

# LD6A LED SignaLight Towers



**IDEC CORPORATION** 

# Ergonomically designed for visual and audible recognition

LD6A SignaLight combines the latest LED technology with IDEC's safety technology. Provides a new concept and innovative design, ideal for factory automation and other various applications.

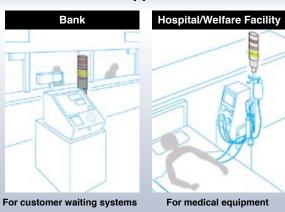


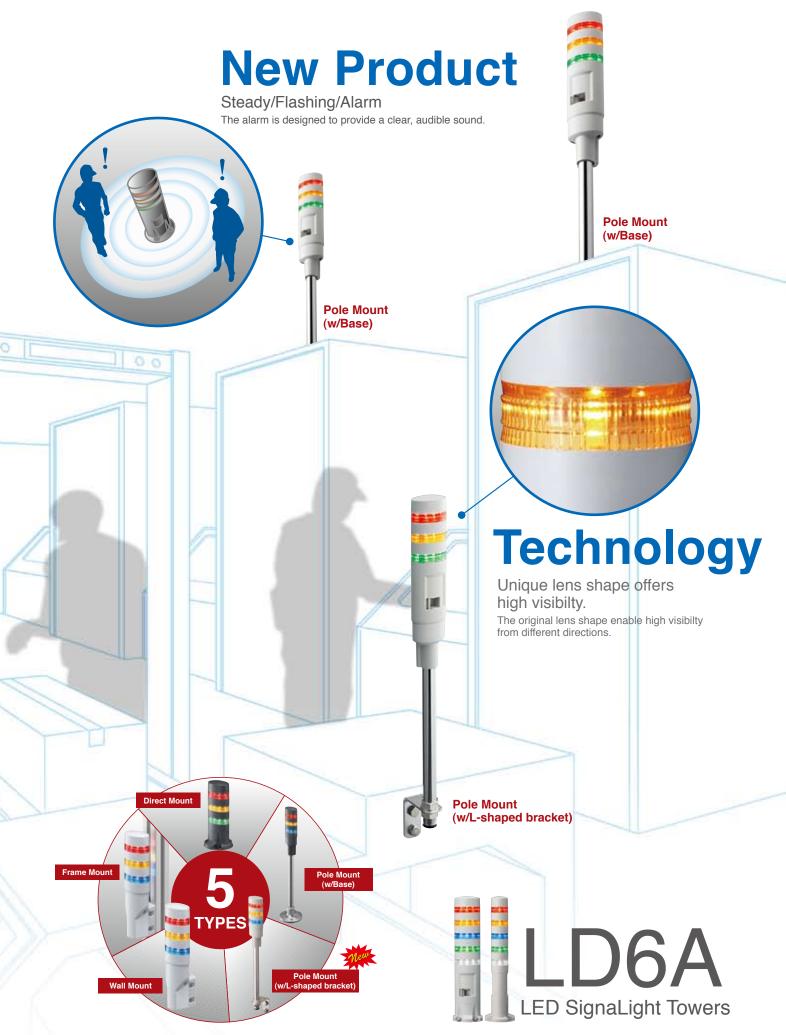
**Colour Arrangement according to IEC Standards** Indicating towers on machines should have the applicable colours in the following order from the top down; RED, YELLOW, BLUE, GREEN, WHITE. (IEC60204-1 Fifth edition Chapter 10.3.2 Colours)

Colours for indicator lights and their meanings with respect to the condition of the machine

Colour	Meaning	Explanation	Action by operator
RED	Emergency	Hazardous condition	Immediate action to deal with hazardous condition
YELLOW	Abnormal	Abnormal condition Impending critical condition	Monitoring and/or intervention (for example by re-establishing the intended function)
BLUE	Mandatory	Indication of a condition that requires action by the operator	Mandatory action
GREEN	Normal	Normal condition	Optional
WHITE	Neutral	Other conditions; may be used whenever doubt exists about the application of RED, YELLOW, GREEN, BLUE	Monitoring

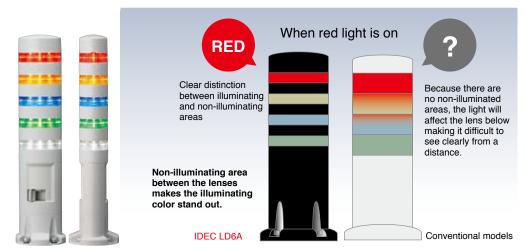
### Other Applications





# Stylish design with high functionality

#### ■ Unique design — oval shape with striped design for clear visibility



#### Marking is possible





IP65 protection degree

Note: Steady/Flashing/Alarm: IP54 Pole mount (L-shaped bracket) IP54 w/o bracket: Pole mount (L-shaped bracket) w/bracket: IP23

#### Two housing colors



Dark and light gray housings are available, providing a stylish image.

# Easy installation and assembly

#### Different mounting styles Easy Assembly L-shaped bracket available for pole mounting. Can also be mounted directly to equipment.





The unique secure terminal style of the LED module makes assembly quick and easy, enabling assembly using only one hand.

#### Plug-in Terminals

Highly reliable plug-in terminals. Easy expansion of LED module.





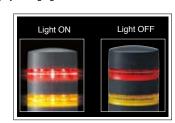






#### Flashing cycle complies with IEC standards [1.75 Hz (approx. 105 times per second)]

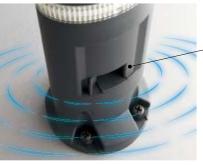
IEC60073 Sixth edition 2002 Chapter 4.2.3 "Coding by changing of characteristics over time"





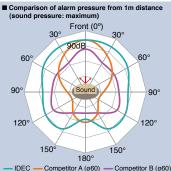
#### Unique powerful design with 360-degree sound field. Two alarm sound patterns available.

Alarm sound at 3.3 kHz and maximum sound level of 90 dB. With IDEC's unique resonant design, the SignaLight has a frequency that is most sensitive to the human ear and sends a clear sound over 360 degrees. Therefore, the sound recognition is improved as the alarm can be heard in a noisy environment, enhancing safety.



Sound volume adjustment

(adjustable within a range of 70 to 90 dB) Alarm 1: Intermittent short beep-beep sound Alarm 2: Intermittent long beep-beep sound

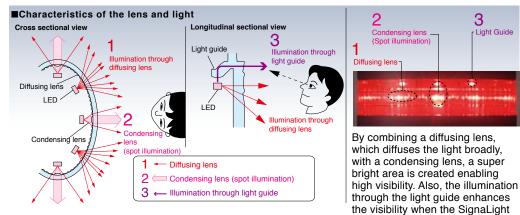


Measured at: IDEC facility Measured distance: 1m

The alarm can be heard from all directions as the sound spreads out evenly.

# Unique lens shape offers high visibility

Three different illumination methods and a unique lens shape enable high visibility from all directions.



#### Clear visibility difference

Because a reflective mirror is not installed in the the LED unit, diffuse reflection does not occur from light disturbance or from strong light. Also, when the clear lens type is used, the visibility difference between when the light is on and when it is off is apparent even in a bright environment.



is viewed from below.

Clear lens type

 Photo: steady/flashing/alarm model.
 Only light gray or dark gray housing is available (091218)

# LD6A LED SignaLight Towers

# Oval shape with striped design. Presents a stylish image on all equipment.

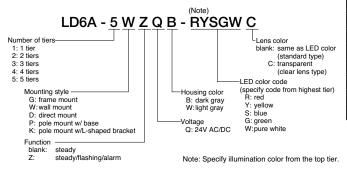
- Striped design with non-illuminating area between the lenses. Built-in super bright LEDs reduce light disturbance to make the illuminating color stand out.
- IDEC's unique lens shape enables high-visibility from different directions.
- Five different mounting styles available. Easy mounting to aluminum frames, wall mounting, direct mounting, and pole mounting (with base or with L-shaped bracket).
- Clear lens type available.
- Custom configuration is possible.
- Flashing cycle: 1.75 Hz (approx. 105 flashes per second) Conforms to international standard IEC 60073.
- Ergonomically designed alarm sound (3.3 kHz, 2 different sounds) spreads 360° degrees. Adjustable volume (70 to 90 dB).
- Degree of protection: IP65 (IP54 for steady, flashing, alarm types and pole mount without L-shaped bracket)



# **General 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 55 Hz, amplitude 0.5 mm
Shock Resistance	Operating extremes: 147 m/s <sup>2</sup> , 6 shocks each in 6 axes
Degree of Protection (IEC60529)	Steady: IP65 Steady/flashing/alarm: IP54 Pole mount (w/o L-shaped bracket): IP54 Pole mount (w/L-shaped bracket): IP23
Housing Color	Dark gray, Light gray
Material	Housing: ABS resin Lens: AS resin Pole: Steel (nickel-chrome plated) Pole stand: Diecast aluminum
Cable	UL1007 AWG22

# Type No. Development





# **Functional Specifications**

r unctional opecifications				
ated Insulation Voltage	60V			
perating Voltage	24V AC/DC ±	±10%		
ated Voltage (Ue)	24V AC/DC			
D Color Code			),	
Illumination Color	R, Y	S, G	w	
Rated Current (per tier)	25 mA	30 mA	20 mA	
Power Consumption (per tier)	0.6W	0.75W	0.5W	
D Life (Note)	Approx. 30,000 hours (until the brightness reduces to 50% the initial value when lit at complete di- rect current of the rated voltage under 25°C environment)			
ashing Cycle C60073)	Approx. 105 flashes per minute (1.75 Hz)			
Alarm Cycle	Alarm 1: approx. 700 times per minute Alarm 2: approx. 35 times per minute			
Draw Current	110 mA max.			
Inrush Current	AC: 400 mA	max. DC: 25	50 mA max.	
Alarm Volume	70 to 90 dB,	at 1m (volume	e adjustable)	
Acoustic Frequency	Approx. 3.3 kHz			
	erating Voltage ted Voltage (Ue) D Color Code Illumination Color Rated Current (per tier) Power Consumption (per tier) D Life (Note) ashing Cycle C60073) Alarm Cycle Draw Current Inrush Current Alarm Volume	Derating Voltage24V AC/DC =tted Voltage (Ue)24V AC/DCIted Voltage (Ue)24V AC/DCD Color CodeR (red), Y (ye)Illumination ColorR, YRated Current25 mA(per tier)0.6WPower Consumption0.6WD Life (Note)Approx. 30,0(until the brigthe initial valuerect current of25°C environashing CycleApprox. 105(1.75 Hz)Alarm CycleAlarm 1: appAlarm CycleAlarm 2: appDraw Current110 mA max.Inrush CurrentAC: 400 mAAlarm Volume70 to 90 dB,	Derating Voltage       24V AC/DC ±10%         Ited Voltage (Ue)       24V AC/DC         D Color Code       R (red), Y (yellow), S (blue G (green), W (pure white)         Illumination Color       R, Y       S, G         Rated Current (per tier)       25 mA       30 mA         Power Consumption (per tier)       0.6W       0.75W         D Life (Note)       Approx. 30,000 hours (until the brightness reduce the initial value when lit at rect current of the rated vo 25°C environment)         ashing Cycle       Approx. 105 flashes per m (1.75 Hz)         Alarm Cycle       Alarm 1: approx. 700 times Alarm 2: approx. 35 times         Draw Current       110 mA max.         Inrush Current       AC: 400 mA max. DC: 25         Alarm Volume       70 to 90 dB, at 1m (volume)	

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

# **External Contact Ratings**

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

#### **Assembled Products**

Package Quantity: 1

Mounting Style	Tiers	LED Color	Steady		Steady/Flashing/Alarm	
	Tiers	Code	Type No.	Weight (approx.)	Type No.	Weight (approx.)
	1	R, Y, S, G, W	LD6A-1GQ*-	220g	LD6A-1GZQ*-	310g
	2	RY, RG	LD6A-2GQ*-	260g	LD6A-2GZQ*-	350g
Frame Mount	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
	1	R, Y, S, G, W	LD6A-1WQ*-	225g	LD6A-1WZQ*-	315g
	2	RY, RG	LD6A-2WQ*-	265g	LD6A-2WZQ*-	355g
Wall Mount	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
	1	R, Y, S, G, W	LD6A-1DQ*-	185g	LD6A-1DZQ*-	275g
	2	RY, RG	LD6A-2DQ*-	225g	LD6A-2DZQ*-	315g
Direct Mount	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
	1	R, Y, S, G, W	LD6A-1PQ*-	645g	LD6A-1PZQ*-	735g
	2	RY, RG	LD6A-2PQ*-	685g	LD6A-2PZQ*-	775g
Pole Mount (with base)	3	RYS, RYG	LD6A-3PQ*-	725g	LD6A-3PZQ*-	815g
(mar base)	4	RYSG	LD6A-4PQ*-	765g	LD6A-4PZQ*-	855g
	5	RYSGW	LD6A-5PQ*-	805g	LD6A-5PZQ*-	895g
	1	R, Y, S, G, W	LD6A-1KQ*-	640g	LD6A-1KZQ*-	730g
Pole Mount	2	RY, RG	LD6A-2KQ*-	680g	LD6A-2KZQ*-	770g
(with L-shaped	3	RYS, RYG	LD6A-3KQ*-	720g	LD6A-3KZQ*-	810g
bracket)	4	RYSG	LD6A-4KQ*-	760g	LD6A-4KZQ*-	850g
	5	RYSGW	LD6A-5KQ*-	800g	LD6A-5KZQ*-	890g

• Specify a housing color code in place of \*: B (dark gray), W (light gray)

• Select the illumination color from the top tier specifying the LED color code from the left. □: R (red), Y (yellow), S (blue), G (green), W (pure white)

#### **Ordering Non-Standard Products**

- Order according to the table above. Specify the illumination color from the top tier. 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

#### 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: Pure white	Clear lens	

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

#### Supplied Parts

Mounting Style	Supplied Parts			
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)			
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)			
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)			
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)			
Pole mount (with L-shaped bracket)	M22 plain washer 2 (pcs), M22 nut (2 pcs), bracket (1 pc)			

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



## **Sub-assembled Products**

#### Base Module

Base Module     Package Quantity: 1				
Description	Mounting Style	Type No.		Remarks
Description		Steady	Steady/Flashing/Alarm	nemarks
$\bigcirc$	Frame Mount	LD6A-0GQ*	LD6A-0GZQ*	
	Wall Mount	LD6A-0WQ*	LD6A-0WZQ*	A top cap is supplied.
	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 (dark gray), W (light gray)

• Do not supply power to the base module without connecting LED modules.

#### LED Module

LED Module     Package Quantity:					
Des	cription	Туре No.	LED Color Code	Remarks	
	For doub every housing	LD9Z-6ALB-	R, Y, S, G, W	Color lens	
	For dark gray housing	LD9Z-6ALB-□C	R, Y, S, G	Clear lens	
	For light grow bousing	LD9Z-6ALW-	R, Y, S, G, W	Color lens	
	For light gray housing	LD9Z-6ALW-DC	R, Y, S, G	Clear lens	

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

#### Center Screw Set

Description		Type No.	Remarks
	1 tier	LD9Z-6AC1	
-	2 tiers	LD9Z-6AC2	
	3 tiers	LD9Z-6AC3	A plain washer and a spring washer are supplied.
00	4 tiers	LD9Z-6AC4	
	5 tiers	LD9Z-6AC5	

#### Ordering Examples

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

mount (with base), steady, light gray housing, 3 tiers, color lens LED h	nouules with neu, relio	w, and Green
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

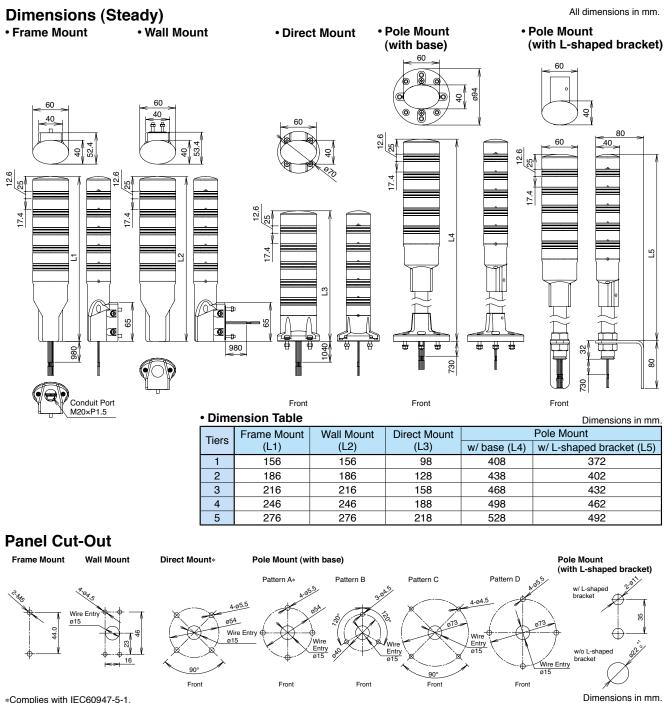
[Ex. 2] When ordering LD6A-5WZQB-RYSGWC as sub-assembled parts, specify the following parts: Wall mount, steady/flashing/alarm, dark gray housing, 5 tiers, clear lens LED modules with Red, Yellow, Blue, Green, and Pure white LED

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

#### Accessories

Description		Type No.	Remarks	
Top Cap	For dark gray	LD9Z-6ATB	A top cap is supplied with a base module.	
	For light gray	LD9Z-6ATW		
L-shaped Bracket	Metal (chrome-plated)	LD9Z-6AK	Two plain washers and two nuts are supplied.	

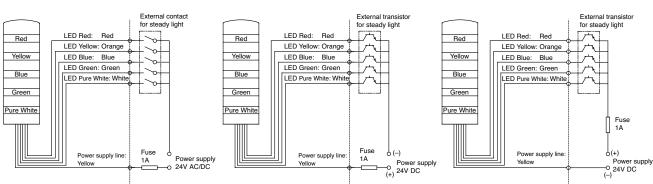




\*Complies with IEC60947-5-1.

# Wiring Example (Steady)

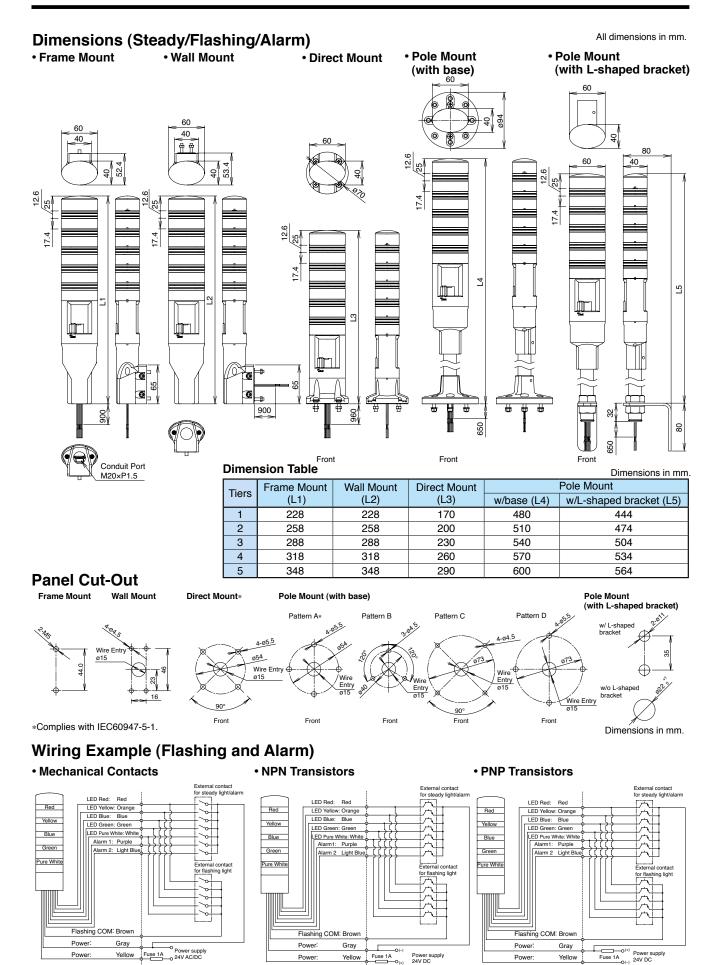
#### Mechanical Contacts



NPN Transistors

PNP Transistors





10



# **Safety Precautions**

- Turn off the power to the LD6A before mounting, dismounting, wiring, and assembling the LED module. Make sure of correct wiring, otherwise electrical shocks or fire hazard may result.
- Mount the LD6A on a solid surface not subjected 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 characteristic is impaired.
- Do not apply any chemicals which may corrode the plastic materials.

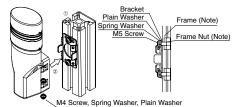
# Instructions

#### Mounting

- See drawing below on mounting of the LD6A.
- For panel cut-out, see pages 9 and 10.
- Face the LD6A to the front to make sure the alarm sound is clear. (Steady/flashing/alarm)

#### **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
- 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 (Note) SFF-302		SFB-001 SFB-4B5 SFB-101	SUS Corporation
□40 mm	SFF-402	SFB-008 SFB-4A5 SFB-108	(Japan)

Note: The mounting bracket for the housing is 40 mm.

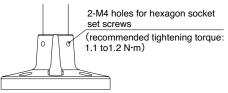
When using a frame mount type, be sure to use flexible conduit, otherwise the waterproof characteristic is impaired. Befer to the "Example of Elexible Conduit"

Refer to the "Example of Flexible Conduit" Conduit por shown on the right.



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

 If the LD6A is subjected to strong vibrations, the hexagon socket screw may become loose. Take measures to prevent loosening. (See the figure below.)

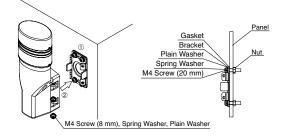


• Do not loosen a screw for which the tightening torque is not specified.

#### Wall Mounting

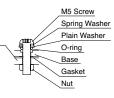
- Make four tapped holes in the mounting panel and mount the bracket and gasket using four screws (M4 x 20).
- Recommended tightening torque: 1.6 to 1.7 N·m 2. Mount the LD6A to the bracket using four screws (M4 x 8).

Recommended tightening torque: 1.6 to 1.7 N·m



#### **Direct Mounting**

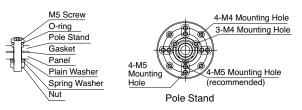
• Recommended tightening torque: 2.6 to 2.7 N·m Panel



#### Pole Mounting (with base)

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

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



#### Pole Mounting (with L-shaped bracket)

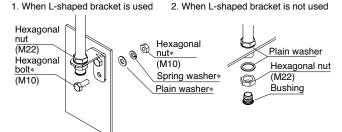
- When L-shaped bracket is used Recommended tightening torque: 10 to 11 N⋅m (M10) Recommended tightening torque: 25 to 26 N⋅m (M22)
- 2. When L-shaped bracket is not used Remove the bushing, hexagonal nut (M22), plain washer, and L-shaped bracket from the LD6A and install in order of plain washer, hexagonal nut (M22), and bushing.

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



Gland

Condui

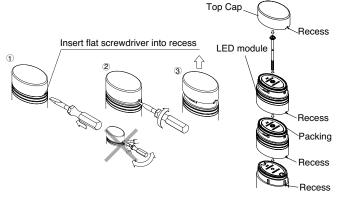


The parts marked with  $\ast$  are not supplied and should be prepared by the user.

### **Replacement and Expansion of LED Modules**

- Make sure to turn power off.
- Insert a flat screwdriver into the recess as shown below, lift up the cap, and remove the cap with your hands. Use a flat screwdriver with a tip of 1-mm thick and 7-mm wide maximum.
- 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 an optional screw of an appropriate length depending on the number of tiers.
- Do not remove the packing from the LED module. Otherwise, waterproof characteristics will be impaired.

# Wiring

- For wiring, see the wiring diagrams on pages 9 and 10.
- · 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 9 and 10.
- 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 consideration of 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) lines with the power lines. The internal circuit may be damaged.
- · Do not turn on steady and flashing lines simultaneously.
- Do not turn on alarms 1 and 2 simultaneously.

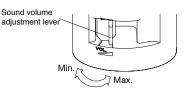
#### Wire Color

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 – Pure White	LED Module – Pure 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 6.

## Sound Volume Adjustment

- Move the sound volume lever to the right and left to adjust the sound volume.
- The sound volume is at maximum when the lever is set to the right.
- The sound volume adjustment lever may be damaged if forcibly moved.



# **Highest Temperature Limitations**

The highest temperature is limited to 50°C when all tiers are lit continuously 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-Pure White, Red-Yellow-Blue-Green-Pure White)

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Specifications and other descriptions in this catalog are subject to change without notice

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