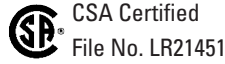


A8 Series — Miniature Switches and Pilot Devices: 8mm

Key features of the 21/64" (8mm) A8 series Switches and Pilot Devices include:

- 21/64" (8mm) round mounting hole
- Compact Design Saves Space
- Bright and Vivid Illumination
- Choice of Shapes and Functions
- Gold Clad Silver Contacts for reliable low level switching
- Snap action contacts
- IP40 (Dustproof) Construction



A5

Switches & Pilot Devices




Specifications	LED Lamp Life	50,000 hours approximately (reduced to half of original intensity)			
	Contact Configuration	SPDT			
	Maximum Voltage	250V AC/DC			
	Thermal Current	3A			
	Contact Material	Gold-clad Silver			
	Terminal Style	Solder Tab Terminal			
	Operating Temperature	-25° to +55°C (no freezing)			
	Operating Humidity	45 to 85% RH			
	Contact Resistance	50mΩ maximum (initial value)			
	Insulation Resistance	100MΩ minimum (500V DC megger)			
	Vibration Resistance	5 to 55Hz, 0.75mm amplitude			
	Shock Resistance	Damage limits: 500m/sec ² (approx. 50G) Operating extremes: 200m/sec ² (approx. 20G)			
	Electrical Life	100,000 operations minimum			
	Mechanical Life	Maintained: 100,000 (1200 operations/hour) Momentary: 200,000 minimum			
Contact Ratings	Degree of Protection	IP40 Enclosed/Dustproof			
	Soldering Temperature	20W/5 seconds or 260°C/3 seconds			
	Dielectric Strength	Switch Unit: 2,000V AC, 1 min. between live/dead part and terminals of different poles; 1,000V AC, 1 minute between terminals of the same pole; 1,500V AC, 1 minute between contact and lamp terminals. Illumination Unit: 2,000V AC, 1 min. between live part/ground			
	Operating Voltage	24V	120V	240V	
	AC 50/60Hz	Resistive	—	1.0A	0.5A
Inductive		—	0.7A	0.5A	
DC		Resistive	1.0A	0.2A	—
		Inductive	0.7A	0.1A	—



1. AC Inductive Load, PF = 0.6 – 0.7; DC Inductive Load, L/R = 7.
2. Minimum applicable load (reference value) is 5V AC/DC 3mA (applicable range is subject to the operating conditions and load).

AB8 Non-Illuminated Pushbuttons (Assembled)

Part Numbers: Non-Illuminated Pushbuttons

Style	Contact	Part Numbers	
		Momentary	Maintained
Round 	SPDT	AB8M-M1-①	AB8M-A1-①
Square 	SPDT	AB8Q-M1-①	AB8Q-A1-①
Rectangular 	SPDT	AB8H-M1-①	AB8H-A1-①

A5

Switches & Pilot Devices






1. In place of ①, specify button color code from the table below.
2. For accessories, see page A5-208.
3. For dimensions, see page A5-209.

① Button Color Code

Color	Code
Black	B
Green	G
Red	R
Blue	S
White	W
Yellow	Y

AL8 Illuminated Pushbuttons and Pilot Lights (Assembled)

Part Numbers: LED Illuminated Pushbuttons and Pilot Lights

Style	Contact	Pushbutton Part Number		Pilot Light Part Number
		Momentary	Maintained	
 Round	SPDT	AL8M-M11-②	AL8M-A11-②	AL8M-P1-②
 Square	SPDT	AL8Q-M11-②	AL8Q-A11-②	AL8Q-P1-②
 Rectangular	SPDT	AL8H-M11-②	AL8H-A11-②	AL8H-P1-②

② Lens/LED Color Code

Color	Code
Amber	A
Green	G
Red	R
White	W
Yellow	Y



- In place of ②, specify lens color code from table on the right.
- A replaceable LED lamp is included with the operator.
- Because the LED lamp does not contain an internal current limiting resistor, an external resistor must be added. For recommended values, see table below.
- For accessories, see page A5-208.
- For dimensions, see page A5-209.

Part Numbers: Replacement LEDs

Lens Color	LED Lamp	Part Number
Amber	Amber	LAD-SA
Green	Green	LAD-SG
Red	Red	LAD-SR
White	Yellow*	LAD-SY
Yellow	Yellow	LAD-SY



* White units use a white lens and a yellow LED.

LED Voltage and Recommended Current Limiting Resistor

Voltage	External Resistor
5V DC	150Ω, 1/2W
6V DC	200Ω, 1/2W
12V DC	510Ω, 1W
24V DC	1.1kΩ, 1W

LED Lamp Ratings

LED Specifications	LED Lamp	Forward Current I _f	Forward Voltage (Nominal) V _f	Reverse Voltage V _r	Operating Voltage & External Current Limiting Resistor (Recommended Value)
	Amber	20mA	2.2V	4V	5V DC: 150Ω, 1/2w
	Green	20mA	2.1V	4V	6V DC: 200Ω, 1/2w
	Red	20mA	1.7V	4V	12V DC: 510Ω, 3/4w
	Yellow	20mA	2.2V	4V	24V DC: 1.1kΩ, 3/4w



When LED lamps are used at voltages other than those stated above, external resistor value, R, is determined by the following formula:

$$R = (\text{Operating Voltage} - V_f) / I_f$$

Accessories — A8 Series: 21/64" (8mm)

A5
Switches & Pilot Devices

Appearance	Description	Used With	Part Number	
 Locking Ring Wrench	Made of metal. Used for tightening plastic locking ring during installation. Tightening torque should not exceed 3kgf-cm	All units	MT-004	
 Lens Removal Tool	Made of metal. Used for removing lens or button from the housing	Illuminated pushbuttons and pilot lights	MT-101	
 Lamp Holder Tool	Made of rubber. Used for removing and replacing LED lamps in illuminated units	Illuminated pushbuttons and pilot lights	OR-66	
 Switch Guard	Used to avoid operating the pushbutton inadvertently. Cover flips open 90°. Provides IP40 protection	Round & square units	AL-K8	
		Rectangular units	AL-KH8	
 Terminal Cover	Made of translucent nylon. Fits over and shields the terminals	All units	AL-V8	
 Adaptor Socket	Plug-on adaptor with solder terminals, allows easy control unit replacement.	All units	AL-C8	
	Plug-on adaptor with PCB terminals, allows easy control unit replacement.		AL-C8V	
 Mounting Hole Plug	Made of rubber. Fills unused mounting holes to provide IP65 protection	Extra panel cutouts	AL-B8	
 Replacements LEDs	LED lamp is included in every illuminated control unit. Replacement lamp is ordered separately. External current limiting resistor required.	Illuminated units and pilot lights	LAD-SR (red)	
			LAD-SG (green)	
			LAD-SA (amber)	
			LAD-SY (yellow)	
 Replacement Engraving Inserts		Illuminated pushbuttons & pilot lights	Round	AL8M-W
			Square	AL8Q-W
			Rectangular	AL8H-W
 Replacement Lenses		Illuminated pushbuttons & pilot lights	Round	AL8M-LK1-②
			Square	AL8Q-LK1-②
			Rectangular	AL8H-LK1-②
 Replacement Buttons		Non-Illuminated buttons	Round	AB8M-BK1-①
			Square	AB8Q-BK1-①
			Rectangular	AB8H-BK1-①



- In place of ①, specify Button Color Code from the table on the right.
- In place of ②, specify Lens/LED Color Code from table on the right.

① **Button Color Code**

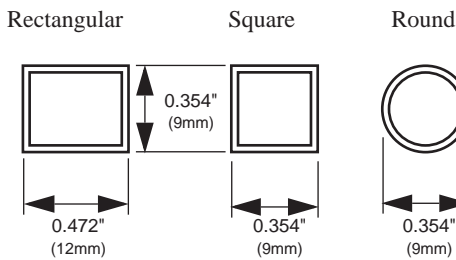
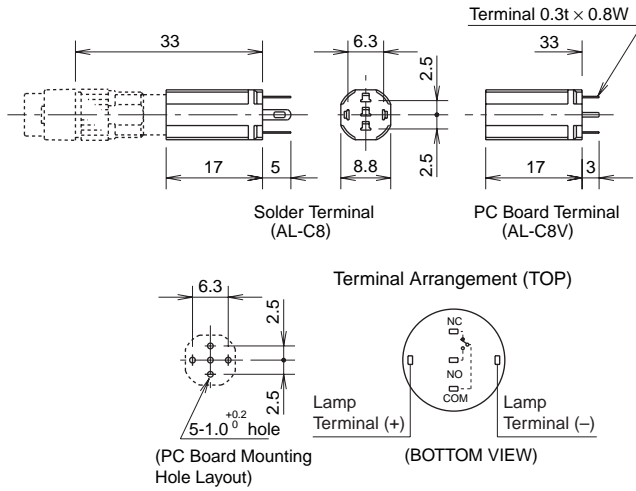
Color	Code	Color	Code
Black	B	Blue	S
Green	G	White	W
Red	R	Yellow	Y

② **Lens/LED Color Code**

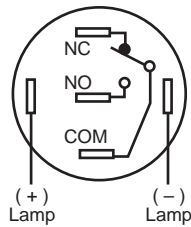
Color	Code
Amber	A
Green	G
Red	R
White	W
Yellow	Y

Dimensions — A8 Series: 21/64" (8mm)

AΔ8 Pushbuttons

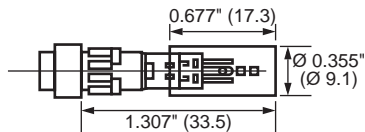


Terminal Arrangement (Bottom View)



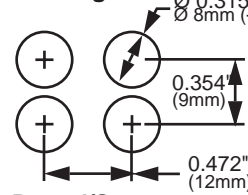
Terminal Cover

AL-V8, ø 21/64" (8mm)

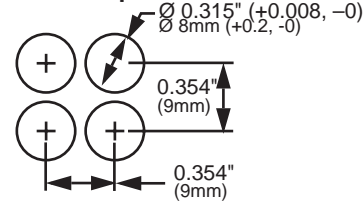


Panel Cut-Out (not drawn to scale)

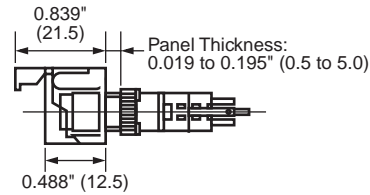
Rectangular



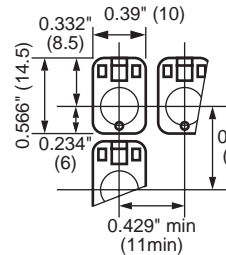
Round/Square



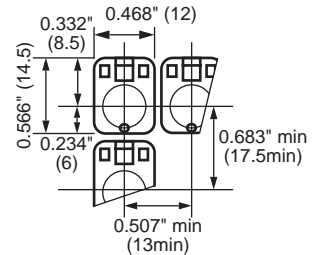
Switch Guard, ø 21/64" (8mm)



AL-K8, ø 21/64" (8mm) Round and Square

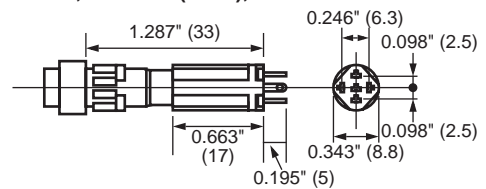


AL-KH8, ø 21/64" (8mm) Rectangular

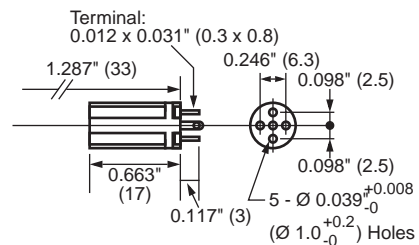


Terminal Sockets

AL-C8, ø 21/64" (8mm), Solder



AL-C8V, ø 21/64" (8mm), PCB



PC Board Drilling Layout Bottom View