

# INSTRUCTION SHEET

## LF2D-E LED Illumination Unit LF2D-EH Series

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

### Safety Precautions

In this operation instruction sheet, safety precautions are categorized in order of importance to Warning and Caution :

#### WARNING

Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

#### CAUTION

Caution notices are used where inattention might cause personal injury or damage to equipment.

#### WARNING

- Before designing the final equipment and powering up the LF2D-E illumination unit, confirm the specifications scribed on this sheet. If there is any uncertainty in the description, contact IDEC before powering up the LF2D-E illumination unit.
- Do not disassemble, repair, or modify the LF2D-E illumination unit, otherwise severe accidents may result, such as electric shocks, damage, fire, or malfunction.
- Turn off the power to the LF2D-E illumination unit before wiring. Make sure of correct wiring, otherwise electric shocks or damage may result.
- Do not gaze into the LF2D-E illumination unit while it is lit, and do not project the light to other people, otherwise eyes may be injured.
- Make sure that the LF2D-E illumination unit does not fall during transportation, installation, and operation, otherwise damage may result.
- Do not pull out or push in the cable of the LF2D-E illumination unit, otherwise damage may result. Give a slack to the cable while wiring.
- The LF2D-E illumination unit is a general-purpose and industrial electronic device. Do not use the LF2D-E illumination unit for electronic equipment which may damage a human body or threaten a life in case a malfunction or failure occurs.
- Make sure that the cable does not touch the LF2D-E housing.

#### CAUTION

- LED modules and illumination units may vary in illumination colors and illuminance.
- Apply a voltage within the rated value, otherwise the LED elements may be damaged.
- The LF2D-E illumination unit is vulnerable to static electricity. Take a sufficient measure for protection against static electricity and surge voltages.
- Do not apply an excessive force to the LF2D-E illumination unit. Do not leave a damaged LF2D-E illumination unit unattended or use a damaged LF2D-E.
- Make sure of the correct operating temperature, which is the temperature around the LF2D-E illumination unit. Otherwise internal temperature rise may result in damage.
- Do not use or store the LF2D-E illumination unit in a place subjected to vibrations and shocks.
- Do not use the LF2D-E illumination unit in the following places:  
Exposed to direct sunlight, near heaters, and at high temperatures  
Subjected to chemicals, and corrosive gases  
(Plastic lens types: Iron powder and oil)  
Basements, greenhouses, and other humid places  
Cold storage warehouses and cooler exhaust outlets  
(make sure that no freezing occurs)
- To obtain waterproof and oilproof quality, observe the followings.  
Do not loosen the screws on the housing.  
In order to avoid panel distortion, make sure that the panel has sufficient strength.  
Ensure the waterproof gasket does not protrude from the flange.

### 1 Types

Lens Material	Type No.
Reinforced Glass	LF2D-EH□F-2W-◇
Plastic	LF2D-EH□G-2W-◇

□ : Lens surface code    ◇ : Accessory code

### Accessories

Cable Gland	LF9Z-A11
Cable (5m)	LF9Z-C05

### 2 Specifications

#### General Specifications

Applicable Standard	JIS C 8105-1 , EN61000-6-2 , EN55015	
Rated Voltage	24V DC (Operating voltage range: 21.6V to 26.4V DC)	
Input Current (approx.)	460 mA typ. (555 mA maximum)	
Rated Power (approx.)	11W typ. (13.3W maximum)	
Operating Temperature	-30 to +55°C (no freezing)	
Storage Temperature	-35 to +70°C (no freezing)	
Operating Humidity	45 to 85% RH (no condensation)	
Storage Humidity	20 to 90% RH (no condensation)	
Life *1	50,000 hours minimum (until the brightness reduces to 70% the initial value in 25°C environment)	
Insulation Resistance	1 MΩ minimum (500V DC megger)	
Dielectric Strength	1000V AC, 1minute (between input terminal and ground terminal or housing)	
Vibration Resistance (damage limits)	5 to 55Hz, amplitude 0.5 mm	
Shock Resistance (damage limits)	1000 m/s <sup>2</sup>	
Material	Flange:	Diecast aluminium
	Housing:	Diecast aluminium
	Lens *2 :	Reinforced Glass Polycarbonate
	Cable Gland:	Brass
	Cable:	PVC
Weight (approx.)	850g (no accessories) 1000g (with cable gland, mounting bracket, cable)	
Degree of Protection	LF2D-EH□F-2W-◇: IP67f *3 LF2D-EH□G-2W-◇: IP67	

\*1: Life of the LED is greatly affected by the operating conditions.

\*2: Lens material is specified by the Type No.

\*3: Water- and oil-tight characteristics are tested to IEC60529 requirements and do not assure protection against all actual operating conditions. For illumination units without accessories, use a cable gland and cable that satisfy IP67f, IP67 degrees of protection.

#### LED Optical Specifications

Illumination Color	White
Color Temperature (typ.)	5700 K
Reference Illuminance (typ.) at 1.0m (perpendicular)	1450 lx

### 3 Installation

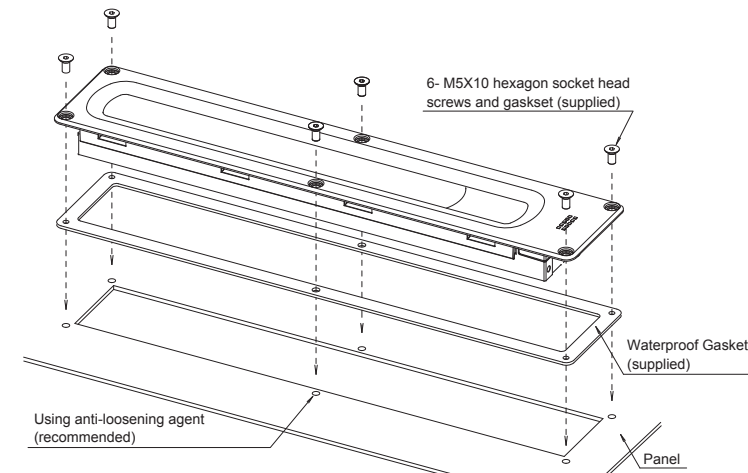
#### Wall and ceiling Recessed Mount

##### Mounting Centers

see [7] "Dimensions."

##### Mounting Procedure

- Apply Loctite on the female threads in the panel to prevent the screws from loosening. Make sure that Loctite does not flow out of the threads.  
(Recommended: LOCTITE 425, ThreeBond 1401)  
Note: When not using Loctite, make sure that the screws are not loosened before starting operation of the illumination unit.
- Install the illumination unit on the panel using the hexagon socket head screws and waterproof gasket supplied with the illumination unit.



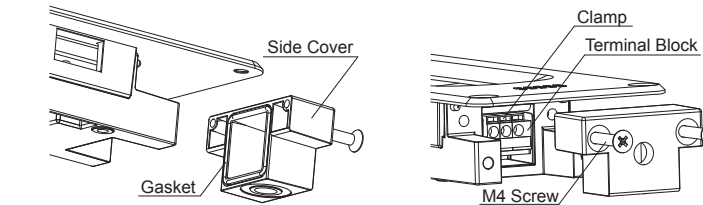
### 4 Wiring

#### Wiring

- Connect the ground (⊕) terminal of the LF2D-E LED illumination unit to a proper ground for protection against static electricity and surge voltages.
- The LF2D-E illumination unit is equipped with a cable, RO-FLEX 725T AWG24 x 3c. When wiring, use an appropriate connector, terminal, or wire to meet the specification values. When soldering the wires of the cable, use a 20W soldering iron, with a tip temperature of 350°C, and complete soldering within 3 seconds. Use Sn-Ag-Cu lead-free solder.
- Make sure that the cable does not touch the LF2D-E housing.

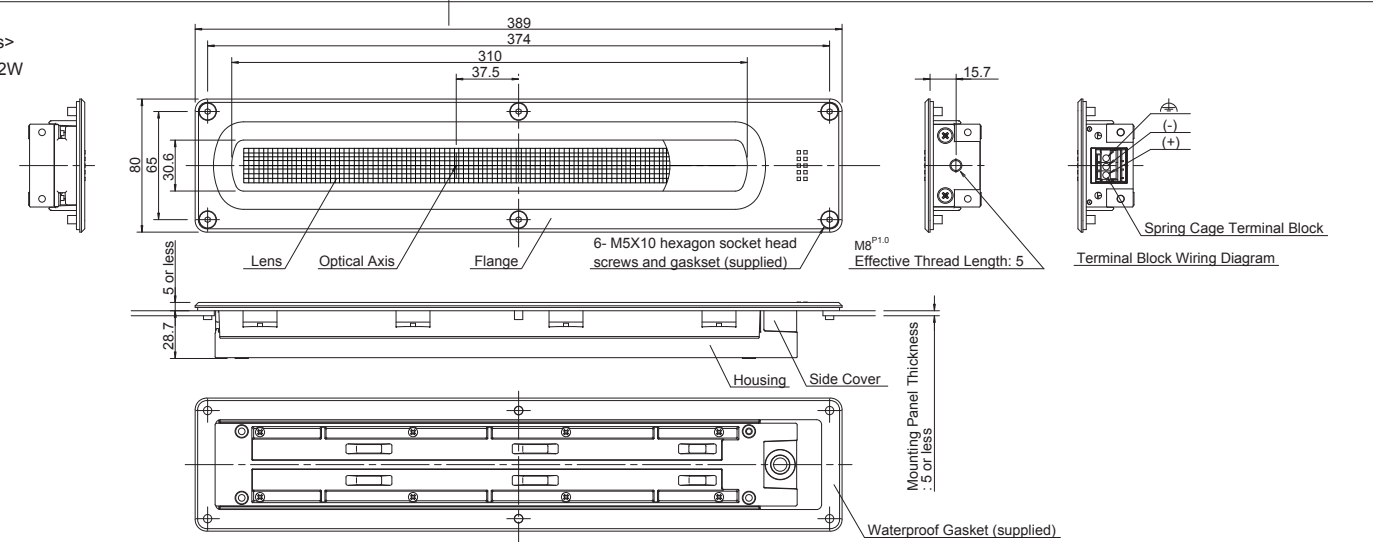
### Cable Connection

- When connecting a cable to the terminal block, remove the side cover. Before removing the side cover, wipe off water and oil from the housing, otherwise water or oil may enter the inside of the housing.
- When reinstalling the side cover, clean the gasket. Any foreign object on the gasket may impair the water-proof characteristics. Make sure that the cable is not caught between the housing and the side cover.
- To install the side cover, tighten the two M4 screws to the torque shown below.  
Recommended tightening torque: 1.4 to 2.0 N·m
- To remove the cable from the terminal block, push in the clamp and pull out the wire.

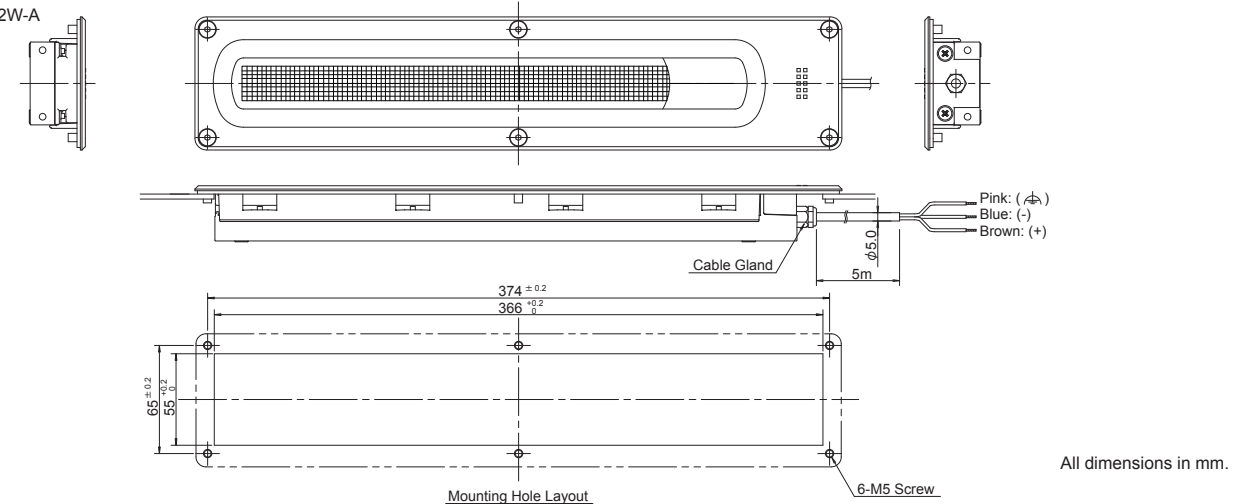


### 7 Dimensions

<No Accessories>  
LF2D-EH□ \* -2W



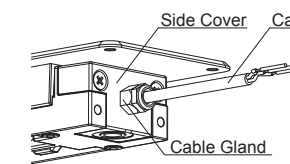
<with Cable Gland, Cable>  
LF2D-EH□ \* -2W-A



### 5 Accessories

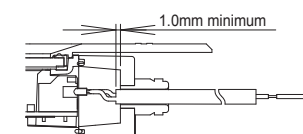
When installing the optional cable gland, and cable, follow the steps shown below.

- Tighten the cable gland to the torque shown below.  
Installation into the side cover:  
Recommended tightening torque: 1.5 to 2.5 N·m  
Tightening the cable:  
Recommended tightening torque: 1.5 to 1.7 N·m



For cable connection, see [4] "Wiring."

- When installing a cable using the cable gland, make sure that the cable sheath protrudes the gland as shown at right, otherwise the water-proof characteristics may be impaired.

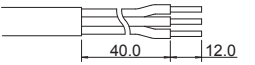


### 6 Recommended Parts

When using commercially available ferrules, cables, and cable glands, choose the recommended parts shown below.

- Ferrule: AI 0.25-12BU, AI 0.34-12TQ  
AI 0.5-12 WH, AI 0.75-12GY (Phoenix Contact)  
Applicable ferrule thickness: 0.25 to 0.75mm<sup>2</sup>

- Cable: RO-FLEX 725T AWG24 x 3c (NICHIGOH)  
Strip the cable sheath and wire insulation as shown at right.



- Cable Gland: SKINDICHT MINI M8X1(LAPP)

When using a cable gland shown above, choose a cable of  $\phi$ 3.5 to 5.5 mm in order to assure Degree of Protection.

Choose a cable gland in consideration of the thread size and effective thread length.

### 8 Precautions for Disposal

- Dispose of the LF2D-E LED Illumination Unit as an industrial waste.