Thumbwheel Switch

A7CN/A7CN-L

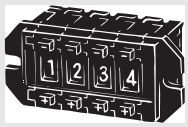
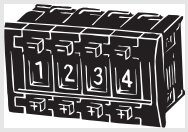
A Brand New Lineup of A7C Series Compact Thumbwheel Switches

- The series includes a complete range of locking-type models that prevent accidental operation.



Ordering Information

Switches (Single Switch Units)

Model	A7CN			
Classification (See note 1.)	Screw mounting (back mounting) 		Snap-in (front mounting) 	
Character height	3.4 mm			
Output code number: Terminals	PCB terminals			
Output code number: Color	Light gray	Black	Light gray	Black
06 (binary coded decimal)	---	A7CN-106-1	A7CN-206	A7CN-206-1

Model	A7CN-L	
Classification (See note 1.)	Snap-in (front mounting)  Locking type	
Character height	3.4 mm	
Output code number: Terminals	PCB terminals	
Output code number: Color	Light gray	Black
06 (binary coded decimal)	A7CN-L206	A7CN-L206-1

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 Switch Units.
3. Models with +, - displays can also be produced. Add "-PM" after the "206" in the model number (e.g., A7CN-206-PM or A7CN-206-PM-1).

Accessories (Order Separately)

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

Classification	Screw mounting (back mounting)	Snap-in (front mounting)	
Accessory: Color	Black	Light gray	Black
End Caps (1 pair)	A7CN-1M-1	A7CN-2M	A7CN-2M-1
Spacer	A7CN-1P□-1 (See note.)	A7CN-2P□ (See note.)	A7CN-2P□-1 (See note.)

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.)

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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	x10 SEC	0	•

Specifications

Switching capacity (resistive load)		3.3 to 28 VDC 1 mA to 0.1 A
Continuous carry current		1A
Contact resistance		200 mΩ max.
Insulation resistance	**Between non-connected terminals**	10 MΩ min. (at 250 VDC)
	Between terminal and non-current carrying part	100 MΩ min. (at 500 VDC)
Dielectric strength	**Between non-connected terminals**	200 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		490m/s^2 min.
Durability	**Mechanical**	30,000 operations min.
	Electrical	20,000 operations min.
Ambient temperature		Operating: -10°C to 65°C (with no icing) Storage: -20°C to 80°C
Ambient humidity		Operating: 35% to 85%
Max. operating force		4.41 N max.

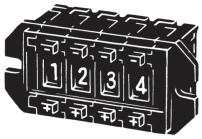
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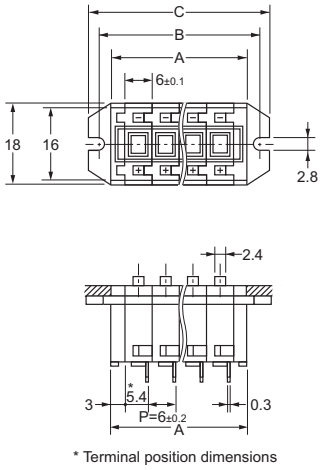
Dimensions

(Unit: mm)

Switches

A7CN-106-1
PCB Terminals





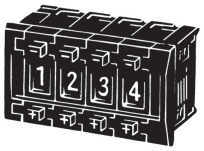
* Terminal position dimensions

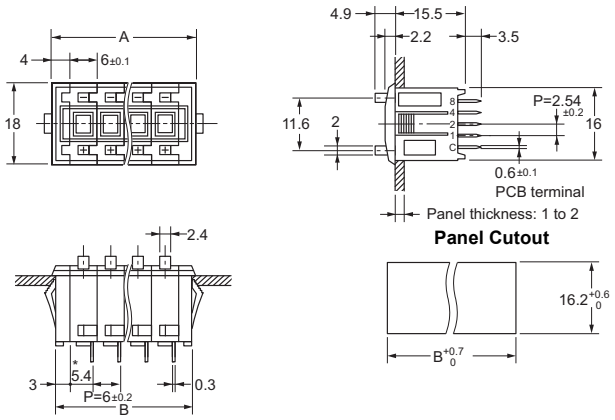
Note: Common terminal C is at the bottom when the Switch Unit is viewed from the front.

Number of Switches (n)	Size A (n x 6 + 6)	Size B (n x 6 + 11)	Size C (n x 6 + 16)
1	12	17	22
2	18	23	28
3	24	29	34
4	30	35	40
5	36	41	46
6	42	47	52
7	48	53	58
8	54	59	64
9	60	65	70
10	66	71	76

Note: 1. The dimensions above include both End Caps, and will increase 6 mm for each Spacer inserted.
2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions. The tolerance for multiple connection is ±(number of units x 0.4) mm.

A7CN-206(-1)
PCB Terminals





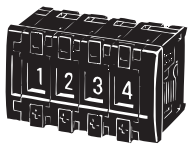
* Terminal position dimensions

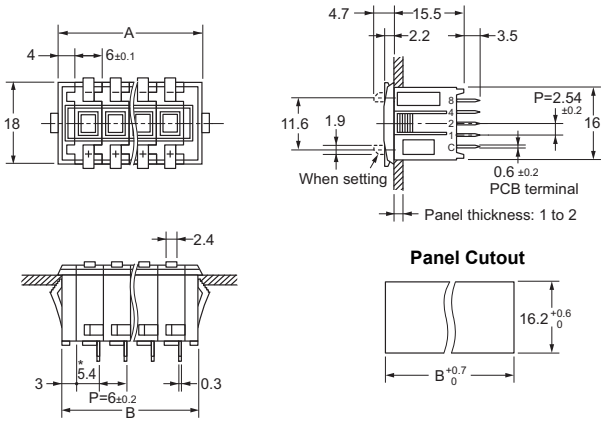
Note: Common terminal C is at the bottom when the Switch Unit is viewed from the front.

Number of Switches (n)	Size A (n x 6 + 8)	Size B (n x 6 + 6)
1	14	12
2	20	18
3	26	24
4	32	30
5	38	36
6	44	42
7	50	48
8	56	54
9	62	60
10	68	66

Note: 1. The dimensions above include both End Caps, and will increase 6 mm for each Spacer inserted.
2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions. The tolerance for multiple connection is ±(number of units x 0.4) mm.

A7CN-L206(-1)
PCB Terminals
Locking Model





* Terminal position dimensions

Note: Common terminal C is at the bottom when the Switch Unit is viewed from the front.

Number of Switches (n)	Size A (n x 6 + 8)	Size B (n x 6 + 6)
1	14	12
2	20	18
3	26	24
4	32	30
5	38	36
6	44	42
7	50	48
8	56	54
9	62	60
10	68	66

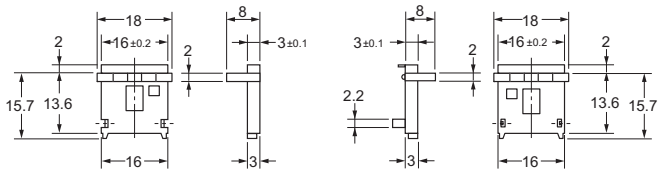
Note: 1. The dimensions above include both End Caps, and will increase 6 mm for each Spacer inserted.
2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions. The tolerance for multiple connection is ±(number of units x 0.4) mm.

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Accessories (Order Separately)

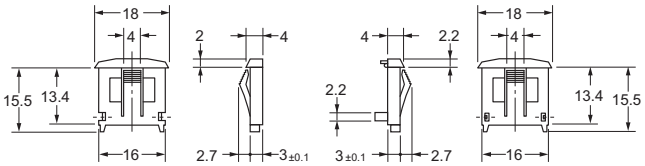
End Caps for Push-operated Switches
A7CN-1M-1 Screw Mounting

Left Side **Right Side**

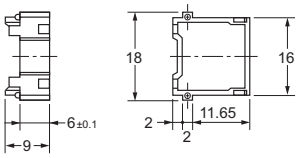


End Caps for Push-operated Switches
A7CN-2M(-1) Snap-in Mounting

Left Side **Right Side**

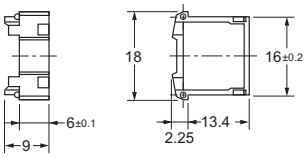


Spacers for Push-operated Switches
A7CN-1P□-1
Screw Panel Mounting Model



Note: 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 3.)

Spacers for Push-operated Switches
A7CN-2P□(-1)
Snap-in Mounting Model



Note: 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 3.)

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

Output Codes

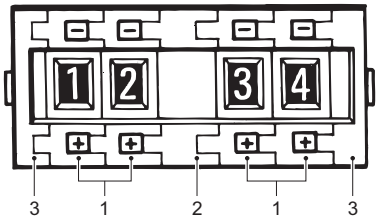
06 (Binary Code)

Dial	Terminals connected to common			
	1	2	4	8
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).

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. Switch Unit (snap-in mounting, black)
   A7CN-206-1: 4 pieces
2. Spacer (snap-in mounting, no designation, black)
   A7CN-2PA-1: 1 piece
3. End Caps (snap-in mounting, black)
   A7CN-2M-1: 1 pair

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Safety Precautions

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

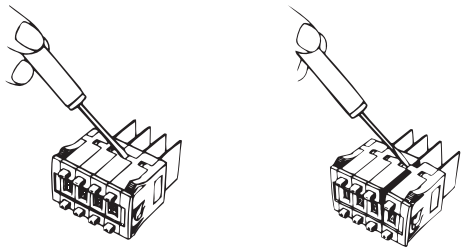
Precautions for Correct Use

Environment

- Do not use where gases are generated (ammonia, chlorine, sulfur dioxide).
- Although Switches are of nearly dust-proof construction, they are not drip-proof, therefore do not use in areas subject to water or oil exposure and do not operate with wet or oily hands.
- Provide additional dust-proofing measures, such as using a dust-proof cover, when using in sand-exposed areas.

Handling

- The A7CN cannot be connected to the A7C.
- The molded components of the Switch use polyacetal resin and polycarbonate 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.
  Do not use thinner or other solutions which might damage the resin.
- When changing settings, do not touch the operating buttons if your fingers are wet or there is oil or any other foreign substance on your fingers.
- Do not drop the individual Switches. Doing so may damage the resin catch (for connecting) on the side of the Switch.
- When separating Switches, use a screwdriver as shown in the figure below; disconnect them by releasing the top and bottom hooks. Be careful not to bend the hooks.



- When connecting Switches, fit the mating parts together.
- Do not push the (+) and (-) operating push-buttons at the same time.

Models with PCB Terminals

Do not use excessive force in handling the Switches. In particular, take care to avoid dropping them because the terminals might bend or break.

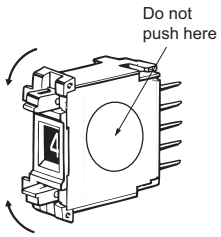
Screw-mounting Models

Tighten mounting screws to a torque between 0.2 to 0.24 N·m, using M2.6 screws. Use plain washers or spring washers together with the screws.

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.



Soldering

Note the following points when soldering printed circuit boards:

- The terminal insertion holes on the PCB must be at least 1 mm in diameter.
- Automatic Soldering
  Do not use dip cleaning. Doing so may result in flux penetration of the Switch interior, causing contact and rotational defects. Clean the flux as shown in Figure 1, tilting the Switch 80° or less and using a brush to apply the solvent only to the back of the board. It may also be cleaned by dipping only the back of the board into the solvent and then using a brush to clean.
- Dip Soldering
  When applying flux solvent, the dipping time is a maximum of 2 seconds. As shown in Figure 2, avoid flooding the top surface of the printed circuit board with flux. Using a brush to apply flux further reduces the danger of flux penetration. When cleaning flux with a brush, tilt the Switch 80° or less, as shown in Figure 1, in order to prevent flux from flowing onto the switch mounting surface. Clean flux as described above under Automatic Soldering.

Figure 1

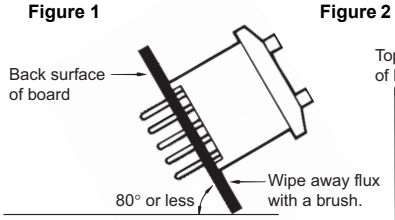
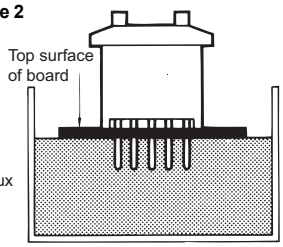


Figure 2



- Using a Soldering Iron
  Use a 30-W soldering iron at a temperature of 350°C for a maximum of 3 seconds, and flush as described above.
  Do not apply force to the terminals during soldering and for 3 minutes after soldering is completed. Doing so may result in conduction or operation failure.
- Ensure that soldering flux and alcohol do not penetrate into the Switch interior

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