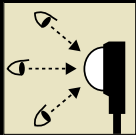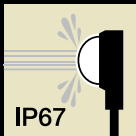# LH1D Series
Surface Mount Indicators
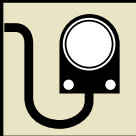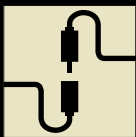# IDEC LED Spider

IDEC CORPORATION

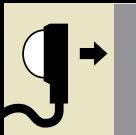## Excellent Visibility
From the front and the side.

IP67 Protection
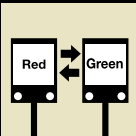Can be used in environments subject to washdown.

Cable Wiring
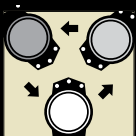Integrated wiring ensures waterproof characteristics.

Connector Wiring
Connector models available for easy maintenance.
∗Jumbo dome model only

Direct Surface Mounting
Requires only a small space behind the mounting surface, and can be installed without concern for other components behind.
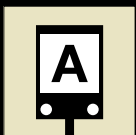
Red/Green
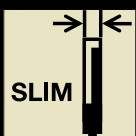Two-color alternate illumination available.

Three-color Alternate Illumination
Combination available: red, green and pure white.
∗Jumbo dome model only
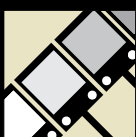
Six Colors
Amber, green, pure white, blue, red and yellow

Legends
Marking film can be inserted into the flat model.
∗Flat model only.

Slim Profile
Can be installed in small areas. Only 10.8 mm in height.
∗Flat model only.
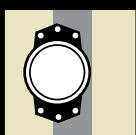
Direct Mounting on Aluminum Frames
Installation is improved by the increased number of mounting holes.
∗Jumbo dome model only

New ø66 Jumbo Dome Ideal for Mounting on

61.5

94

67

ø66 Jumbo Dome Model
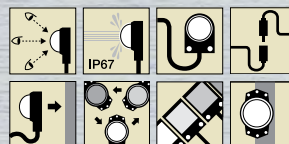
Color Variation
- Amber
- Green
- Pure White
- Blue
- Red
- Yellow

Two- and three-color alternate illumination also available.

Application Examples
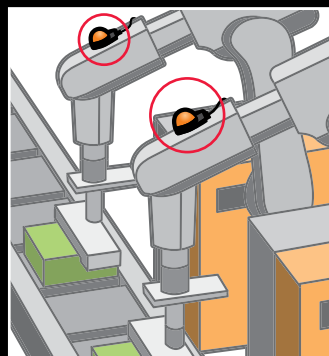
Robot Arm Status Indicator
Indicates the operating status of the motor.
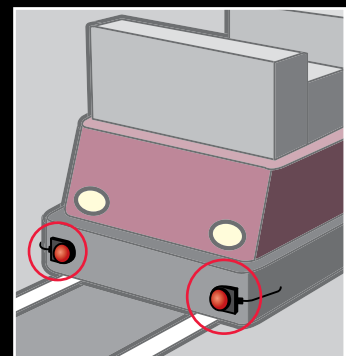
AGV Status Indicator
Can be used as a directional indicator on automatic guided vehicles.

Indicators with Excellent Visibility.
Large Equipment.

With increasing awareness on safety at production sites, equipment must be designed to be clearly visible and capable of delivering correct information.
With an innovative design, slim and stylish IDEC LED Spiders are ideal for various applications.

28.3

47

40

10.8

40

59.2

IDEC
LH1D-H2H
AC/DC
24 V
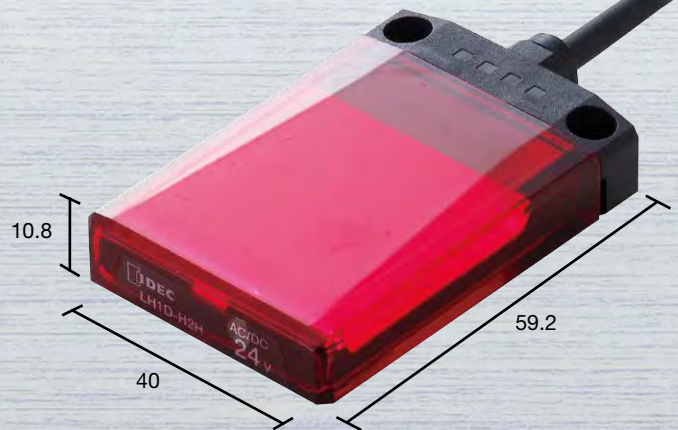
Dimensions in mm.

Dome Model

IP67

Color Variation

|		
Amber	Green	Pure White
Blue	Red	Yellow

Flat Model

IP67

A   SLIM
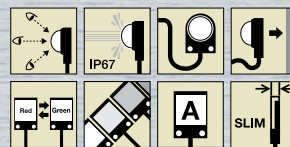
Color Variation

Amber	Green	Pure White
Blue	Red	Yellow

Two-color alternate illumination also available.
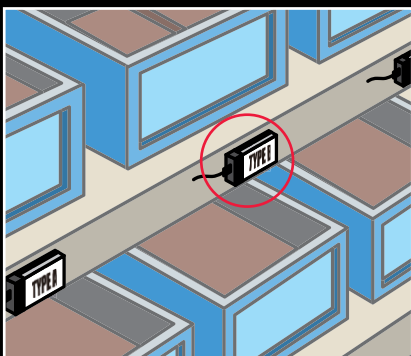
Picking System

Can be used to select picking locations.
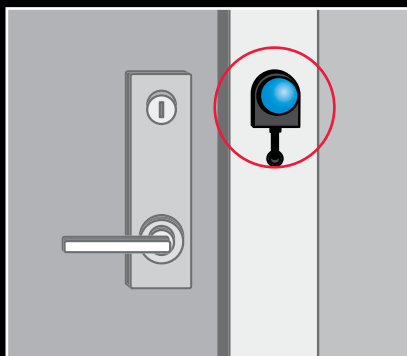
Door Monitoring

Indicates whether a door can be opened or closed.
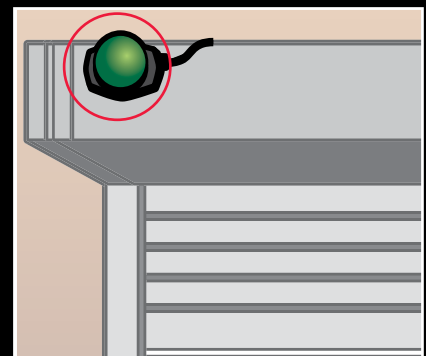
Roller Shutter Status Indicator

Indicates the operating status of a roller shutter.

LH Series Surface Mount Indicators

Innovative indicators with IP67 protection and integrated cable wiring.
Directly mountable on equipment and aluminum frames (jumbo dome models).

- Surface mount style does not affect the location of other components. Requires only a small space behind the mounting surface.
- Integrated cable wiring ensures waterproof characteristics. 1m, 3m, and 5m cables available. M12 connector cable (30 cm) available for jumbo dome model.
- IP67 (IEC60529) rated. Can be used in environments subject to washdown.
- Slim design well suited for installation in small spaces.
- Excellent visibility from the front and from the side.
- Legends and symbols can be printed on marking film to customize flat model.
- Two-color alternate illumination available for all models. Three-color alternate illumination available with jumbo dome model.

Standards

Standards	Marks	File No. or Organization
UL508 CSA C22.2 No.14	c UL us LISTED	UL/c-UL File No. E68961
EN60598-2-1	TÜV	TÜV SÜD
EN60598-2-1 EN60947-5-1	CE	EC Low Voltage Directive

- LH series surface mount indicators are approved by TÜV as class III lighting fixtures.

Specifications

Type	Cable	Connector
Rated Insulation Voltage (Ui)	32V	
Rated Voltage	24V AC/DC	24V DC
Operating Voltage Range	24V AC/DC ±10%	24V DC ±10%
Rated Current	17 mA	
Maximum Current Draw	0.6W	

- Use Class 2 power supply when using the LH1D as a UL compliant product.
- Use Class III circuit when using the LH1D as an EN compliant product.
- 24V AC, 50/60 Hz
- M12 connectors are available for jumbo dome models only.

Model		Jumbo Dome	Dome / Flat
Illumination Colors	Single Color	A (amber), G (green), PW (pure white), R (red), S (blue), Y (yellow)	
	Two-Color Alternate	A/G, A/PW, R/G, R/PW, G/PW	R/G
	Three-Color Alternate	R/G/PW	

Specifications

Applicable Standards	IEC60947-5-1, IEC60947-1 EN60947-5-1, EN60947-1 EN60598-2-1 UL508, CSA C22.2 No.14
Operating Temperature	–20 to +55°C (no freezing)
Operating Humidity	45 to 85% RH (no condensation)
Storage Temperature	–30 to +80°C (no freezing)
Impulse Withstand Voltage (illuminating part)	800V
Insulation Resistance	Between live and dead parts: 100 MΩ minimum
Dielectric Strength	Between live and dead parts: 2000V, 50/60 Hz , 1 minute
Pollution Degree	3
Vibration Resistance	5 to 55 Hz, amplitude 0.5 mm
Shock Resistance	1000 m/s^2
Degree of Protection	IP67 (IEC60529) NEMA Type 4X Indoor Use Only (Note)
Housing Color	Black
LED Lamp Life	Approx. 50,000 hours (When used on complete DC at 25°C, brightness reduces to 50% of the initial intensity.)
Weight	140g (jumbo dome model, 1m cable) 50g (dome model, 1m cable) 50g (flat model, 1m cable)

Note: Jumbo dome model is NEMA Type 1 under UL listing.

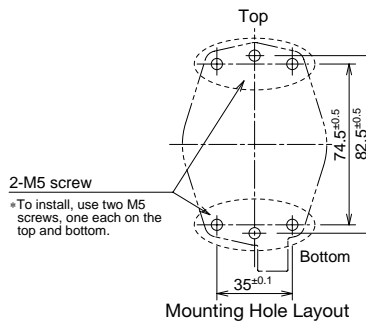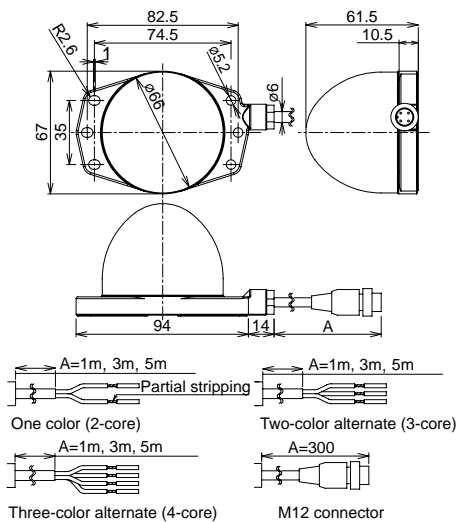| Model		Jumbo Dome	Dome/Flat
Cable	Single Color	UL20276, 21 AWG, 3-core Cable outside diameter: ø4.9 mm Allowable cable bending radius: 30 mm	UL20276, 24AWG, 3-core Cable outside diameter: ø4.1 mm Allowable cable bending radius: 24.6 mm
	Two-Color Alternate		
	Three- Color Alternate	UL20276, 22AWG, 4-core Cable outside diameter: ø5.0 mm Allowable cable bending radius: 30 mm	
Connector		20AWG, 4-core Cable length: 0.3m Cable outside diameter: ø6.0 mm Allowable cable bending radius: 40 mm M12 one-touch connector	

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Jumbo Dome Model

Shape	Types		Ordering Part No.	Illumination Color
Jumbo Dome (ø66) One color	Cable	1m	LH1D-D3HQ4C10①	Specify a color code in place of ① in the Part No. Color code: A, G, PW, R, S, Y
		3m	LH1D-D3HQ4C30①	
		5m	LH1D-D3HQ4C50①	
	Connector		LH1D-D3HQ4CN1①	
Jumbo Dome (ø66) 2-color alternate	Cable	1m	LH1D-D3HQ4C10①②	Specify a color code in place of ①/② in the Part No. Color code: R/G, A/G,R/PW, G/PW, A/PW (Two-color alternate)
		3m	LH1D-D3HQ4C30①②	
		5m	LH1D-D3HQ4C50①②	
	Connector		LH1D-D3HQ4CN1①②	
Jumbo Dome (ø66) 3-color alternate	Cable	1m	LH1D-D3HQ4C10①②③	Specify a color code in place of ①/②/③ in the Part No. Color code: R/G/PW (Three-color alternate)
		3m	LH1D-D3HQ4C30①②③	
		5m	LH1D-D3HQ4C50①②③	
	Connector		LH1D-D3HQ4CN1①②③	

- Color code: A (amber), G (green), PW (pure white), R (red), S (blue), Y (yellow).
- For orange, specify "A " (for amber).

Dimensions

All dimensions in mm.

2-M5 screw
* To install, use two M5 screws, one each on the top and bottom.

Mounting Hole Layout

One color (2-core)
Two-color alternate (3-core)
Three-color alternate (4-core)
M12 connector

Internal Circuit

- **One-color Illumination**

Cable color: White / Connector pin No. 4
LED module (color: ①)
Cable color: Brown / Connector pin No. 3
Cable color: Green / Connector pin No. 2 — (N.C.)
Connector pin No.1 — (N.C.)

- **Two-color Alternate Illumination**

Cable color: White / Connector pin No. 4
LED module (color: ①)
Cable color: Green / Connector pin No. 2
LED module (color: ②)
Cable color: Brown / Connector pin No. 3
Connector pin No. 1 — (N.C.)

- **Three-color Alternate Illumination**

Cable color: White / Connector pin No. 4
LED module (color: ①)
Cable color: Green / Connector pin No. 2
LED module (color: ②)
Cable color: Yellow / Connector pin No. 1
LED module (color: ③)
Cable color: Brown / Connector pin No. 3

Note: For the schematic of the LED module, see "LED Module Internal Circuit" on the right.

Lens Colors

	Illumination Color	Lens Color
One Color	Amber (A)	Amber
	Green (G)	Green
	Pure White (PW)	White
	Red (R)	Red
	Blue (S)	Blue
	Yellow (Y)	Yellow
Two-color Alternate	Red (R) / Green (G)	White
	Amber (A) / Green (G)	White
	Red (R) / Pure White (PW)	White
	Green (G) / Pure White (PW)	White
	Amber (A) / Pure White (PW)	White
Three-color Alternate	Red (R) / Green (G) / Pure White (PW)	White

LED Module Internal Circuit

The schematic of the LED module internal circuit differ depending on the illumination color.

- **Illumination color: A, R, W**
- **Illumination color: G, PW, S**
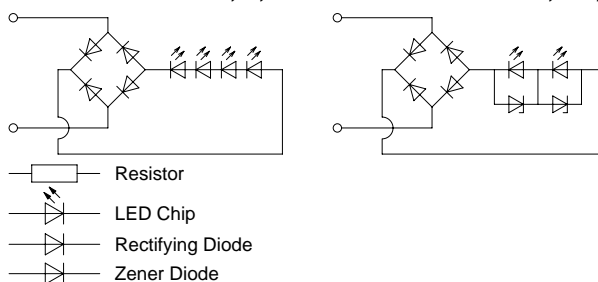
Resistor
LED Chip
Rectifying Diode
Zener Diode

LH Series Surface Mount Indicators

Dome Model

Package Quantity: 1

Shape	Cable	Ordering Part No.	Illumination Color
Dome ø37 One Color	1m	**LH1D-D2HQ4C10①**	Specify a color code in place of ① in the Part No. A: amber G: green PW: pure white R: red S: blue Y: yellow
	3m	**LH1D-D2HQ4C30①**	
	5m	**LH1D-D2HQ4C50①**	
Dome ø37 Red/Green 2-color alternate	1m	**LH1D-D2HQ4C10RG**	R (red) / G (green) 2-color alternate illumination
	3m	**LH1D-D2HQ4C30RG**	
	5m	**LH1D-D2HQ4C50RG**	

•For orange, specify "A" (for amber).

Dimensions

Mounting Hole Layout

One Color

Partial stripping × 2

Two-color Alternate

Partial stripping × 3
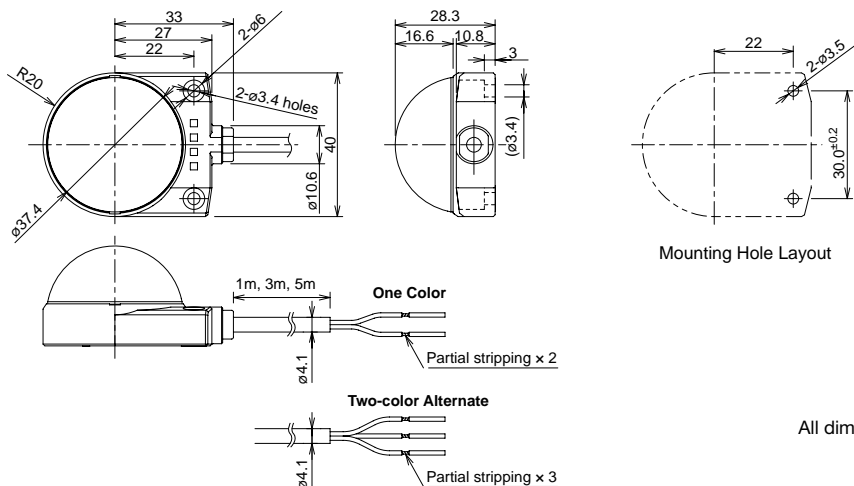
All dimensions in mm.

Internal Circuit
• One-color Illumination

Cable color: White

LED module (color: ①)

Cable color: Brown

Lens Colors

Illumination Type	Illumination Color	Lens Color
One Color	Amber (A) Green (G) Pure White (PW) Red (R) Blue (S) Yellow (Y)	Amber Green Clear (Note) Red Blue Yellow
Two-color Alternate	Red (R) / Green (G)	Clear (Note)

Note: Because lenses have a white diffusion cover inside, pure white, white, and red/green types appear white when the light is off.

• Two-color Alternate Illumination
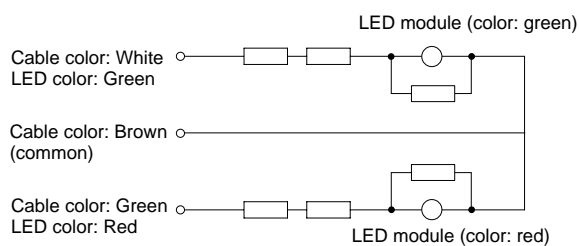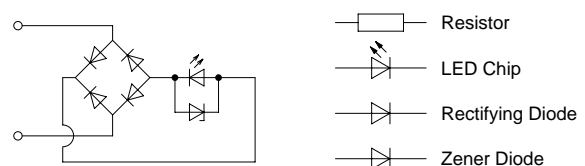
Cable color: White
LED color: Green

LED module (color: green)

Cable color: Brown
(common)

Cable color: Green
LED color: Red

LED module (color: red)

Note: For the schematic of the LED module, see "LED Module Internal Circuit" on the right.

LED Module Internal Circuit

Resistor	
LED Chip	
Rectifying Diode	
Zener Diode	

6 **IDEC**

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C/ Puerto Rico, 4
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portugal@ermec.com

LH Series Surface Mount Indicators

Flat Model

Package Quantity: 1

Shape	Cable	Ordering Part No.	Illumination Color
Flat One Color	1m	**LH1D-H2HQ4C10①**	Specify a color code in place of ① in the Part No. A: amber G: green PW: pure white R: red S: blue Y: yellow
	3m	**LH1D-H2HQ4C30①**	
	5m	**LH1D-H2HQ4C50①**	
Flat Red/Green 2-color Alternate	1m	**LH1D-H2HQ4C10RG**	R (red) / G (green) 2-color alternate illumination
	3m	**LH1D-H2HQ4C30RG**	
	5m	**LH1D-H2HQ4C50RG**	

•For orange, specify "A" (for amber).

Dimensions

Illumination Area

1m, 3m, 5m

One Color
Partial stripping × 2

Two-color Alternate
Partial stripping × 3

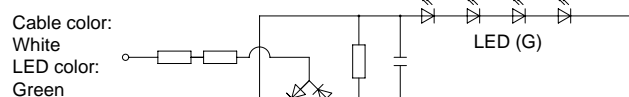All dimensions in mm.

Mounting Hole Layout
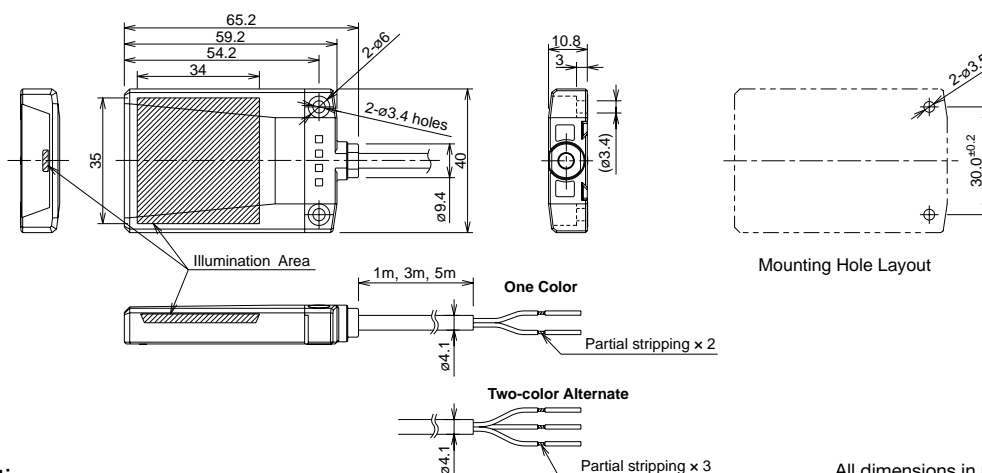
Internal Circuit

• One-color Illumination

Cable color: White

Cable color: Brown

• Two-color Alternate Illumination

Cable color: White
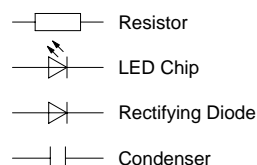LED color: Green

LED (G)

Cable color: Brown (common)

Cable color: Green
LED color: Red

LED (R)

Lens Colors

Illumination Type	Illumination Color	Lens Color
One Color	Amber (A) Green (G) Pure White (PW) Red (R) Blue (S) Yellow (Y)	Amber Green Clear Red Blue Yellow
Two-color Alternate	Red/Green	Clear

—▭— Resistor

⚡ LED Chip

—▷— Rectifying Diode

—┤├— Condenser

Replacement Parts

Shape	Material	Ordering Part No.	Lens Color
Lens (flat model)	Polyarylate	**LH9Z-1DLH2①**	For flat model. Specify a color code in place of ① in the Part No. A: amber C: clear G: green R: red S: blue Y: yellow Note: Use C (clear) lens for R / G (red/green alternate), or PW (pure white) illumination.

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# LH Series Surface Mount Indicators

Safety Precautions

- Do not disassemble, repair, or modify the LH1D indicator, otherwise electric shock, damage, fire, or malfunction may occur.
- Do not pull out or push in the cable of the LH1D indicator, otherwise damage may occur. Provide a slack in the cable while wiring.

- The LH1D indicator is a general-purpose and industrial electronic device. Do not use the LH1D indicator for electronic equipment which may damage the human body or threaten life in case of malfunction or failure.

Operating Instructions

- LED elements may vary in colors and brightness.
- The LH1D indicator is vulnerable to static electricity. Take sufficient protection against static electricity and spikes.
- For one-color illumination of cable types, the green wire is cut short because it is not used. When cutting the cable for shorter wiring, cut the green wire short or make sure that the green wire is not used.

- The pin layout of connector type is shown at the right.

Green Cable (N.C)

Pin No.2　Pin No.1
Pin No.3　Pin No.4
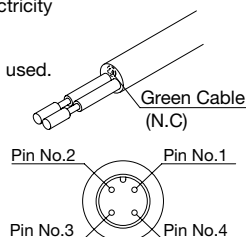
- Excessive shock to the LH1D may cause damage or failure, and the internal lens may fall off even if no detects are found externally.
  The internal lens may have fallen off when:
  · The illumination varies greatly when viewed from the side.
  · The indicator makes a rattling sound when shaken lightly.
  When any of the above is observed, contact IDEC.
 Note: Do not remove the lens.
  The specified degree of protection cannot be assured when the lens is removed.

Lens　Internal lens

Base　Without lens
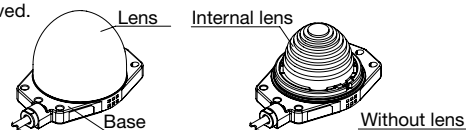
Panel Mounting

Using two M3 screws (M5 screws for jumbo dome models), install the LH1D indicator to a mounting surface. Tighten the screws to a torque of 0.6 N·m maximum (1.0 to 1.4 N•m for jumbo dome models). Mounting screws are not provided and must be supplied by the user.
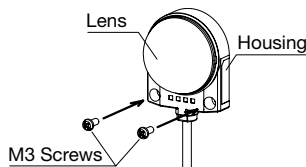
- Jumbo Dome Model

Top　10.5
M5 screws
Bottom
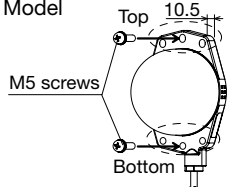
Note 1: Take into account the thickness of the base (10.5 mm), when selecting the length of the screws.
Note 2: Take appropriate anti-loosening measures such as spring washers and screw locks.
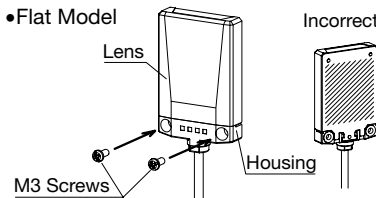Note 3: Install the LH1D using two M5 screws, one each on the top and the bottom.

- Dome Model

Lens
Housing
M3 Screws

Note: The dome lens is not removable. Do not attempt to remove the lens, otherwise damage will occur.

- Flat Model

Incorrect
Lens
M3 Screws
Housing

Note 1: Do not install the LH1D indicator by attaching only the lens, such as by taping down the lens. Otherwise internal components may come loose.
Note 2: Make sure that the back of the indicator is securely attached to the mounting surface, so that the lens cannot be easily removed.

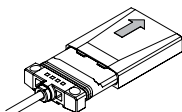## Inserting Marking Film into Flat Model Lens

1. Insert a flat screwdriver into the groove between the base and lens. Do not use flat screwdrivers with a tip width of 1.0 mm or more.
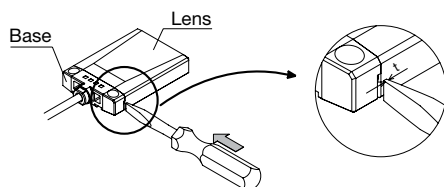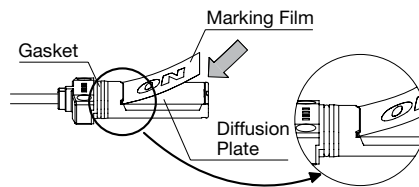
Base　Lens

2. Twist the screwdriver and disengage the lens from the base.
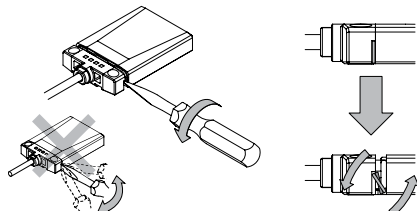
3. Remove the lens from the base.

4. Insert the edge of a marking film into the gap between the base and the diffusion plate, and place the marking film on top of the diffusion plate.
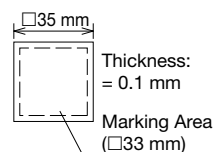
Marking Film
Gasket
Diffusion Plate

5. Install the lens. Ensure that the lens is installed snugly.

No Gap
Lens installed on the base snugly.
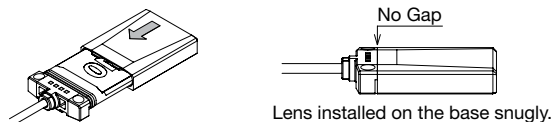
Note 1: Do not touch the gasket, as this may affect its waterproof characteristics.
Note 2: Do not touch the diffusion plate.

Markings

Legends and symbols can be printed on marking film for the flat lens. One 0.1mm-thick film can be installed. Marking film is not attached and must be supplied by the user.
Recommended marking film: Polyester

□35 mm
Thickness: = 0.1 mm
Marking Area (□33 mm)

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