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# LD6A LED SignaLight Towers

## Unique Striped Design Improves Visibility

Key features of the LD6A LED SignaLight Towers include:

- The striped design with non-illuminated area between the lenses makes the illuminated color very visible.
- Unique oval lens shape provides high-visibility from different directions.
- Five different mounting styles available: frame mount, wall mount, direct mount and pole mount (round or L-shaped bracket).
- Clear lens models available to clearly distinguish between illuminated and non-illuminated lenses.
- Custom configuration is possible.
- Flashing cycle: 1.75Hz (approx. 105 flashes per minute) conforms to international standard IEC 60073.
- Alarm (3.3kHz, 2 different styles) can be heard in 360° degrees. Adjustable volume (70 to 90dB).
- Degree of protection: IP65 Steady units and IP54 Flashing units (using frame, wall, direct and pole mount with round base), IP23 Steady and Flashing units using pole mount with L-shaped bracket.

## Assembled Products

| Mounting Style | Tiers | LED Color Code | Steady | | Steady/Flashing/Alarm | |
|---|---|---|---|---|---|---|
| | | | Part Number | Weight (approx.) | Part Number | Weight (approx.) |
| G: Frame Mount | 1 | R, Y, S, G, W | LD6A-1GQ*-□ | 220g | LD6A-1GZQ*-□ | 310g |
| | 2 | RY, RG | LD6A-2GQ*-□□ | 260g | LD6A-2GZQ*-□□ | 350g |
| | 3 | RYS, RYG | LD6A-3GQ*-□□□ | 300g | LD6A-3GZQ*-□□□ | 390g |
| | 4 | RYSG | LD6A-4GQ*-□□□□ | 340g | LD6A-4GZQ*-□□□□ | 430g |
| | 5 | RYSGW | LD6A-5GQ*-□□□□□ | 380g | LD6A-5GZQ*-□□□□□ | 470g |
| W: Wall Mount | 1 | R, Y, S, G, W | LD6A-1WQ*-□ | 225g | LD6A-1WZQ*-□ | 315g |
| | 2 | RY, RG | LD6A-2WQ*-□□ | 265g | LD6A-2WZQ*-□□ | 355g |
| | 3 | RYS, RYG | LD6A-3WQ*-□□□ | 305g | LD6A-3WZQ*-□□□ | 395g |
| | 4 | RYSG | LD6A-4WQ*-□□□□ | 345g | LD6A-4WZQ*-□□□□ | 435g |
| | 5 | RYSGW | LD6A-5WQ*-□□□□□ | 385g | LD6A-5WZQ*-□□□□□ | 475g |
| D: Direct Mount | 1 | R, Y, S, G, W | LD6A-1DQ*-□ | 185g | LD6A-1DZQ*-□ | 275g |
| | 2 | RY, RG | LD6A-2DQ*-□□ | 225g | LD6A-2DZQ*-□□ | 315g |
| | 3 | RYS, RYG | LD6A-3DQ*-□□□ | 265g | LD6A-3DZQ*-□□□ | 355g |
| | 4 | RYSG | LD6A-4DQ*-□□□□ | 305g | LD6A-4DZQ*-□□□□ | 395g |
| | 5 | RYSGW | LD6A-5DQ*-□□□□□ | 345g | LD6A-5DZQ*-□□□□□ | 435g |
| P: Pole Mount (with base) | 1 | R, Y, S, G, W | LD6A-1PQ*-□ | 645g | LD6A-1PZQ*-□ | 735g |
| | 2 | RY, RG | LD6A-2PQ*-□□ | 685g | LD6A-2PZQ*-□□ | 775g |
| | 3 | RYS, RYG | LD6A-3PQ*-□□□ | 725g | LD6A-3PZQ*-□□□ | 815g |
| | 4 | RYSG | LD6A-4PQ*-□□□□ | 765g | LD6A-4PZQ*-□□□□ | 855g |
| | 5 | RYSGW | LD6A-5PQ*-□□□□□ | 805g | LD6A-5PZQ*-□□□□□ | 895g |
| K: Pole Mount (with L-shaped bracket) | 1 | R, Y, S, G, W | LD6A-1KQ*-□ | 640g | LD6A-1KZQ*-□ | 730g |
| | 2 | RY, RG | LD6A-2KQ*-□□ | 680g | LD6A-2KZQ*-□□ | 770g |
| | 3 | RYS, RYG | LD6A-3KQ*-□□□ | 720g | LD6A-3KZQ*-□□□ | 810g |
| | 4 | RYSG | LD6A-4KQ*-□□□□ | 760g | LD6A-4KZQ*-□□□□ | 850g |
| | 5 | RYSGW | LD6A-5KQ*-□□□□□ | 800g | LD6A-5KZQ*-□□□□□ | 890g |

Specify housing color code in place of *: B (black), W (light gray)
Specify illumination color in place of □ starting with the top tier. State the LED color code from the left.
R (red), Y (yellow), S (blue), G (green), W (pure white)
Example: When the LED color is RYGSW => **LD6A-5GQW-RYGSW**
Clear lens type also available. Specify "C" after the LED color code.
Example:
**LD6A-5GQW-RYSGW** => **LD6A-5GQW-RYSGWC**

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## Combination of LED Color and Lens Color

| LED Color | Color Lens Type | Clear Lens Type |
|---|---|---|
| R: Red | Red lens | Clear lens |
| Y: Yellow | Yellow lens | Clear lens |
| S: Blue | Blue lens | Clear lens |
| G: Green | Green lens | Clear lens |
| W: White | Clear lens | |

For white (W) LED, a clear lens is used in both color and clear lens configurations.

## Mounting Parts Included

| Mounting Style | Supplied Parts |
|---|---|
| G: Frame mount | M4 screw (4 pcs)*, M4 spring washer (4 pcs)*, M4 plain washer (4 pcs)*, M5 screw (2 pcs), M5 spring washer (2 pcs), M5 plain washer (2 pcs), bracket (1 pc) |
| W: Wall mount | M4 screw (20 mm) (4 pcs), M4 screw (8 mm) (4 pcs)*, M4 spring washer (8 pcs)* M4 plain washer (8 pcs)*, M4 nut (4 pcs), bracket (1 pc), gasket (1 pc) |
| D: Direct mount | M5 screw (4 pcs)*, M5 spring washer (4 pcs)*, M5 plain washer (4 pcs)*, M5 nut (4 pcs)*, O-ring (4 pcs), gasket (1 pc) |
| P: Pole mount (with base) | M5 screw (4 pcs), M5 spring washer (4 pcs), M5 plain washer (4 pcs), M5 nut (4 pcs), O-ring (4 pcs), gasket (1 pc) |
| K: Pole mount (with L-shaped bracket) | M22 plain washer 2 (pcs), M22 nut (2 pcs), bracket (1 pc) |

*For black housing, black screws and washers are supplied. For light gray housing, silver screws and washers are supplied.

## Base Module

| Style | Mounting Style | Part Number | | Notes |
|---|---|---|---|---|
| | | Steady | Steady/Flashing/Alarm | |
| | Frame Mount | LD6A-0GQ* | LD6A-0GZQ* | A top cap is supplied. |
| | Wall Mount | LD6A-0WQ* | LD6A-0WZQ* | |
| | Direct Mount | LD6A-0DQ* | LD6A-0DZQ* | |
| | Pole Mount (with base) | LD6A-0PQ* | LD6A-0PZQ* | |
| | Pole Mount (with L-shaped bracket) | LD6A-0KQ* | LD6A-0KZQ* | |

Specify a housing color code in place of *: B (black), W (light gray)
Do not supply power to the base module without connecting LED modules.

## LED Module

| Style | | Lens | Part Number | LED Color Code |
|---|---|---|---|---|
| | Black | Color lens | LD9Z-6ALB-☐ | R, Y, S, G, W |
| | | Clear lens | LD9Z-6ALB-☐C | R, Y, S, G |
| | Light gray | Color lens | LD9Z-6ALW-☐ | R, Y, S, G, W |
| | | Clear lens | LD9Z-6ALW-☐C | R, Y, S, G |

Specify an LED color code in place of ☐: R (red), Y (yellow), S (blue), G (green), W (white)
When using white (W) with a clear lens, order LD9Z-6ALB-W (black housing) or LD9Z-6ALW-W (light gray housing).

## Center Set Screw

| Item | | Part Number | Notes |
|---|---|---|---|
| | 1 tier | LD9Z-6AC1 | A plain washer and spring washer are supplied. |
| | 2 tiers | LD9Z-6AC2 | |
| | 3 tiers | LD9Z-6AC3 | |
| | 4 tiers | LD9Z-6AC4 | |
| | 5 tiers | LD9Z-6AC5 | |

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## Ordering Examples

[Ex. 1] When ordering LD6A-3PQW-RYG as sub-component parts, specify the following:
Pole mount (with base), steady, light gray housing, 3 tiers, color lens LED modules with Red, Yellow, and Green LED

| | | |
|---|---|---|
| Base module (pole mount with base, steady, light gray housing) | LD6A-0PQW | 1 piece |
| LED module (red LED with color lens, light gray housing) | LD9Z-6ALW-R | 1 piece |
| LED module (yellow LED with color lens, light gray housing) | LD9Z-6ALW-Y | 1 piece |
| LED module (green LED with color lens, light gray housing) | LD9Z-6ALW-G | 1 piece |
| Center screw set (3 tiers) | LD9Z-6AC3 | 1 piece |

[Ex. 2] When ordering LD6A-5WZQB-RYSGWC as sub-component parts, specify the following:
Wall mount, steady/flashing/alarm, black housing, 5 tiers, clear lens LED modules with Red, Yellow, Blue, Green, and Pure white LED

| | | |
|---|---|---|
| Base module (wall mount, steady/flashing/alarm, black housing) | LD6A-0WZQB | 1 piece |
| LED module (red LED with clear lens, black housing) | LD9Z-6ALB-RC | 1 piece |
| LED module (yellow LED with clear lens, black housing) | LD9Z-6ALB-YC | 1 piece |
| LED module (blue LED with clear lens, black housing) | LD9Z-6ALB-SC | 1 piece |
| LED module (green LED with clear lens, black housing) | LD9Z-6ALB-GC | 1 piece |
| LED module (pure white LED with clear lens, black housing) | LD9Z-6ALB-W | 1 piece |
| Center screw set (5 tiers) | LD9Z-6AC5 | 1 piece |

## Replacement Parts

| Item | Description | | Part Number | Notes |
|---|---|---|---|---|
| | Top Cap | Black | LD9Z-6ATB | A top cap is supplied with a base module. |
| | | Light gray | LD9Z-6ATW | |
| | L-shaped Bracket | Metal (chrome-plated) | LD9Z-6AK | Two plain washers and two nuts are supplied. |

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# Specifications

## Specifications

| | | | |
|---|---|---|---|
| Safety Standards | IEC60947-5-1, EN60947-5-1, UL508, CSA C22.2 No.14 | | |
| Operating Temperature | –25 to +55°C (no freezing) | | |
| Operating Humidity | 45 to 85% RH (no condensation) | | |
| Storage Temperature | –40 to +75°C (no freezing) | | |
| Overvoltage Category | III (IEC60664-1) | | |
| Impulse Withstand Voltage | 800V (IEC60947-1) | | |
| Insulation Resistance | 100 MΩ minimum (500V DC megger) | | |
| Dielectric Strength | Between live and dead parts: 1000V AC, 1 minute | | |
| Pollution Degree | 3 | | |
| Corrosion Immunity | Atmosphere free from corrosive gases | | |
| Vibration Resistance | Operating extremes: 10 to 55Hz, amplitude 0.5 mm | | |
| Shock Resistance | Operating extremes: 147 m/s², 6 shocks each in 6 axes | | |
| Degree of Protection (IEC60529) | Steady | frame mount, wall mount, direct mount, pole mount with base | IP65 |
| | Steady | pole mount with L-shaped bracket | IP23 |
| | Flashing/ Alarm | frame mount, wall mount, direct mount, pole mount with base | IP54 |
| | Flashing/ Alarm | pole mount with L-shaped bracket | IP23 |
| Housing Color | Black, Light gray | | |
| Material | Housing: ABS resin<br>Lens: AS resin<br>Pole: Steel (nickel-chrome plated)<br>Pole base: Diecast aluminum | | |
| Wire | 22AWG | | |

## Functional Specifications

| | | | | |
|---|---|---|---|---|
| Rated Insulation Voltage | | 60V | | |
| Operating Voltage | | 24V AC/DC ±10% | | |
| Rated Voltage (Ue) | | 24V AC/DC | | |
| LED Color Code | | R (red), Y (yellow), S (blue), G (green), W (white) | | |
| LED | Illumination Color | R, Y | S, G | W |
| | Rated Current (per tier) | 25mA | 30mA | 20mA |
| | Power Consumption (per tier) | 0.6W | 0.75W | 0.5W |
| LED Life (Note) | | Approx. 30,000 hours (until brightness is reduced to 50% of the initial value in a 25°C operating environment) | | |
| Flashing Cycle (IEC60073) | | Approx. 105 flashes per minute (1.75 Hz) | | |
| Alarm | Alarm Cycle | Alarm 1: approx. 700 times per minute<br>Alarm 2: approx. 35 times per minute | | |
| | Current Draw | 110mA max. | | |
| | Inrush Current | AC: 400mA max. DC: 250mA max. | | |
| | Alarm Volume | 70 to 90dB, at 1m (volume adjustable) | | |
| | Acoustic Frequency | Approx. 3.3kHz | | |

Note: Life of the LED varies according to operating conditions and environment.

## External Contact Ratings

| | | | |
|---|---|---|---|
| LED | AC Contact Capacity (per tier) | Current Capacity | 100mA min. |
| | | Dielectric Strength | 35V AC min. |
| | DC Contact Capacity, Transistor Capacity (per tier) | Current Capacity | 100mA min. |
| | | Dielectric Strength | 35V min. |
| | | Leakage Current | 0.1mA max. |
| Alarm | AC Contact Capacity (per alarm) | Current Capacity | 400mA min. |
| | | Dielectric Strength | 35V AC min. |
| | DC Contact Capacity, Transistor Capacity (per alarm) | Current Capacity | 300mA min. |
| | | Dielectric Strength | 35V min. |
| | | Leakage Current | 0.1mA max. |

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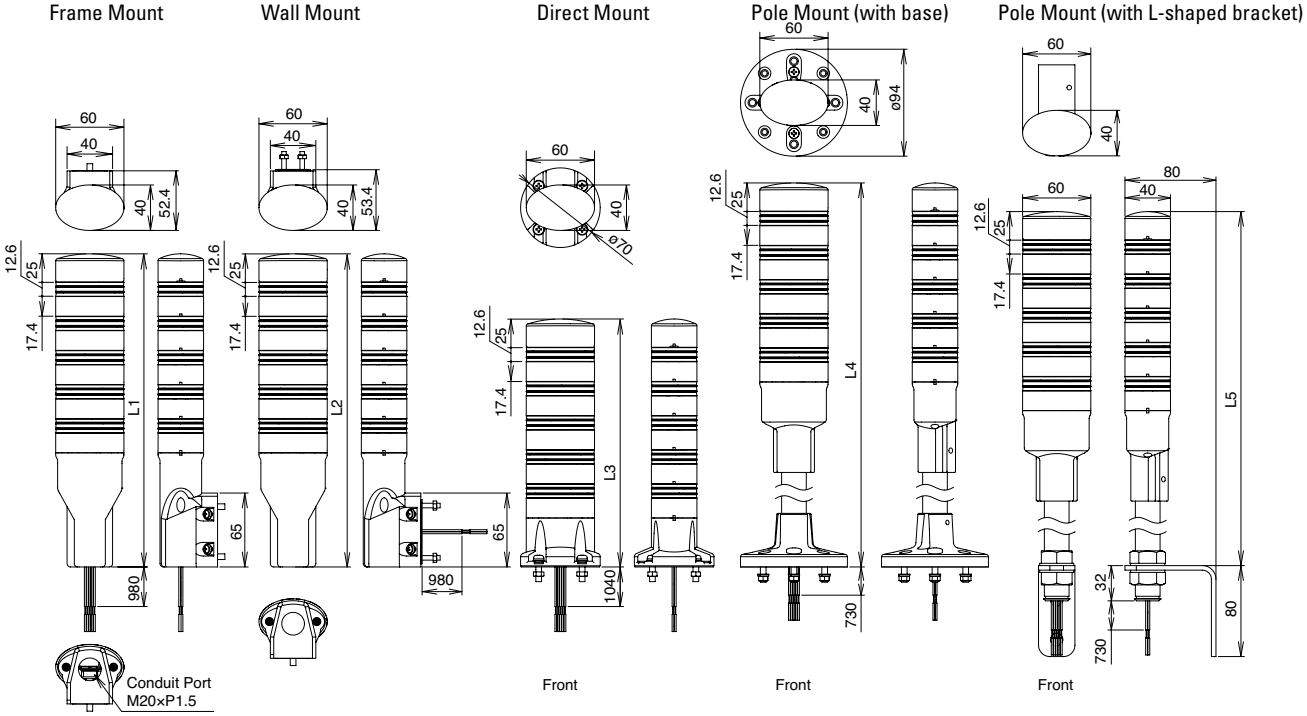
## Dimensions (Steady Light)

Frame Mount | Wall Mount | Direct Mount | Pole Mount (with base) | Pole Mount (with L-shaped bracket)

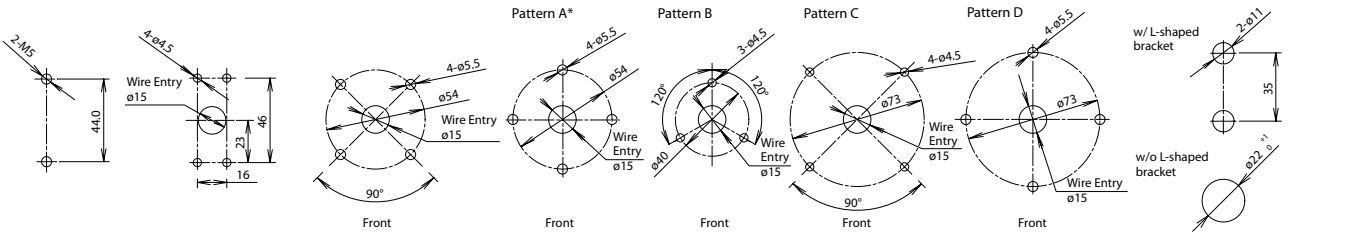



## Dimension Table

| Tiers | Frame Mount (L1) | Wall Mount (L2) | Direct Mount (L3) | Pole Mount | |
|---|---|---|---|---|---|
| | | | | w/ base (L4) | w/ L-shaped bracket (L5) |
| 1 | 156 | 156 | 98 | 408 | 372 |
| 2 | 186 | 186 | 128 | 438 | 402 |
| 3 | 216 | 216 | 158 | 468 | 432 |
| 4 | 246 | 246 | 188 | 498 | 462 |
| 5 | 276 | 276 | 218 | 528 | 492 |

## Panel Cut-Out

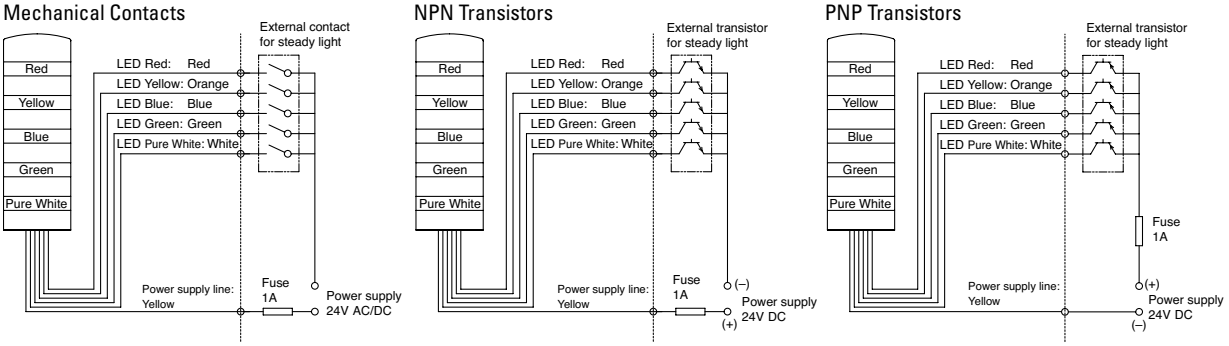
Frame Mount | Wall Mount | Direct Mount* | Pole Mount (with base) | Pole Mount (with L-shaped bracket)




*Complies with IEC60947-5-1.

## Wiring Example (Steady Light)

Mechanical Contacts | NPN Transistors | PNP Transistors



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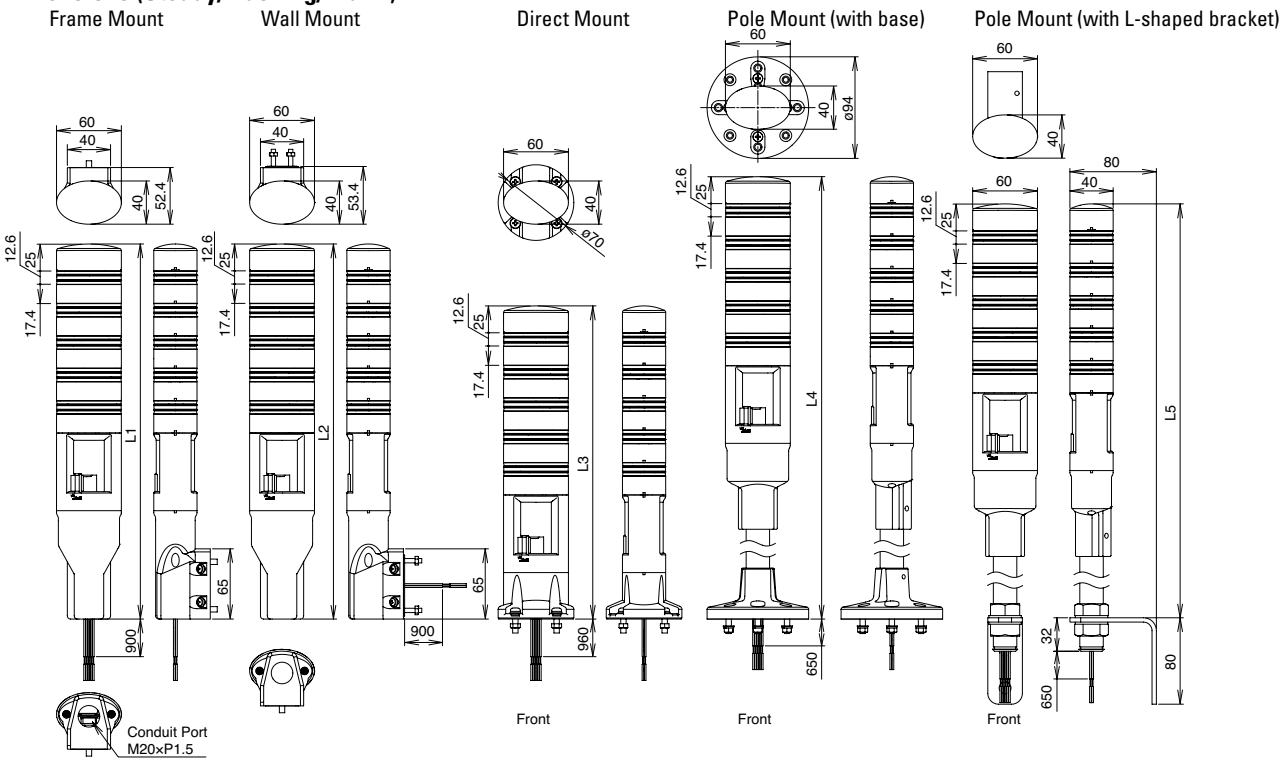
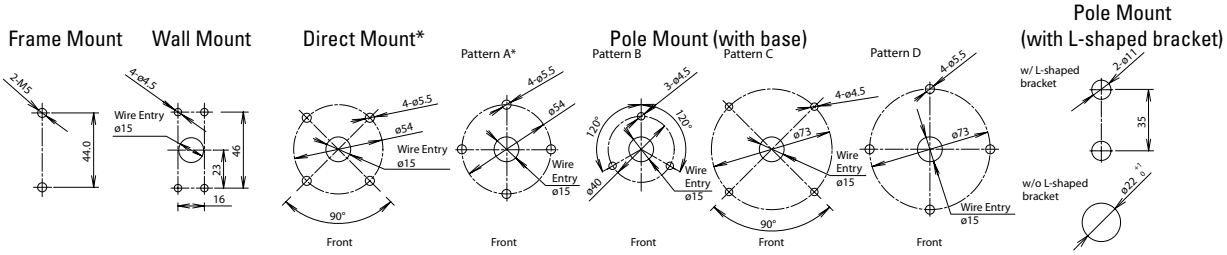
## Dimensions (Steady/Flashing/Alarm)




## Dimension Table

| Tiers | Frame Mount (L1) | Wall Mount (L2) | Direct Mount (L3) | Pole Mount | |
|---|---|---|---|---|---|
| | | | | w/ base (L4) | w/ L-shaped bracket (L5) |
| 1 | 228 | 228 | 170 | 480 | 444 |
| 2 | 258 | 258 | 200 | 510 | 474 |
| 3 | 288 | 288 | 230 | 540 | 504 |
| 4 | 318 | 318 | 260 | 570 | 534 |
| 5 | 348 | 348 | 290 | 600 | 564 |

## Panel Cut-Out




*Complies with IEC60947-5-1.

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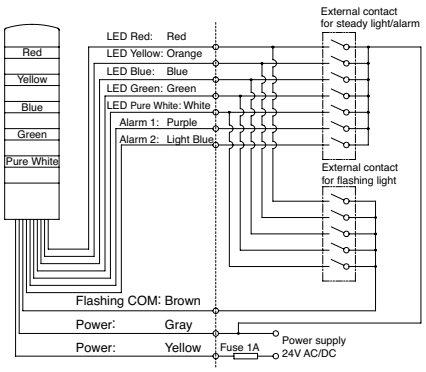
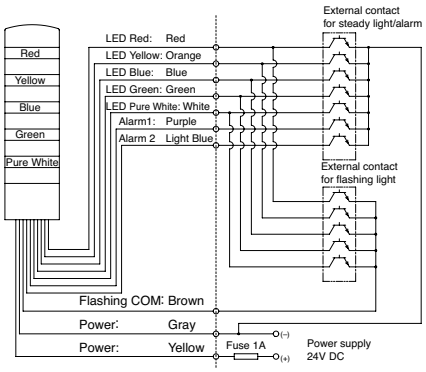
## Wiring Example (Flashing Light and Alarm)

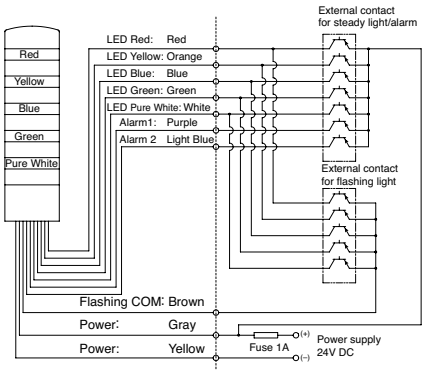
Mechanical Contacts




NPN Transistors

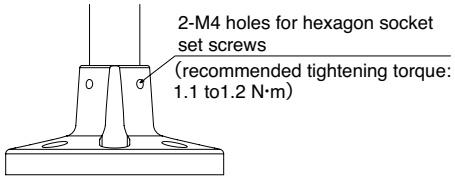



PNP Transistors




## Safety Precautions

- Turn off the power to the LD6A before mounting, removing, wiring or assembling the LED module. Make sure the wiring is done correctly otherwise electrical shock or fire may result.
- Mount the LD6A on a solid surface not subject to vibrations.
- Do not mount the LD6A upside-down or horizontally.
- Do not leave the LD6A without a cap or unassembled.
- Install the supplied gasket, otherwise the waterproof seal will be compromised.
- Do not apply any chemicals that may corrode the plastic materials.
- If the LD6A is subjected to strong vibrations, the hexagon socket screw may become loose. Take measures to prevent loosening. (See the figure below.)




- Do not loosen any screws if the tightening torque is not specified.

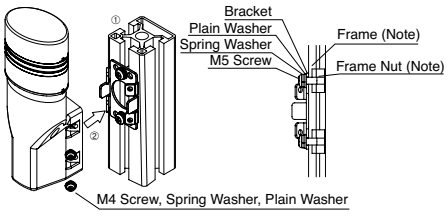
# Instructions

## Mounting

- See drawing below regarding the mounting of the LD6A.
- For panel cut-out dimensions, see pages 9 and 10.
- Postion the LD6A to make sure the alarm sound is the loudest. (Steady/flashing/alarm type)

## Frame Mounting

1. Insert two nuts in the frame, and attach the bracket using two M5 screws. Recommended tightening torque: 2.6 to 2.7 N·m
2. Mount the LD6A to the bracket using four M4 screws. Recommended tightening torque: 1.6 to 1.7 N·m




Note: See table below for typical examples of frames and nuts. Consult the manufacturer of the frame for the installation method of the frame nut.

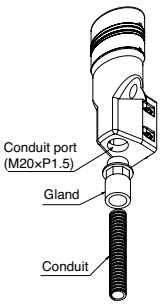
## Examples of recommended frames and frame nuts

| Frame Size | Frame | Frame Nut | Manufacturer |
|---|---|---|---|
| ☐30 mm* | SFF-302 | SFB-001<br>SFB-4B5<br>SFB-101 | SUS Corporation (Japan) |
| ☐40 mm | SFF-402 | SFB-008<br>SFB-4A5<br>SFB-108 | |

*The mounting bracket for the housing is 40 mm.

When using a frame mount type, be sure to use flexible conduit, otherwise the waterproof seal will be compromised.

Refer to the “Example of Flexible Conduit” shown on the right.




## Example of Flexible Conduit

| | |
|---|---|
| Conduit Port Size | M20 |
| Gland | AL16/M20/A/BL |
| Conduit | PAFS16BL |
| Manufacturer | Adaptaflex |

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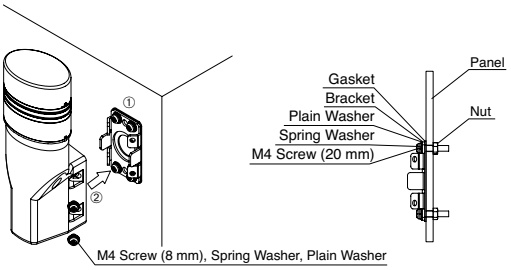
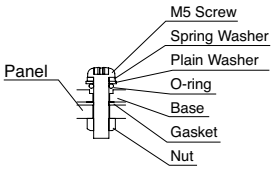
## Wall Mounting

1. Make four tapped holes in the mounting panel and mount the bracket and gasket using four screws (M4 x 20).
   Recommended tightening torque: 1.6 to 1.7 N·m
2. Mount the LD6A to the bracket using four screws (M4 x 8).
   Recommended tightening torque: 1.6 to 1.7 N·m




## Direct Mounting

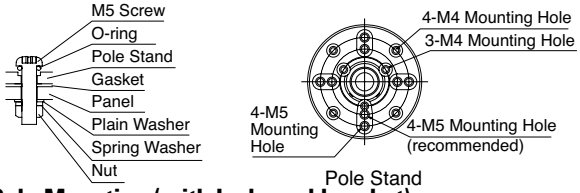
Recommended tightening torque: 2.6 to 2.7 N·m




## Pole Mounting (with base)

The pole mount type can be installed in four ways. The recommended mounting method (pattern A from page 9 or 10) is described below.

Recommended tightening torque: 2.6 to 2.7 N·m (M5 screw)




## Pole Mounting (with L-shaped bracket)

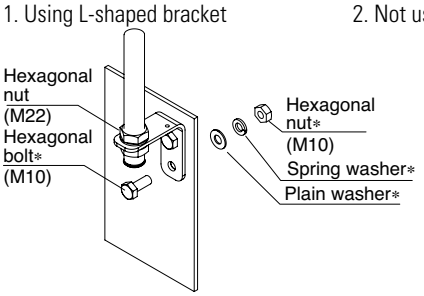
**1. Using L-shaped bracket**

Recommended tightening torque: 10 to 11 N·m (M10)
Recommended tightening torque: 25 to 26 N·m (M22)

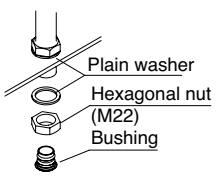
**2. Not using L-shaped bracket**

Remove the bushing, hexagonal nut (M22), plain washer, and L-shaped bracket from the LD6A and install in the following order: plain washer, hexagonal nut (M22), and bushing.
Recommended tightening torque: 25 to 26 N·m (M22)

1. Using L-shaped bracket



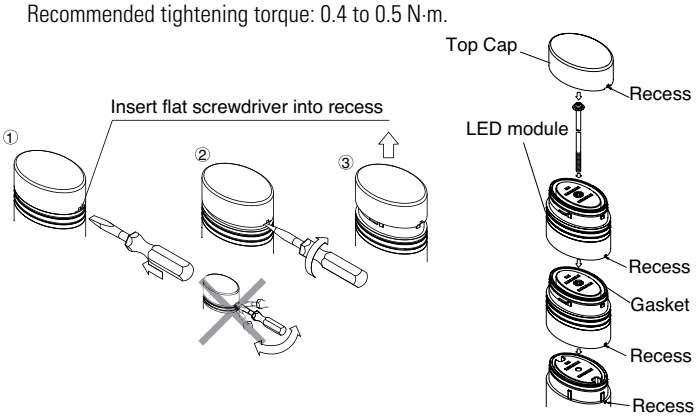

2. Not using L-shaped bracket




The parts marked with * are not supplied and should be provided by the user.

## Replacement and Addition of LED Modules

- Make sure to turn power off.
- Insert a flat screwdriver into the cap recess as shown below, lift up the cap, and remove with your hands. Use a flat screwdriver with maximum 1-mm thick and 7-mm wide tip.
- Remove the center screw before reassembling the LED modules.
- When assembling the LED modules, make sure to align the recess of the cap with the recess of the LED module. Otherwise, damage may result.
  Recommended tightening torque: 0.4 to 0.5 N·m.




- Note the correct orientation when assembling the LED modules.
- Tighten the screws to the recommended tightening torque. The LED module may be damaged if the screw is loose during operation.
- Do not touch the metal plug on the LED module. Otherwise, LED elements maybe damaged due to static electricity.
- Use a maximum of 5 tiers.
- Select the correct screw length depending on the number of tiers.
- Do not remove the gasket from the LED module. Otherwise, the waterproof seal will be compromised.

## Wiring

- For wiring, see the wiring diagrams on pages 782 and 784.
- Incorrect wiring may damage the internal circuit.
- Be sure to insulate unused wires.
- Connect a 1A fuse to the power line as shown in the Wiring Examples on pages 782 and 784.
- Use a UL listed external fuse holder.
- Use a class 2 power supply only.
- When using LED modules of the same color for two or more tiers, determine contact capacity in referencet to the LED current, because only one wire is used to light all tiers of the same color.
- Do not apply voltage to flashing (brown) lines.
- Do not connect flashing (brown) line to the power lines. The internal circuit may be damaged.
- Do not turn on steady and flashing circuits simultaneously.
- Do not turn on alarms 1 and 2 simultaneously.

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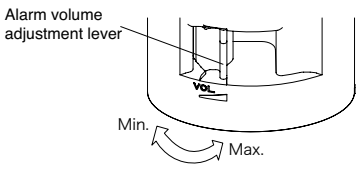
## Wire Color

| Wire Color | Steady | Steady, Flashing, Alarm |
|---|---|---|
| Red | LED Module – Red | LED Module – Red |
| Orange | LED Module – Yellow | LED Module – Yellow |
| Blue | LED Module – Blue | LED Module – Blue |
| Green | LED Module – Green | LED Module – Green |
| White | LED Module – White | LED Module – White |
| Purple | — | Alarm 1 |
| Light Blue | — | Alarm 2 |
| Brown | — | Flashing COM |
| Gray | — | Power Line |
| Yellow | Power Line | Power Line |

For information on external contacts, see "External Contact Ratings" on page 781.

## Alarm Volume Adjustment

- Move the volume adjustment to the right or left to change the volume.
- When the adjustment lever is all the way to the right the volume is at its maximum.
- The adjustment lever may be damaged if forced open or closed.




## High Temperature Limitations

The external temperature cannot exceed 50°C when all tiers are lit at the same time in the following combinations:

1. Three tiers
   Two or more tiers of blue and green (example: Red-Green-Blue, Green-Green-Red)
2. Four or five tiers (example: Red-Yellow-Green-White, Red-Yellow-Blue-Green-White)