

## A8 Series — Miniature Switches and Pilot Devices: 8mm

**Key features:**

- 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


**Specifications**

<b>LED Lamp Life</b>	50,000 hours approximately (reduced to half of original intensity)
<b>Contact Configuration</b>	SPDT
<b>Maximum Voltage</b>	250V AC/DC
<b>Thermal Current</b>	3A
<b>Contact Material</b>	Gold-clad Silver
<b>Terminal Style</b>	Solder Tab Terminal
<b>Operating Temperature</b>	-25° to +55°C (no freezing)
<b>Operating Humidity</b>	45 to 85% RH
<b>Contact Resistance</b>	50mΩ maximum (initial value)
<b>Insulation Resistance</b>	100MΩ minimum (500V DC megger)
<b>Vibration Resistance</b>	5 to 55Hz, 0.75mm amplitude
<b>Shock Resistance</b>	Damage limits: 500m/sec <sup>2</sup> (approx. 50G) Operating extremes: 200m/sec <sup>2</sup> (approx. 20G)
<b>Electrical Life</b>	100,000 operations minimum
<b>Mechanical Life</b>	Maintained: 100,000 (1200 operations/hour) Momentary: 200,000 minimum
<b>Degree of Protection</b>	IP40 Enclosed/Dustproof
<b>Soldering Temperature</b>	20W/5 seconds or 260°C/3 seconds
<b>Dielectric Strength</b>	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

**Contact Ratings**

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).

Switches &amp; Pilot Lights

Display Lights

Relays &amp; Sockets

Timers

Terminal Blocks

Circuit Breakers

AB8 Non-Illuminated Pushbuttons (Assembled)

Non-Illuminated Pushbuttons

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

- 1. In place of Ⓢ, specify button color code from the table below.
- 2. For accessories, see page 449.
- 3. For dimensions, see page 450.

Ⓢ Button Color Codes

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

## AL8 Illuminated Pushbuttons &amp; Pilot Lights (Assembled)

## Illuminated Pushbuttons

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

## Ⓞ LED/Lens Color Codes

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

- In place of Ⓞ, 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 449.
- For dimensions, see page 450.

## 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, 3/4W
24V DC	1.1kΩ, 3/4W

## 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 6V DC: 200Ω, 1/2w 12V DC: 510Ω, 3/4w 24V DC: 1.1kΩ, 3/4w
Green	20mA	2.1V	4V	
Red	20mA	1.7V	4V	
Yellow	20mA	2.2V	4V	

When LED lamps are used at voltages other than those stated above, external resistor value, R, is determined by the following formula:  $R = (\text{Operating Voltage} - V_f) / I_f$

Switches &amp; Pilot Lights

Display Lights

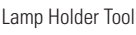



Relays &amp; Sockets

Timers

Terminal Blocks

Circuit Breakers

Accessories

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 <small>AL-C8      AL-C8V shown attached</small>	Plug-on adaptor with solder terminals, allows easy control unit replacement. Plug-on adaptor with PCB terminals, allows easy control unit replacement.	All units	AL-C8
			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 and pilot lights	Round	AL8M-W
		Square	AL8Q-W
		Rectangular	AL8H-W
 Replacement Lenses	Illuminated pushbuttons and 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

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

① Button Color Codes

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

② LED/Lens Color Codes

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

Switches & Pilot Lights

Display Lights

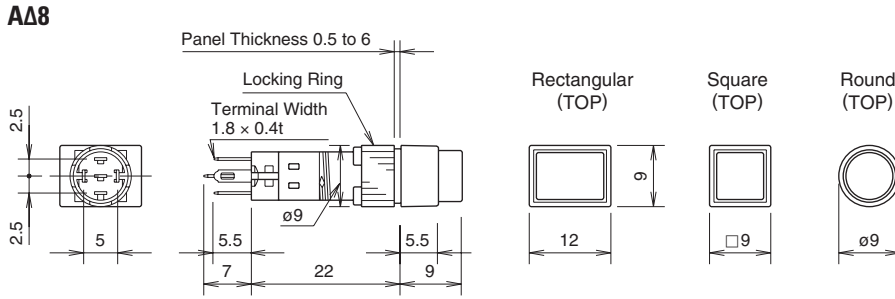
Relays & Sockets

Timers

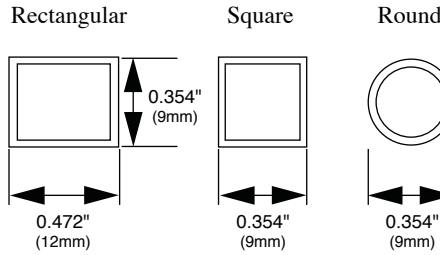
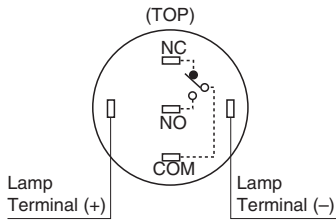
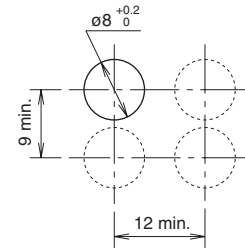
Terminal Blocks

Circuit Breakers

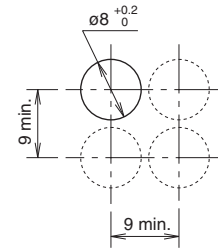
**Dimensions**



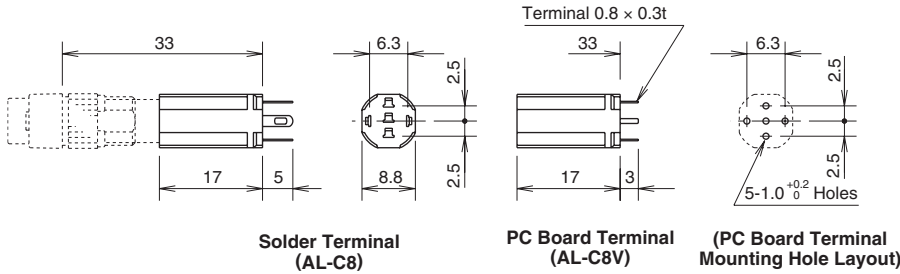
**Panel Cut-Out (not drawn to scale)**  
**Rectangular**



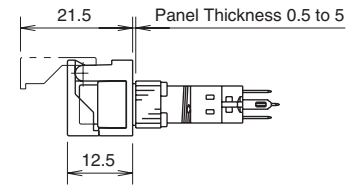
**Round/Square**



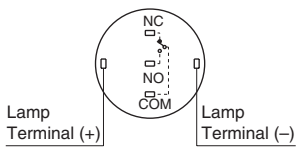
**Terminal Sockets**



**Switch Guard, Ø 21/64" (8mm)**

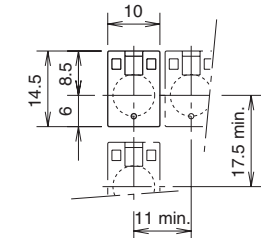


**Terminal Arrangement (TOP)**

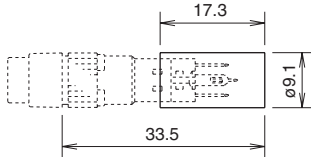


**(Bottom View)**

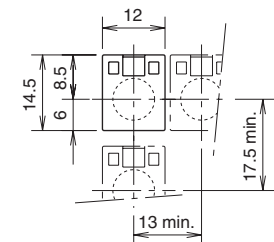
**For Round/Square Units (AL-K8)**



**Terminal Cover AL-V8, Ø 21/64" (8mm)**



**For Rectangular Units (AL-KH8)**



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