

**LF1D (IP69K) and LF2D (IP67, IP67f) Series**

**Machine Tools • Food & Beverage Processing Equipment • Vision Systems**

**Key features**

With their rugged construction, the LF1D/2D series of light units are ideal for machine tools, automated label and package inspection equipment, and food and beverage processing equipment. Their design provides equally brilliant light at the center or edges of the units. Plus with their ratings, the LF1D (IP67, IP67f, IP69K) and LF2D (IP67, IP67f) can be used where high-pressure and high-temperature washdowns are used.

**Mini (LF1D-C)**

- Compact unit only 100 x 50 x 25mm
- Single phosphor LED module design eliminates multiple shadows while distributing light over a wide area (120°)

**Slim & Wide (LF1D/2D-E, EH, F, FH)**

- Brightness: Standard Models: up to 1,100lx at 1m  
High-Luminance Models: up to 1,450lx at 1m
- Available with terminal block or spring clamp connections for easy installation
- Angle adjustable mounting brackets provide installation flexibility

**Long (LF1D-H/J)**

- Two lengths available: 365mm and 510mm
- The flat light design reduces glare and multiple shadows, improving visibility from a distance



**Part Numbers**

**Mini (LF1D-C)**

Cable		Part Number
Location	Length	



Side	3m	LF1D-C2F-2W-330
	5m	LF1D-C2F-2W-350
Back	3m	LF1D-C2F-2W-430
	5m	LF1D-C2F-2W-450

**Long (LF1D-J 365mm)**

Cable		Part Number
Location	Length	



Side	5m	LF1D-H2F-2N-350
	1.5m + M12 connector	LF1D-H2F-2N-3B0
Back	5m	LF1D-H2F-2N-450
	1.5m + M12 connector	LF1D-H2F-2N-4B0

**Long (LF1D-J 510mm)**

Cable		Part Number
Location	Length	



Side	5m	LF1D-J2F-2N-350
	1.5m + M12 connector	LF1D-J2F-2N-3B0
Back	5m	LF1D-J2F-2N-450
	1.5m + M12 connector	LF1D-J2F-2N-4B0

**Slim and Wide Surface Mounting (LF1D/-E, EH, F, FH)**

Cable Gland LF9Z-A11	Model		Slim Model (10 LEDs x 1 row)		Wide Model (7 LEDs x 2 rows)	
	Cable LF9Z-C05	Mounting Bracket LF9Z-B11,B12	Clear Reinforced Glass	Clear Polycarbonate	Clear Reinforced Glass	Clear Polycarbonate



— (hole on the side)	—	√	LF1D-E⊙2F-2W LF1D-E⊙2F-2W-101	LF1D-E⊙3G-2W LF1D-E⊙3G-2W-101	LF1D-F⊙2F-2W LF1D-F⊙2F-2W-101	LF1D-F⊙3G-2W LF1D-F⊙3G-2W-101
— (hole on the back)	—	√	LF1D-E⊙2F-2W-200 LF1D-E⊙2F-2W-201	LF1D-E⊙3G-2W-200 LF1D-E⊙3G-2W-201	LF1D-F⊙2F-2W-200 LF1D-F⊙2F-2W-201	LF1D-F⊙3G-2W-200 LF1D-F⊙3G-2W-201
√ (Side)	—	√	LF1D-E⊙2F-2W-300 LF1D-E⊙2F-2W-301	LF1D-E⊙3G-2W-300 LF1D-E⊙3G-2W-301	LF1D-F⊙2F-2W-300 LF1D-F⊙2F-2W-301	LF1D-F⊙3G-2W-300 LF1D-F⊙3G-2W-301
	√	√	LF1D-E⊙2F-2W-350 LF1D-E⊙2F-2W-A	LF1D-E⊙3G-2W-350 LF1D-E⊙3G-2W-A	LF1D-F⊙2F-2W-350 LF1D-F⊙2F-2W-A	LF1D-F⊙3G-2W-350 LF1D-F⊙3G-2W-A
√ (Back)	—	√	LF1D-E⊙2F-2W-400 LF1D-E⊙2F-2W-401	LF1D-E⊙3G-2W-400 LF1D-E⊙3G-2W-401	LF1D-F⊙2F-2W-400 LF1D-F⊙2F-2W-401	LF1D-F⊙3G-2W-400 LF1D-F⊙3G-2W-401
	√	√	LF1D-E⊙2F-2W-450 LF1D-E⊙2F-2W-451	LF1D-E⊙3G-2W-450 LF1D-E⊙3G-2W-451	LF1D-F⊙2F-2W-450 LF1D-F⊙2F-2W-451	LF1D-F⊙3G-2W-450 LF1D-F⊙3G-2W-451

\*In place of ⊙ insert H for High-Luminance or leave blank for Standard models.

## Slim and Wide Recessed Mounting (LF2D/-E, EH, F, FH)

Model		Slim Model (10 LEDs × 1 row)		Wide Model (7 LEDs × 2 rows)	
Cable Gland LF9Z-A11	Cable LF9Z-C05	Clear Reinforced Glass	Clear Polycarbonate	Clear Reinforced Glass	Clear Polycarbonate
—	—	LF2D-E⊙2F-2W	LF2D-E⊙3G-2W	LF2D-F⊙2F-2W	LF2D-F⊙3G-2W
—	—	LF2D-E⊙2F-2W-200	LF2D-E⊙3G-2W-200	LF2D-F⊙2F-2W-200	LF2D-F⊙3G-2W-200
√ (Side)	—	LF2D-E⊙2F-2W-300	LF2D-E⊙3G-2W-300	LF2D-F⊙2F-2W-300	LF2D-F⊙3G-2W-300
	√	LF2D-E⊙2F-2W-A	LF2D-E⊙3G-2W-A	LF2D-F⊙2F-2W-A	LF2D-F⊙3G-2W-A
√ (Back)	—	LF2D-E⊙2F-2W-400	LF2D-E⊙3G-2W-400	LF2D-F⊙2F-2W-400	LF2D-F⊙3G-2W-400
	√	LF2D-E⊙2F-2W-450	LF2D-E⊙3G-2W-450	LF2D-F⊙2F-2W-450	LF2D-F⊙3G-2W-450

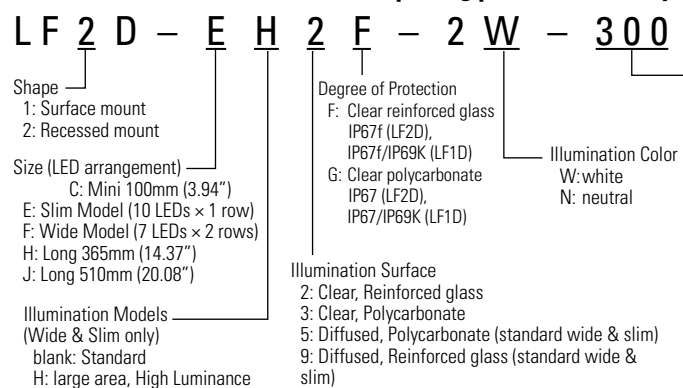
\*In place of ⊙ insert H for High-Luminance or leave blank for Standard models.

## Accessories

Item	Mounting Bracket				Cable Gland	Cable
	Fixed		Adjustable Angle			
Part Number	LF9Z-B11	LF9Z-B12	LF9Z-1MDE1	LF9Z-1MDF1	LF9Z-A11	LF9Z-C05
Applicable Unit	LF1D (Slim)	LF1D (Wide)	LF1D (Slim)	LF1D (Wide)	LF1D/2D (Slim & Wide)	
Material	Stainless Steel				Brass	PVC
Notes	1 pair, Left and Right				M8*	Length: 5m

\*Applicable wire size (10-12 AWG)

## Part Number Structure (use for interpreting part numbers only)



## Cable Gland

Code	Cable Gland	Cable Gland Hole Location	Cable	Mounting Bracket
Blank	—	side	—	—
A	√	side	5m	√ <sup>1</sup>
101	—	side	—	√ <sup>1</sup>
200	—	back	—	—
201	—	back	—	√ <sup>1</sup>
300	√	side	—	—
380	√	side	1.5m <sup>3</sup>	—
301	—	side	—	√ <sup>1</sup>
330	√	side	3m	—
350 <sup>2</sup>	√	side	5m	—
400	—	back	—	—
401	—	back	—	√ <sup>1</sup>
430	√	back	3m	—
450	√	back	5m	—
451	√	back	5m	√ <sup>1</sup>
480	√	back	1.5m <sup>3</sup>	—

1. Mounting bracket available for LF1D (wide and slim) only.

2. Only available for LF1D (wide and slim) models.

3. 1.5m cable with M12 connector for Long only (LF1D-H, J).

Specifications

LED Optical Specifications

Model	Mini	Standard				High-Luminance				Long	
	LF1D-C	Slim (LF1D/2D-E)		Wide (LF1D/2D-F)		Slim (LF1D/2D-EH)		Wide (LF12D-FH)		LF1D-H	LF1D-J
Illumination Surface	Clear	Clear	Diffused	Clear	Diffused	Clear	Diffused	Clear	Diffused	Clear	
Illumination Color	Cool White									Neutral White	
Total Luminous Flux	560lm	600lm		840lm		1,000lm		1,260lm		2,000lm	3,000lm
Color Temperature	5700K									4700K	
Reference Illuminance at 1.0m	180lx	1,100lx	1,000lx	1,100lx	1,000lx	1,450lx	1,200lx	1,450lx	1,200lx	560lx	840lx

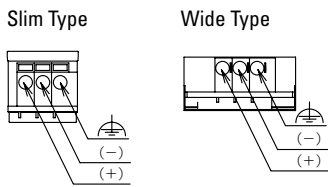
LED modules and illumination units may vary in color and brilliance. Luminous flux, color temperature, and illuminance values shown above are typical.

General Specifications

Model	Mini	Standard		High-Luminance		Long					
	LF1D-C	Slim (LF1D/2D-E)		Wide (LF1D/2D-F)		Slim (LF1D/2D-EH)		Wide (LF1D/2D-FH)		LF1D-H	LF1D-J
Rated Voltage	24V DC										
Voltage Range	21.6 to 26.4V DC										
Rated Power (typ.)	4.6W	9W		12.5W		11W		12.5W		18.4W	27.6W
Insulation Resistance	100MΩ minimum (500V DC megger)										
Dielectric Strength	1,000V AC, 50/60Hz, 1 minute										
Vibration Resistance (damage limits)	Frequency 5 to 55Hz, amplitude 0.5mm										
Shock Resistance (damage limits)	1000m/s <sup>2</sup>										
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 Environment	No corrosive gases										
Life <sup>1</sup>	50,000 hours (The illumination duration in which the illuminance maintains a minimum of 70% of the initial value at 25°C.)										
Degree of Protection <sup>2</sup>	IP67f (LF2D: reinforced glass), IP67 (LF2D: polycarbonate), IP69K (LF1D)										
Material <sup>3</sup>	Housing: Diecast aluminum (LF1D/LF2D), Lens: Reinforced glass or polycarbonate (LF1D/LF2D) Cover: Stainless steel (LF1D), Flange cover: Diecast aluminum (LF2D)										
Weight (approx.)	420g	LF1D-E*-2W*: 750g LF1D-E*-2W-A*: 950g LF2D-E*-2W*: 850g LF2D-E*-2W-A*: 1,000g		LF1D-F*-2W*: 800g LF1D-F*-2W-A*: 1,000g LF2D-F*-2W*: 900g LF2D-F*-2W-A*: 1,050g		LF1D-E*-2W*: 750g LF1D-E*-2W-A*: 950g LF2D-E*-2W*: 850g LF2D-E*-2W-A*: 1,000g		LF1D-F*-2W*: 800g LF1D-F*-2W-A*: 1,000g LF2D-F*-2W*: 900g LF2D-F*-2W-A*: 1,050g		1200g	1600g

- LED life depends on the operating environment.
- Waterproof or oil-proof characteristics specified by IEC 60529 and JEM1030. For illumination units without accessories, use a cable gland and cables that satisfy IP67f or IP67 degree of protection.
- The reinforced glass and polycarbonate illumination surfaces have the same appearance, but have different degrees of protection (IP67f or IP67).

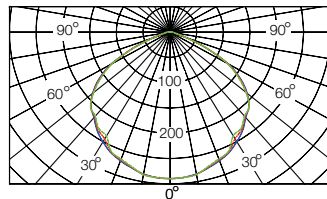
Terminal Block Wiring



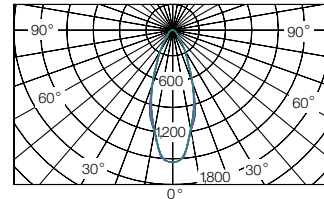
Applicable ferrules: 0.25 to 0.75 mm<sup>2</sup>  
Recommended source - Phoenix Contact:  
AI 0,25-12 BU, AI 0,34-12 TQ,  
AI 0,5-12 WH, AI 0,75-12 GY

Illuminance Charts

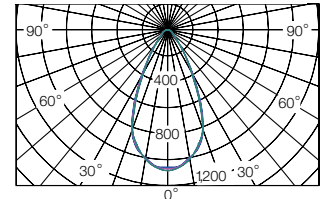
LF1D-C



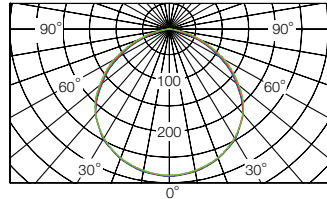
LF1D/2D-EH



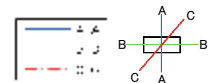
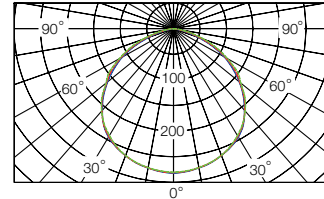
LF1D/2D-FH



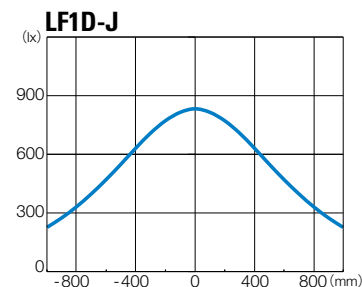
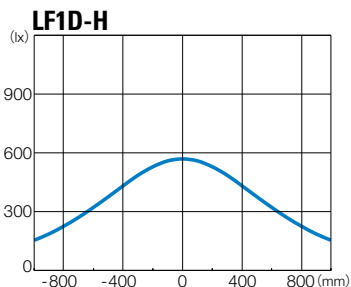
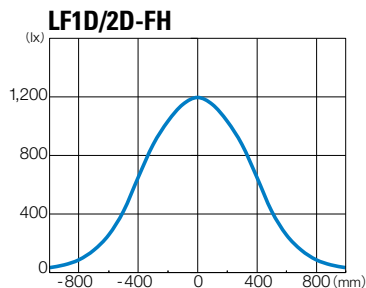
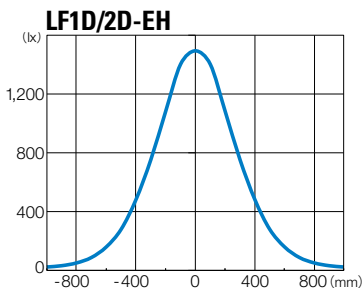
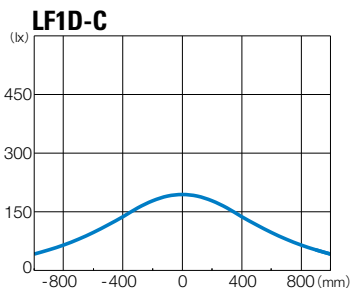
LF1D-H



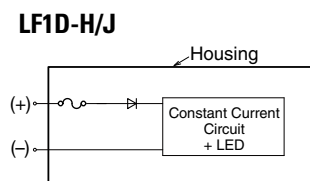
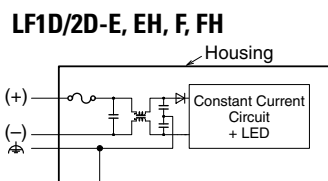
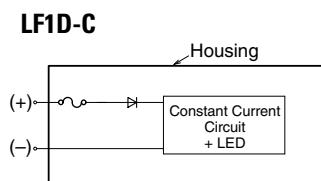
LF1D-J



Distribution Characteristics

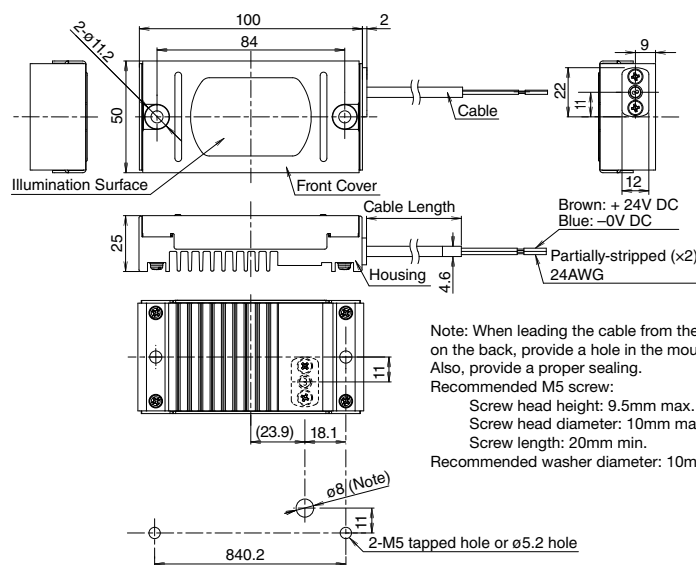


Internal Circuit

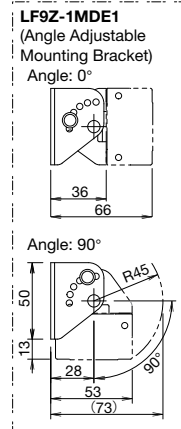
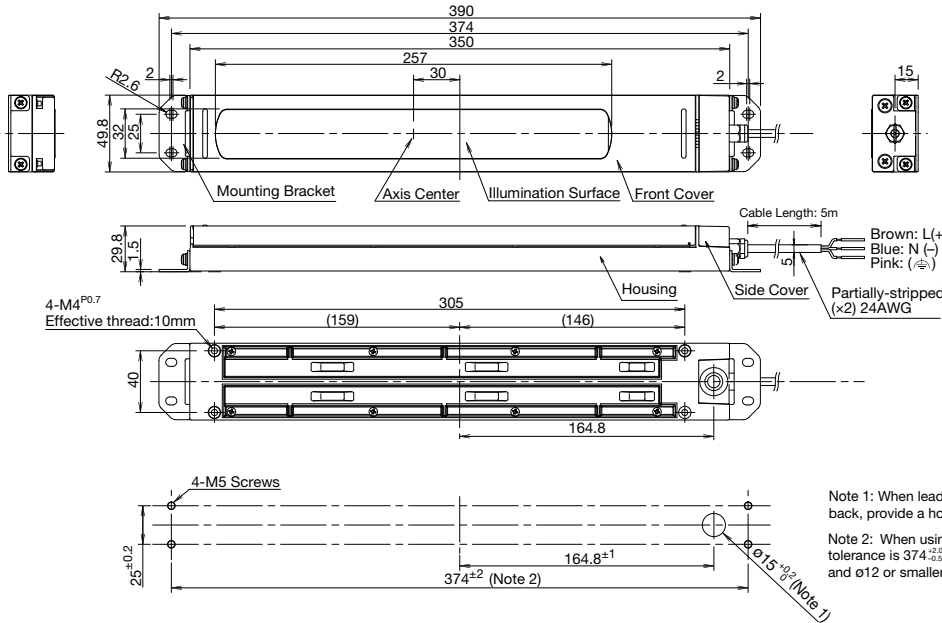


Dimensions (mm)

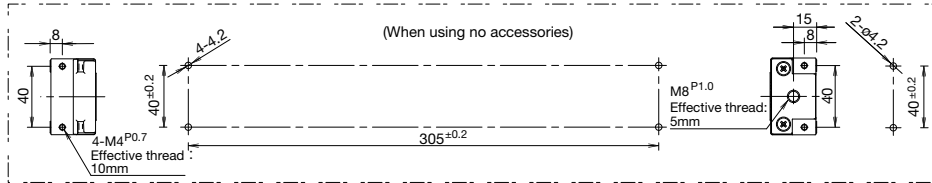
LF1D-C Mini



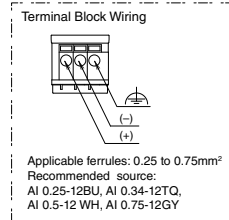
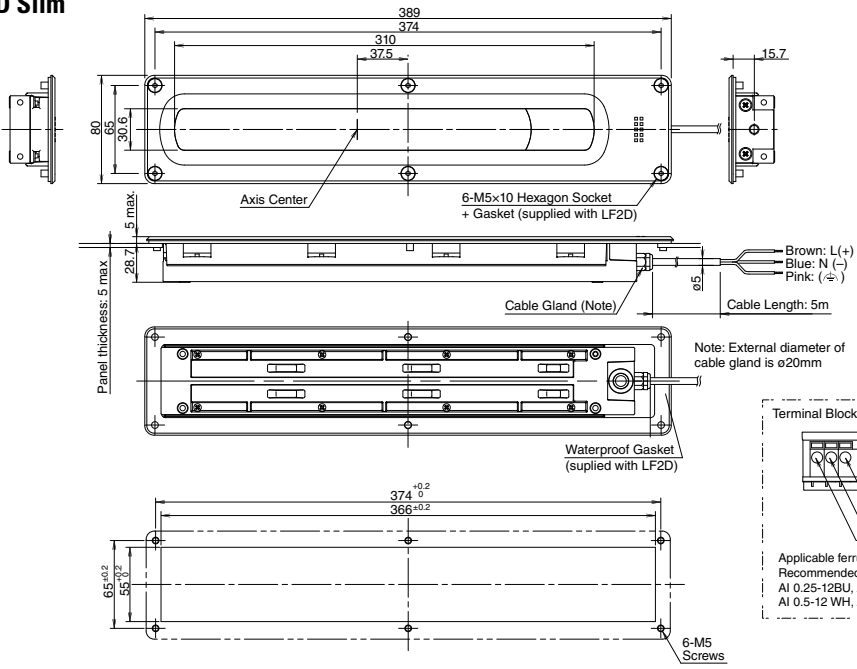
LF1D Slim



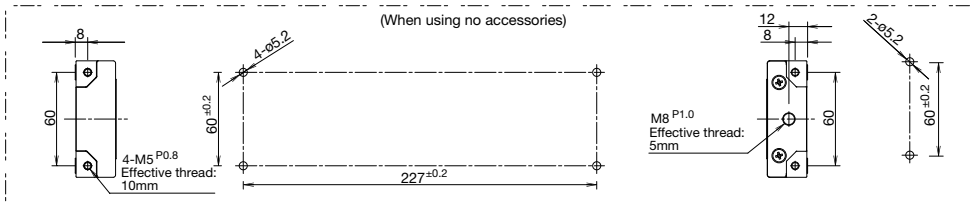
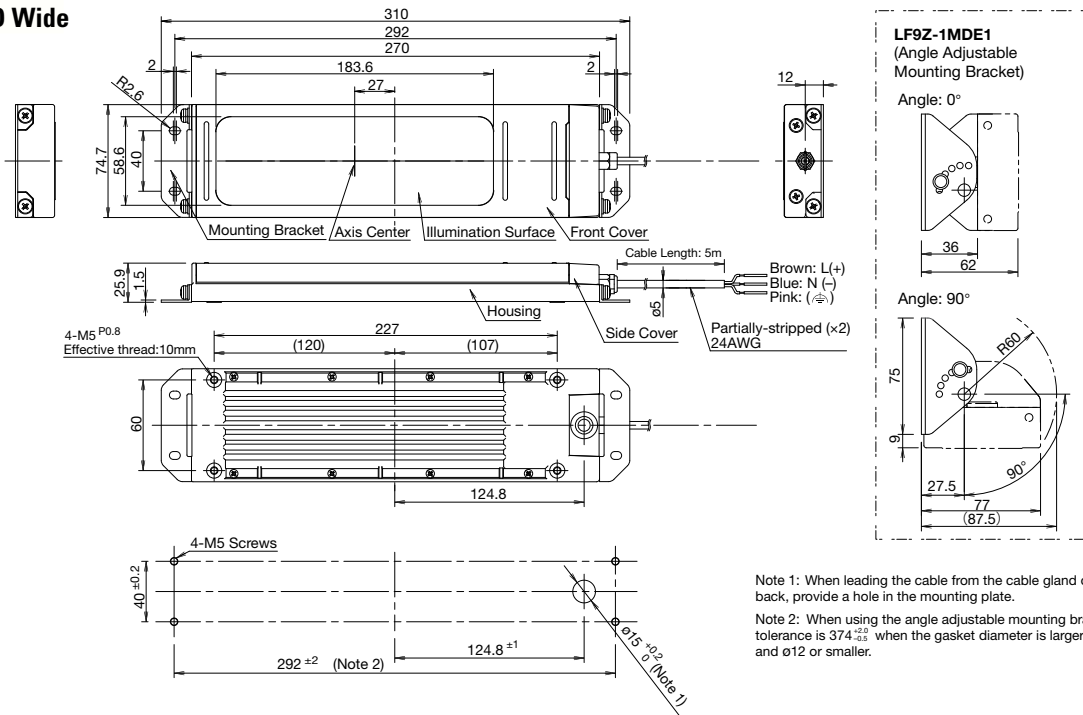
Note 1: When leading the cable from the cable gland on the back, provide a hole in the mounting plate.  
 Note 2: When using the angle adjustable mounting bracket, the tolerance is 374<sup>+0.2</sup> when the gasket diameter is larger than ø10 and ø12 or smaller.



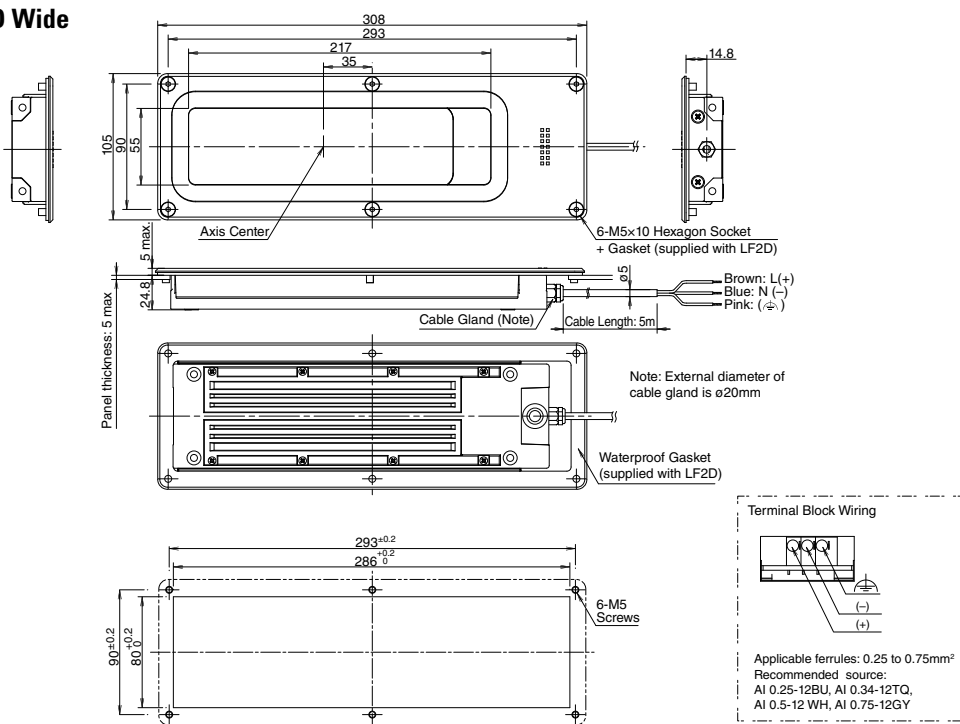
LF2D Slim



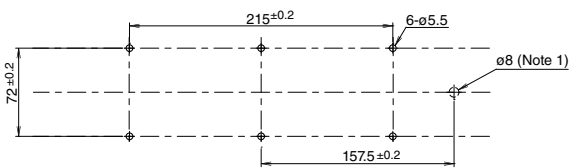
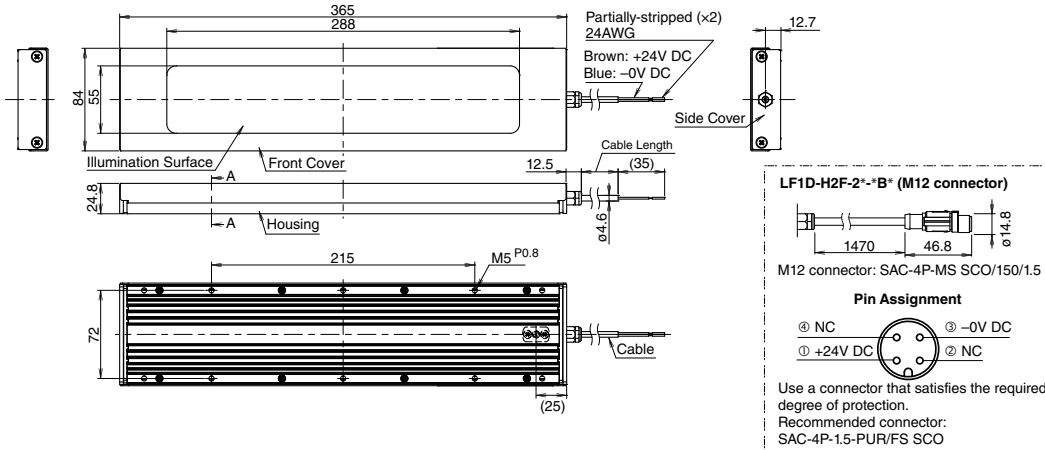
## LF1D Wide



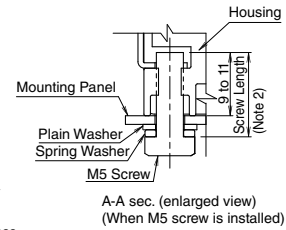
## LF2D Wide



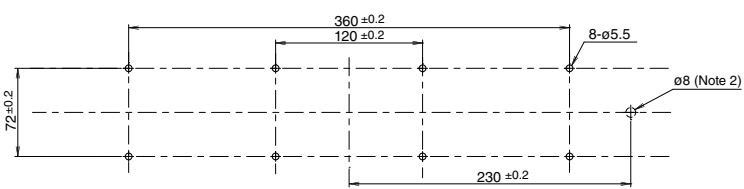
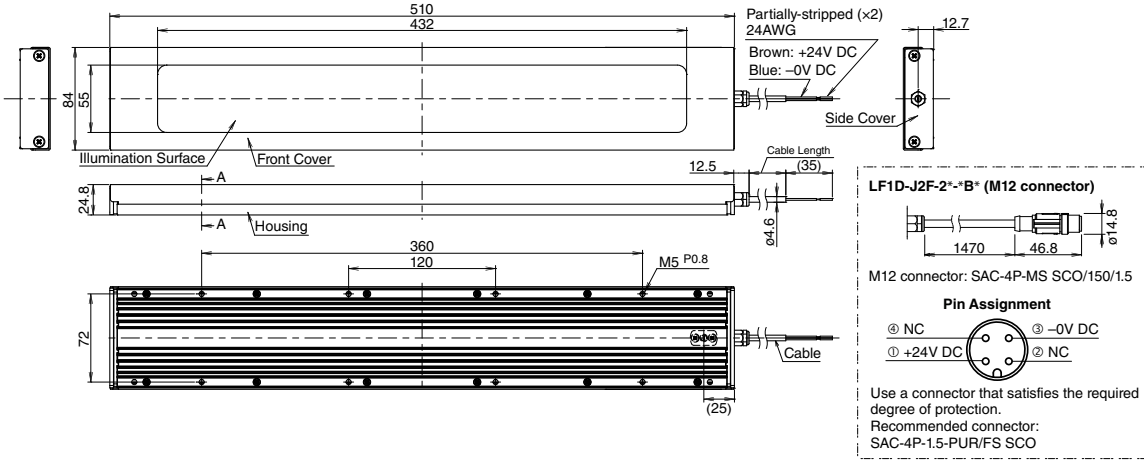
LF1D-H Long



Note 1: When leading the cable from the cable gland on the back, provide a hole in the mounting plate. A ø16 hole is necessary when using the LF1D-\*2F-2N-\*B\* (M12 connector type).  
 Note 2: Choose mounting screws in consideration of mounting plate thickness.



LF1D-J Long



Note 1: When leading the cable from the cable gland on the back, provide a hole in the mounting plate. A ø16 hole is necessary when using the LF1D-\*2F-2N-\*B\* (M12 connector type).  
 Note 2: Choose mounting screws in consideration of mounting plate thickness.

