

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 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).

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> | 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 |
|  <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

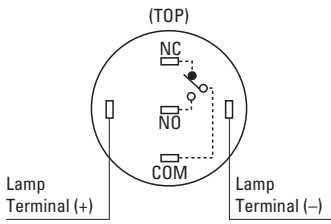
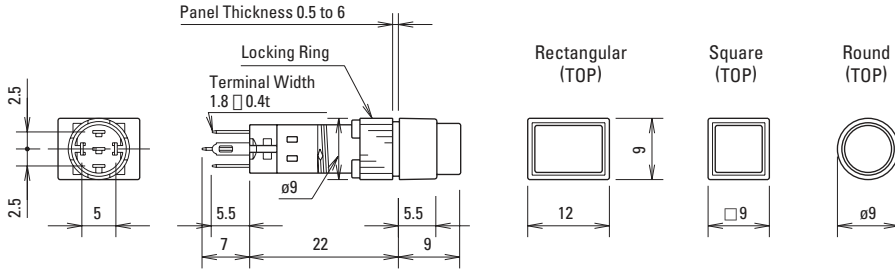
| Color | Code |
|--------|------|
| Black | B |
| Green | G |
| Red | R |
| Blue | S |
| White | W |
| Yellow | Y |

② LED/Lens Color Codes

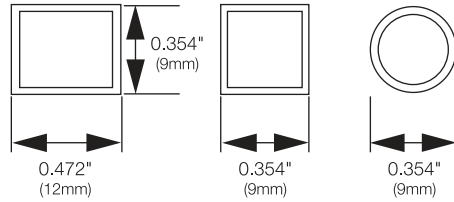
| Color | Code |
|--------|------|
| Amber | A |
| Green | G |
| Red | R |
| White | W |
| Yellow | Y |

Dimensions

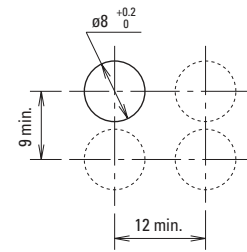
AΔ8



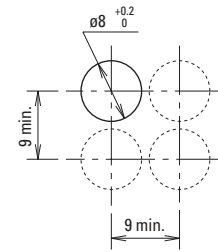
Rectangular Square Round



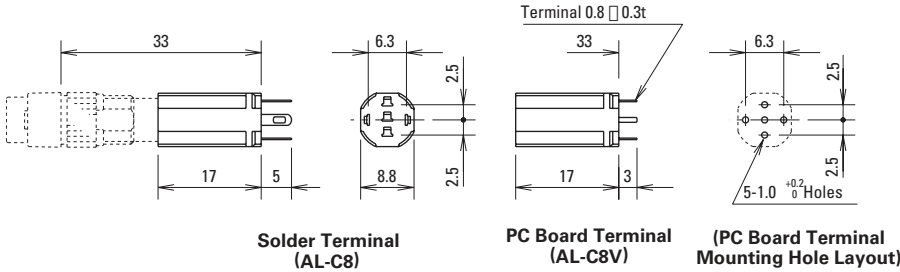
Panel Cut-Out (not drawn to scale)
Rectangular



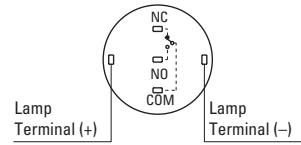
Round/Square



Terminal Sockets



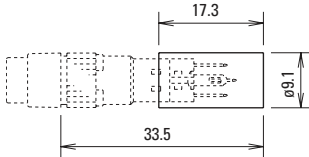
Terminal Arrangement (TOP)



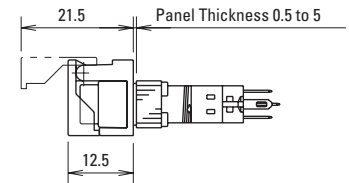
(Bottom View)

Terminal Cover

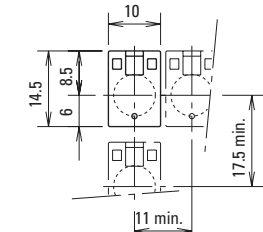
AL-V8, Ø 21/64" (8mm)



Switch Guard, Ø 21/64" (8mm)



For Round/Square Units (AL-K8)



For Rectangular Units (AL-KH8)

