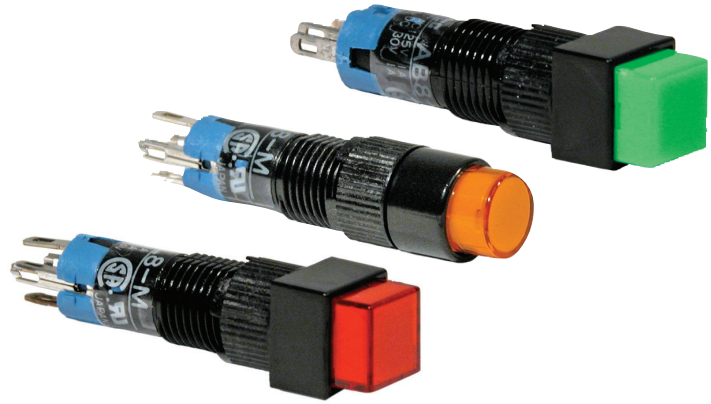


**A8 Series — Miniature Switches and Pilot Devices: 8mm**

**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**

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 <sup>2</sup> (approx. 50G) Operating extremes: 200m/sec <sup>2</sup> (approx. 20G)
Electrical Life	100,000 operations minimum
Mechanical Life	Maintained: 100,000 (1200 operations/hour) Momentary: 200,000 minimum
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

**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 & Pilot Devices

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

AB8 Non-Illuminated Pushbuttons (Assembled)

Non-Illuminated Pushbuttons

Style	Contact	Part Numbers	
		Momentary	Maintained
Round	SPDT	AB8M-M1-⓪	AB8M-A1-⓪
Square	SPDT	AB8Q-M1-⓪	AB8Q-A1-⓪
Rectangular	SPDT	AB8H-M1-⓪	AB8H-A1-⓪

⓪ Button Color Codes

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

- 1. In place of ⓪, specify button color code from the table below.
- 2. For accessories, see page 493.
- 3. For dimensions, see page 494.

AL8 Illuminated Pushbuttons & Pilot Lights (Assembled)

Illuminated Pushbuttons

Style	Contact	Part Numbers		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 LED/Lens Color Codes

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 493.
- For dimensions, see page 494.

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 6V DC: 200Ω, 1/2W 12V DC: 510Ω, 1W 24V DC: 1.1kΩ, 1W
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:  $R = (Operating\ Voltage - V_f) / I_f$

Accessories

Item	Description	Used With	Part Number
 <p>Locking Ring Wrench</p>	Made of metal. Used for tightening plastic locking ring during installation. Tightening torque should not exceed 3kgf-cm	All units	MT-004
 <p>Lens Removal Tool</p>	Made of metal. Used for removing lens or button from the housing	Illuminated pushbuttons and pilot lights	MT-101
 <p>Lamp Holder Tool</p>	Made of rubber. Used for removing and replacing LED lamps in illuminated units	Illuminated pushbuttons and pilot lights	OR-66
 <p>Switch Guard</p>	Used to avoid operating the pushbutton inadvertently. Cover flips open 90°. Provides IP40 protection	Round & square units	AL-K8
		Rectangular units	AL-KH8
 <p>Terminal Cover</p>	Made of translucent nylon. Fits over and shields the terminals	All units	AL-V8
 <p>Adaptor Socket</p> <p>AL-C8 AL-C8V shown attached</p>	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
 <p>Mounting Hole Plug</p>	Made of rubber. Fills unused mounting holes to provide IP65 protection	Extra panel cutouts	AL-B8
 <p>Replacements LEDs</p>	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)
 <p>Replacement Lenses</p>		Illuminated pushbuttons and pilot lights	Round AL8M-LK1-②
			Square AL8Q-LK1-②
			Rectangular AL8H-LK1-②
 <p>Replacement Buttons</p>		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

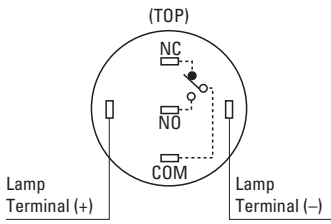
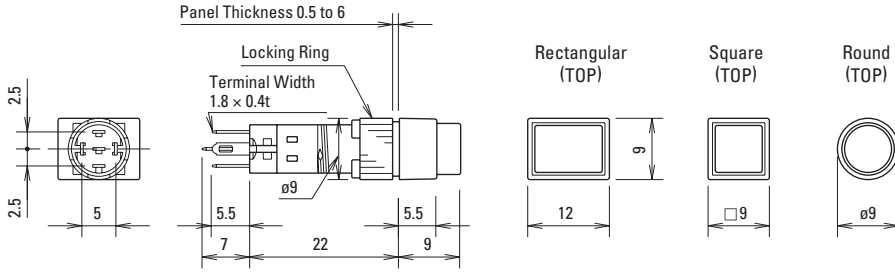
Color	Code
Black	B
Green	G
Red	R
Blue	S
White	W
Yellow	Y

② LED/Lens Color Codes

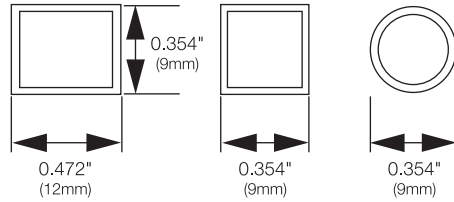
Color	Code
Amber	A
Green	G
Red	R
White	W
Yellow	Y

Dimensions

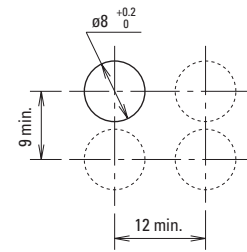
AΔ8



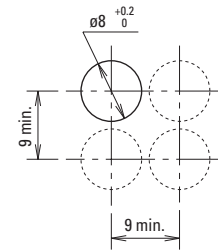
Rectangular Square Round



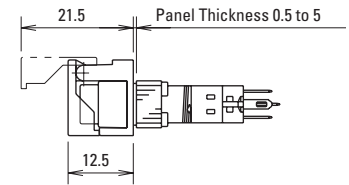
Panel Cut-Out (not drawn to scale)  
Rectangular



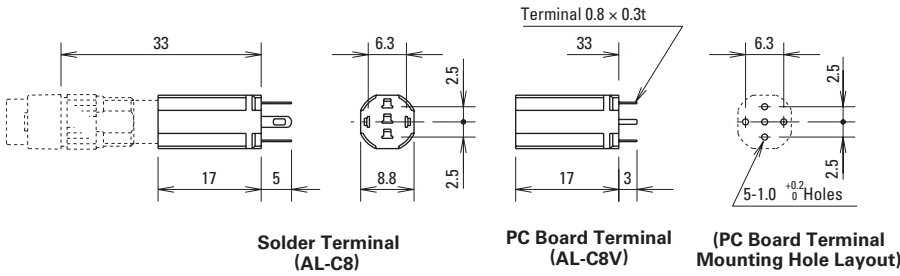
Round/Square



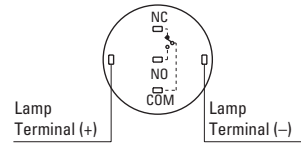
Switch Guard, Ø 21/64" (8mm)



Terminal Sockets



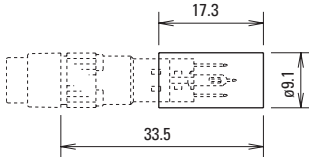
Terminal Arrangement (TOP)



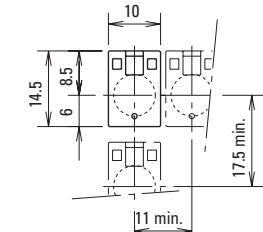
(Bottom View)

Terminal Cover

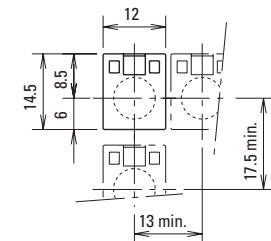
AL-V8, Ø 21/64" (8mm)



For Round/Square Units (AL-K8)



For Rectangular Units (AL-KH8)



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[AL8Q-M11-G](#) [AL8M-P1-G](#) [AB8M-M1-B](#) [AB8M-A1-A](#) [AB8M-M1-LA](#) [AB8H-A1-Y](#) [AB8H-M1-B](#) [AB8M-A1-Y](#) [AB8M-M1-G](#) [AB8Q-A1-W](#) [AB8M-A1-B](#) [AB8M-M1-R](#) [AB8M-M1-W](#) [AB8M-M1-Y](#) [AB8H-M1-R](#) [AB8M-A1-S](#) [AB8H-A1-G](#) [AB8H-M1-W](#) [AB8H-M1-Y](#) [AB8Q-M1-B](#) [AB8Q-M1-G](#) [AB8Q-M1-R](#) [AB8Q-M1-S](#) [AB8Q-M1-W](#) [AB8Q-A1-Y](#) [AB8M-M1-S](#) [AB8H-A1-W](#) [AB8H-M1-S](#) [AB8M-A1-R](#) [AB8Q-A1-G](#) [AB8Q-A1-S](#) [AB8H-A1-S](#) [AB8Q-A1-B](#) [AB8Q-A1-R](#) [AB8H-M1-G](#) [AB8M-A1-W](#) [AB8Q-M1-Y](#) [AL8M-A11-A](#) [AL8M-M11-A](#) [AL8Q-A11-R](#) [AL8Q-M11-R](#) [AL8Q-P1-W](#) [AL8H-LK1-R](#) [AL8M-P1-Y](#) [AL8Q-A11-A](#) [AL8Q-M11-W](#) [AL8Q-M11-Y](#) [AL8Q-P1-A](#) [AL8H-M11-W](#) [AL8M-A11-R](#) [AL8H-LK1-W](#) [AL8H-M11-A](#) [AL8M-A11-W](#) [AL8M-A11-Y](#) [AL8M-LK1-G](#) [AL8H-M11-R](#) [AL8H-P1-Y](#) [AL8Q-A11-G](#) [AL8M-P1-W](#) [AL8H-P1-G](#) [AL8H-A11-Y](#) [AL8H-M11-G](#) [AL8Q-A11-Y](#) [AL8Q-M11-A](#) [AL8Q-P1-G](#) [AL8H-P1-R](#) [AL8M-M11-R](#) [AL8M-M11-W](#) [AL8M-M11-Y](#) [AL8H-A11-A](#) [AL8H-A11-G](#) [AL8H-A11-R](#) [AL8H-P1-A](#) [AL8H-P1-W](#) [AL8M-M11-G](#) [AL8M-P1-R](#) [AL8Q-A11-W](#) [AL8H-A11-W](#) [AL8H-M11-Y](#) [AL8M-A11-G](#) [AL8Q-P1-R](#) [AL8Q-P1-Y](#) [AL8M-P1-A](#) [AB8H-A1-B](#) [AB8H-A1-R](#) [AB8M-A1-G](#)