Pushbutton Switch

A16

Mounting Aperture of 16 mm

- Modular construction (Pushbutton + Case + Lamp + Switch)
- Wide Variety of Control and Signal Devices: Lighted, Non-Lighted, and Buzzer
- UL and cUL approved.
- Conforms to EN60947-5-1, IEC947-5-1
- Quick and easy assembly, snap-in Switch.
- Wide range of switching capacity from standard to microload
- · High reliability, IP65
- Short mounting depth, less than 28.5 mm below panel



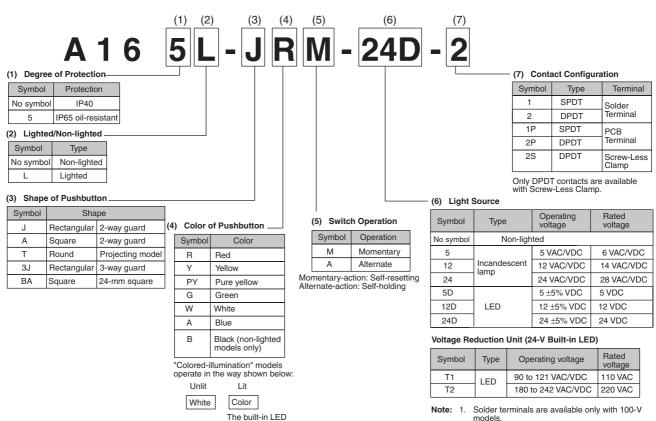
(F) (R)

Model Number Structure

■ Model Number Legend

Completely Assembled

The model numbers used to order sets of Units are illustrated below. One set comprises the Pushbutton, Lamp (lighted models only), Case, and Switch.



The Voltage Reduction Unit is not available for models with PCB terminals.

Neon lamps are not available with models that are ordered as a set. They must be ordered individually if required. Refer to page 13.

Model	Lighted Pushbutton Switches	Non-lighted Pushbutton Switches						
Pushbutton	Rectangular	Rectangular						
	Square	Square						
	Round	Round						
Lamp	LED lamp Incandescent lamp Neon lamp							
Case								
Switch	Solder Terminals (Without Voltage Reduction Uni	Solder Terminals (Without Voltage Reduction Unit)						
	(William Voltage Neduction Only)							

Note: There is no Lamp with non-lighted models.

Subassembled

1. Pushbutton

Non-lighted/Lighted

A16_L-__

1. Degree of Protection

None: IP40 5: IP65

2. Flange Shape

J: Rectangular T: Round A: Square

3. Illumination Color for Non-lighted Models

R: Red G: Green Y: Yellow W: White A: Blue B: Black

Illumination Color for Lighted Models

LED/Incandescent Lamp

R: Red
Y: Yellow
PY: Pure yellow
W: White
A: Blue
LED

GY: Green Incandescent Lamp

G: Green
Neon Lamp
RN: Red
GN: Green

2. Lamp

A16-

1. Operating Voltage (Rated Voltage) Incandescent Lamp

5: 5 VAC/VDC (6 VAC/VDC)
12: 12 VAC/VDC (14 VAC/VDC)
24: 24 VAC/VDC (28 VAC/VDC)

LED

5DS: 5 VDC (5 VDC) 12DS:12 VDC (12 VDC) 24DS:24 VDC (24 VDC)

Neon Lamp

1N: 100 VAC (110 VAC) 2N: 200 VAC (220 VAC)

3. Case



1. Degree of Protection

None: IP40

5: IP65 Oil-resistant

4. Switch (Solder Terminals)



Voltage Reduction Circuit
 (Operating Voltage/Rated Voltage)

None: Without Voltage Reduction Unit

T1: 100 VAC/110 VAC

5. Socket (Solder Terminals Only)

M16-

Voltage Reduction Circuit
 (Operating Voltage/Rated Voltage)

0: Without Voltage Reduction Unit

T1: 100 VAC/110 VAC

2. Illumination Color

None: Incandescent Lamp

R: Red (LED)
G: Green (LED)
Y: Yellow (LED)
W: White (LED)
A: Blue (LED)
RN: Red (Neon Lamp)
GN: Green (Neon Lamp)

2. Flange Shape

CJ: Rectangular
CT: Round
CA: Square
3. Switch Action

M: Momentary A: Alternate

2. Contacts

1: SPDT 2: DPDT

Ordering Information

■ List of Models

Ordering as a Set

The model numbers used to order sets of Units are given in the following tables. One set comprises the Pushbutton, Lamp (lighted models only), Case, and Switch.

A16□-J (Rectangular) Models

Solder Terminal Models

IP40

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED	5 VDC	A16L-J□M-5D-1	A16L-J□A-5D-1	R: red
	without Voltage Reduction Unit	12 VDC	A16L-J□M-12D-1	A16L-J□A-12D-1	Y: yellow PY: pure yellow
	Trioddollori Orini	24 VDC	A16L-J□M-24D-1	A16L-J□A-24D-1	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A16L-J□M-5-1	A16L-J□A-5-1	R: red
	lamp	12 VDC/VAC	A16L-J□M-12-1	A16L-J□A-12-1	Y: yellow PY: pure yellow
		24 VDC/VAC	A16L-J□M-24-1	A16L-J□A-24-1	G: green
	Non-lighted		A16-J□M-1	A16-J□A-1	W: white A: blue B: black (See note 2.)
DPDT	LED	5 VDC	A16L-J□M-5D-2	A16L-J□A-5D-2	R: red
	without Voltage Reduction Unit	12 VDC	A16L-J□M-12D-2	A16L-J□A-12D-2	Y: yellow PY: pure yellow
	ricudellori oriit	24 VDC	A16L-J□M-24D-2	A16L-J□A-24D-2	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A16L-J□M-5-2	A16L-J□A-5-2	R: red
	lamp	12 VDC/VAC	A16L-J□M-12-2	A16L-J□A-12-2	Y: yellow PY: pure yellow
		24 VDC/VAC	A16L-J□M-24-2	A16L-J□A-24-2	G: green
	Non-lighted		A16-J□M-2	A16-J□A-2	W: white A: blue B: black (See note 2.)



IP65 Oil-resistant

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED	5 VDC	A165L-J□M-5D-1	A165L-J□A-5D-1	R: red
	without Voltage Reduction Unit	12 VDC	A165L-J□M-12D-1	A165L-J□A-12D-1	Y: yellow PY: pure yellow
	Troduction of the	24 VDC	A165L-J□M-24D-1	A165L-J□A-24D-1	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A165L-J□M-5-1	A165L-J□A-5-1	R: red
	lamp	12 VDC/VAC	A165L-J□M-12-1	A165L-J□A-12-1	Y: yellow PY: pure yellow
		24 VDC/VAC	A165L-J□M-24-1	A165L-J□A-24-1	G: green
	Non-lighted		A165-J□M-1	A165-J□A-1	W: white A: blue B: black (See note 2.)
DPDT	LED	5 VDC	A165L-J□M-5D-2	A165L-J□A-5D-2	R: red
	without Voltage Reduction Unit	12 VDC	A165L-J□M-12D-2	A165L-J□A-12D-2	Y: yellow PY: pure yellow
	Troduction of the	24 VDC	A165L-J□M-24D-2	A165L-J□A-24D-2	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A165L-J□M-5-2	A165L-J□A-5-2	R: red
	lamp	12 VDC/VAC	A165L-J□M-12-2	A165L-J□A-12-2	Y: yellow PY: pure yellow G: green
		24 VDC/VAC	A165L-J□M-24-2	A165L-J□A-24-2	
	Non-lighted		A165-J□M-2	A165-J□A-2	W: white A: blue B: black (See note 2.)

Note: 1. Enter the desired color symbol for the Pushbutton in the \square .

2. Black ("B") Pushbuttons are only available for non-lighted models.

A16□-A (Square) Models

Solder Terminal Models

IP40



Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED	5 VDC	A16L-A□M-5D-1	A16L-A□A-5D-1	R: red
	without Voltage Reduction Unit	12 VDC	A16L-A□M-12D-1	A16L-A□A-12D-1	Y: yellow PY: pure yellow
	Troduction of the	24 VDC	A16L-A□M-24D-1	A16L-A□A-24D-1	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A16L-A□M-5-1	A16L-A□A-5-1	R: red
	lamp	12 VDC/VAC	A16L-A□M-12-1	A16L-A□A-12-1	Y: yellow PY: pure yellow
		24 VDC/VAC	A16L-A□M-24-1	A16L-A□A-24-1	G: green
	Non-lighted		A16-A□M-1	A16-A□A-1	W: white A: blue B: black (See note 2.)
DPDT	LED	5 VDC	A16L-A□M-5D-2	A16L-A□A-5D-2	R: red
	without Voltage Reduction Unit	12 VDC	A16L-A□M-12D-2	A16L-A□A-12D-2	Y: yellow PY: pure yellow
	rieduction offic	24 VDC	A16L-A□M-24D-2	A16L-A□A-24D-2	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A16L-A□M-5-2	A16L-A□A-5-2	R: red
	lamp	12 VDC/VAC	A16L-A□M-12-2	A16L-A□A-12-2	Y: yellow PY: pure yellow
		24 VDC/VAC	A16L-A□M-24-2	A16L-A□A-24-2	G: green
	Non-lighted		A16-A□M-2	A16-A□A-2	W: white A: blue B: black (See note 2.)



IP65 Oil-resistant

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED	5 VDC	A165L-A□M-5D-1	A165L-A□A-5D-1	R: red
	without Voltage Reduction Unit	12 VDC	A165L-A□M-12D-1	A165L-A□A-12D-1	Y: yellow PY: pure yellow
	Thousand The	24 VDC	A165L-A□M-24D-1	A165L-A□A-24D-1	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A165L-A□M-5-1	A165L-A□A-5-1	R: red
	lamp	12 VDC/VAC	A165L-A□M-12-1	A165L-A□A-12-1	Y: yellow PY: pure yellow
		24 VDC/VAC	A165L-A□M-24-1	A165L-A□A-24-1	G: green
	Non-lighted		A165-A□M-1	A165-A□A-1	W: white A: blue B: black (See note 2.)
DPDT	LED	5 VDC	A165L-A□M-5D-2	A165L-A□A-5D-2	R: red
	without Voltage Reduction Unit	12 VDC	A165L-A□M-12D-2	A165L-A□A-12D-2	Y: yellow PY: pure yellow G: green A: blue W: white
	rieduction offic	24 VDC	A165L-A□M-24D-2	A165L-A□A-24D-2	
	Incandescent	5 VDC/VAC	A165L-A□M-5-2	A165L-A□A-5-2	R: red
	lamp	12 VDC/VAC	A165L-A□M-12-2	A165L-A□A-12-2	Y: yellow PY: pure yellow
		24 VDC/VAC	A165L-A□M-24-2	A165L-A□A-24-2	G: green
	Non-lighted		A165-A□M-2	A165-A□A-2	W: white A: blue B: black (See note 2.)

Note: 1. Enter the desired color symbol for the Pushbutton in the \square .

2. Black ("B") Pushbuttons are only available for non-lighted models.

A16□-T (Round) Models

Solder Terminals

IP40



Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED	5 VDC	A16L-T□M-5D-1	A16L-T□A-5D-1	R: red
	without Voltage Reduction Unit	12 VDC	A16L-T□M-12D-1	A16L-T□A-12D-1	Y: yellow PY: pure yellow
	rioddollon Criii	24 VDC	A16L-T□M-24D-1	A16L-T□A-24D-1	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A16L-T□M-5-1	A16L-T□A-5-1	R: red
	lamp	12 VDC/VAC	A16L-T□M-12-1	A16L-T□A-12-1	Y: yellow PY: pure yellow
		24 VDC/VAC	A16L-T□M-24-1	A16L-T□A-24-1	G: green
	Non-lighted	•	A16-T□M-1	A16-T□A-1	W: white A: blue B: black (See note 2.)
DPDT	LED	5 VDC	A16L-T□M-5D-2	A16L-T□A-5D-2	R: red
	without Voltage Reduction Unit	12 VDC	A16L-T□M-12D-2	A16L-T□A-12D-2	Y: yellow PY: pure yellow
	ricudellon onlin	24 VDC	A16L-T□M-24D-2	A16L-T□A-24D-2	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A16L-T□M-5-2	A16L-T□A-5-2	R: red
	lamp	12 VDC/VAC	A16L-T□M-12-2	A16L-T□A-12-2	Y: yellow PY: pure yellow
		24 VDC/VAC	A16L-T□M-24-2	A16L-T□A-24-2	G: green
	Non-lighted		A16-T□M-2	A16-T□A-2	W: white A: blue B: black (See note 2.)



IP65 Oil-resistant

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED	5 VDC	A165L-T□M-5D-1	A165L-T□A-5D-1	R: red
	without Voltage Reduction Unit	12 VDC	A165L-T□M-12D-1	A165L-T□A-12D-1	Y: yellow PY: pure yellow
	Troudonom orm	24 VDC	A165L-T□M-24D-1	A165L-T□A-24D-1	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A165L-T□M-5-1	A165L-T□A-5-1	R: red
	lamp	12 VDC/VAC	A165L-T□M-12-1	A165L-T□A-12-1	Y: yellow PY: pure yellow
		24 VDC/VAC	A165L-T□M-24-1	A165L-T□A-24-1	G: green
	Non-lighted		A165-T□M-1	A165-T□A-1	W: white A: blue B: black (See note 2.)
DPDT	LED	5 VDC	A165L-T□M-5D-2	A165L-T□A-5D-2	R: red
	without Voltage Reduction Unit	12 VDC	A165L-T□M-12D-2	A165L-T□A-12D-2	Y: yellow PY: pure yellow
	Tieddelloll Offic	24 VDC	A165L-T□M-24D-2	A165L-T□A-24D-2	G: green A: blue W: white
	Incandescent	5 VDC/VAC	A165L-T□M-5-2	A165L-T□A-5-2	R: red
	lamp	12 VDC/VAC	A165L-T□M-12-2	A165L-T□A-12-2	Y: yellow PY: pure yellow
		24 VDC/VAC	A165L-T□M-24-2	A165L-T□A-24-2	G: green
	Non-lighted		A165-T□M-2	A165-T□A-2	W: white A: blue B: black (See note 2.)

Note: 1. Enter the desired color symbol for the Pushbutton in the \square .

2. Black ("B") Pushbuttons are only available for non-lighted models.

Other Models

Models with Reduced-voltage Lighting and Solder Terminals



IP40

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED (with built-in re-	100/110 VAC/VDC	A16L-∆□M-T1-1	A16L-∆□A-T1-1	R: red
DPDT	ation and continuous Productions	100/110 VAC/VDC	A16L-∆□M-T1-2	A16L-∆□A-T1-2	Y: yellow PY: pure yellow G: green W: white A: blue

IP65

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED (with built-in re-	100/110 VAC/VDC	A165L-∆□M-T1-1	A165L-∆□A-T1-1	R: red
DPDT	4	100/110 VAC/VDC	A165L-∆□M-T1-2	A165L-∆□A-T1-2	Y: yellow PY: pure yellow G: green W: white A: blue

- **Note: 1.** Enter the desired shape for the Pushbutton in Δ : J (rectangular), A (square), or T (round). Enter the desired color symbol for the Pushbutton in the \Box .
 - 2. Models with rated voltage 200 to 220 VAC/VDC (T2 models) are only available with Screw-Less Clamps.

Screw-Less Clamp Models



IP40

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
DPDT	LED	5 VDC	A16L-∆□M-5D-2S	A16L-∆□A-5D-2S	R: red
	LED (with built-in reduced-voltage lighting function)	12 VDC	A16L-∆□M-12D-2S	A16L-∆□A-12D-2S	Y: yellow PY: pure yellow G: green W: white A: blue B: black (See note 2.)
		24 VDC	A16L-∆□M-24D-2S		
		100/110 VAC/VDC	A16L-∆□M-T1-2S		
		200/220 VAC/VDC	A16L-∆□M-T2-2S	IA IOL-/A A-12-23	
	Non-lighted		A16-∆□M-2S	A16-∆□A-2S	

IP65

Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
DPDT	LED	5 VDC	A165L-∆□M-5D-2S	A165L-∆□A-5D-2S	R: red
		12 VDC	A165L-∆□M-12D-2S	A165L-∆□A-12D-2S	Y: yellow
		24 VDC	A165L-∆□M-24D-2S	A165L-∆□A-24D-2S	PY: pure yellow G: green
	LED (with built-in re-	100/110 VAC/VDC	A165L-∆□M-T1-2S	A165L-∆□A-T1-2S	W: white A: blue B: black (See note 2.)
	duced-voltage light- ing function)	200/220 VAC/VDC	A165L-∆□M-T2-2S	A165L-∆□A-T2-2S	
	Non-lighted		A165-∆□M-2S	A165-∆□A-2S	

- **Note: 1.** Enter the desired shape for the Pushbutton in Δ : J (rectangular), A (square), or T (round). Enter the desired color symbol for the Pushbutton in the \Box .
 - 2. Black ("B") Pushbuttons are only available for non-lighted models.

A165□-BA (24-mm Square) Models

Solder Terminals

IP65



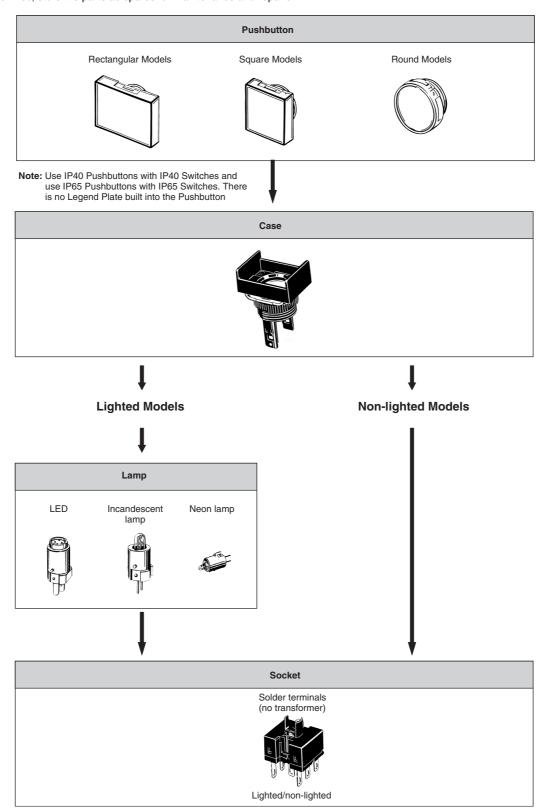
Output	Lighting	Operating voltage	Momentary operation (Self-resetting)	Alternate operation (Self-holding)	Pushbutton color symbol (See note 1.)
SPDT	LED	5 VDC	A165L-BA□M-5D-1	A165L-BA□A-5D-1	R: red
	LED	12 VDC	A165L-BA□M-12D-1	A165L-BA□A-12D-1	Y: yellow PY: pure yellow
	LED	24 VDC	A165L-BA□M-24D-1	A165L-BA□A-24D-1	G: green
	Non-lighted		A165-BA□M-1	A165-BA□A-1	W: white
DPDT	LED	5 VDC	A165L-BA□M-5D-2	A165L-BA□A-5D-2	A: blue
	LED	12 VDC	A165L-BA□M-12D-2	A165L-BA□A-12D-2	B: black (See note 2.)
	LED	24 VDC	A165L-BA□M-24D-2	A165L-BA□A-24D-2	
	Non-lighted		A165-BA□M-2	A165-BA□A-2	

Note: 1. Enter the desired color symbol for the Pushbutton in the \square .

^{2.} Black ("B") Pushbuttons are only available for non-lighted models.

Ordering Individually

Pushbuttons, Lamps, Cases, and Switches (Sockets) 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.



Pushbuttons

Illumination: red, yellow, and white use either LED or incandescent lamps.

LED

Degree of protection	IP40			Oil-resistant IP65		
Color	Rectangular	Square	Round	Rectangular	Square	Round
Red	A16L-JR	A16L-AR	A16L-TR	A165L-JR	A165L-AR	A165L-TR
Yellow	A16L-JY	A16L-AY	A16L-TY	A165L-JY	A165L-AY	A165L-TY
Pure yellow	A16L-JPY	A16L-APY	A16L-TPY	A165L-JPY	A165L-APY	A165L-TPY
Green	A16L-JGY	A16L-AGY	A16L-TGY	A165L-TGY	A165L-AGY	A165L-TGY
White	A16L-JW	A16L-AW	A16L-TW	A165L-TW	A165L-AW	A165L-TW
Blue	A16L-JA	A16L-AA	A16L-TA	A165L-JA	A165L-AA	A165L-TA

Incandescent Lamps (With the exception of green, the Units are the same as for LEDs.)

Degree of protection	IP40			Oil-resistant IP65		
Color	Rectangular	Square	Round	Rectangular	Square	Round
Red	A16L-JR	A16L-AR	A16L-TR	A165L-JR	A165L-AR	A165L-TR
Yellow	A16L-JY	A16L-AY	A16L-TY	A165L-JY	A165L-AY	A165L-TY
Pure yellow	A16L-JPY	A16L-APY	A16L-TPY	A165L-JPY	A165L-APY	A165L-TPY
Green	A16L-JG	A16L-AG	A16L-TG	A165L-JG	A165L-AG	A165L-TG
White	A16L-JW	A16L-AW	A16L-TW	A165L-JW	A165L-AW	A165L-TW
Blue	A16L-JA	A16L-AA	A16L-TA	A165L-JA	A165L-AA	A165L-TA

Non-lighted (Same as Units for incandescent lamps.)

Degree of protection	IP40			Oil-resistant IP65		
	Rectangular	Square	Round	Rectangular	Square	Round
Color						
Red	A16L-JR	A16L-AR	A16L-TR	A165L-JR	A165L-AR	A165L-TR
Yellow	A16L-JY	A16L-AY	A16L-TY	A165L-JY	A165L-AY	A165L-TY
Pure yellow	A16L-JPY	A16L-APY	A16L-TPY	A165L-JPY	A165L-APY	A165L-TPY
Green	A16L-JG	A16L-AG	A16L-TG	A165L-JG	A165L-AG	A165L-TG
White	A16L-JW	A16L-AW	A16L-TW	A165L-JW	A165L-AW	A165L-TW
Blue	A16L-JA	A16L-AA	A16L-TA	A165L-JA	A165L-AA	A165L-TA
Black	A16L-JB	A16L-AB	A16L-TB	A165L-JB	A165L-AB	A165L-TB

Neon Lamps

Degree of protection	IP40			Oil-resistant IP65		
	Rectangular	Square	Round	Rectangular	Square	Round
Color						
Red	A16L-JRN	A16L-ARN	A16L-TRN	A165L-JRN	A165L-ARN	A165L-TRN
Green	A16L-JGN	A16L-AGN	A16L-TGN	A165L-JGN	A165L-AGN	A165L-TGN
White	A16L-JWN	A16L-AWN	A16L-TWN	A165L-JWN	A165L-AWN	A165L-TWN

Switches

Appearance		Classification	on		Model
A.	Lighted/non-lighted (com-	Standard load/microload	SPDT	Solder terminal	A16-1
	mon use)	(common use)	DPDT		A16-2
- M			SPDT	PCB terminal	A16-1P
			DPDT		A16-2P
			DPDT	Screw-Less Clamp	A16-2S

Switches with Reduced-voltage Lighting

Appearance		Classification					
Â.a	100 V	Standard load/microload	SPDT	Solder terminal	A16-T1-1		
		(common use)	DPDT		A16-T1-2		
The s	100 V		DPDT	Screw-less clamp	A16-T1-2S		
	200 V				A16-T2-2S		

Lamps

LED

Operating voltage	5 VDC	12 VDC	24 VDC
Red	A16-5DSR	A16-12DSR	A16-24DSR
Yellow	A16-5DSY	A16-12DSY	A16-24DSY
Green	A16-5DSG	A16-12DSG	A16-24DSG
White (See note.)	A16-5DSW	A16-12DSW	A16-24DSW
Blue	A16-5DA	A16-12DA	A16-24DA

Note: Use the white LED together with white or pure yellow Pushbuttons.

Incandescent Lamp

Operating voltage	5 VAC/VDC	12 VAC/VDC	24 VAC/VDC
Model	A16-5	A16-12	A16-24

Neon Lamp

Operating voltage	100 VAC	200 VAC
Red (See note.)	A16-1NRN	A16-2NRN
Green	A16-1NGN	A16-2NGN

Note: Use the red neon lamp with red or white Pushbuttons.

Cases

Appearance		Classification		Model
	IP40	Momentary operation	Rectangular (2-way guard)	A16-CJM
			Rectangular (3-way guard)	A16-C3JM
			Square	A16-CAM
			Round	A16-CTM
		Alternate operation	Rectangular (2-way guard)	A16-CJA
			Rectangular (3-way guard)	A16-C3JA
			Square	A16-CAA
			Round	A16-CTA
	Oil-resistant IP65	Momentary operation	Rectangular (2-way guard)	A165-CJM
			Rectangular (3-way guard)	A165-C3JM
			Square	A165-CAM
			Round	A165-CTM
		Alternate operation	Rectangular (2-way guard)	A165-CJA
			Rectangular (3-way guard)	A165-C3JA
			Square	A165-CAA
			Round	A165-CTA

Accessories (Order Separately)

Accessories

Name	Appearance	Classification	Model	Remarks
Switch Guards		For rectangular models	A16ZJ-5050	Cannot be used with the Dust Cover.
		For square and round models	A16ZA-5050	
Dust Covers		For rectangular models	A16ZJ-5060	Cannot be used with the Switch Guard.
		For square models	A16ZA-5060	
	For round models	A16ZT-5060		
Panel Plugs		For rectangular models	A16ZJ-3003	Used for covering the panel cutouts for future panel expansion.
		For square models	A16ZA-3003	future panel expansion.
	TO	For round models	A16ZT-3003	

Replacements

Name	Appearance		Classificat	tion	Model	Remarks
Legend Plates		Rectangular	IP40	Milky	A16ZJ-5204	A single Legend Plate (transparent) is
				Transparent	A16ZJ-5202	included with a standard model.
			Oil-resis-	Milky	A16ZJ-5204	The milky Legend Plate can be used with the IP40 and oil-resistant IP65.
			tant IP65	Transparent	A16ZJ-5203	- With the II 40 and on-resistant II 05.
		Square	IP40	Milky	A16ZA-5204	
				Transparent	A16ZA-5202	
			Oil-resis-	Milky	A16ZA-5204	
			tant IP65	Transparent	A16ZA-5203	
		Round	IP40	Milky	A16ZT-5204	
				Transparent	A16ZT-5202	
			Oil-resis-	Milky	A16ZT-5204	
			tant IP65	Transparent	A16ZT-5203	
Color Caps		descent lemp/pep		White	A16Z□-5001W	Insert one of the following letters into
(for IP40)				Red	A16Z□-5001R	the box (\Box) .
	Rectangular LED Inca	gea	ng.nou		A16Z□-5001Y	J: Rectangular
		LED indicator		Pure yellow	A16Z□-5001PY	A: Square T: Round
				Green	A16Z□-5001GY	The Color Cap is usually supplied. Re-
		Incandescent lamp/		Blue	A16Z□-5001A	place the Cap if the color is to be
		non-lighted		Green	A16Z□-5001G	changed.
	Square	Non-lighted		Black	A16Z□-5011B	When using an LED indicator, be sure
Color Caps		LED indicato		White	A16Z□-5101W	to use a Color Cap that matches the luminescent color of the LED.
(for oil-resistant IP65)		descent lamp	o/non-	Red	A16Z□-5101R	The materials used for the IP40 and
55)		gea		Yellow	A16Z□-5101Y	oil-resistant IP65 are different so be
	Round	LED indicato	r	Pure yellow	A16Z□-5101PY	sure to use a Color Cap that matches the specifications of the Switch.
					A16Z□-5101GY	the specifications of the Switch.
		Incandescen	t lamp/	Blue	A16Z□-5101A	1
		non-lighted		Green	A16Z□-5101G	
		Non-lighted	lon-lighted Black A16Z□-5111B			

Tools

Name	Appearance Model Applicable types			Remarks				
			Pushbutton Switch	Knob-type Selector Switch	Key-type Selector Switch	Emergency Stop Switch	Indicator	
Extractor		A3PJ-5080	Yes	No	No	No	Yes	Convenient for extracting Pushbutton Switches
Screw Fitting	Ĵ	A16Z-3004	Yes	Yes	Yes	Yes	Yes	Convenient for ganged installation. Tighten to a torque of 0.39 N · m min.
Extractor		A16Z-5080	Yes	Yes	Yes	Yes	Yes	Convenient for extracting the Switch and Lamps.

Specifications

■ Approved Standards

Agency	Standards	File No.
UL, cUL (See note.)	UL508	E41515
	EN60947-5-1	

Note: cUL: CSA, C22.2 No. 14

■ Approved Standard Ratings

UL, cUL (File No. E41515)

5 A at 125 VAC, 3 A at 250 VAC (general use) 3 A at 30 VDC (resistive)

EN60947-5-1 (Low Voltage Directive)

3 A at 250 VAC (AC12), 3 A at 30 VDC (DC12)

■ Ratings

Contacts

AC resistive load	DC resistive load
	3 A at 30 VDC
5 A at 125 VAC	

Minimum applicable load: 1 mA at 5 VDC

Rated values are obtained from tests conducted under the following conditions.

1. Load: Resistive load

2. Mounting conditions: No vibration and no shock

3. Temperature: 20±2°C

4. Operating frequency: 20 operations/min

Super-bright LED

Rated voltage	Rated current	Operating voltage	Internal limiting resistor
5 VDC	30 mA (15 mA)	5 VDC±5%	33 Ω (68 Ω)
12 VDC	15 mA	12 VDC±5%	270 Ω (560 Ω)
24 VDC	10 mA	24 VDC±5%	1600 Ω (2,000 Ω)

Note: The values in parentheses are for models with blue Pushbuttons.

Incandescent Lamp

Rated voltage	Rated current	Operating voltage
6 VAC/VDC	60 mA	5 VAC/VDC
14 VAC/VDC	40 mA	12 VAC/VDC
28 VAC/VDC	24 mA	24 VAC/VDC

■ Characteristics

Item		Pushbutton Switch		
Allowable operating frequency	Mechanical	Momentary operation: 120 operations/minute max. (See note 1.) Alternate operation: 60 operations/minute max. (See note 1.)		
	Electrical	20 operations/minute max. (See note 1.)		
Insulation resistance		100 MΩ min. (at 500 VDC)		
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min between terminals of same polarity 2,000 VAC, 50/60 Hz for 1 min between terminals of different polarity and also between each terminal and ground 1,000 VAC, 50/60 Hz for 1 min between lamp terminals (See note 2.)		
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)		
Shock resistance	Mechanical	500 m/s ²		
	Malfunction	150 m/s² max. (malfunction within 1 ms)		
Durability	Mechanical	Momentary operation: 2,000,000 operations min. Alternate operation: 200,000 operations min. (See note 1.)		
	Electrical	100,000 operations min. (See note 1.)		
Ambient temperature		Operating: -10°C to 55°C (with no icing or condensation) Storage: -25°C to 65°C (with no icing or condensation)		
Ambient humidity		Operating: 35% to 85%		
Electric shock protection class		Class II		
PTI (tracking characteristic)		175		
Degree of contamination		3 (IEC947-5-1)		
Weight		Approx. 10 g (in the case of a lighted DPDT switch with solder terminals)		

Note: 1. Set and reset constitute one operation.

2. With LED and incandescent lamp not mounted.

Screw-Less Clamp

Ite	em	Screw-Less Clamp			
Recommended wire size		0.5 mm ² twisted wire or 0.8 mm-dia. solid wire			
Usable wires and tensile	Twisted wire	0.3 mm ²	0.5 mm ²	0.75 mm ²	1.25 mm ²
strength	Solid wire	0.5 mm dia.	0.8 mm dia.	1.0 mm dia.	
	Tensile strength	10 N	20 N	30 N	40 N
Length of exposed wire		10 ±1 mm			

■ Operating Characteristics

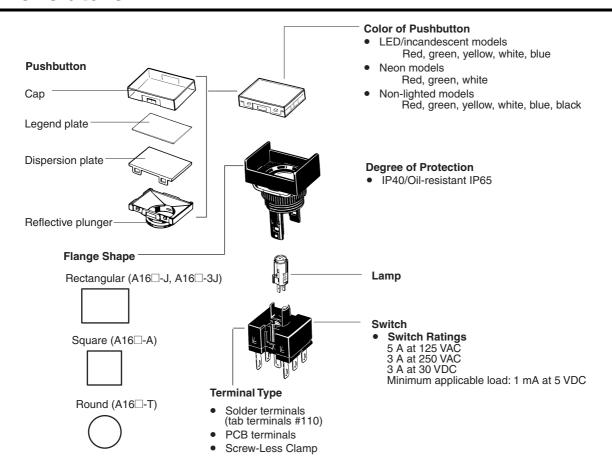
Турс	Pushbutton Switch			
		IP40		resistant IP65
Features	SPDT	DPDT	SPDT	DPDT
Operating force (OF) max.	2.45 N	4.41 N	2.94 N	4.91 N
Releasing force (RF) min.	0.29 N			·
Total travel (TT)	Approx. 3 mm			
Pretravel (PT) max.	2.5 mm			
Lock stroke (LTA) min. (See note.)	0.5 mm			

Note: Lock stroke is only for alternate operation.

■ Contact Form

Name	Contact
DPDT	COM
	NO

Nomenclature



Dimensions

Note: All units are in millimeters unless otherwise indicated.

■ Lighted/Non-lighted Pushbutton Switches without Voltage Reduction Unit

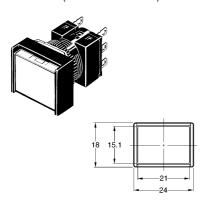
The lamp terminal is also provided with non-lighted models.

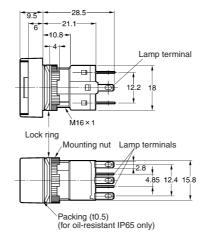
Solder terminals and tab terminals (#110) can be both used with Lighted and Non-lighted Pushbutton Switches.

Rectangular

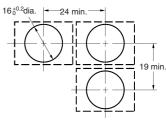
A16□-J

Solder terminals (tab terminals #110)





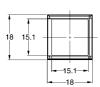


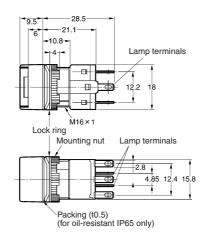


Square A16□-A

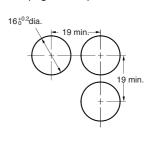
Solder terminals (tab terminals #110)





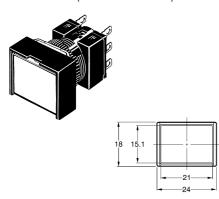


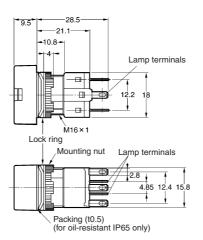
Panel Cutouts
See page 25 for panel cutouts



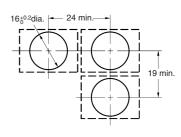
Rectangular A16□-3J

Solder terminals (tab terminals #110)





Panel Cutouts
See page 25 for panel cutouts

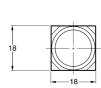


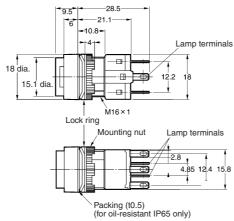
OMRON

Round A16□-T

Solder terminals (tab terminals #110)

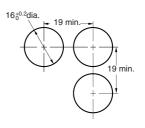




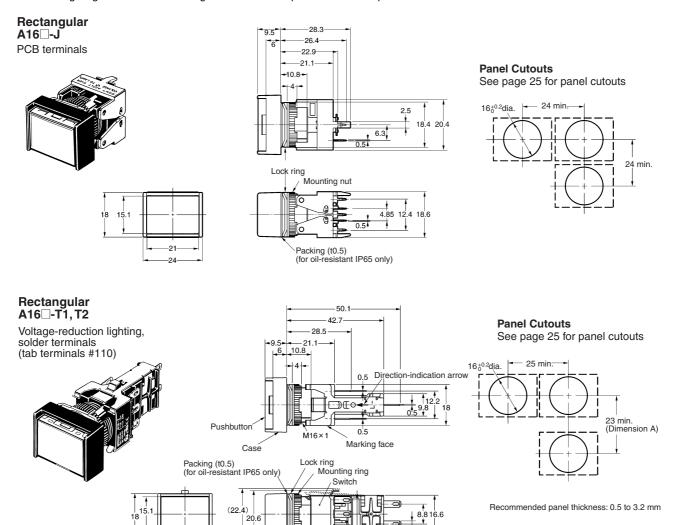


Panel Cutouts

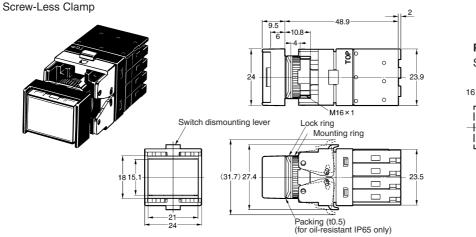
See page 25 for panel cutouts



The following diagrams show the rectangular model as a representative example.



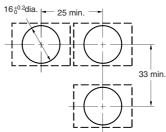




20.6

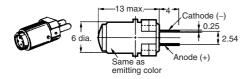
Panel Cutouts

See page 25 for panel cutouts

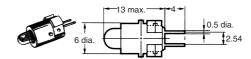


■ Lamps

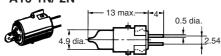
LED A16-5DS□/-12DS□/-24DS□



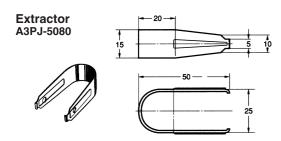
Incandescent Lamp A16-5/-12/-24

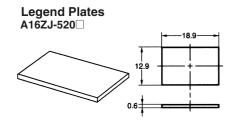


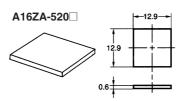
Neon Lamp A16-1N/-2N

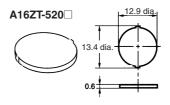


■ Accessories, Tools, and Components









Note: 1. The panel is 0.6 mm thick.

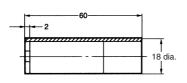
2. The panel is made of the materials listed in the following table.

Color	Degree of protection	Materials
Milky	IP40	Polyacrylate resin
	IP65	
Transparent	IP40	Polycarbonate resin
	IP65	Polyacrylate resin

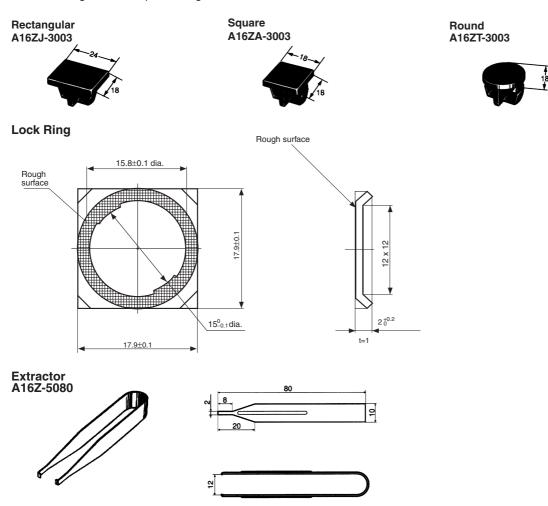
Note: The standard model is transparent.





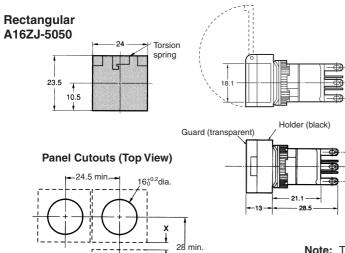


Panel Plugs (Black Resin)
Select the Plug that fits the panel design and mount from the front of the Panel. Panel cutouts are the same as those for Switches.



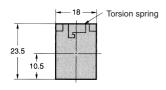
■ Dimensions with Accessories

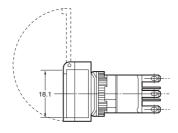
Switch Guards



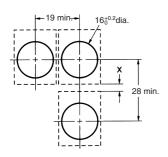
Note: The above illustration shows the case where 4.5 mm is provided for the distance "x." If no clearance is required for the "x" section, the vertical mounting dimension can be as small as 24 mm. Set this distance according to operating conditions.

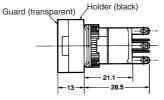
Square A16ZA-5050





Panel Cutouts (Top View)

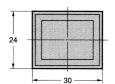


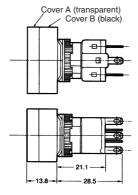


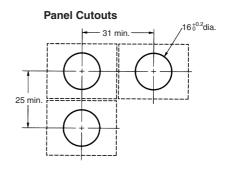
The above illustration shows the case where 4.5 mm is provided for the distance "x." If no clearance is required for the "x" section, the vertical mounting dimension can be as small as 24 mm.Set this distance according to operating conditions.For models with PCB terminals, the horizontal mounting dimension is 24 mm min.

Dust Covers

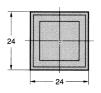
Rectangular A16ZJ-5060

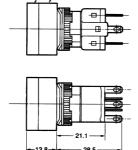




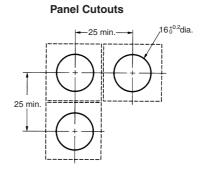


Square A16ZA-5060



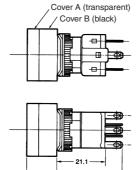


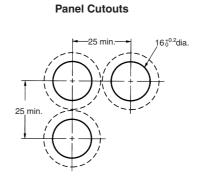
Cover A (transparent) Cover B (black)



Round A16ZT-5050





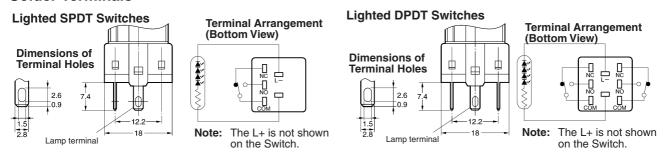


■ Terminal Arrangement

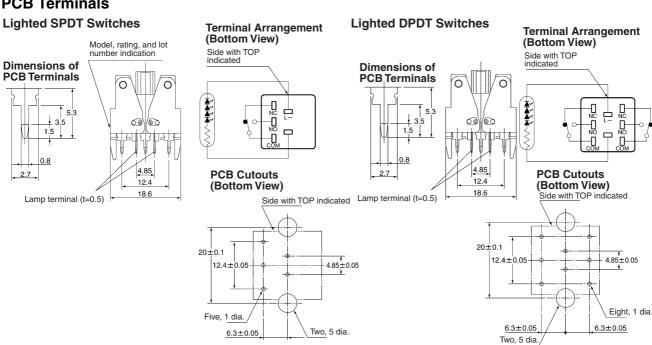
Models without Reduced-voltage Lighting

Non-lighted Pushbutton Switches are also provided with lamp terminals.

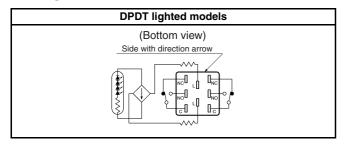
Solder Terminals



PCB Terminals

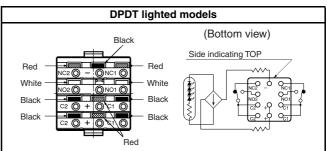


Voltage Reduction Units



• The voltage-reduction circuit is built in.

Screw-Less Clamps

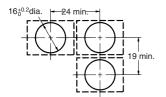


• Voltage-reduction lighting models with Screw-Less Clamps (A16L-□T1-2S, A16L-□T2-2S) incorporate voltage-reduction circuits.

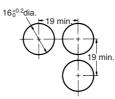
■ Panel Cutouts

Solder Terminals

Rectangular A16□-J/M16□-□J (Top View)



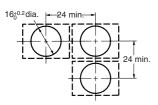
Square A16□-A/M16□-A Round A16□-T/M16□-T (Top View)



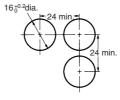
- Note: 1. Make sure the thickness of the mounting panel is between 0.5 and 3.2 mm. If, however, a Switch Guard or Dust Cover is used, the thickness of the mounting panel must be between 0.5 and 2 mm.
 - 2. If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after coating.

PCB Terminals

Rectangular A16□-J/M16□-J (Top View)



Square A16□-A/M16□-A, A165□-BA, M165-BA Round A16□-T/M16□-T (Top View)



- Note: 1. Ensure that the variation in the distance between the centers of neighboring mounting holes is less than ±0.1 mm.
 - 2. Make sure the thickness of the mounting panel is between 0.5 and 3.2 mm. If, however, a Switch Guard or Dust Cover is used, the thickness of the mounting panel must be between 0.5 and 2 mm.
 - 3. If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after coating.

Installation

■ Panel Mounting

After mounting the Pushbutton Unit (i.e., the Pushbutton and the Case) to the panel, snap in the Switch Unit (i.e., the Switch and the Lamp) from the back of the panel.

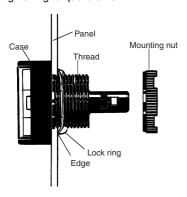
Mounting to the Panel

Insert the Pushbutton Unit into the front of the panel, and fix the lock ring and mounting nut from the terminal side.

Make sure that the lock ring is aligned with the thread of the Case and the edge of the lock ring is touching the panel.

Tighten the mounting nuts to a torque of 0.29 to 0.49 N·m.

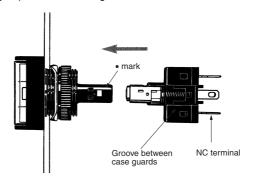
The maximum tightening torque is 0.49 N·m.



Mounting the Switch Unit

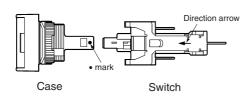
Snap on the Switch Unit to the Pushbutton Unit.

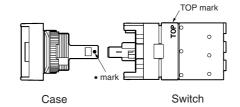
Make sure that the Switch Unit has the correct orientation when snapping it onto the Case. Align the • mark on the Case with the groove between the case guards on the NC terminal side of the Switch Unit in the way shown below, and push the Switch Unit into the Case until it clicks into place. Confirm that the Switch Unit is securely in place before using.



Mounting the Switch Unit for Voltage Reduction Types

- 1. The mounting panel thickness must be 0.5 to 3.2 mm.
- 2. The mounting ring must be tightened to a torque 0.29 to 0.49 N·m.
- The mounting hole must be cut out in the way described previously. The dimension A is the length required for removing the Switch when it is in the mounted state. If Switches are mounted side-by-side separated by less than the specified distance, it may not be possible to remove the
- 4. Be sure to mount the Case to the Switch with the correct orientation. Mount with the mark on the Case facing in the same direction as the side of the Switch with the direction arrow or the word TOP.

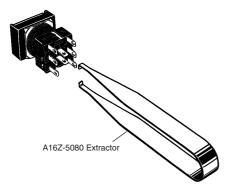




Removing the Switch Unit

Grip the part between the Switch holder of the Case and the Switch Unit using the A16Z-5080 Extractor, and pull to remove the Switch Unit.

• 16-mm Models



• A16-P Models (with PCB Terminals)

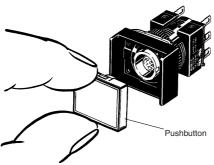


The Switch Unit can be mounted or dismounted by simply opening or closing the lever.

■ Mounting and Replacing the Pushbutton

Removing and Mounting the Pushbutton

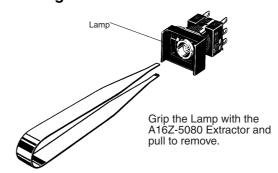
 Remove the Pushbutton as shown in the following diagram. If the Pushbutton cannot be removed by hand, use the A3PJ-5080 Extractor.



2. To attach the Pushbutton, push until it clicks into place.

Removing the Lamp

Removing from the Pushbutton End

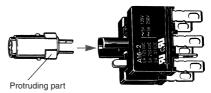


Removing from the Switch End

The Lamp can be removed by hand once the Switch is removed using the A16Z-5080 Extractor.

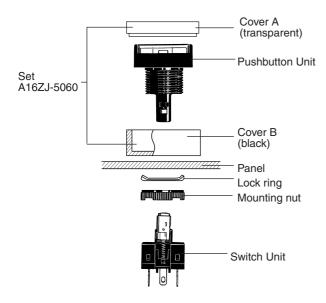
Installing the Lamp

When mounting the Lamp, make sure it is facing the direction shown in the following diagram. Insert the Lamp while matching the protruding part of the Lamp and the small guides on the outer surface of the Case.



The Lamp can be mounted from the Pushbutton end by using the A16Z-5080 Extractor. The lamp can be mounted by following the opposite procedure for removing the Lamp.

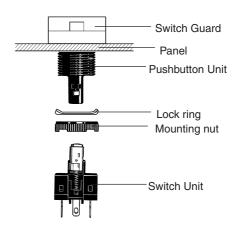
■ Mounting the A16Z Dust Cover



- 1. Separate the Dust Cover into 2 parts: cover A and cover B.
- 2. Insert the Case into cover B.
- 3. Mount these parts together onto the panel.
- 4. From the back of the panel, mount the lock ring and secure with the mounting nut.
- Insert cover A into cover B. Ensure that the entire perimeter of cover A is securely attached to cover B by pressing in different directions.
- 6. Mount the Switch Unit to the Case.

Note: Recommended panel thickness: 0.5 to 2 mm.

■ Mounting the A16Z Switch Guard



- 1. Insert the Case into the Switch Guard.
- 2. Mount these parts together onto the panel.
- 3. From the back of the panel, mount the lock ring and secure with the mounting nut.
- 4. Attach the Switch Unit to the Case.

Note: Recommended panel thickness: 0.5 to 2 mm.

Precautions

Refer to the *Technical Information for Pushbutton Switches* (Cat. No. A143).

−<u></u> WARNING

Do not apply a voltage between the incandescent lamp and the terminal that is greater than the rated voltage. If the incandescent lamp is broken, the operating part may pop out.

Always turn OFF the power and wait for 10 minutes before replacing the incandescent lamp. If the lamp is replaced immediately after the power is turned OFF, the remaining heat may cause burns.

■ Correct Use

Mounting

Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance.

Do not tighten the mounting nut more than necessary using tools such as pointed-nose pliers. Doing so will damage the mounting nut. The tightening torque is 0.29 to 0.49 N·m.

Wiring

Solder Terminal

Solder terminals and quick-connect terminals (#110) are commonly used for terminals.

Be sure to use electrical wires that are a size appropriate for the applied voltage and carry current (conductor size is 0.5 to 0.75 mm²). Perform soldering according to the conditions provided below. If the soldering is not properly performed, the lead wires will become detached, resulting in short-circuits.

- 1. Hand soldering: 30 W, within 5 s
- 2. Dip soldering: 240°C, within 3 s

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

Use non-corrosive resin fluid as the flux.

Make sure that the electric cord is wired so that it does not touch the Unit. If the electric cord touches the Unit, then electric wires with a heat resistance of 100°C min. must be used.

After wiring the Switch, maintain an appropriate clearance and creepage distance.

Screw-Less Clamps

Mounting Procedure

- Strip a length of 10 mm off the end of the wire (allowable range: 10±1 mm).
- 2. Bunch wire strands together and straighten them.
- Insert the wire into the insertion hole while pressing the release button at the side of the hole. (Using a precision screwdriver is recommended.)
- 4. Let go of the release button to lock the wire into place.
- After locking, pull on the wire gently to confirm that it is securely locked.

Removing Procedure

Remove wires by pulling them while pressing the release button.

Note: When reusing wires that have already been locked, cut off the end of the wire and strip the wire again before using.

Operating Environment

The IP65 model is designed with a degree of protection so that it will not sustain damage if it is subjected to water from any direction to the front of the panel.

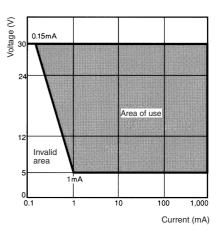
Using the Microload

Insert a contact protection circuit, if necessary, to prevent the reduction of life expectancy due to extreme wear on the contacts caused by loads where inrush current occurs when the contact is opened and closed.

The A16 allows both a standard load (125 V at 5A, 250 V at 3 A) and a microload. If a standard load is applied, however, the microload area cannot be used. If the microload area is used with a standard load, the contact surface will become rough, and the opening and closing of the contact for a microload may become unreliable.

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

The equation, λ 60 = 0.5 x 10⁻⁴/operations indicates that the estimated malfunction rate is less than 1/2,000,000 operations with a reliability level of 60%.



LED

The LED current-limiting resistor is built-in, so internal resistance is not required.

Rated voltage	Internal limiting resistor
5 VDC	33 Ω (82 Ω)
12 VDC	270 Ω (470 Ω)
24 VDC	1600 Ω (2400 Ω)

Note: The values in parentheses are for models with blue Pushbutton Units.

Others

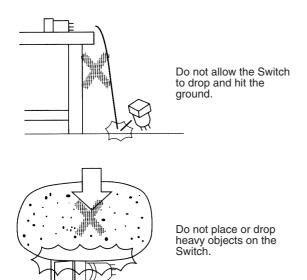
The oil-resistant IP65 uses NBR rubber and is resistant to general cutting oil and cooling oil. Some particular oils cannot be used with the oil-resistant IP65, however, so contact your OMRON representative for details.

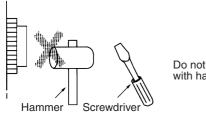
If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after the coating.

Do not subject the Switch to extreme shock or vibration. Doing so will cause malfunctions and damage to the Switch.

Do not let sharp objects come into contact with the Switches that are made of resin. Doing so will damage the Switches, causing scratches on the outside of the operating parts, and malfunction.

When handling the Switches, do not throw or drop them.





Do not operate the Switch with hard or sharp objects.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

Cat. No. A124-E1-02

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

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