

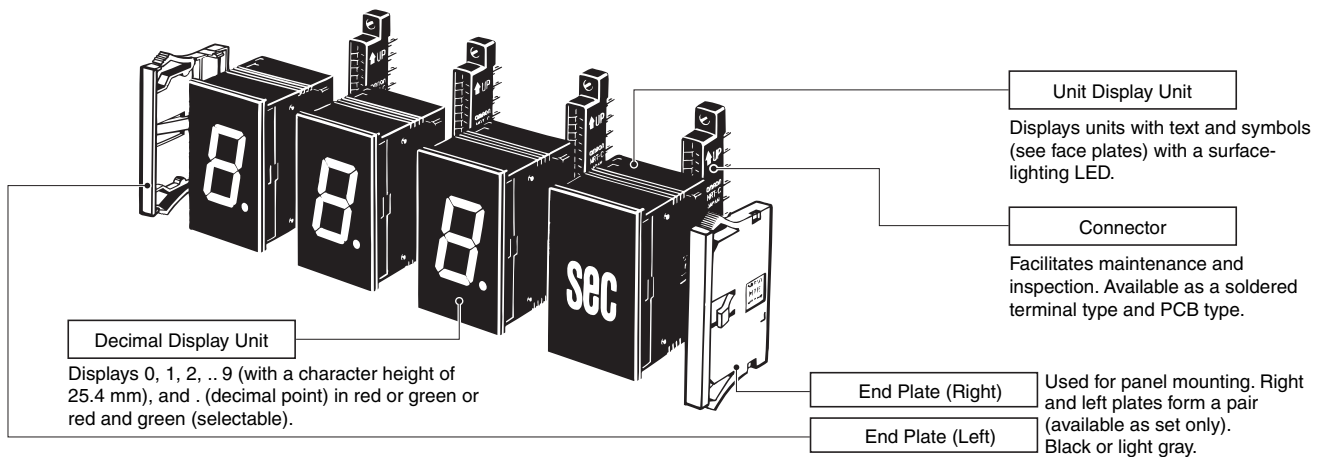
Zero Suppression Incorporated

- Single-color (red or green) and two-color (red or green selectable) displays with a character height of 25 mm are available for a variety of applications and locations.
- Miniature design with a 43-mm depth is perfect for saving space in equipment and devices.
- A wide power supply range from 12 to 24 VDC.
- Connectors are available, which allows easy maintenance.
- Negative logic input.





Model Configuration

■ Unit Configuration



Ordering Information

■ List of Models

Display contents	Display color	Type	Model
 Decimal	Red	Negative	M7E-02DRN2
	Green (See note 1.)		M7E-02DGN2
	Red/green (two colors) (See note 1.)		M7E-02DRGN2
 Unit	Red	---	M7E-02UR2-□ (See note 2.)
	Green	---	M7E-02UG2-□ (See note 2.)

- Note:** 1. The M7E-02DGN2 (single-color (green) model) is different from the M7E-02DRGN2 (two-color (red and green) model) in displayed tone.
 2. The symbol in the box (□) expresses the code for the display contents. Refer to page 6.

Connectable PLCs

M7E model		PLC's output method		
Display contents	Type	Static output		Dynamic output
		PNP output	NPN output	
Decimal	Negative	Not connectable	Connectable	Not connectable
Unit	---	Connectable (only voltage imposed)		

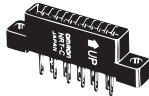
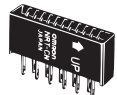
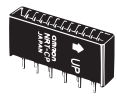
■ Accessories (Order Separately)

End Plate

Case color	Model
Light gray	M7E-022M
Black	M7E-022M-1

Note: The Right and Left Plates form a pair.

Connector

Terminal	Model
 Solder terminals	NRT-C
 Solder terminals	NRT-CN
 PCB terminals	NRT-CP

Specifications

■ Ratings

Rated power supply	Wide range from 12 to 24 VDC
Allowable voltage fluctuation range	90% to 110% of rated voltage
Current consumption (per display)	Red LED: 60 mA max. (at 24 VDC) 100 mA max. (at 12 VDC) Green LED: 80 mA max. (at 24 VDC) 140 mA max. (at 12 VDC)
Input level	High: 4 V to power supply voltage Low: 0 to 1.5 V
Negative logic	
Ambient temperature	Operating: -10 to 55°C (with no icing) Storage: -25 to 70°C (with no icing)
Ambient humidity	Operating: 35% to 85% (with no condensation)

■ Characteristics

Insulation resistance	100 MΩ min. (at 500 VDC) between each terminal and mounting panel
Dielectric strength	500 VAC, 50/60 Hz for 1 min between each terminal and mounting panel
Noise immunity (See note 2.)	Power terminal: ±500 V Input terminals: ±500 V (normal mode) ±1,500 V (common mode)
Vibration resistance	Destruction: 10 to 55 Hz, 0.75-mm double amplitude
Shock resistance	Destruction: 300 m/s ²
Degree of protection	IEC IP40 (portion on panel surface)
Compatible connector	OMRON NRT-C/NRT-CN/NRT-CP

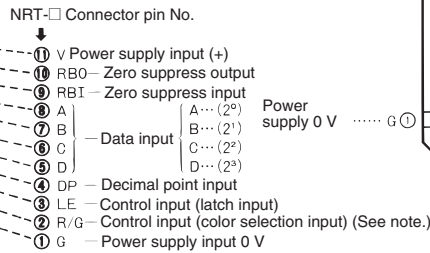
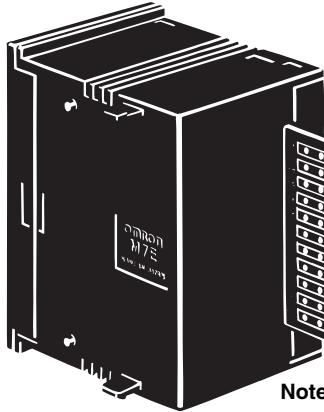
- Note:** 1. Initial values
 2. Impulse conditions:
 Rise time: 1 ns +10% max.
 Pulse width: 100 ns, 1 μs
 Polarity: Positive, negative, asynchronous to power frequency, 100-Hz repeat frequency.

Installation

Terminal Arrangement/Functions

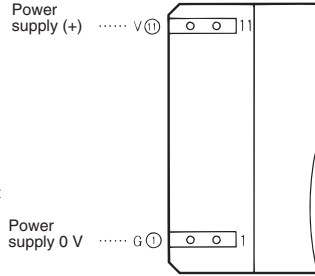
Terminal Arrangement Note: Values in parentheses apply to the NRT-□ Connector's pin numbers.

Decimal Display Unit



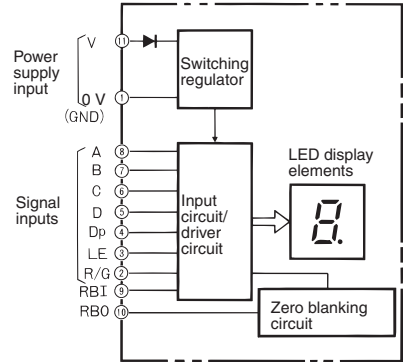
Note: The R/G terminal is only for two-color models. It is NC on the single-color models.

Unit Display Unit



Block Diagram

Note: Circled numbers are the connector pin numbers.

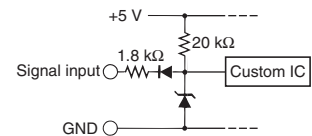


Terminal Functions

Terminal symbol	Name	Function
V	Power supply	Positive (+) power-supply terminal.
RBO	Control output	Low is output during zero blanking.
RBI	Control input	Turns OFF when the input is low while the decimal point is not lit and the contents of display is 0.
A B C D	Data inputs	<ul style="list-style-type: none"> Displays a digit or symbol corresponding to the value of the binary code signal. Decimal display uses 0 to 9; nothing will be displayed for higher values.
DP	Data input	The decimal point lights. Operates independently from the LE terminal.
LE	Control input	Latch input: The immediately preceding display condition is retained.
R/G	Control input	Set low for green display and high for red display. (See note.)
G	Power supply	0-V power-supply (ground) input terminal (GND).

Signal Input Circuit

Negative Logic Standard Model



Note: Only for the M7E-02DRGN2.

Input Codes

Operation Examples of RBI and RBO

Zero suppression functions and RBO is low when the display is 0, the decimal point is not lit, and RBI is low.

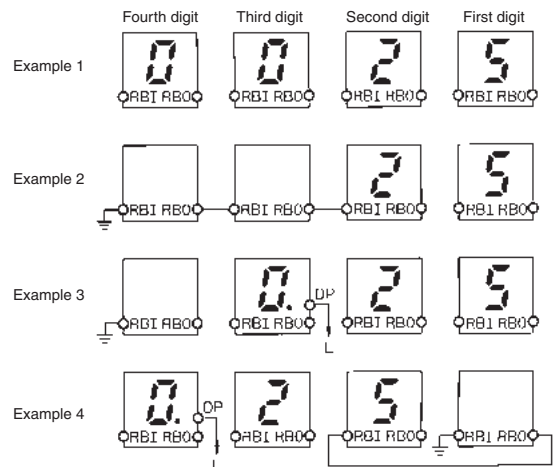
Example 1: Zero blanking is not required and the RBI input and RBO output of each digit are open.

Example 2: Wired as shown when there is zero blanking. If the data of the rightmost digit is 0, 0 will be displayed.

Example 3: Zero blanking is valid for only the digits on the left of the lit digit and decimal point.

Example 4: Zero blanking is valid for the second digit and the following digits that are on the right of the lit digit and decimal point. If the first- to fourth-digit values are all 0 and the decimal point is lit with the fourth digit, 0.000 will be displayed. (There is no data in □□.)

Note: Use RBO output for the connection with RBI input only.



Negative Logic Unit

- The display color will be green if the color control input of terminal 2 is set low and red if it is set high.
- All inputs are pulled up internally. Therefore high can be open.

Connector pin No.	Input signal							Output	Output display condition	
	③	⑤	⑥	⑦	⑧	④	⑨			
Terminal symbol	LE	D	C	B	A	DP	RBI	RBO	Decimal	
Input signals	H	H	H	H	H	H	L	L	Blank	*2
	H	H	H	H	H	H	H	H	0	
	H	H	H	H	L	H	*1	H	1	
	H	H	H	L	H	H	*1	H	2	
	H	H	H	L	L	H	*1	H	3	
	H	H	L	H	H	H	*1	H	4	
	H	H	L	H	L	H	*1	H	5	
	H	H	L	L	H	H	*1	H	6	
	H	H	L	L	L	H	*1	H	7	
	H	L	H	H	H	H	*1	H	8	
	H	L	H	H	L	H	*1	H	9	
	H	L	H	L	H	H	*1	H	-	*3
	H	L	H	L	L	H	*1	H	Blank	
	H	L	L	H	H	H	*1	H	Blank	
	H	L	L	H	L	H	*1	H	Blank	
	H	L	L	L	H	H	*1	H	Blank	
	H	L	L	L	L	H	*1	H	Blank	
	*	*	*	*	*	L	*1	H	.	
H	H	H	H	H	L	*1	H	0	*2	
L	*1	*1	*1	*1	*1	*1	H	Retains the display conditions of A to D terminals before LE goes low. DP is not related.		

*1 Either low or high.

*2 Even if the data input is 0 and RBI is low, "0." will be displayed if DP is low.

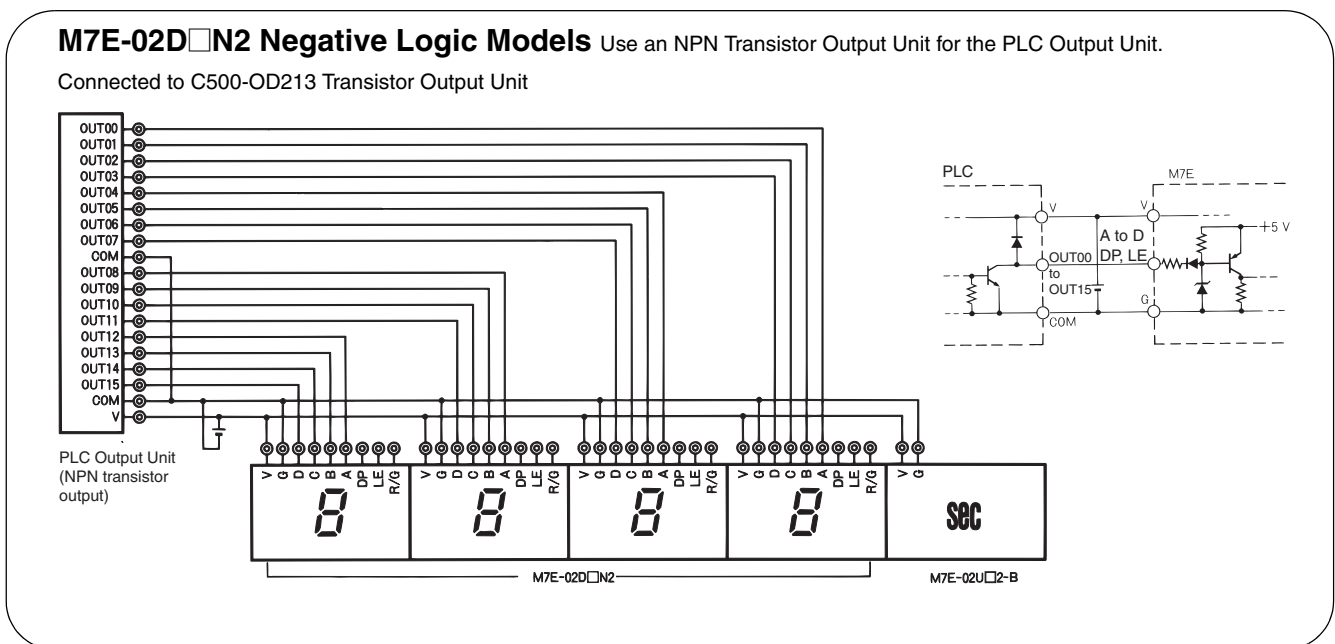
*3 Indicates the minus symbol (-) on the 7-segment display.

External Connections

Refer to the *Block Diagram* on page 3 and *Terminal Arrangement/Functions* on page 3 before performing external connections for each Unit.

PLC Connections

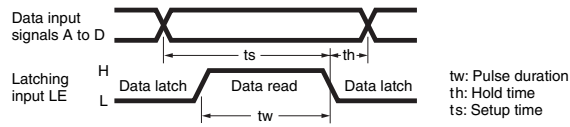
Refer to your PLC operation manual before connecting the PLC.



Operation

Operation Timing (Input Signal Timing)

Negative Logic



Pulse duration (tw)	1.5 ms min.
Hold time (th)	0.75 ms min.
Setup time (ts)	2.25 ms min.

Operation Chart

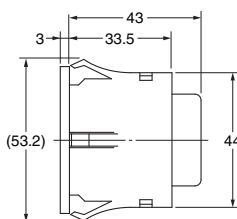
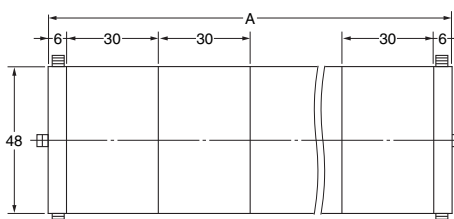
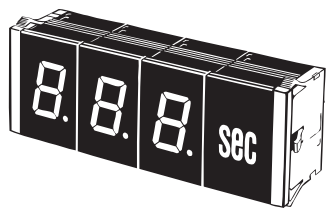
The following example shows the relationship between each input terminal and the display condition.

Data		0	1	2	3	4	5	6	7	8	9	Description	
Input signals	A (2 ⁰)	H	L	H	L	H	L	H	L	H	L	Inputs the data signal as BCD (or binary code)	
	B (2 ¹)	H	H	L	L	H	H	L	L	H	H		
	C (2 ²)	H	H	H	H	L	L	L	L	H	H		
	D (2 ³)	H	H	H	H	H	H	H	H	L	L		
	DP	H	L	L	L	L	L	L	H	H	H	H	Low when the decimal point lights. The decimal point can light without regard to the LE signal.
	LE	H	L	L	L	H	H	L	L	L	L	L	Low when all the display is to be retained. (High is maintained until the signal goes low.)
Display condition		7	1	2	3	4	5	5	6	7	8	9	---
Remarks		The "4" display is retained by the LE signal.					The "5" display is retained by the LE signal.					---	

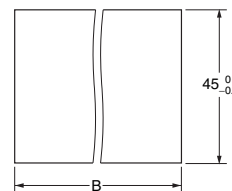
Dimensions

Note: All units are in millimeters unless otherwise indicated.

M7E-02□N2

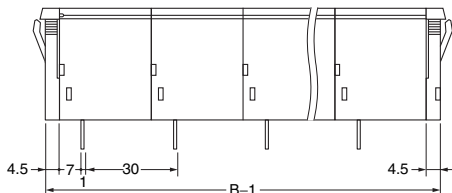
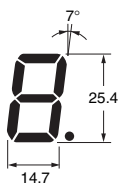


Panel Cutout



Panel thickness: 1 to 3 mm

LED



(Unit: mm)

Number of Units (n)	Dimension A (n x 30 + 12)	Dimension B (n x 30 + 10)
1	42±0.4	40±0.4
2	72±0.4	70±0.4
3	102±0.4	100±0.4
4	132±0.4	130±0.4
5	162±0.8	160±0.8
6	192±0.8	190±0.8
7	222±0.8	220±0.8
8	252±0.8	250±0.8

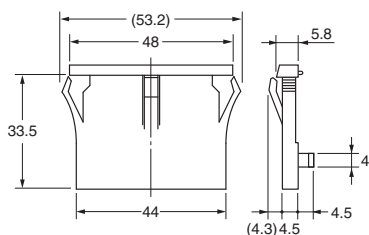
Note: 1. Dimensions A and B include End Plates.
2. Tolerance is ±0.4 mm unless otherwise specified.

Accessories (Order Separately)

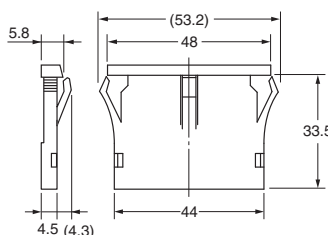
End Plate

M7E-022M(-1)

Left End



Right End



Face Plate

- A face plate is used with the Unit Display Unit, which incorporates a surface-lighting LED.
- The following face plates are available.
- Custom face plates can be made. Refer to the following for the procedure.

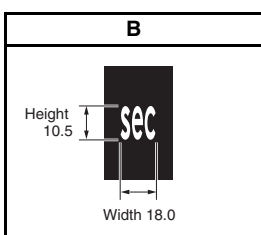
Symbol	A	B	C	F	G	H	J	JC1	K	V	Z1
Display contents	Blank display	sec	min	kg	mm	cm	m	m/min	°C	rpm	%

Character Dimensions

(Unit: mm)

Height	-	10.5	14.0	18.0	10.5	10.5	10.5	18.6	14.0	14.0	14.0
Width	-	18.0	13.0	13.0	17.5	16.0	10.8	17.2	14.0	15.0	14.0

Example of Dimensions



Safety Precautions

■ Precautions for Correct Use

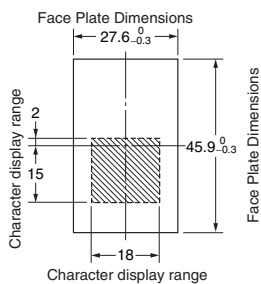
Display Unit

Refer to *Safety Precautions for M7E*.

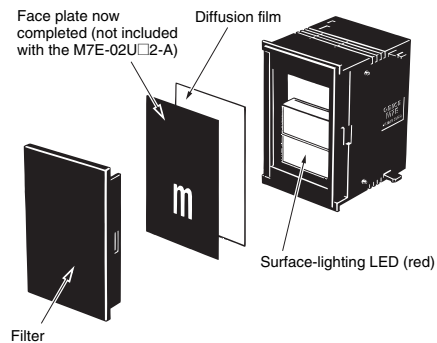
Procedure for Making Face Plates for M7E-02 Unit Display Unit

Custom face plates can be made according to the following guidelines.

1. Prepare a blank Unit Display Unit (M7E-02UR2-A or M7E-02UG2-A) for the desired lighting color.
2. Take transparent polyester film (with thickness equivalent to 0.188) and cut it to the following dimensions.



3. Print solid black on the film covering all area except the character and so that the desired unit character is within the character display range (with the unit character transparent).
4. Install the completed face plate into the Unit Display Unit.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

In the interest of product improvement, specifications are subject to change without notice.

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.

2015.9

In the interest of product improvement, specifications are subject to change without notice.

OMRON Corporation
Industrial Automation Company

<http://www.ia.omron.com/>

(c)Copyright OMRON Corporation 2015 All Right Reserved.