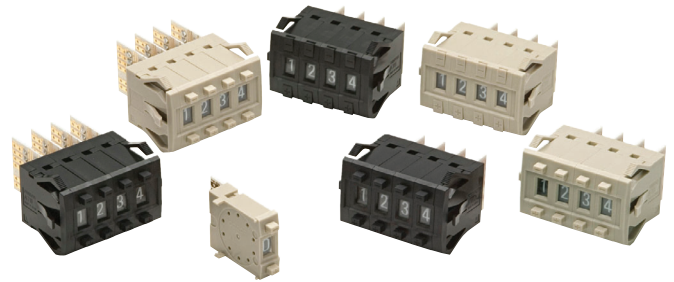


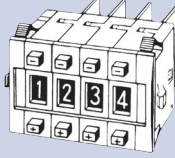
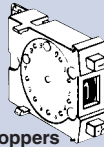
## Wide Range of Locking-type Models Available


- Character height of 4.8 or 3.2 mm makes for easy-to-view display.
- Installation is easy with snap-in mounting.
- The series includes a complete range of locking-type models that prevent accidental operation.



## Ordering Information

### Switches (Single Switch Units)

Model	A7BS		A7BS-20□-S	
	Snap-in (front mounting)		Snap-in (front mounting)	
			 With external stoppers	
Classification (See note 1.)	Solder terminals *1			
Terminals	Light gray		Black	
Color	Light gray		Black	
Output code number	Model			
06 (binary coded decimal)	A7BS-206 *2	A7BS-206-1 *2	A7BS-206-S	A7BS-206-S-1
07 (binary coded decimal, with component adding provision) *3	A7BS-207 *2	A7BS-207-1 *2	A7BS-207-S	A7BS-207-S-1
19 (decimal code, with component-adding provision)	A7BS-219	A7BS-219-1	---	---
54 (binary coded hexadecimal)	A7BS-254	A7BS-254-1	---	---
55 (binary coded hexadecimal, with component-adding provision) *3	A7BS-255	A7BS-255-1	---	---

Model	A7BL	
	Snap-in (front mounting)	
	 Locking type	
Classification (See note 1.)	Solder terminals *1	
Terminals	Light gray	
Color	Black	
Output code number	Model	
06 (binary coded decimal)	A7BL-206 *2	A7BL-206-1 *2
07 (binary coded decimal, with component-adding provision) *3	A7BL-207 *2	A7BL-207-1 *2

Note: 1. The classification diagrams show 4 Switch Units combined with End Caps to create 4-digit displays.

2. The model numbers given above are for Switch Units.

3. Models with +, - displays can also be produced. Add "-PM" (+/- alternating display) or "-MP" (-/+ alternating display) after the "206" or "207" in the model number (e.g., A7BS-206-PM, A7BS-207-PM-1, or A7BS-206-MP). There is no "-MP" type available, however, for A7BS-20□-S models.

\*1. For models with PCB terminals, add "-P2" to the model number (e.g., A7BS-207-P2-1).

\*2. Models with internal stoppers are also available. Add "-S□□" after the "206" or "207" in the model number and specify the display range in the □□. For example, to specify the range 0 to 6, add "-S06" to the model number (e.g., A7BS-206-S06-1).

\*3. Models with diodes are available. Add "-D" to the model number (e.g., A7BS-207-D or A7BS-207-D-1).

## Accessories (Order Separately)

Use accessories, such as End Caps, Spacers, and Connectors with the Switch Units.

### End Caps, Spare Units, and Connectors

Accessory	Color	Light gray	Black
End Caps (1 pair)		A7B-M *	A7B-M-1 *
Spacer		A7B-P□ (See note.)	A7B-P□-1 (See note.)
Connectors	Solder terminals	A7B-C	
	PCB terminals	A7B-CP	

Note: The □ in the Spacer model number stands for a letter in the range A to U. (Refer to the table in the following explanation about Spacers.)

\* The minimum order is for 10 End Caps.

### End Caps

End Caps are used on the Switch Units at each end and allow all the Switch Units to be securely mounted to a panel. They come in pairs, one for the left and one for the right.

### Spacers

- Spacers are used for creating extra space or gaps between the Switch Units and have the same dimensions as the Switch Units themselves.
- There are also Spacers with engraved characters or symbols that can be used for indicating units, such as time and length. (Refer to the following table.) Consult your OMRON representative for details.

Symbol	A	B	C	D	E	F	G
Stamp	No designation	SEC	MIN	H	g	kg	mm

Symbol	H	J	K	L	Q	T	U
Stamp	cm	m	°C	PCS	x 10 SEC	0	•

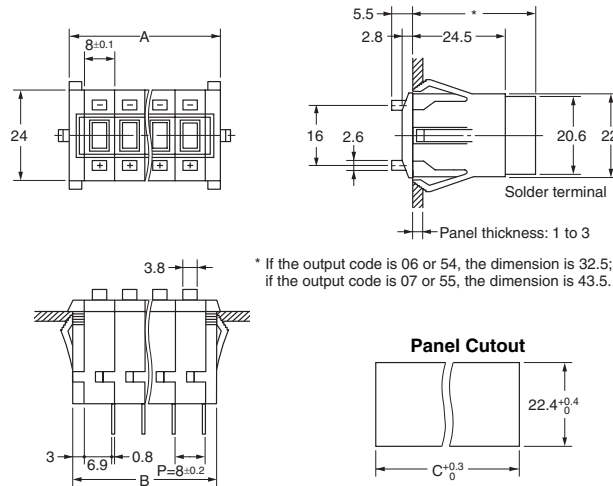
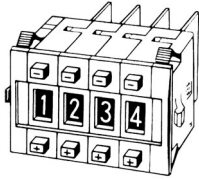
## Specifications

Switching capacity (resistive load)	5 to 28 VDC or 50 VAC 1 mA to 0.1 A	
Continuous carry current	1 A max.	
Contact resistance	300 mΩ max.	
Insulation resistance	Between non-connected terminals	10 MΩ min. (at 500 VDC)
	Between terminal and non-current carrying part	1,000 MΩ min. (at 500 VDC)
Dielectric strength	Between non-connected terminals	600 VAC, 50/60 Hz for 1 min
	Between terminal and non-current carrying part	1,000 VAC, 50/60 Hz for 1 min
Vibration resistance	10 to 55 Hz, 1.5-mm double amplitude	
Shock resistance	490 m/s <sup>2</sup> min.	
Durability	Mechanical	100,000 operations min.
	Electrical	50,000 operations min.
Ambient temperature	Operating: -10°C to 65°C (with no icing) Storage: -20°C to 80°C	
Ambient humidity	Operating: 45% to 85%	
Max. operating force	5.39 N max.	

## Dimensions

### Switches

#### A7BS-2□□(-1) Solder Terminals



Number of Switches (n)	Size A (n x 8 + 8)	Size B (n x 8 + 6)	Size C
1	16	14	14.4
2	24	22	22.4
3	32	30	30.4
4	40	38	38.4
5	48	46	46.8
6	56	54	54.8
7	64	62	62.8
8	72	70	70.8
9	80	78	78.8
10	88	86	86.8

Note: 1. The dimensions above include both End Caps, and will increase 8 mm for each Spacer inserted.  
 2. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions. The tolerance for multiple connection is  $\pm$ (number of units x 0.4) mm.

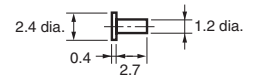
#### Thumbwheel Switches with External Stoppers:

#### A7BS-20□-S(-1)

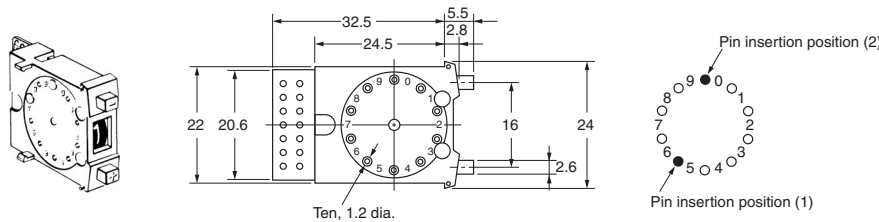
- Use A7BS-S Stopper Pins to make dial display restrictions for these Switches.
- Insert the Stopper Pins in the positions required to give the desired display range. For example, for a display range of 0 to 5, insert a Stopper Pin at position 1 (see following diagram) to stop the display from going above 5 when the (+) button is pressed, and insert a Stopper Pin at position 2 to stop the display from going below 0 when the (-) button is pressed.

Refer to page 7 for details.

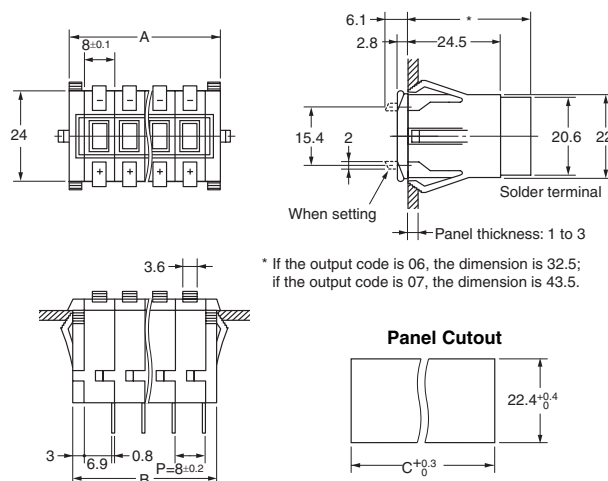
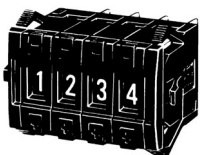
#### Stopper Pins



Note: 1. Two pins constitute one set.  
 2. The first shipment is free and is attached to the Switch. Order the A7BS-S separately if it is required for maintenance.



#### A7BL-206(-1) A7BL-207(-1) Solder Terminals, Locking Models



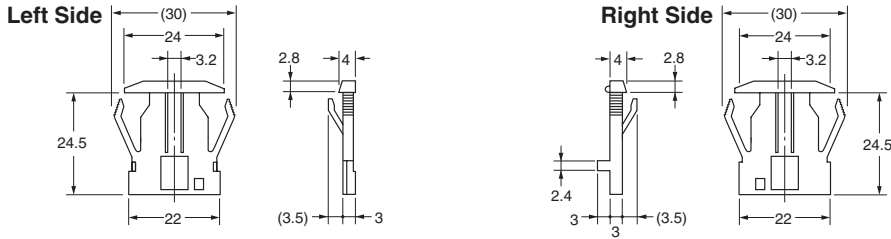
Number of Switches (n)	Size A (n x 8 + 8)	Size B (n x 8 + 6)	Size C
1	16	14	14.4
2	24	22	22.4
3	32	30	30.4
4	40	38	38.4
5	48	46	46.8
6	56	54	54.8
7	64	62	62.8
8	72	70	70.8
9	80	78	78.8
10	88	86	86.8

Note: 1. The dimensions above include both End Caps, and will increase 8 mm for each Spacer inserted.  
 2. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions. The tolerance for multiple connection is  $\pm$ (number of units x 0.4) mm.

## Accessories (Order Separately)

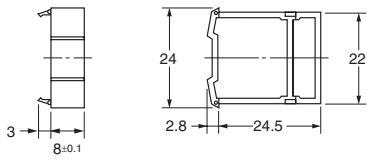
### End Caps for Push-operated Switches

#### A7B-M(-1) Snap-in Panel Mounting



### Spacers for Push-operated Switches

#### A7B-P□(-1) Snap-in Panel Mounting

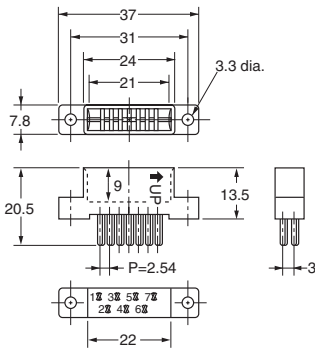
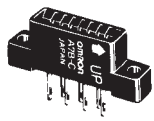


The □ in the Spacer model number stands for a letter in the range A to U. (Refer to the table under the explanation about Spacers on page 2.)

Note: Unless otherwise indicated, dimensional tolerances for dimensions in the models above are  $\pm 0.4$  mm.

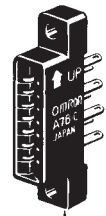
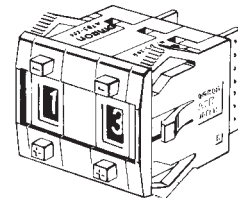
## Connectors (These devices allow Switches to be quickly removed for maintenance and inspection of connectivity, and quickly re-installed.)

### A7B-C Solder Terminals



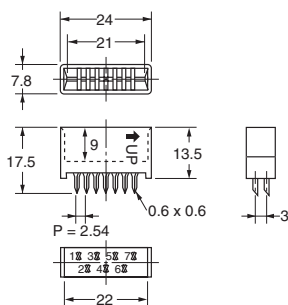
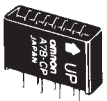
### Inserting Connectors

Insert Connectors with the "UP" arrow pointing up.



Connector

### A7B-CP PCB Terminals



Note: Unless otherwise indicated, dimensional tolerances for dimensions in the models above are  $\pm 0.4$  mm.

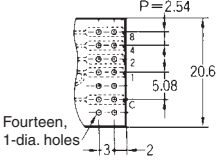
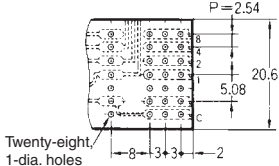
## Output Codes/Terminals

- Switches with output codes 06 or 07 both use binary coded decimal but Switches with output code 07 have a component-adding provision. Similarly, Switches with output codes 54 or 55 both use binary coded hexadecimal but Switches with output code 55 have a component-adding provision.

### How to Read Output Codes

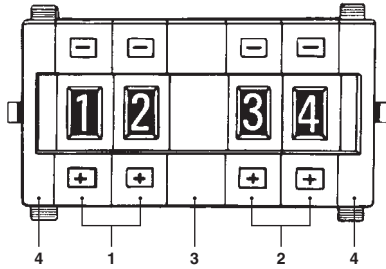
For example, when the dial position is "3," the common terminal C on the Switch is connected to terminals 1 and 2. When the Switch is inserted into the Connector, the common terminal C becomes connector terminal 2, and terminals 1 and 2 become connector terminals 4 and 5 respectively.

Output code number	Terminals	Output codes																																																																																																																																			
06		<table border="1"> <thead> <tr> <th>Model</th> <th>Switch Unit or Connector</th> <th>Common terminal number</th> <th colspan="4">Terminals connected to common</th> </tr> <tr> <td></td> <td>Switch Unit</td> <td>C</td> <td>1</td> <td>2</td> <td>4</td> <td>8</td> </tr> </thead> <tbody> <tr> <td>06</td> <td>Connector</td> <td>2</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>07</td> <td>Connector</td> <td>1</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> </tbody> </table>	Model	Switch Unit or Connector	Common terminal number	Terminals connected to common					Switch Unit	C	1	2	4	8	06	Connector	2	4	5	6	7	07	Connector	1	4	5	6	7																																																																																																							
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07	<p>Component-adding provision</p>	<table border="1"> <thead> <tr> <th rowspan="10">Dial</th> <th colspan="6">Terminal connected to common</th> </tr> <tr> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1</td> <td>●</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td>●</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td>●</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> <td>●</td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td>●</td> </tr> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>●</td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>●</td> </tr> <tr> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>●</td> </tr> <tr> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>●</td> </tr> </tbody> </table> <p>Note: The solid dot ● indicates that the internal switch is ON (i.e., connected to the common terminal).</p>	Dial	Terminal connected to common						0	1	2	3	4	5	0						1	●					2		●				3			●			4				●		5					●	6						●	7							●	8								●	9									●																																																
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Output code number	Terminals	Output codes																																																																																																																														
54	 <p>Fourteen, 1-dia. holes</p>	<table border="1"> <thead> <tr> <th data-bbox="703 338 788 389">Model</th> <th data-bbox="788 338 948 389">Switch Unit or Connector</th> <th data-bbox="948 338 1098 389">Common terminal number</th> <th colspan="4" data-bbox="1098 338 1406 389">Terminals connected to common</th> </tr> <tr> <td></td> <td></td> <td></td> <th data-bbox="1098 389 1134 421">1</th> <th data-bbox="1134 389 1171 421">2</th> <th data-bbox="1171 389 1208 421">4</th> <th data-bbox="1208 389 1244 421">8</th> </tr> </thead> <tbody> <tr> <td></td> <td>Switch Unit</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>54</td> <td>Connector</td> <td>2</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>55</td> <td>Connector</td> <td>1</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> </tbody> </table>	Model	Switch Unit or Connector	Common terminal number	Terminals connected to common							1	2	4	8		Switch Unit	C					54	Connector	2	4	5	6	7	55	Connector	1	4	5	6	7																																																																																											
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55	 <p>Twenty-eight, 1-dia. holes</p> <p>Component-adding provision</p>	<table border="1"> <thead> <tr> <th data-bbox="703 712 788 743">Dial</th> <th data-bbox="788 712 948 743">Switch Unit or Connector</th> <th data-bbox="948 712 1098 743">Common terminal number</th> <th colspan="4" data-bbox="1098 712 1406 743">Terminals connected to common</th> </tr> <tr> <td></td> <td></td> <td></td> <th data-bbox="1098 743 1134 775">1</th> <th data-bbox="1134 743 1171 775">2</th> <th data-bbox="1171 743 1208 775">4</th> <th data-bbox="1208 743 1244 775">8</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>0</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>1</td> <td>●</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>2</td> <td></td> <td>●</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>3</td> <td>●</td> <td>●</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>4</td> <td></td> <td></td> <td>●</td> <td></td> </tr> <tr> <td></td> <td></td> <td>5</td> <td>●</td> <td></td> <td>●</td> <td></td> </tr> <tr> <td></td> <td></td> <td>6</td> <td></td> <td>●</td> <td>●</td> <td></td> </tr> <tr> <td></td> <td></td> <td>7</td> <td>●</td> <td>●</td> <td>●</td> <td></td> </tr> <tr> <td></td> <td></td> <td>8</td> <td></td> <td></td> <td></td> <td>●</td> </tr> <tr> <td></td> <td></td> <td>9</td> <td>●</td> <td></td> <td></td> <td>●</td> </tr> <tr> <td></td> <td></td> <td>A</td> <td></td> <td>●</td> <td></td> <td>●</td> </tr> <tr> <td></td> <td></td> <td>B</td> <td>●</td> <td>●</td> <td></td> <td>●</td> </tr> <tr> <td></td> <td></td> <td>C</td> <td></td> <td></td> <td>●</td> <td>●</td> </tr> <tr> <td></td> <td></td> <td>D</td> <td>●</td> <td></td> <td>●</td> <td>●</td> </tr> <tr> <td></td> <td></td> <td>E</td> <td></td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td></td> <td></td> <td>F</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </tbody> </table> <p>Note: 1. The solid dot ● indicates that the internal switch is ON (i.e., connected to the common terminal).</p>	Dial	Switch Unit or Connector	Common terminal number	Terminals connected to common							1	2	4	8			0							1	●						2		●					3	●	●					4			●				5	●		●				6		●	●				7	●	●	●				8				●			9	●			●			A		●		●			B	●	●		●			C			●	●			D	●		●	●			E		●	●	●			F	●	●	●	●
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## Ordering Procedure

Place orders as shown in the example below, specifying the model and number. Standard products are not factory-assembled for shipment. Contact your OMRON representative for details on ordering factory-assembled sets.



1. A7BS-206 (Switch Unit): 2 pieces
2. A7BS-207 (Switch Unit): 2 pieces
3. A7B-PA (Spacer): 1 piece
4. A7B-M (End Caps): 1 pair

## Safety Precautions

Refer to *Precautions for Correct Use* on page in the *Technical Guide for Thumbwheel Switches*.

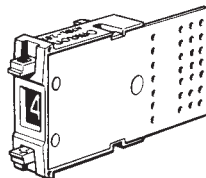
### Precautions for Correct Use

#### Handling

- The molded components of the Switch use polyacetal resin and ABS resin. It is recommended that alcohol is used to wipe off dirt and smudges from the molded components. Take care to prevent the alcohol from getting inside.
- A7BS/A7BL Thumbwheel Switches are not drip-proof. Do not use them in areas subject to water or oil.
- Do not allow solder flux or alcohol to enter the Switch.

#### Setting Numbers

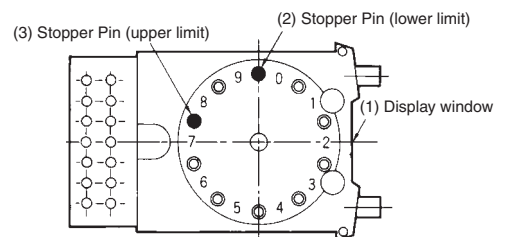
#### Locking Type



- Set with the setting button by raising it.
- Return the button to its original position after setting. It is then locked to prevent rotation, and the set numbers will not change accidentally.

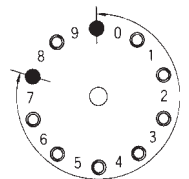
#### Models with External Stoppers (A7BS-20□-S)

With the A7BS-20□-S, any range can be set externally using the Stopper Pin. Insert the Stopper Pin using the following procedure:



Example: To Display the Range 0 to 7

1. Any number within the range of (0 to 7) can be chosen to limit the numbers displayed in the display window. (In this example, 8 and 9 are outside of this range.)
2. First, insert the Stopper Pin in the hole in front of the lower limit ("0") for the number to be defined.
3. Next, insert the Stopper Pin in the hole past the upper limit ("7") for the number to be defined. (The Stopper Pins then surround the exact range to be defined.)
4. Confirm that the (+) push-button can no longer be pushed after reaching the upper limit of ("7").
5. Confirm that the (-) push-button can no longer be pushed after reaching the lower limit of ("0"). This completes the setting.



## 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.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

### LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

## Application Considerations

### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

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

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

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

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

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

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

## Disclaimers

### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

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

### DIMENSIONS AND WEIGHTS

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

### 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 OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

### ERRORS AND OMISSIONS

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

2008.12

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

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