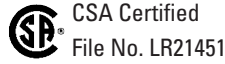## A8 Series — Miniature Switches and Pilot Devices: 8mm

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**

UL UL Recognized
® File No. E55996

CSA CSA Certified
File No. LR21451

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
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).*

A5

Switches & Pilot Devices

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

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

1. In place of ②, specify lens color code from table on the right.
2. A replaceable LED lamp is included with the operator.
3. Because the LED lamp does not contain an internal current limiting resistor, an external resistor must be added. For recommended values, see table below.
4. For accessories, see page A5-208.
5. 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 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:
$R = (Operating\ Voltage - V_f) / I_f$

Miniature Switches & Pilot Devices **IDEC**

Switches & Pilot Devices

Accessories — A8 Series: 21/64" (8mm)				

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

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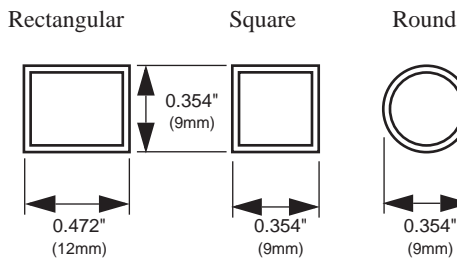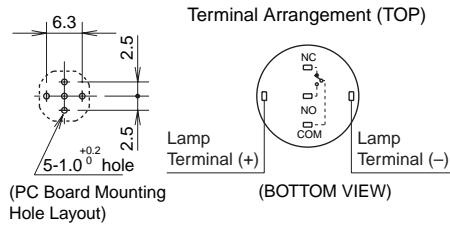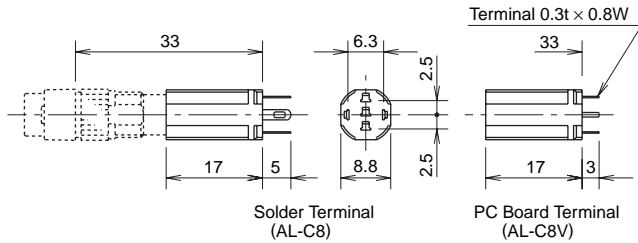2. In place of ②, specify Lens Color Code from table on the right.

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)

A△8 Pushbuttons

A5

Switches & Pilot Devices

33

6.3

Terminal 0.3t × 0.8W

33

2.5

17   5

8.8

2.5

17   3

Solder Terminal
(AL-C8)

PC Board Terminal
(AL-C8V)

6.3

2.5

Terminal Arrangement (TOP)

2.5

5-1.0 $^{+0.2}_{0}$ hole

(PC Board Mounting
Hole Layout)

NC
NO
COM

Lamp
Terminal (+)

Lamp
Terminal (−)

(BOTTOM VIEW)

Rectangular   Square   Round

0.354"
(9mm)

0.472"
(12mm)

0.354"
(9mm)

0.354"
(9mm)

**Terminal
Arrangement**
(Bottom View)

NC
NO
COM

(+)
Lamp

(−)
Lamp

Panel Cut-Out (not drawn to scale)
Rectangular

Ø 0.315" (+0.008, −0)
Ø 8mm (+0.2, -0)

0.354"
(9mm)

0.472"
(12mm)
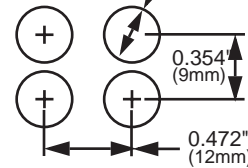
Round/Square

Ø 0.315" (+0.008, −0)
Ø 8mm (+0.2, -0)

0.354"
(9mm)

0.354"
(9mm)

Switch Guard, Ø 21/64" (8mm)

0.839"
(21.5)

Panel Thickness:
0.019 to 0.195" (0.5 to 5.0)

0.488" (12.5)
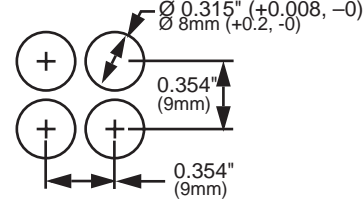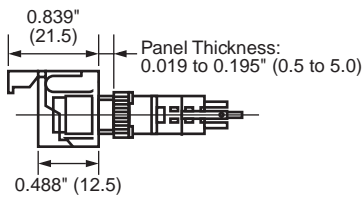
**AL-K8, Ø 21/64" (8mm)
Round and Square**

0.332"
(8.5)

0.39" (10)

0.566" (14.5)

0.234"
(6)

0.683" min
(17.5min)

0.429" min
(11min)
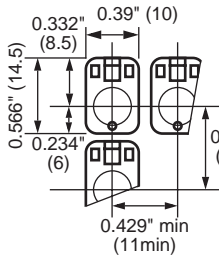
**AL-KH8, Ø 21/64" (8mm)
Rectangular**

0.332"
(8.5)

0.468" (12)

0.566" (14.5)

0.234"
(6)

0.683" min
(17.5min)

0.507" min
(13min)
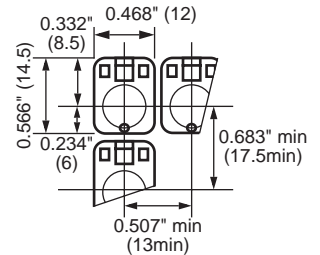
Terminal Sockets

AL-C8, Ø 21/64" (8mm), Solder

1.287" (33)

0.246" (6.3)

0.098" (2.5)

0.663"
(17)

0.343" (8.8)

0.098" (2.5)

0.195" (5)

AL-C8V, Ø 21/64" (8mm), PCB

Terminal:
0.012 x 0.031" (0.3 x 0.8)

1.287" (33)

0.246" (6.3)

0.098" (2.5)

0.663"
(17)

0.098" (2.5)

0.117" (3)

5 - Ø 0.039 $^{+0.008}_{-0}$
(Ø 1.0 $^{+0.2}_{-0}$) Holes
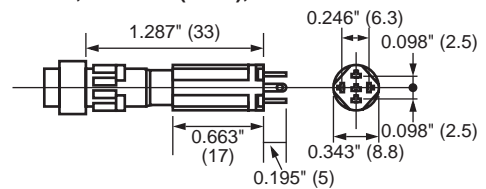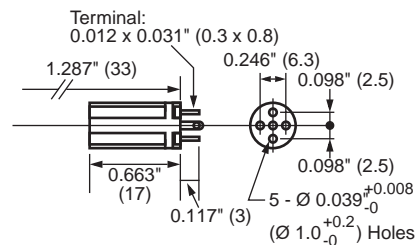
PC Board Drilling Layout
Bottom View

Terminal Cover

AL-V8, Ø 21/64" (8mm)

0.677" (17.3)

Ø 0.355"
(Ø 9.1)

1.307" (33.5)