

## Dust-tight, Easy-to-Use, Push-operated Switches with Large Display Characters

- Simple push mechanism and large, easy-to-view numeric display make setting easy.
- Dust penetration prevented with seal for the display windows.



## Ordering Information

### Switches (Single Switch Units)

Model	A7PS		A7PH	
	Snap-in (front mounting)		Snap-in (front mounting)	
				
Classification (See note 1.)	Solder terminals *1			
	Light gray		Black	
Terminals	Solder terminals *1			
Color	Light gray	Black	Light gray	Black
Output code number	Model			
03 (decimal code)	A7PS-203	A7PS-203-1	A7PH-203	A7PH-203-1
06 (binary coded decimal)	A7PS-206	A7PS-206-1	A7PH-206	A7PH-206-1
07 (binary coded decimal, with component-adding provision) *2	A7PS-207	A7PS-207-1	A7PH-207	A7PH-207-1
19 (decimal code, with component-adding provision)	A7PS-219	A7PS-219-1	A7PH-219	---
54 (binary coded hexadecimal)	A7PS-254	A7PS-254-1	A7PH-254	A7PH-254-1
55 (binary coded hexadecimal, with component adding provision) *2	A7PS-255	A7PS-255-1	---	---

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 1 Switch Unit.

3. Models with stoppers are also available. Add "-S□□" after the "203," "206," "207," "219," "254," or "255" 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., A7PS-206-S06-1).

4. Models with +, - displays can also be produced. Add "-PM" after the "206" in the model number (e.g., A7PS-206-PM or A7PS-206-PM-1)

\*1. Models with PCB terminals are available.

\*2. Models with diodes are available. Add "-D" to the model number (e.g., A7PS-207-D or A7PS-207-D-1).

### Accessories (Order Separately)

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

Accessory	Color	Light gray	Black
End Caps		A7P-M *	A7P-M-1 *
Spacer		A7P-P□ (See note.)	A7P-P□-1 (See note.)
Connectors	Solder terminals	NRT-C	
		NRT-CN	
		NRT-CP	
	PCB terminals		

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

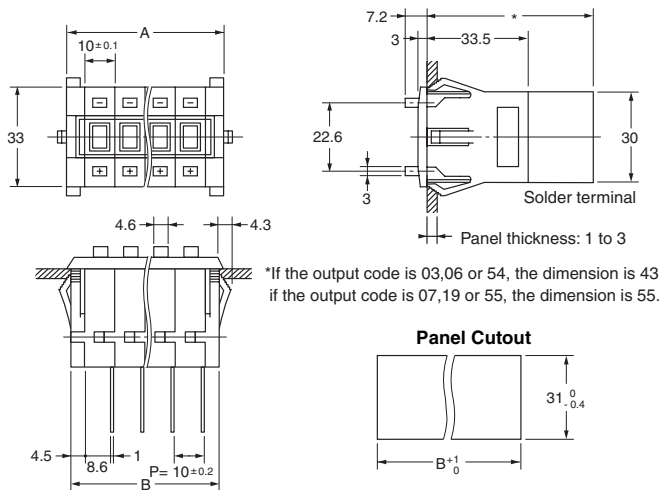
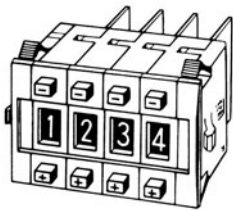
Item	Model	A7PS	A7PH
Switching capacity (resistive load)		50 VAC or 5 to 28 VDC 1 mA to 0.1 A	125 VAC or 5 to 28 VDC 10 $\mu$ A to 0.15 A
Continuous carry current		1 A max.	3 A max.
Contact resistance		300 m $\Omega$ max.	
Insulation resistance	Between non-connected terminals	10 M $\Omega$ min. (at 500 VDC)	
	Between terminal and non-current carrying part	1,000 M $\Omega$ 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 for 2 hours min.	
Shock resistance		490 m/s <sup>2</sup> min.	
Durability	Mechanical	100,000 operations min.	2,000,000 operations min.
	Electrical	50,000 operations min.	1,000,000 operations min.
Ambient temperature		Operating: -10°C to 65°C	
Ambient humidity		Operating: 45% to 85%	
Max. operating force		6.37 N max.	

## Dimensions

(Unit: mm)

### Switches

A7PS-2□□(-1)  
A7PH-2□□(-1)  
Solder Terminal



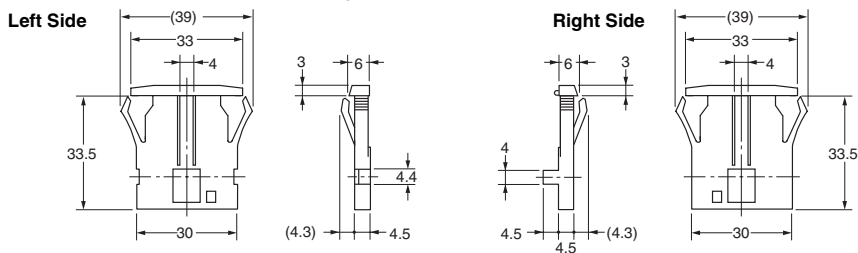
Number of Switches (n)	Size A (n x 10 + 12)	Size B (n x 10 + 9)
1	22	19
2	32	29
3	42	39
4	52	49
5	62	59
6	72	69
7	82	79
8	92	89
9	102	99
10	112	109

Note: 1. The dimensions above include both End Caps, and will increase 10 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  $\pm(\text{number of units} \times 0.4)$  mm.

### Accessories (Order Separately)

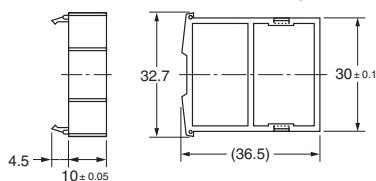
#### End Caps for Push-operated Switches

##### A7P-M(-1) Snap-in Panel Mounting



#### Spacers for Push-operated Switches

##### A7P-P□(-1) Snap-in Panel Mounting



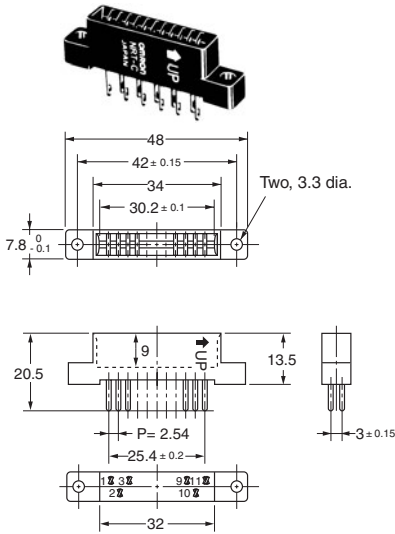
The □ in the Spacer model number stands for a letter in the range A to U. (Refer to the table under the explanation about Spacers on page 1.)

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.)

### NRT-C Solder Terminals



### NRT-CN Solder Terminals



### NRT-CP PCB Terminals



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

## Inserting Connectors

Insert Connectors with the "UP" arrow pointing up.



## 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 3, and terminals 1 and 2 become connector terminals 5 and 7 respectively.

Output code number	Terminals	Output codes												
		Model	Switch Unit or Connector	Common terminal number	Terminals connected to common									
03		03,19	Connector	6	1	2	3	4	5	7	8	9	10	11
		Dial	Switch Unit	C	0	1	2	3	4	5	6	7	8	9
19		03,19	Connector	6	1	2	3	4	5	7	8	9	10	11
		Dial	Switch Unit	C	0	1	2	3	4	5	6	7	8	9
06		06,07	Connector	3	5	7	9	11						
		Dial	Switch Unit	C	1	2	4	8						
07		06,07	Connector	1										
		Dial	Switch Unit	C	0	1	2	3	4	5	6	7	8	9

Note: The solid dot ● indicates that the internal switch is ON (i.e., connected to the common terminal).

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Output code number	Terminals	Output codes																																																																																	
54	<p>Ten, 1.1-dia. holes</p>	<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> </thead> <tbody> <tr> <td></td> <td>Switch Unit</td> <td>C</td> <td>1</td> <td>2</td> <td>4</td> <td>8</td> </tr> <tr> <td>54</td> <td>Connector</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>55</td> <td>Connector</td> <td>1</td> <td>5</td> <td>7</td> <td>9</td> <td>11</td> </tr> </tbody> </table>	Model	Switch Unit or Connector	Common terminal number	Terminals connected to common					Switch Unit	C	1	2	4	8	54	Connector	3					55	Connector	1	5	7	9	11																																																					
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55	<p>Twenty-three, 1.1-dia. holes</p> <p>Component-adding provision</p>	<table border="1"> <thead> <tr> <th rowspan="13">Dial</th> <th>0</th> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>1</th> <td>●</td> <td></td> <td></td> <td></td> </tr> <tr> <th>2</th> <td></td> <td>●</td> <td></td> <td></td> </tr> <tr> <th>3</th> <td>●</td> <td>●</td> <td></td> <td></td> </tr> <tr> <th>4</th> <td></td> <td></td> <td>●</td> <td></td> </tr> <tr> <th>5</th> <td>●</td> <td></td> <td>●</td> <td></td> </tr> <tr> <th>6</th> <td></td> <td>●</td> <td>●</td> <td></td> </tr> <tr> <th>7</th> <td>●</td> <td>●</td> <td>●</td> <td></td> </tr> <tr> <th>8</th> <td></td> <td></td> <td></td> <td>●</td> </tr> <tr> <th>9</th> <td>●</td> <td></td> <td></td> <td>●</td> </tr> <tr> <th>A</th> <td></td> <td>●</td> <td></td> <td>●</td> </tr> <tr> <th>B</th> <td>●</td> <td>●</td> <td></td> <td>●</td> </tr> <tr> <th>C</th> <td></td> <td></td> <td>●</td> <td>●</td> </tr> <tr> <th>D</th> <td>●</td> <td></td> <td>●</td> <td>●</td> </tr> <tr> <th>E</th> <td></td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <th>F</th> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </thead> </table> <p>Note: 1. The solid dot (●) indicates that the internal switch is ON (i.e., connected to the common terminal).</p>	Dial	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.



1. A7P-M (End Caps): 1 set
2. A7PS-203 (Switch Unit): 1 piece
3. A7PS-206 (Switch Unit): 1 piece
4. A7P-PA (Spacer): 1 piece
5. A7PS-207 (Switch Unit): 1 piece
6. A7PS-219 (Switch Unit): 1 piece
7. NRT-C (Connector): 4 pieces

Note: Standard products are not factory-assembled for shipment. Contact your OMRON representative for details on ordering factory-assembled sets.

## Safety Precautions

Refer to *Precautions for Correct Use* on 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.
- A7P Thumbwheel Switches are dust-proof, but they are not drip-proof. Do not use them in areas subject to water or oil exposure.
- Do not allow solder flux or alcohol to enter the Switch.
- Do not push the (+) and (-) operating push-buttons at the same time.

## 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.

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- 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.
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2011.2

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