CSM\_A3S\_DS\_E\_7\_1

# **Pushbutton Switch Series with Square 40-mm Body**

- Combines miniature design with distinct but soft sense of operation.
- Easy panel mounting from the front and simple lamp replacement without tools.



Refer to Safety Precautions for All Pushbutton Switches/ Indicators and Safety Precautions on page 18.

# **List of Models**

# **Lighted Pushbutton Switches**

A	Model	
Rectangular	A3SJ	
Square		A3SA

■ Specifications: Refer to page 12.

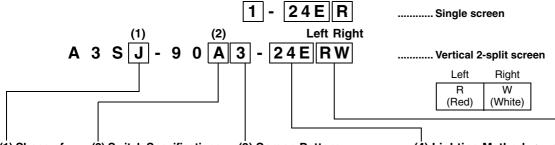
■ Dimensions: Refer to page 14.

■ Accessories: Refer to pages 10 to 11.

**OMRON** 

# **Model Number Structure**

**Model Number Legend** ..... The model numbers used to order sets are illustrated below. One set comprises the Operation Unit, Lamp, and Socket Unit. For information on combinations, refer to Ordering Information on pages 3 to 4.



# (1) Shape of Operation Unit

Sym- bol	Shape
J	Rectan- gular
Α	Square

# (2) Switch Specifications Standard Load

Symbol	Operation		
Α	Momentary	SPDT	
В	Alternate		
С	Momentary	DPDT	
D	D Alternate		

#### **Microload**

Symbol	Operation		
Ε	Momentary	SPDT	
F	Alternate	SEDI	
G	Momentary	DPDT	
Н	Alternate	וטרטו	

- Standard Load 250 VAC, 2 A 125 VDC, 0.4 A
- Microload 125 VAC, 0.1 A 30 VDC, 0.1 A

Minimum applicable load 5 VDC, 1 mA

- Momentary operation ...Self-resetting
- Alternate operation ...Self-holding

# (3) Screen Pattern Illumination-only models

Symbol	Screen pattern	
	Single screen	
1		
	Vertical 2-split screen	
3		
	(rectangular models only)	
Models with colored illumination		

- Models with colored illumination can be ordered individually. Refer to page 5 for details.
- Colored Illumination



The built-in LED is colored

# (4) Lighting Method → (5) Operation Unit Color LED-lighted Models For LED

Symbol	Rated voltage
05E	5 VDC
12E	12 VDC
24E	24 VDC

# Symbol Color R Red Y Yellow G Green W White \*

# Incandescent Lamp-lighted Models

Symbol	Rated voltage
06	6 VAC/VDC
14	14 VAC/VDC
28	28 VAC/VDC

# Incandescent Lamp-lighted Models

Symbol	Color
R	Red
Υ	Yellow
G	Green
Α	Blue
W	White *

<sup>\*</sup> The color cap is transparent.

#### **Number of Built-in LEDs and Incandescent Lamps**

			<u> </u>
Model	Screen pattern	LED	Incandescent lamp
A3SJ	Single screen	2	1
	Vertical 2-split	2	2
	screen	_	_
A3SA	Single screen	1	1

# Structure of Split-screen Operation Unit **Type** Color cap Legend plate \* Dispersion plate Light-separation plate (2-split screen only) Vertical 2-split screen Single screen LED/incandescent (Rectangular models (Rectangular models only) lamp holder and square models) A3SJ Not included for the Square Models (A3SA) with incandescent lamp.

Ordering as a Set ......The model numbers used to order sets of Units are given in the following tables. One set comprises the Operation Unit, Lamp, and Socket Unit.

### **Standard Loads**



A3SJ

Single screen Vertical 2-split screen

2

# Single screen

Contact type			Standard load (250 VA	Standard load (250 VAC, 2 A; 125 VDC 0.4 A)		
Output	Lighting	Operation	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Operation Unit color symbol	
		5 VDC	A3SJ-90A1-05E□	A3SJ-90B1-05E□		
	LED	12 VDC	A3SJ-90A1-12E□	A3SJ-90B1-12E□		
SPDT		24 VDC	A3SJ-90A1-24E□	A3SJ-90B1-24E□	Enter the desired color	
SPDI	Incandescent lamp	6 VAC/VDC	A3SJ-90A1-06□	A3SJ-90B1-06□	symbol for the Pushbutton	
		14 VAC/VDC	A3SJ-90A1-14□	A3SJ-90B1-14□	in □.	
	lallip	28 VAC/VDC	A3SJ-90A1-28□	A3SJ-90B1-28□	R (Red)	
		5 VDC	A3SJ-90C1-05E□	A3SJ-90D1-05E□	Y (Yellow)	
	LED	12 VDC	A3SJ-90C1-12E□	A3SJ-90D1-12E□	G (Green)	
DPDT		24 VDC	A3SJ-90C1-24E□	A3SJ-90D1-24E□	A (Blue) * W (White)	
	Incandescent lamp	6 VAC/VDC	A3SJ-90C1-06□	A3SJ-90D1-06□	vv (vviite)	
		14 VAC/VDC	A3SJ-90C1-14□	A3SJ-90D1-14□		
	lallip	28 VAC/VDC	A3SJ-90C1-28□	A3SJ-90D1-28□		

<sup>\*</sup> Incandescent lamp only.

### Vertical 2-split screen

Contact type		Standard load (250 VA	Operation Unit		
Output	Lighting	Operation	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Operation Unit color symbol
SPDT	LED	24 VDC	A3SJ-90A3-24E□□	A3SJ-90B3-24E□□	Enter the desired color symbol for the Pushbutton
3501	Incandescent lamp	28 VDC	A3SJ-90A3-28□□	A3SJ-90B3-28□□	in □□.  R (Red)
DPDT	LED	24 VDC	A3SJ-90C3-24E□□	A3SJ-90D3-24E□□	Y (Yellow) G (Green)
וטייט	Incandescent lamp	28 VDC	A3SJ-90C3-28□□	A3SJ-90D3-28□□	W (White) A (Blue) *

<sup>\*</sup> Incandescent lamp only.

# **Microloads**

Single screen

Contact type			Contact type   Microload (125 VAC, 0.1 A; 30 VDC 0.1 A)	
Operation Output Lighting		•	Momentary operation (Self-resetting)	Unit color symbol
		5 VDC	A3SJ-90E1-05E□	
	LED	12 VDC	A3SJ-90E1-12E□	Enter the
SPDT		24 VDC	A3SJ-90E1-24E□	desired col- or symbol
SFDT	Incan- descent	6 VAC/VDC	A3SJ-90E1-06□	
		14 VAC/VDC	A3SJ-90E1-14□	for the
	lamp	28 VAC/VDC	A3SJ-90E1-28□	Pushbutton in $\square$ .
		5 VDC	A3SJ-90G1-05E	R (Red)
	LED	12 VDC	A3SJ-90G1-12E	Y (Yellow)
DPDT		24 VDC	A3SJ-90G1-24E	G (Green)
	Incan-	6 VAC/VDC	A3SJ-90G1-06□	A (Blue) *
	descent	14 VAC/VDC	A3SJ-90G1-14□	W (White)
	lamp	28 VAC/VDC	A3SJ-90G1-28 □	

Individual models: Refer to pages 6 to 9.

(The Pushbutton, Lamp, and Switch can be ordered separately.)

Vertical 2-split screen

Contact type Operation Output Lighting			Microload (125 VAC, 0.1 A; 30 VDC 0.1 A) Momentary operation (Self-resetting)	Operation Unit color symbol
SPDT	LED	24 VDC	A3SJ-90E3-24E□□	Enter the desired col-
וטיפ	Incan- descent lamp	28 VDC	A3SJ-90E3-28□□	or symbol for the Pushbutton in □□.
DPDT	LED	24 VDC	A3SJ-90G3-24E□□	R (Red) Y (Yellow) G (Green)
וטיטו	Incan- descent lamp	28 VDC	A3SJ-90G3-28□□	W (White) A (Blue) *

<sup>\*</sup> Incandescent lamp only.

- Specifications: Refer to page 12. Dimensions: Refer to page 14.
- Accessories: Refer to pages 10 to 11.

Ordering as a Set ...... The model numbers used to order sets of Units are given in the following tables. One set comprises the Operation Unit, Lamp, and Socket Unit.

**Standard Loads** 



Single screen

Single screen

Contact type		Standard load (250 VA	AC, 2 A; 125 VDC 0.4 A)	Operation Unit		
Output	Operation Output Lighting		Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Operation Unit color symbol	
		5 VDC	A3SA-90A1-05E□	A3SA-90B1-05E□		
	LED	12 VDC	A3SA-90A1-12E□	A3SA-90B1-12E□		
SPDT		24 VDC	A3SA-90A1-24E□	A3SA-90B1-24E□		
SPDI	1	6 VAC/VDC	A3SA-90A1-06□	A3SA-90B1-06□	Enter the desired color	
	Incandescent	lamp	14 VAC/VDC	A3SA-90A1-14□	A3SA-90B1-14□	<ul><li>symbol for the Pushbutton</li><li>in □.</li></ul>
	lamp	28 VAC/VDC	A3SA-90A1-28□	A3SA-90B1-28□	R (Red)	
		5 VDC	A3SA-90C1-05E□	A3SA-90D1-05E□	Y (Yellow)	
	LED	12 VDC	A3SA-90C1-12E□	A3SA-90D1-12E□	G (Green) A (Blue) *	
DPDT		24 VDC	A3SA-90C1-24E□	A3SA-90D1-24E□	W (White)	
וטייט	In a small a small	6 VAC/VDC	A3SA-90C1-06□	A3SA-90D1-06□		
	Incandescent lamp	14 VAC/VDC	A3SA-90C1-14□	A3SA-90D1-14□		
	lamp	28 VAC/VDC	A3SA-90C1-28□	A3SA-90D1-28□		

<sup>\*</sup> Incandescent lamp only.

### **Microloads**

Single screen

Contact type			Microload (125 VAC, 0.1 A; 30 VDC 0.1 A)	Operation Unit	
Output	Operation  Output Lighting		Momentary operation (Self-resetting)	color symbol	
		5 VDC	A3SA-90E1-05E□		
	LED	12 VDC	A3SA-90E1-12E□		
SPDT		24 VDC	A3SA-90E1-24E□		
SPDI		6 VAC/VDC	A3SA-90E1-06□	Enter the desired color	
	Incandescent lamp	14 VAC/VDC	A3SA-90E1-14□	symbol for the Pushbutton in $\square$ .	
	lamp	28 VAC/VDC	A3SA-90E1-28□	R (Red)	
		5 VDC	A3SA-90G1-05E□	Y (Yellow)	
	LED	12 VDC	A3SA-90G1-12E□	G (Green) A (Blue) *	
		24 VDC	A3SA-90G1-24E□	W (White)	
		6 VAC/VDC	A3SA-90G1-06□	, , , , ,	
	lamp	ncandescent 14 VAC/VDC A3SA-90			
	lamp	28 VAC/VDC	A3SA-90G1-28□		

<sup>\*</sup> Incandescent lamp only.

Individual models: Refer to pages 6 to 9.

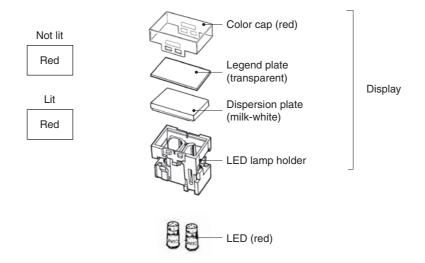
(The Pushbutton, Lamp, and Switch can be ordered separately.)

■ Specifications: Refer to page 12. ■ Dimensions: Refer to page 14.

# Illumination-only and Colored-illumination LED Models

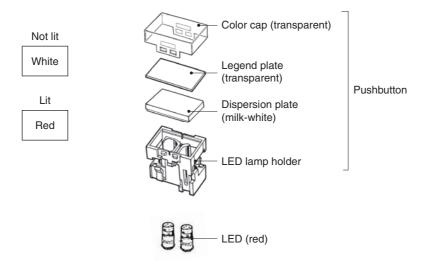
Illumination only describes LED models for which the screen color is the same whether the LED is lit or not. The screen simply becomes brighter when the LED lights.

Example: Red LED



Colored illumination describes LED models for which the screen color is white when the LED is not lit and changes to the color of the LED lamp when the LED is lit.

Example: Red LED



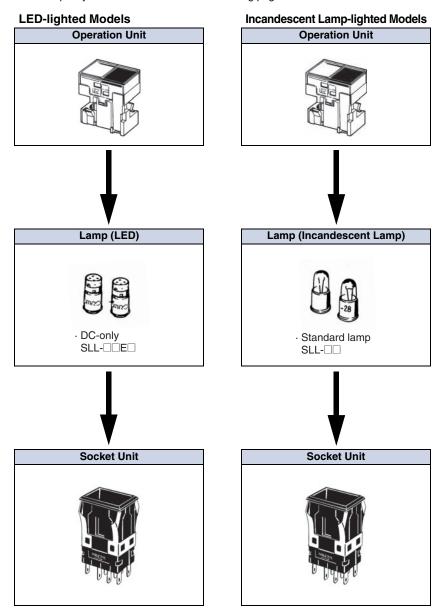
**Ordering** .......With colored-illumination models, order the Display (Operation Unit), Lamp, and Socket Unit as shown in the following table.

Disp	olay (Operation U	nit)	LED	Socket Unit	
Single screen	Rectangular models A3SJ-5801				
	Square models	A3SA-5801	Select the LED lamps to suit your desired	Select from the Switches on page 9.	
2-split screen	Rectangular models only	A3SJ-5921	coloration from the selection on page 9.		

OMRON 5

Ordering Individually ....... Operation Units, Lamps, and Socket Units can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.

Ordering ...... Specify a model number from the following page.



Ordering set combinations: Refer to pages 3 to 4.

■ Specifications: Refer to page 12. ■ Dimensions: Refer to page 14.

Ordering Individually ....... Operation Units, Lamps, and Socket Units can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.

# **Operation Unit LED-lighted Models**

(LED is not built in.)

			Appearance	Rectangular Models (2 LEDs)	Square Models (1 LED)
			<b>.</b>	(transparent legend	(transparent legend
	Screen patter	n	Display color	plate built in)	plate built in)
			White	A3SJ-5801	A3SA-5801
Single	screen		Red	A3SJ-5802	A3SA-5802
Onigit	Coccii		Green	A3SJ-5803	A3SA-5803
			Yellow	A3SJ-5805	A3SA-5805
			White/red	A3SJ-5901	
			White/green	A3SJ-5902	
	Standard		White/yellow	A3SJ-5904	
	split screen		Red/green	A3SJ-5905	_
	00.00		Red/yellow	A3SJ-5907	
			Green/yellow	A3SJ-5909	
			Red/white	A3SJ-5911	
2-split	_		Green/white	A3SJ-5912	
screen *	Reverse split		Yellow/white	A3SJ-5914	
	screen		Green/red	A3SJ-5915	_
			Yellow/red	A3SJ-5917	
			Yellow/green	A3SJ-5919	
			White/white	A3SJ-5921	
	One-color 2-split		Red/red	A3SJ-5922	
	screen		Green/green	A3SJ-5923	
			Yellow/yellow	A3SJ-5925	

Note: The color cap is transparent when the display color is white.

Ordering set combinations: Refer to pages 3 to 4.

■ Specifications: Refer to page 12. ■ Dimensions: Refer to page 14.

<sup>\*</sup> Two-split screen configurations are given with the OMRON surface of the case downward.

Ordering Individually....... Operation Units, Lamps, and Socket Units can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.

# **Operation Unit**

# **Incandescent Lamp-lighted Models**

(Incandescent lamp is not built in.)

, 12.12.30	ent lamp is not		Appearance	Rectangular	Square	
	0		Discussion and an	(transparent legend	(Legend plate not	
	Screen patte		Display color	plate built in)	included)	
		One lamp	White	A3SJ-5301	A3SA-5301	
			Red	A3SJ-5302	A3SA-5302	
			Green	A3SJ-5303	A3SA-5303	
			Blue	A3SJ-5304	A3SA-5304	
Single	e screen		Yellow	A3SJ-5305	A3SA-5305	
		Two lamps	White	A3SJ-5321		
			Red	A3SJ-5322		
			Green	A3SJ-5323	_	
			Blue	A3SJ-5324		
			Yellow	A3SJ-5325		
			White/red	A3SJ-5201		
			White/green	A3SJ-5202		
			White/blue	A3SJ-5203		
			White/yellow	A3SJ-5204		
	Standard split		Red/green	A3SJ-5205	_	
	screen		Red/blue	A3SJ-5206		
			Red/yellow	A3SJ-5207		
			Green/blue	A3SJ-5208		
			Green/yellow	A3SJ-5209		
			Blue/yellow	A3SJ-5210		
			Red/white	A3SJ-5211		
0!!			Green/white	A3SJ-5212		
2-split screen *		lolol	Blue/white	A3SJ-5213		
30.0011	_	التلتا	Yellow/white	A3SJ-5214		
	Reverse split		Green/red	A3SJ-5215		
	screen		Blue/red	A3SJ-5216		
			Yellow/red	A3SJ-5217		
			Blue/green	A3SJ-5218		
			Yellow/green	A3SJ-5219		
			Yellow/blue	A3SJ-5220		
			White/white	A3SJ-5221		
	One-color		Red/red	A3SJ-5222		
	2-split		Green/green	A3SJ-5223	_	
	screen		Blue/blue	A3SJ-5224		
			Yellow/yellow	A3SJ-5225		
NI-t Th			diaminu aniny in ushi	1-	+	

Ordering set combinations: Refer to pages 3 to 4.

■ Specifications: Refer to page 12. ■ Dimensions: Refer to page 14.

Note: The color cap is transparent when the display color is white.

\* Two-split screen configurations are given with the OMRON surface of the case downward.

Ordering Individually ....... Operation Units, Lamps, and Socket Units can be ordered separately. Combinations that are not available as sets can be created using individual Units. Also, store the parts as spares for maintenance and repairs.

### Lamp

# **LED Lamp**

Operating voltage	5 VDC	12 VDC	24 VDC
Color	Model (DC only)	Model (DC only)	Model (DC only)
Red	SLL-05ER	SLL-12ER	SLL-24ER
Yellow	SLL-05EY	SLL-12EY	SLL-24EY
Green	SLL-05EG	SLL-12EG	SLL-24EG
White	SLL-05EW	SLL-12EW	SLL-24EW

Note: The A3SJ (M2SJ) requires two LEDs for each Switch. The A3SA (M2SA) requires one LED.

### **Incandescent Lamp**

Lamp type Operating voltage	Standard lamp	Low-voltage lamp
5 VAC/VDC	SLL-06	SLL-06H
12 VAC/VDC	SLL-14	SLL-14H
24 VAC/VDC	SLL-28	SLL-28H

Note: The low-voltage lamp has an advantage in that it generates less heat.

Switch (common to both LED models and incandescent lamp-lighted models)

Conta	act type	Number of outputs	Appearance Operation	Rectangular models	Square models	Selection precautions			
	Standard load Silver contacts 2				1	Momentary operation	A3SJ-8010	A3SA-7010	Use the Socket Unit in
		•	Alternate operation	A3SJ-8020	A3SA-7020	combination with the same shape Operation Unit			
		_	Momentary operation	A3SJ-8030	A3SA-7030	(rectangular or square). Example:			
		2	Alternate operation	A3SJ-8040	A3SA-7040	For the A3SJ-5801 Rectan- gular Operation Unit, select			
	Momentary operation		Momentary operation	A3SJ-8050	A3SA-7050	the A3SJ-8□□0			
Micro-	oad alloy contacts		•	Alternate operation	A3SJ-8060	A3SA-7060	Socket Unit.  • Momentary operation is		
load			Momentary operation	A3SJ-8070	A3SA-7070	self-resetting, and alternate operation is self-holding (i.e.,			
		Alternate operation		A3SJ-8080	A3SA-7080	push-on, push-off).			

# Accessories, Replacements, and Tools

**Accessories for Rectangular Models** 

Name	Appearance	Classification	Model	Application precautions
		Short edge Barriers (1 pair)	A3SA-4001	The purpose of a Barrier is to prevent malfunctioning
Barrier		Short intermediate Barriers	A3SA-4002	and to improve design image of the mounting panel.  There is one intermediate Barrier and one pair of
Damei	MAMA	Long edge Barriers (1 pair)	A3SJ-4003	edge Barriers (2 Barriers).  Mount Short Barriers horizontally.  Mount Long Barriers vertically.
		Long intermediate Barriers	A3SJ-4004	Would Long Damers vehically.
Switch Guard		-		Cannot be used with Barrier or Seal Cover.
Seal Cover		-	A3SJ-5060	Cannot be used with Barrier or Switch Guard.     Cap material: Vinyl chloride
Long Mounting Plate		1 pair	A3SJ-3002	Use when vertically mounting individual (with Barrier) or multiple Switches (in standard mounting style and with Barrier). A Short Mounting Plate is attached to the Switch; replace it with the long one.

# **Accessories for Square Models**

Name	Appearance	Classification	Model	Application precautions
Barrier	44	Short Edge Barriers (1 pair)	A3SA-4001	The purpose of the Barrier is to prevent malfunctioning and to improve design image of the mounting
barrier		Short Intermediate Barrier	A3SA-4002	panel.
Switch Guard		-	A3SA-5050	Cannot be used with Barrier or Seal Cover.
Seal Cover		-	A3SA-5060	Cannot be used with Barrier or Switch Guard.     Cap material: Vinyl chloride

■ Accessory mounting: Refer to page 19.

# Accessories, Replacements, and Tools Replacements for Rectangular Models

Name	Appearance	Classi	Classification		Application precautions
		Wire-wrap terr	minals	A3SJ-4104	
Socket		PCB terminals	i	A3SJ-4105	Sockets cannot be used for multiple mounting.
	ו קדיוו וי נ	Solder termina	als	A3SJ-4106	
Dispersion plate		Milk-white	Single screen	A3SJ-5107	_
-		Transparent		A3SJ-5600	
		White	Single screen	A3SJ-5601	
		Red		A3SJ-5602	
		Green		A3SJ-5603	
		Blue		A3SJ-5604	Contact your OMRON representative for color
Color con		Yellow		A3SJ-5605	changes or inscribing.  If LEDs are to be used, use a color cap that
Color cap		Transparent		A3SJ-5630	matches the LED color.
	<b>←</b>	White		A3SJ-5631	The blue color cap is only for incandescent lamps.
	1	Red	O anlit aaraan	A3SJ-5632	
		Green	2-split screen	A3SJ-5633	
		Blue		A3SJ-5634	
	7	Yellow	1	A3SJ-5635	
Legend plate		Transparent		A3SJ-4204	A transparent legend plate is mounted on the
Legend plate		Milk-white		A3SJ-4203	Operation Unit.

# **Replacements for Square Models**

Name	Appearance	Classification	Model	Application precautions
		Wire-wrap terminals	A3SA-4101	
Socket		PCB terminals	A3SA-4102	Sockets cannot be used for multiple mounting.
	1 11111	Solder terminals	A3SA-4103	
Dispersion plate		Milk-white	A3SA-5107	-
		Transparent	A3SA-5600	
		White	A3SA-5601	Contact your OMRON representative for color
Color cap		Red	A3SA-5602	changes or inscribing.
Color cap		Green	A3SA-5603	If LED colors are to be used, use a color cap that
		Blue	A3SA-5604	matches the LED color.
		Yellow	A3SA-5605	-
Legend plate		Transparent	A3SA-4204	A transparent color cap is mounted to a standard Display. Legend plates cannot be used, however,
Logoria piate		Milk-white	A3SA-4203	with Displays for incandescent lamps.

### Tools

Name	Appearance	Classification	Model	Application precautions
Extractor		_	A3PJ-5080	Convenient for extracting the Operation Unit.

■ Accessory mounting: Refer to page 19.

OMRON 1

# **Specifications**

# **Approved Standard Ratings** UL (File No. E41515), CSA (File No. LR45258)

3 A at 125 VAC Standard Load: 2 A at 250 VAC 0.1 A at 125 VAC Microload: 0.1 A at 30 VDC

Note: Certification has been obtained for the Switch Unit.

For detailed information on individual products that have received

certification, consult your supplier.

### Ratings For Standard Loads

	induct	ductive load (A)			Inductive load (A)			
Rated voltage	Resistive load		Lamp	load		ctive ad	Moto	r load
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC 250 VAC	1	3	1 0.7	0.7 0.5	-	<u>2</u> .5	1.5 1	1 0.7
8 VDC 14 VDC	3 3		-	1	1	<u>2</u> .5		.5 .5
30 VDC 125 VDC 250 VDC	0.4 0.2		-	1 05 03	1.5 0.4 0.2		-	1 05 03

- Note: 1. The above values are for steady-state currents. 2. Inductive load: Power factor = 0.4; time constant = 7 ms.
  - 3. The lamp load has an inrush current of 10 times the steady-state
  - 4. The motor load has an inrush current of 6 times the steady-state current.

The rated values are for testing conducted under the following conditions.

(1) Ambient temperature: 20±2°C

(2) Ambient humidity: 65% ±5%RH

(3) Operating frequency: 20 times/min

#### For Microloads

	0.1 A at 30 VDC (resistive load); 0.1 A at 125 VAC (resistive load)
Minimum applicable load	1 mA at 5 VDC

# **LED Lamp**

Туре	Applied voltage	Rated voltage	Rated current	Built-in limiting resistance
	5 VDC±5%	5 VDC	30 mA	39 Ω
DC only	12 VDC±5%	12 VDC	15 mA	270 Ω
	24 VDC±5%	24 VDC	12.5 mA	1300 Ω

### **Incandescent Lamp**

Applied voltage	Rated voltage	Standard lamp	Low-power lamp
voitage		Rated current	Rated current
5 VAC/VDC	6 VAC/VDC	200 mA	100 mA
12 VAC/VDC	14 VAC/VDC	80 mA	40 mA
24 VAC/VDC	28 VAC/VDC	40 mA	25 mA

### **Characteristics**

		F	
Operating frequency	Mechanical	Momentary operation models: 120 operations/min max. *1	
irequericy	Electrical	20 operations/min max.	
Insulation	n resistance	100 MΩ min. (at 500 VDC)	
Contact	Standard load	50 m $\Omega$ max. (initial value)	
resistance	Microload	50 mΩ max. (initial value)	
	Between terminals of same polarity	1,000 VAC, 50/60 Hz for 1 minute	
	Between terminals of different polarity	2,000 VAC, 50/60 Hz for 1 minute	
Dielectric strength	Between current- carrying metal part and ground	2,000 VAC, 50/60 Hz for 1 minute	
	Between each terminal and non-current-carry- ing metal part	2,000 VAC, 50/60 Hz for 1 minute	
	Between lamp terminals	1,000 VAC, 50/60 Hz for 1 minute *2	
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude *3	
Shock Destruction		500 m/s <sup>2</sup> max.	
resistance	Malfunction	200 m/s <sup>2</sup> max. *3	
Life expect- ancy	Mechanical	Momentary operation models: 1,000,000 operations min. Alternate operation models: 100,000 operations min. (One operation consists of set and reset operations.)	
	Electrical	100,000 operations min. (rated load)	
Weight		Approx. 10 g	
Inrush	NC	Standard load: 10 A max.	
current	NO	Standard load: 10 A max.	
Ambient temperate	operating ure	<ul><li>−10 to 50°C</li><li>(with no icing or condensation)</li></ul>	
Ambient operating humidity		35% to 85% RH	
Ambient storage temperature		−25 to 65°C (with no icing or condensation)	
Degree o	f protection	IP00	
	nock protection class	Class II	
PTI (proo	f tracking index)	175	
Pollution	degree	3 (IEC 60947-5-1)	
*1 With alta	rnate operation models 6	60 operations/min max. One operation	

<sup>\*1.</sup> With alternate operation models, 60 operations/min max. One operation cycle consists of set and reset operations.

# **Operating Characteristics**

Operating characteristics	Operation	Momentary operation models	Alternate operation models
Operating force	OF max.	3.92 N	4.90 N
Releasing force	RF min.	0.49 N	0.294 N
Total travel	TT	Approx. 3 mm	Approx. 3 mm
Pretravel	PT max.	2.2 mm	2.2 mm
Lock travel alternate	LTA min.	-	0.5 mm

# **Contact Form**

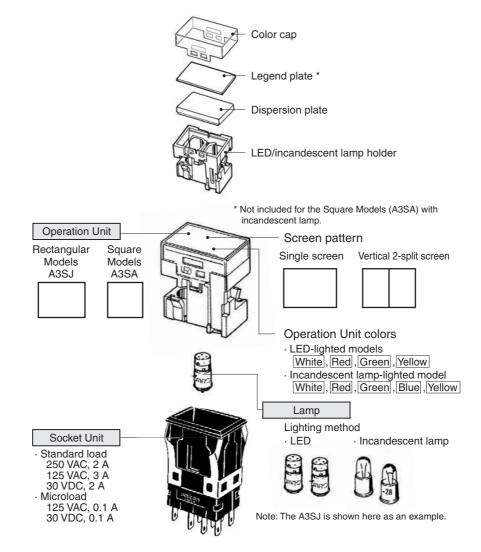
Name	Contact Form
Double-throw contacts	COM NO

<sup>\*2.</sup> With no incandescent lamp or LED lamp mounted.

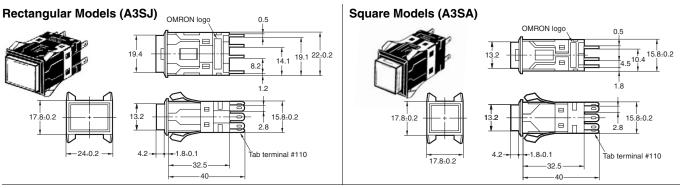
<sup>\*3.</sup> Malfunction: 1 ms max.

# **Nomenclature**

# **Model Structure Operation Unit Structure**



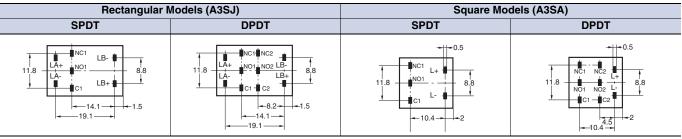
OMRON 13



Note: Unless specified, a tolerance of ±0.4 mm applies for all dimensions. Use a mounting panel thickness of 1 to 4 mm.

# **Terminal Arrangement**

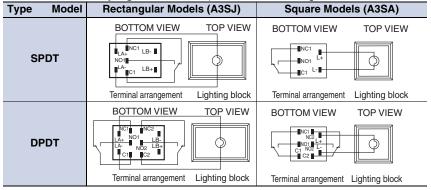
Bottom View (All are shown with the OMRON logo facing down.)



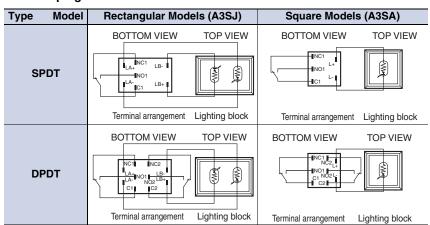
Note: The arrangements given above are not indicated on the Socket Unit.

#### Contact Type

Incandescent Lamp-lighted Models (The terminal arrangements are the same as for the LED-lighted models.)



# **LED Lamp-lighted Models**



**Dimensions** (Unit: mm)

# **Panel Cutout** (If using a Switch Guard or Seal Cover, refer to the panel cutout diagrams on page 17.) **Rectangular Models (A3SJ)**

Cla	ssification	Mounting design	Panel cutout	Remarks	
	Individual mounting, horizontal	17.8±0.2	16.2±0.2	Panel cutout spacing between rows of Units:	
	Multiple mounting, horizontal	17.8±0.2 1 2 n	16.2±0.2 + 24n-1.6±0.2 -+	<del>→                                     </del>	
Flange mount models	Individual mounting, vertical	Mount to Long Mounting Plate (ASSJ-3002) before use.	22.4±0.2	6 min.	
	Multiple mounting, vertical	Mount to Long Mounting Plate (A3SJ-3002) before use.	22.4±0.2 17.8n-1.6±0.2		
	Individual mounting, horizontal	19.8	16.2±0.2	Panel cutout spacing between rows of Units:	
Barrier	Multiple mounting, horizontal	19.8 1 2 n	16.2±0.2 25.3n+1.6±0.2	1.4	
mount models	Individual mounting, vertical	Mount to Long Mounting Plate (A3SJ-3002) before use.	22.4±0.2 20.7±0.2	6 min 1	
	Multiple mounting, vertical	Mount to Long Mounting Plate (A3SJ-3002) before use.	22.4±0.2 19.1n+1.6±0.2	Dotted line indicates the position of each mounting Barrier.	

<sup>\*</sup> If the panel is to be finished (e.g., coated), make sure that the panel meets the specified dimensions after the coating.

# Square Models (A3SA)

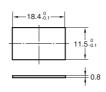
Clas	ssification	Mounting design	Panel cutout	Remarks
Flange mount	Individual mounting	17.8±0.2	16.2±0.2	Panel cutout spacing between rows of Units:
models	Multiple mounting	17.8±0.2 1 2 3 n	16.2±0.2 17.8n-1.6±0.2	6 min.
Barrier mount models	Individual mounting	19.8	16.2±0.2 ± 20.7±0.2	Panel cutout spacing between rows of Units:
	Multiple mounting	19.8 1 2 3 n	16.2±0.2 19.1n+1.6±0.2	Dotted line indicates the position of each mounting Barrier.

 $<sup>^{\</sup>star}$  If the panel is to be finished (e.g., coated), make sure that the panel meets the specified dimensions after the coating.

**Dimensions** (Unit: mm)

# **Accessory Mounting Dimensions**

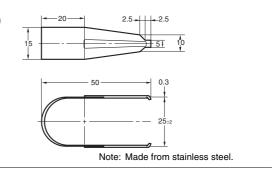
# Legend Plate Rectangular Models A3SJ-4203/-4204



# Square Models A3SA-4203/-4204

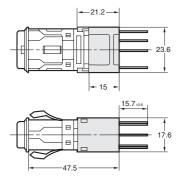


# Extractor A3PJ-5080

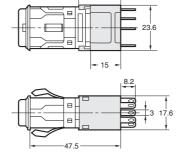


# Socket-mounting Dimensions Rectangular Models

# Wire-wrap Terminals A3SJ-4104

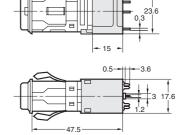


# Solder Terminals A3SJ-4106



**--**21.2 **--**

# PCB Terminals A3SJ-4105

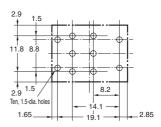


-21.2-

# **Terminal Hole Dimensions**



# PCB Cutout (Bottom View)

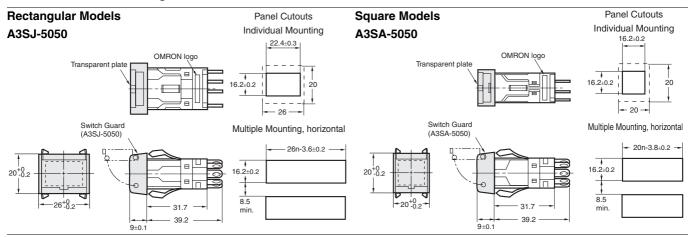


**Dimensions** (Unit: mm)

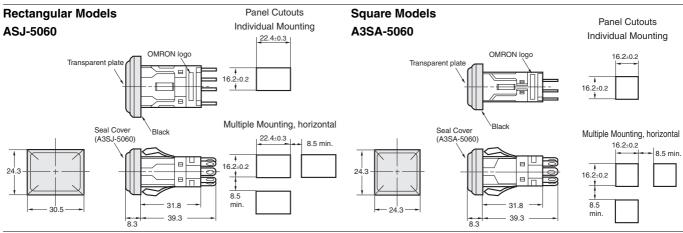
# **Square Models**

# **Wire-wrap Terminals Solder Terminals PCB Terminals** A3SA-4101 A3SA-4103 A3SA-4102 -212 17.6 -15 8.2 15.7±0 0.5-11 -3.6 **PCB Cutout Terminal Hole Dimensions** (bottom view) Eight, 1.5-dia. holes The OMRON logo is downward on the Socket Unit.

# **Switch and Guard Mounting Dimensions**



### **Seal Cover Mounting Dimensions**



Note: 1. Recommended panel thickness: 1.0 to 3.3 mm

2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

# **Safety Precautions**

#### Refer to Safety Precautions for All Pushbutton Switches/Indicators.

#### **Precautions for Correct Use**

#### Mounting

 Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance. Electric shock or fire may occur.

#### Wiring

- For wiring, use a wire size that is appropriate for the applied voltage and the supplied current. Be sure to perform soldering according to the following conditions. Using the Switch with incomplete soldering may result in errors and heat, which may cause fire.
- (1) Manual soldering: Use a soldering iron with a tip temperature of 350°C maximum and complete soldering within 3 seconds.
- (2) Dip soldering: Solder at 350°C for 3 s or less.

Wait for one minute after soldering before exerting any external force on the solder.

- Use non-corrosive liquid rosin as the flux.
- If screw-tightened terminals are used, hold the Socket Unit Set or Socket Unit and install the lead wiring applying a torque of less than 0.98 N·m to the Socket Unit. Applying a torque of more than 0.98 N·m may result in damage. The tightening torque is 0.59 to 0.78 N·m.
- Make sure that the insulating sheath of the wires does not come in contact with the Unit. If wiring is performed with the insulating sheath of the wires coming in contact with the Unit, use wire with a minimum heat resistance of 100°C.
- After wiring the Switch, make sure that there is a suitable isolation distance.

#### **Operating Environment**

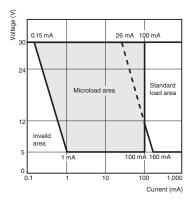
 Do not use in locations that are subject to dust, oil, or metal fillings, because these may penetrate the interior the Switch and cause malfunction.

#### **Using Microloads**

• Using a standard load switch when a microload circuit is opened or closed may cause wear on the contacts. Use the switch within the operating range. (Refer to the diagram below.) Even when using microload models within the operating range shown below, if inrush current occurs when the contacts are opened or closed, it may cause the contact surface to become rough, and so decrease life expectancy. Therefore, insert a contact protection circuit where necessary.

The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% ( $\lambda$  60) (conforming to JIS C5003).

The equation  $\lambda$  60 = 0.5 x 10<sup>-6</sup>/time indicates that the estimated malfunction rate is less than 1/2,000,000 with a reliability level of 60%.



#### **LED Lamp**

 A current-limiting resistor for the LED lamp is built in, so no external resistor is required.

Rated voltage	Built-in limiting resistance
5 VDC	39 Ω
12 VDC	270 Ω
24 VDC	1300 Ω

#### **Incandescent Lamp**

 It is advantageous in terms of service life and heat generation to apply 80% of the rated voltage (operating voltage) to the incandescent lamp.

#### Operation

 Always mount the Operation Unit before operating the Switch.
 (Using your fingers or tweezers to operate moving parts of the Switch may deform internal parts and cause malfunctions.)

#### **Character Film**

• If the character film is to be specially prepared, use heat-resistant film with a maximum thickness of 0.2 mm.



#### Others

 If the panel is to be finished (e.g., coated), make sure that the panel meets the specified dimensions after the coating.

### **Application**

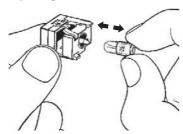
# Replacing Incandescent and LED Lamps and Panel Mounting

#### Removing the Display

- Grasp the groove on the color cap surface, and pull it firmly toward you to remove the Display.
- An Extractor (A3PJ-5080) is available to conveniently remove the Display.

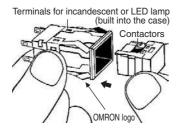


#### Mounting and Replacing Incandescent and LED Lamps



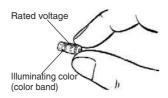
#### Inserting the Display into the Socket Unit

Insert the Operation Unit in the proper direction. With the OMRON logo downward, insert the Operation Unit so that the lamp/LED terminals on the inside surface of the Unit case and the contactors of the Display.



# Rated Voltage and Color of LED

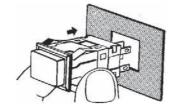
The LED voltage rating is indicated on the base. Use the LED within  $\pm 5\%$  of voltage range.



# Mounting to the Switch Panel

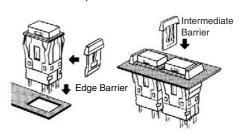
Mount the Socket Unit to the panel by inserting it from the front of the panel.

Mount the Socket Unit so that the OMRON logo is downward.



#### **Barrier Mounting**

- Place the Edge Barrier on the side of the Socket Unit, and then insert it into the panel.
- Insert the Intermediate Barrier between the Switches after inserting the Socket Units into the panel.



# Inscribing Legend Plate Characters Inscribing

A3SJ (M2SJ)

- Inscription depth: 0.5 mm max.
- The legend plate is made of polycarbonate, so apply an alcoholbased paint coating, such as melamine, phthalate, or acrylic resin paint when marking the legend.



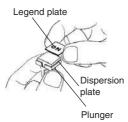
Legend plate

 When replacing the legend plate, be careful that the coil spring in the Display does not become removed.

# Assembling the Legend Plate (Plunger) A3SA (M2SA)

(LED Lamp)

(1) Assemble the color plate to the plunger, and then assemble the legend plate on top.



(Incandescent Lamp)

(2) Inscribe the surface of the plunger, and then coat the surface.

### Lighted Square Pushbutton Switches

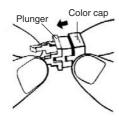
Assemble models A3SA-5301 to A3SA-5305 so that the hook is toward you.



Hook toward you

Note: Legend plates cannot be used with A3SA Displays for incandescent lamps.

(3) Assemble the color cap to the inscribed plunger.



(4) Push in the color in the direction of the arrow to assemble the plunger and the lamp holder.

# Lighted Square Pushbutton Switches

A3SA

Perform the assembly so that the wide groove and the hook on the plunger are in the same direction.



#### Indicator

M2SA

Perform the assembly so that the wide groove and the hook on the plunger are in the same direction.



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