Think Automation and beyond...

IDEC

LUMIFA™

New

LF1D/LF2D

LED Illumination Units
(Wide angle & high illuminance model)

IDEC CORPORATION

(12/05/18)

IDEC, a trusted name that supplies reliable industrial products, offers superior LED illumination units.

Industrial illumination requires resistance against harsh environments subject to water, oil, and metal chips, while providing brightness specified by EN1837: 1999, 4.2, to ensure safety. IDEC's LUMIFA LED Illumination units ensure long service life, energy savings, low heat generation, and high resistance against shock. In the LF1D/LF2D (wide angle & high illuminance model), the optical design with a bright LED device, lens, and reflector are integrated with a highly efficient power supply design. These new LED illumination units light not only the target object but also the periphery. The slim profile design is also ideal for installation in various industrial machines and equipment.

LF series LED Illumination Units

Low heat:	LED illumination generate very little heat, unlike incandescent and halogen lamps.
Long service life:	Maintenance-free operation for over 50,000 hours.
Vibration/shock resistance:	Highly resistant.
Energy saving:	Less power consumption when compared with fluorescent lamps, contributing to CO_2 reduction.
RoHS compliant:	Environmentally friendly compared with mercury-laden fluorescent lamps.

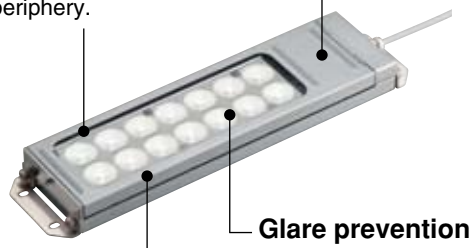
Wide-angle and High Illumination

Bright (EN1837:1999, 4.2)

The combination of reflector and lens illuminate not only the object but its periphery.

Efficient power circuit

Highly efficient, power circuit.



Heat Dissipation

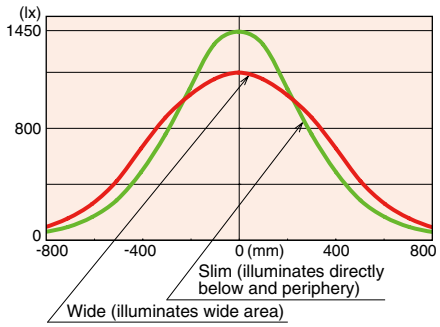
Heat is dissipated by the aluminum housing.

Glare prevention

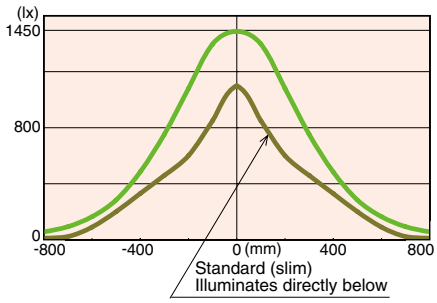
Micro lens processing of the lens enhances brightness, and reduces glare.

Light Distribution Characteristics

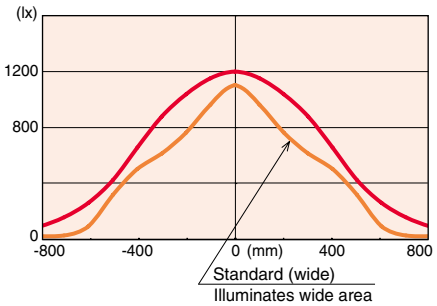
Slim and wide (wide angle & high illuminance)



Wide angle & high illuminance/standard (slim)



Wide angle & high illuminance/standard (wide)



Illuminating Surface Comparison

Standard

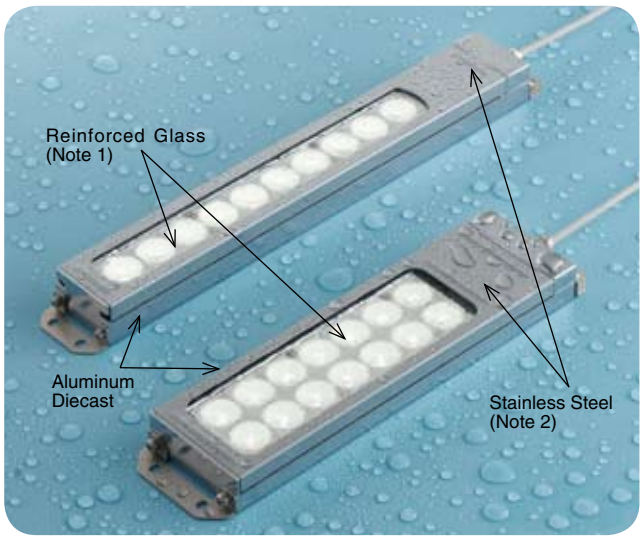
Because various light distribution angles are available with lenses, the best lighting characteristics can be provided to suit each application, in addition to the concentrated light distribution shown at left.

Wide angle & high illuminance

The diffusing light illuminates the center and periphery more brightly and evenly.

Robust and Resistant

- Degree of protection is IP67f (illumination surface: reinforced glass). Waterproof, dust-proof, and oil-proof. Can be used in environments subject to water, dust, and oil.
- Construction of diecast aluminum (base), stainless steel (front), and reinforced glass. Resistant against flying chips.



Note 1: Polycarbonate available for applications such as food machines.

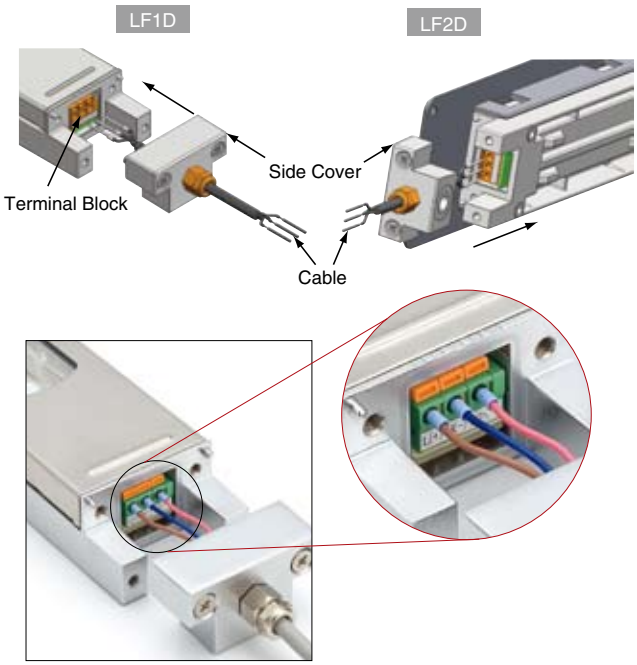
Note 2: LF2D is in aluminum diecast.

Easy Maintenance

Spring-clamp terminal blocks

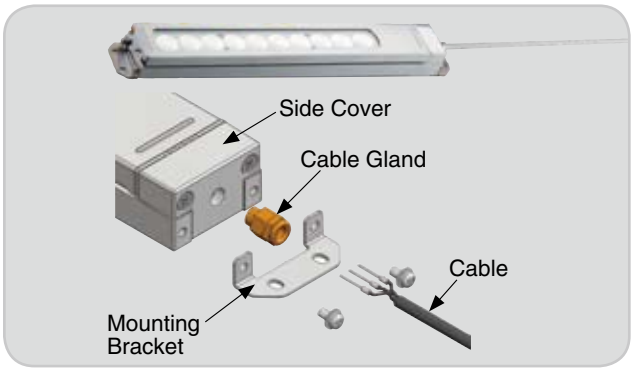
Removable direct plug-in terminal block and spring clamp connections ensure a high quality connection, making it easy to install or replace the LED illumination unit.

Connection Example

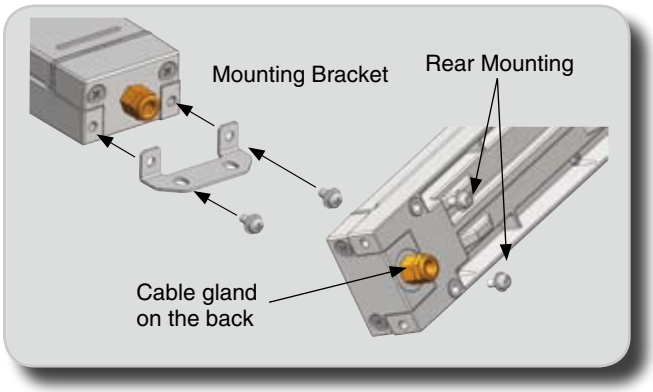


Variety

Cable gland, cable, and mounting brackets are also available as accessories for installation in various applications.

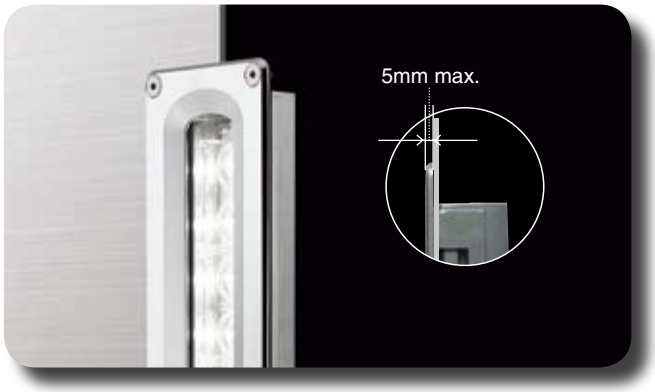


Screw holes are provided on the sides for installation using mounting brackets, and also on the back for direct mounting. Cable can connected from the rear.



Flush mounting of LF2D minimizes the build-up of metal chips.

Only 5 mm extension from the mounting panel (LF2D).



LF1D/LF2D LED Illumination Units (Wide Angle & High Illuminance)

Wide-angle and bright illumination in a compact housing. Ideal for installing inside machines or equipment. IP67f degree of protection.

- LED provides energy-savings, long-life, space-saving and maintenance advantages.
- Highly bright LED device, optimal optical design of lens and reflector, and highly efficient power supply achieve wide lighting angle and highly bright illumination.
- IP67f degree of protection (LF1D: IP69K)
- Illumination surface —reinforced glass or polycarbonate.
- Robust housing of aluminum diecast and stainless steel (LF1D only).
- Thin and slim profiles allow installation in compact areas.
- Extreme low profile with the sleek design of the LF2D. Resistant to dust build up on the surface.

Application examples
Machine tools, food processing equipment, automatic manufacturing machines, printing machines, production system, and test equipment.

LF1D-∗H (Illumination color: white)

Package Quantity: 1

Style			Slim (LF1D-EH)		Wide (LF1D-FH)	
Shape						
LED Arrangement			10 LEDs × 1 row		7 LEDs × 2 rows	
Optional Accessories			Illumination Surface		Illumination Surface	
Cable Gland LF9Z-A11	Cable LF9Z-C05	Mounting Bracket LF9Z-B11, -B12	Reinforced Glass	Polycarbonate	Reinforced Glass	Polycarbonate
Without (Cable gland hole on the side of LF1D)	—	—	**LF1D-EH2F-2W**	**LF1D-EH3G-2W**	**LF1D-FH2F-2W**	**LF1D-FH3G-2W**
		With	**LF1D-EH2F-2W-101**	**LF1D-EH3G-2W-101**	**LF1D-FH2F-2W-101**	**LF1D-FH3G-2W-101**
Without (Cable gland hole on the back of LF1D)	—	—	**LF1D-EH2F-2W-200**	**LF1D-EH3G-2W-200**	**LF1D-FH2F-2W-200**	**LF1D-FH3G-2W-200**
		With	**LF1D-EH2F-2W-201**	**LF1D-EH3G-2W-201**	**LF1D-FH2F-2W-201**	**LF1D-FH3G-2W-201**
With (Side)	—	—	**LF1D-EH2F-2W-300**	**LF1D-EH3G-2W-300**	**LF1D-FH2F-2W-300**	**LF1D-FH3G-2W-300**
		With	**LF1D-EH2F-2W-301**	**LF1D-EH3G-2W-301**	**LF1D-FH2F-2W-301**	**LF1D-FH3G-2W-301**
	With	—	**LF1D-EH2F-2W-350**	**LF1D-EH3G-2W-350**	**LF1D-FH2F-2W-350**	**LF1D-FH3G-2W-350**
		With	**LF1D-EH2F-2W-A**	**LF1D-EH3G-2W-A**	**LF1D-FH2F-2W-A**	**LF1D-FH3G-2W-A**
With (Back)	—	—	**LF1D-EH2F-2W-400**	**LF1D-EH3G-2W-400**	**LF1D-FH2F-2W-400**	**LF1D-FH3G-2W-400**
		With	**LF1D-EH2F-2W-401**	**LF1D-EH3G-2W-401**	**LF1D-FH2F-2W-401**	**LF1D-FH3G-2W-401**
	With	—	**LF1D-EH2F-2W-450**	**LF1D-EH3G-2W-450**	**LF1D-FH2F-2W-450**	**LF1D-FH3G-2W-450**
		With	**LF1D-EH2F-2W-451**	**LF1D-EH3G-2W-451**	**LF1D-FH2F-2W-451**	**LF1D-FH3G-2W-451**

- Use Class 2 power supply when using the LF1D as UL/c-UL listed LED illumination unit.

LF2D-∗H (Illumination color: white)

Package Quantity: 1

Style		Slim (LF2D-EH)		Wide (LF2D-FH)	
Shape					
LED Arrangement		10 LEDs × 1 row		7 LEDs × 2 rows	
Optional Accessories		Illumination Surface		Illumination Surface	
Cable Gland LF9Z-A11	Cable LF9Z-C05	Reinforced Glass	Polycarbonate	Reinforced Glass	Polycarbonate
Without (cable gland hole on the side of LF2D)	—	**LF2D-EH2F-2W**	**LF2D-EH3G-2W**	**LF2D-FH2F-2W**	**LF2D-FH3G-2W**
Without (cable gland hole on the back of LF2D)	—	**LF2D-EH2F-2W-200**	**LF2D-EH3G-2W-200**	**LF2D-FH2F-2W-200**	**LF2D-FH3G-2W-200**
With (Side)	—	**LF2D-EH2F-2W-300**	**LF2D-EH3G-2W-300**	**LF2D-FH2F-2W-300**	**LF2D-FH3G-2W-300**
	With	**LF2D-EH2F-2W-A**	**LF2D-EH3G-2W-A**	**LF2D-FH2F-2W-A**	**LF2D-FH3G-2W-A**
With (Back)	—	**LF2D-EH2F-2W-400**	**LF2D-EH3G-2W-400**	**LF2D-FH2F-2W-400**	**LF2D-FH3G-2W-400**
	With	**LF2D-EH2F-2W-450**	**LF2D-EH3G-2W-450**	**LF2D-FH2F-2W-450**	**LF2D-FH3G-2W-450**

- Use Class 2 power supply when using the LF2D as UL/c-UL listed LED illumination unit.

Accessories

Accessory		Material	Part No.	Remarks	Package Quantity
Cable Gland		Brass	**LF9Z-A11**	M8, applicable wire size: ø3.5 to 5.5 mm²	1
Mounting Bracket	For LF1D-E/LF1D-EH (slim)	Stainless Steel	**LF9Z-B11**	With mounting screws	2 (for right and left)
	For LF1D-F/LF1D-FH (wide)		**LF9Z-B12**		
Angle Adjustable Mounting Bracket	For LF1D-E/LF1D-EH (slim)	Stainless Steel	**LF9Z-1MDE1**		
	For LF1D-F/LF1D-FH (wide)		**LF9Z-1MDF1**		
Cable		PVC	**LF9Z-C05**	5m	1

LF1D/LF2D LED Illumination Units (Wide Angle & High Illuminance Model)

Part No. Development

1 Series (Legend)	
LF	Series name

2 Shape (Legend)	
1	Box
2	Flange

3 Style (LED arrangement) (Legend)	
E	Slim (10 LEDs × 1 row)
F	Wide (7 LEDs × 2 rows)

6 Degree of Protection (Legend)	
F	IP67f
G	IP67

6 Reinforced glass: F
Polycarbonate: G

7 Voltage (Legend)	
2	24V DC

8 Illumination Color (Legend)	
W	White

1	2		3	4	5	6		7	8		9
LF	2	D	E	H	2	F	–	2	W	–	A

4 Light Distribution (Legend)	
Blank	Standard
H	Wide angle & high illuminance

5 Illumination Surface (Legend)	
2	Reinforced glass
3	Polycarbonate

9 Cable Gland (LF9Z-A11) (Legend)		9 Cable (Legend) (LF9Z-C05)		9 Mounting Bracket (Legend) (LF9Z-B11, LF9Z-B12)	
Blank	Without accessories. Cable gland hole on the side.				
A	With cable gland (standard). With cable. With mounting bracket (LF1D only)				
1	Without cable gland. Cable gland hole on the side.	0	Without	0	Without
2	Without cable gland. Cable gland hole in the back.			1	Yes
3	With cable gland (standard) on the side.	0	Without		
4	With cable gland (standard) in the back.	5	Yes		

- LF1D/LF2D: "100" and "351" are not available.
- LF2D: "350" and "∗∗1" (with mounting bracket) are not available.

Specifications

Model	LF1D-∗H		LF2D-∗H	
Style	Slim	Wide	Slim	Wide
Rated Voltage	24V DC			
Voltage Range	21.6 to 26.4V DC			
Rated Power (typ.) (at rated voltage)	11W	12.5W	11W	12.5W
Insulation Resistance	1MΩ minimum (500V DC megger)			
Dielectric Strength	1,000V AC 50/60Hz, 1 minute			
Vibration Resistance (damage limits)	Frequency 5 to 55 Hz, amplitude 0.5 mm			
Shock Resistance (damage limits)	1,000 m/s²			
Operating Temperature	–30 to +55°C (no freezing)			
Operating Humidity	45 to 85% RH (no condensation)			
Storage Temperature	–35 to +70°C (no freezing)			
Operating Atmosphere	No corrosive gas			
Life (Note 1)	50,000 hours (The illumination duration in which the brightness maintains a minimum of 70% of the initial value at 25°C.)			
Degree of Protection (Note 2)	IP67f (reinforced glass), IP67 (polycarbonate), IP69K (LF1D)			
Material (Note 3)	Housing: Diecast aluminum Front cover: Stainless steel Illumination surface: Reinforced glass or polycarbonate		Housing and flange: Diecast aluminum Illumination surface: Reinforced glass or polycarbonate	
Weight (approx.)	LF1D-EH∗∗-2W∗: 750g LF1D-EH∗∗-2W-A∗: 950g	LF1D-FH∗∗-2W∗: 800g LF1D-FH∗∗-2W-A: 1,000g	LF2D-EH∗∗-2W∗: 850g LF2D-EH∗∗-2W-A:1,000g	LF2D-FH∗∗-2W∗: 900g LF2D-FH∗∗-2W-A: 1,050g

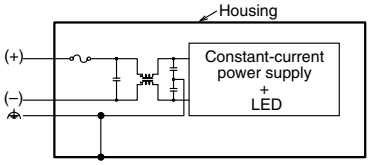
Note 1: LED life depends on the operating environment.
Note 2: Waterproof or oil-proof characteristics specified by IEC 60529 (IP67) and DIN40050-9 (IP69K).
For illumination units without accessories, use a cable gland and cable that satisfy the required degree of protection.
Note 3: The reinforced glass and polycarbonate illumination surfaces have the same appearance, but have different degrees of protection.

LED Optical Specifications

Model	LF1D-∗H		LF2D-∗H	
Style	Slim	Wide	Slim	Wide
Illumination Color	White			
Color Temperature (typ.)	5,700K			
Total Luminous Flux (typ.)	1,000 lm	1,260 lm	1,000 lm	1,260 lm
Reference Illuminance (typ.) at 1.0m directly below	1,450 lx	1,200 lx	1,450 lx	1,200 lx

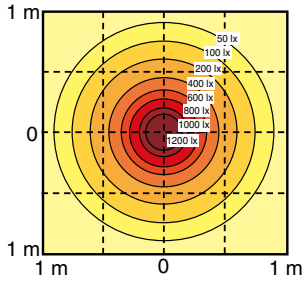
- LED modules and illumination units may vary in illumination color and illuminance.

Internal Circuit

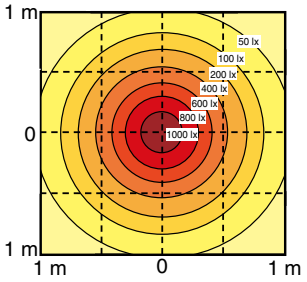


Illuminance Distribution (LF1D/LF2D) at 1.0m

Slim

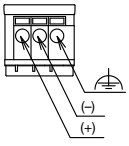


Wide

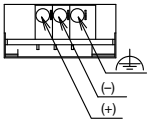


Terminal Block Wiring

Slim



Wide

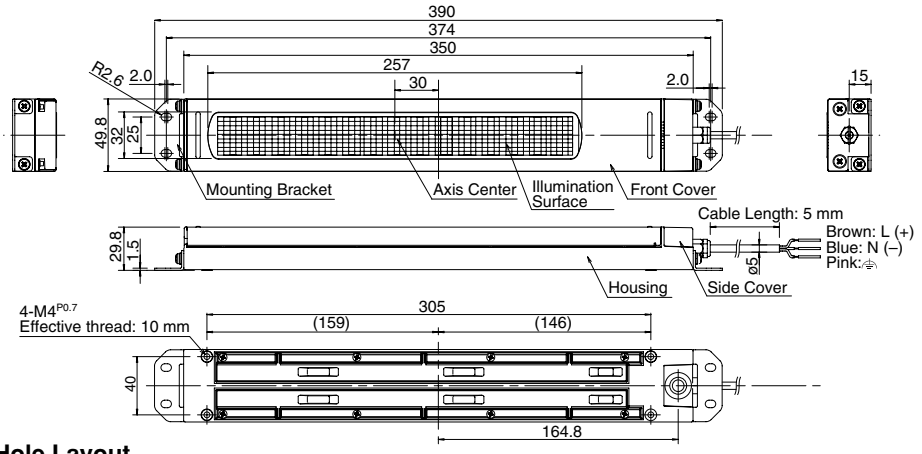


Applicable ferrules: 0.25 to 0.75 mm²
Recommended source:
Phoenix Contact:
Al 0,25-12 BU, Al 0,34-12 TQ,
Al 0,5-12 WH, Al 0,75-12 GY

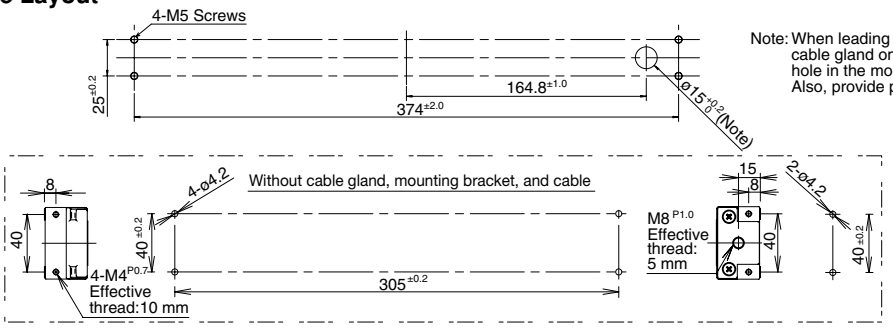
Dimensions

LF1D-EH (Slim, 10 LEDs × 1 row)

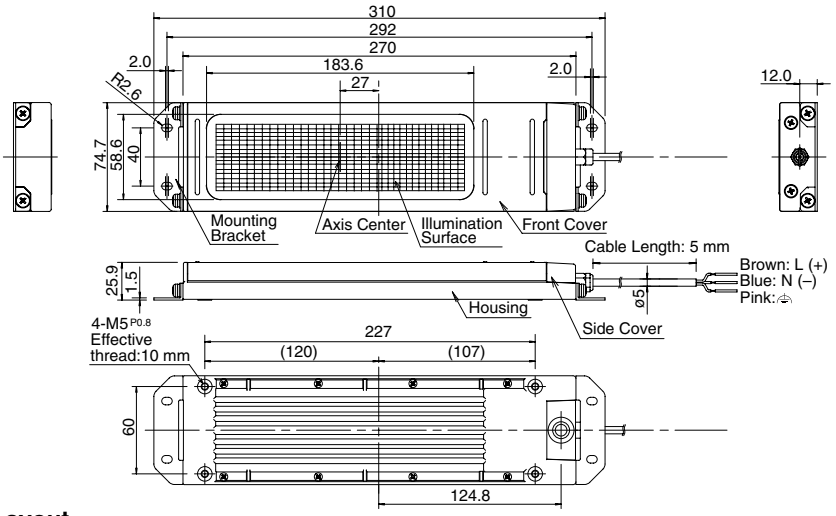
All dimensions in mm.



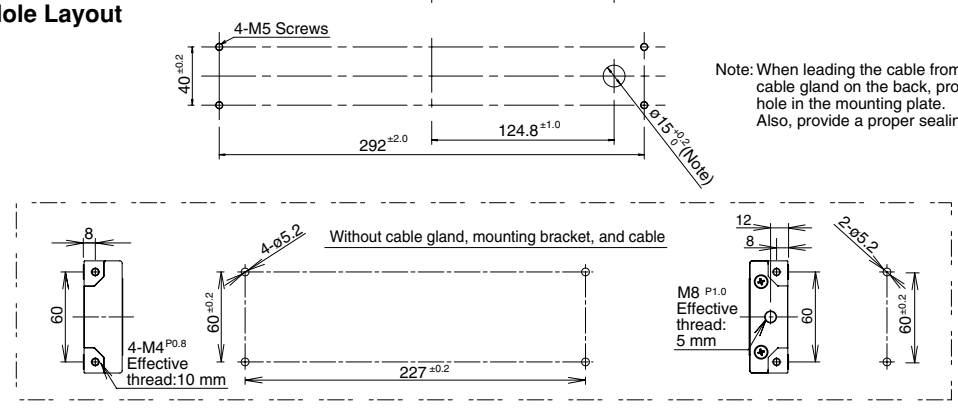
Mounting Hole Layout



LF1D-FH (Wide, 7 LEDs × 2 rows)



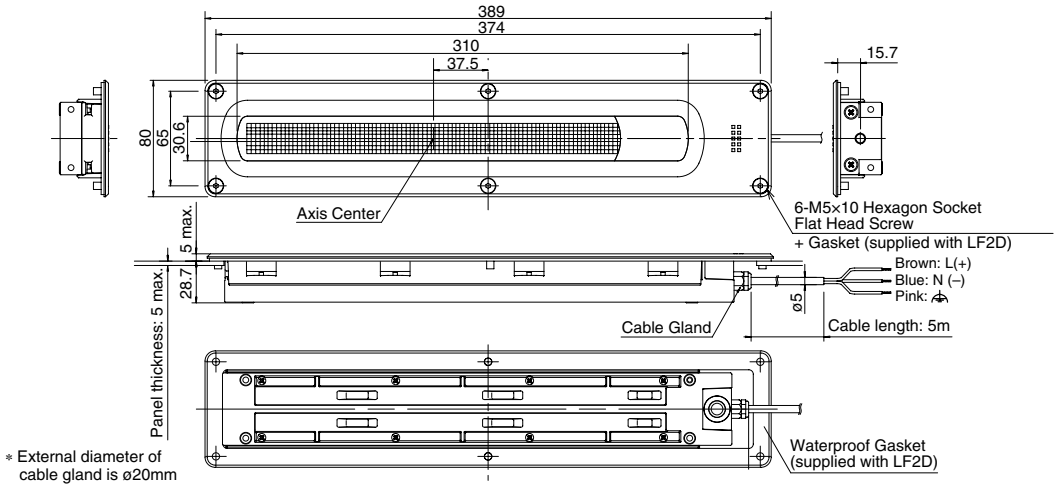
Mounting Hole Layout



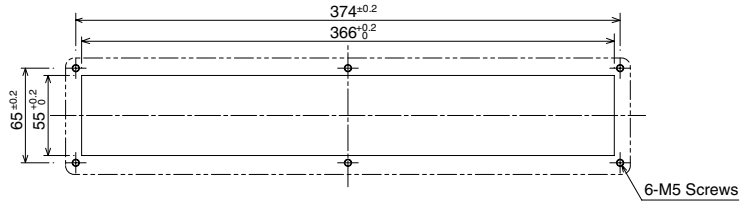
Dimensions

LF2D-EH (Slim, 10 LEDs × 1 row)

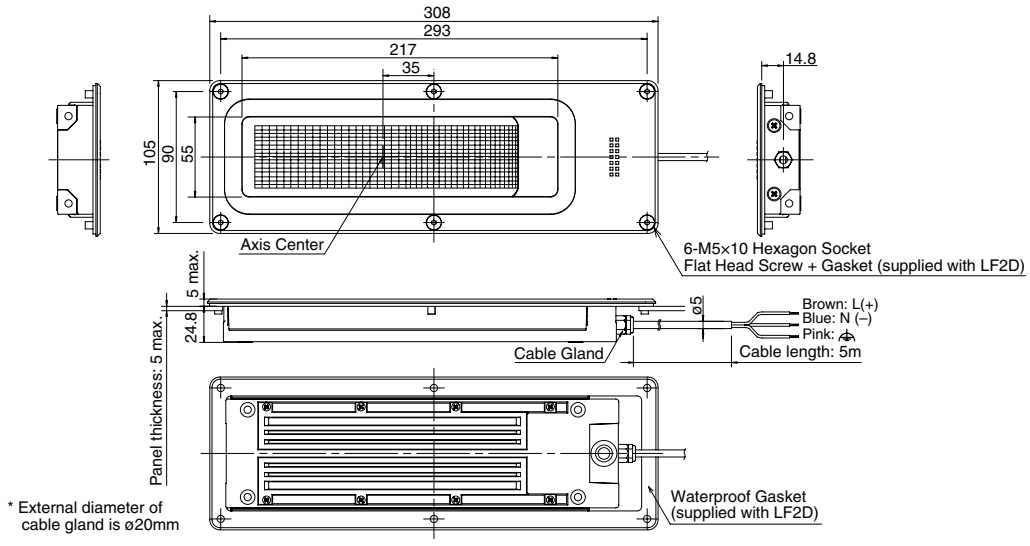
All dimensions in mm.



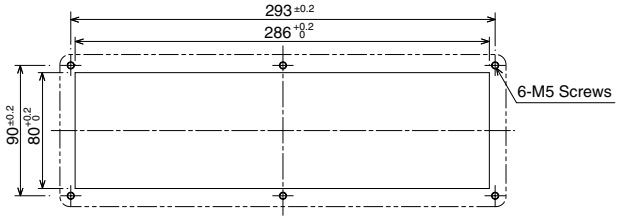
Mounting Hole Layout



LF2D-FH (Wide, 7 LEDs × 2 rows)



Mounting Hole Layout



LUMIFA™

LF1D/LF2D LED Illumination Units (Wide Angle & High Illuminance Model)

⚠ Safety Precautions

- Do not disassemble, repair, or modify LF1D/LF2D. Otherwise electric shock, fire, or malfunction may occur.
- Turn off power before wiring. To prevent electric shock or damage, ensure that the wiring is correct.
- Do not stare directly into the LF1D/LF2D while it is lit, and do not project the light towards other people, otherwise their eyes may be injured.
- The LF1D/LF2D is general-purpose industrial electric device. Do not use with electronic equipment which may cause harm or injury to anyone or threaten life in case a malfunction or failure occurs.

Instructions

- Before designing equipment and powering up units, confirm the specifications described in the instruction sheet.
- Apply voltage within the rated value, otherwise the LED elements may be damaged.
- The LF1D/LF2D is vulnerable to static electricity. Take sufficient measures for protection against static electricity and voltage surges.
- Make sure that the unit is not dropped during transportation, installation, and operation, otherwise damage may result.
- Do not pull or push the cable, otherwise damage may result. Allow sufficient slack to the cable while wiring.
- Do not apply excessive force. Do not leave a damaged unit unattended or use a damaged unit. Reinforced glass illumination surface requires extra attention.
- Ensure correct operating temperature. Otherwise rise in internal temperature may result in damage to the unit.
- Do not use or store in a location subjected to vibration and shock.
- Do not use in the following locations:
  - Exposure to direct sunlight, near heaters, high temperatures
  - Subject to chemicals, and corrosive gases (Plastic illumination surface: avoid iron powder and oil)
  - Places with high humidity such as basements and greenhouses
  - Cold storage warehouses (make sure that no freezing occurs)
- Do not loosen screws, otherwise the protection characteristics will be impaired.
- For the LF2D, make sure to provide sufficient strength for mounting panel. Required waterproof characteristics cannot be obtained if a distorted mounting panel is used.

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