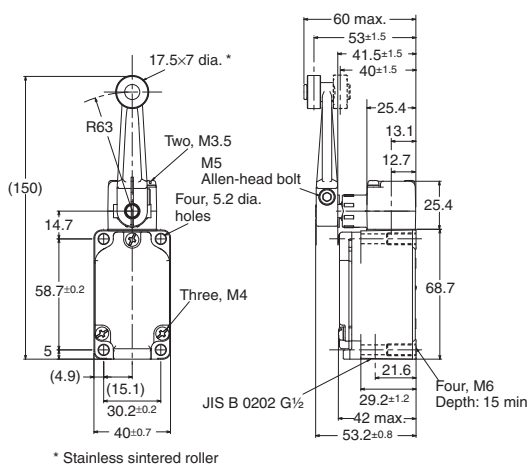
Roller lever R50

WLCA2-7-N



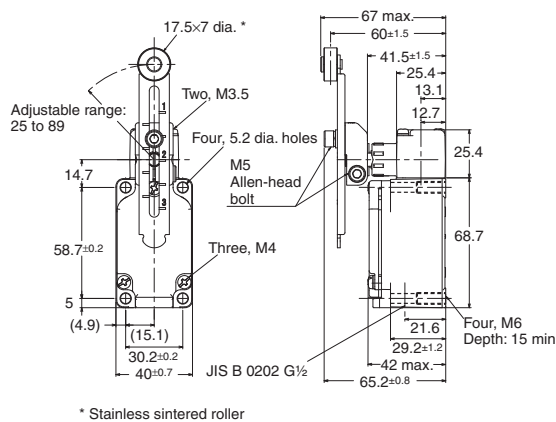
Roller lever R63

WLCA2-8-N



Adjustable roller lever

WLCA12-N
WLCA12-2-N
WLCA12-2N-N



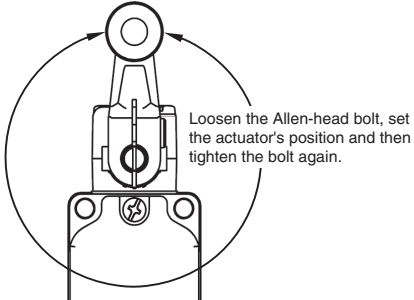
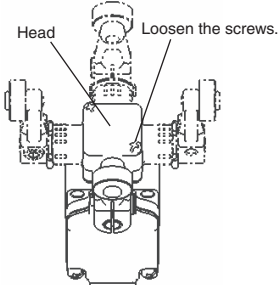
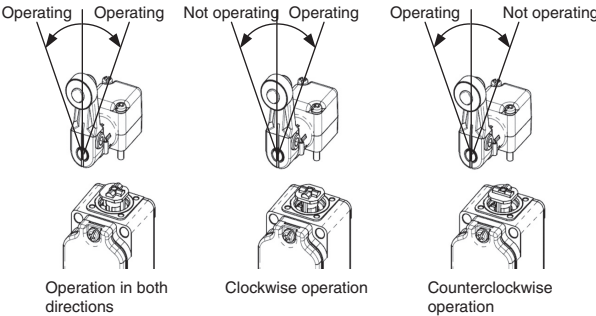
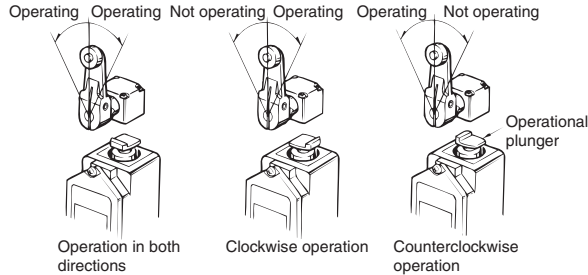
Note: Unless otherwise indicated, a tolerance of ± 0.4 mm applies to all dimensions.

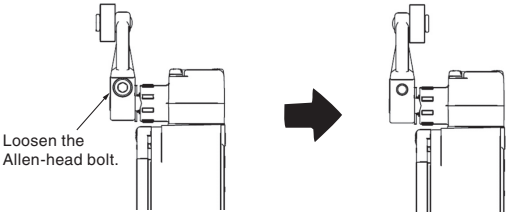
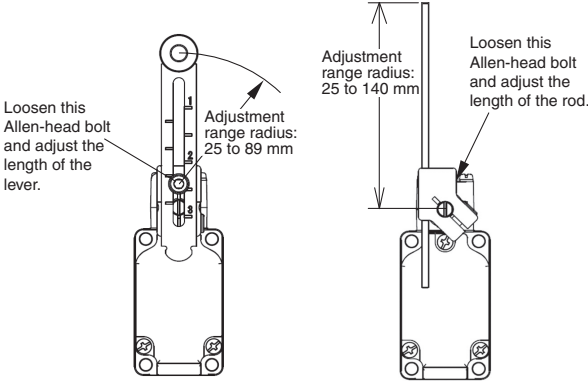
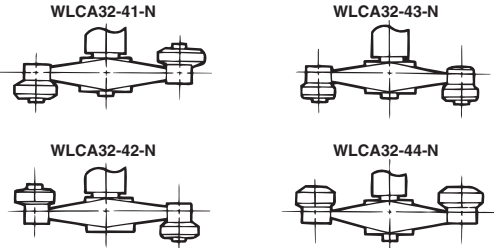
Operating characteristics		Model	WLCA2-N	WLCA2-2-N	WLCA2-2N-N	WLCA2-7-N	WLCA2-8-N
Operating force	OF	max.	13.34 N	13.34 N	13.34 N	10.2 N	8.04 N
Release force	RF	min.	1.18 N	1.18 N	1.18 N	0.9 N	0.71 N
Pretravel	PT		15±5°	25±5°	20° max.	15±5°	15±5°
Overtravel	OT	min.	70°	60°	70°	70°	70°
Movement Differential	MD	max.	12°	16°	10°	12°	12°

Operating characteristics		Model	WLCA12-N *1	WLCA12-2-N *1	WLCA12-2N-N *1
Operating force	OF	max.	13.34 N	13.34 N	13.34 N
Release force	RF	min.	1.18 N	1.18 N	1.18 N
Pretravel	PT		15±5°	25±5°	20° max
Overtravel	OT	min.	70°	60°	70°
Movement Differential	MD	max.	12°	16°	10°

* The operating characteristics are measured at the lever length of 38 mm.

Using the Switches

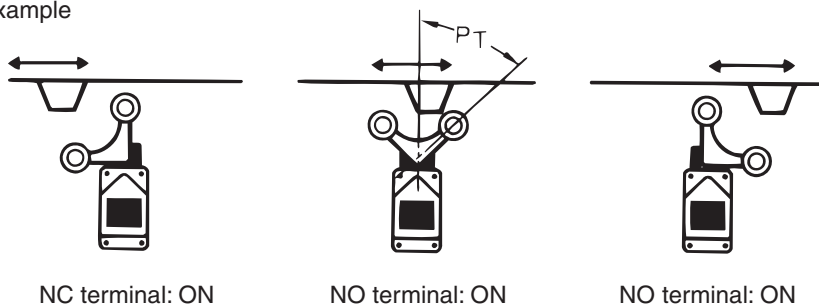
Item	Applicable models and Actuators	Details
<p>Changing the Installation Position of the Actuator By loosening the Allen-head bolt on the actuator lever, the position of the actuator can be set anywhere within the 360°. With Operation Indicator-equipped Switches, the actuator lever comes in contact with the top of the indicator cover, so use caution when rotating and setting the lever. When the lever only moves forwards and backwards, it will not contact the lamp cover. (This does not apply to Long-life Models.)</p>	<p>Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLG2, WLCA2-7-N, WLCA2-8-N, WLGCA2, WLMCA2-N, WLMG2, WLMGCA2) Adjustable Roller Lever: (WLCA12-N, WLCA12-2-N, WLCA12-2N-N, WLG12) Adjustable Rod Lever: (WLCL-N, WLCL-2-N, WLCL-2N-N, WLGL, WLCAL4-N, WLCAL5-N)</p>	
<p>Changing the Orientation of the Head By removing the head screws (two or four screws), mounting in any of four orientations is possible. Be sure to change the plunger for internal operations at the same time. The roller plunger can be set in either of two positions at 90°.</p>	<p>Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLG2, WLCA2-7-N, WLCA2-8-N, WLGCA2, WLMCA2-N, WLMG2, WLMGCA2) Adjustable Roller Lever: (WLCA12-N, WLCA12-2-N, WLCA12-2N-N, WLG12) Adjustable Rod Lever: (WLCL-N, WLCL-2-N, WLCL-2N-N, WLGL, WLCAL4-N, WLCAL5-N) Horizontal plunger: (WLS□-N) Top-roller plunger: (WLD2-N) Sealed top-roller plunger: (WLD28-N) Fork lock lever: (WLCA32-4□-N) Note: Excludes the -RP60-series and -141-series.</p>	
<p>Changing the Operating Direction By removing the Head on models which can operate on one-side only, and then changing the direction of the operational plunger, one of three operating directions can be selected. The tightening torque for the screws on the Head is 0.78 to 0.88 N·m.</p>	<p>Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLCA2-7-N, WLCA2-8-N, WLMCA2-N) Adjustable Roller Lever: (WLCA12-N, WLCA12-2-N, WLCA12-2N-N) Adjustable Rod Lever: (WLCL-N, WLCL-2-N, WLCL-2N-N, WLCAL4-N, WLCAL5-N) Roller lever: (WLGCA2, WLMGCA2)</p>	<p>One-side Operation The output of the Switch will be changed, regardless of which direction the lever is pushed. The output of the Switch will only be changed when the lever is pushed in one direction.</p>  <p>One-side Operation for High-sensitivity and High-precision Switches The output of the Switch will be changed, regardless of which direction the lever is pushed. The output of the Switch will only be changed when the lever is pushed in one direction.</p> 

Item	Applicable models and Actuators	Details
<p>Installing the Roller on the Inside By installing the roller lever in the opposite direction, the roller can be installed on the inside. (Set so that operation can be completed within a 180° level range.)</p>	<p>Roller lever: (WLCA2-N, WLCA2-2-N, WLCA2-2N-N, WLG2, WLCA2-7-N, WLCA2-8-N, WLGA2, WLMCA2-N, WLMG2, WLMGCA2) Fork Lock Lever: (WLCA32-4□-N)</p>	 <p>Loosen the Allen-head bolt.</p>
<p>Adjusting the Length of the Rod or Lever The length of the rod or lever can be adjusted by loosening the Allen-head bolt.</p>	<p>Adjustable Roller Lever: (WLCA12-N, WLCA12-2-N, WLCA12-2N-N, WLG12) Adjustable Rod Lever: (WLCL-N, WLCL-2-N, WLCL-2N-N, WLGL, WLCAL4-N)</p>	 <p>Loosen this Allen-head bolt and adjust the length of the lever.</p> <p>Adjustment range radius: 25 to 89 mm</p> <p>Adjustment range radius: 25 to 140 mm</p> <p>Loosen this Allen-head bolt and adjust the length of the rod.</p> <p>Adjustable Roller Levers: Adjustable Rod Levers:</p>
<p>Selecting the Roller Position There are four types of Switches with Fork Lock Levers for use depending on the roller position.</p>	<p>Fork Lock Lever: (WLCA32-4□-N)</p>	 <p>WLCA32-41-N WLCA32-43-N</p> <p>WLCA32-42-N WLCA32-44-N</p> <p>An explanation of the operation of fork lock levers is provided after this table.</p>

Operation of Fork Lock Levers

A Switch with a Fork Lock Lever is constructed so that the dog pushes the lever to invert the output and this inverted state is maintained even after the dog moves on.
If the dog then pushes the lever from the opposite direction, the lever will return to its original position.

Example



Terms and Conditions Agreement

Read and understand this catalog.

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

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.omron.com/global/> or contact your Omron representative for published information.

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.

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.

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

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

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.

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.

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 AUTOMATION AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • www.omron247.com

OMRON CANADA, INC. • HEAD OFFICE

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • www.omron247.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE

México DF • 52.55.59.01.43.00 • 01-800-226-6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE

Apodaca, N.L. • 52.81.11.56.99.20 • 01-800-226-6766 • mela@omron.com

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE

São Paulo, SP, Brasil • 55.11.2101.6300 • 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. • +31 (0) 23 568 13 00 • www.industrial.omron.eu

Authorized Distributor:

Controllers & I/O

- Machine Automation Controllers (MAC) • Motion Controllers
- Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

Robotics

- Industrial Robots • Mobile Robots

Operator Interfaces

- Human Machine Interface (HMI)

Motion & Drives

- Machine Automation Controllers (MAC) • Motion Controllers • Servo Systems
- Frequency Inverters

Vision, Measurement & Identification

- Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing

- Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors
- Rotary Encoders • Ultrasonic Sensors

Safety

- Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems
- Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices
- Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components

- Power Supplies • Timers • Counters • Programmable Relays
- Digital Panel Meters • Monitoring Products

Switches & Relays

- Limit Switches • Pushbutton Switches • Electromechanical Relays
- Solid State Relays

Software

- Programming & Configuration • Runtime