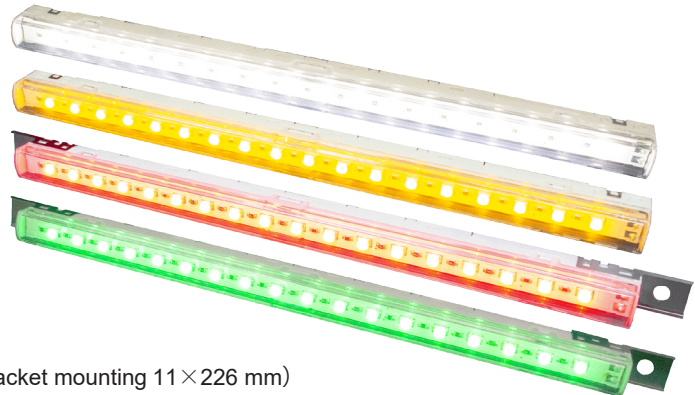


LLC Line Indicator

Slim display.

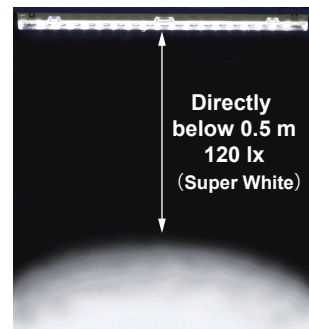
Standard mounting

Bracket mounting



- Display surface : 11×200 mm
(External dimension : Standard mounting 11×200 mm, Bracket mounting 11×226 mm)
- Depth behind panel : 14.3 mm
- Terminal : Wire harness
- Mounting : Standard mounting, Bracket mounting
- Illumination type : Full-Face
- Accessories : Joint fitting¹
- Applications
Equipment operation status display, reminder sign,
Built-in industrial lighting, indirect lighting, Shelf lighting, etc.

Ideal for simple lighting



Do not look directly at the light emitting part when it is lit.
Doing so may dangerous to your eyes.

CHARACTERISTICS

| | |
|-------------------------------|---|
| Display Surface Size | 11×200 mm |
| Illumination Color | Red, Super Green, Yellow, Super White |
| Illumination Type | Full-Face |
| Display Surface Shape | R face |
| Supply Voltage | DC 24 V ±10% |
| Consumption Current | 70 mA max. |
| Terminal Shape | Wire harness |
| Insulation Resistance | More than 100 MΩ at DC 500 V |
| Dielectric Strength | AC 1000 V RMS between terminals and ground 50/60 Hz for 60 sec. at normal ambient temperature and humidity |
| Peak Reverse Voltage | 150 V |
| Ambient Operating Temperature | -10°C to 40°C (No Freeze, No Condensation) |
| Ambient Operating Humidity | 45 to 85%RH max. (No Condensation) |
| Ambient Storage Temperature | -25°C to 65°C (No Freeze, No Condensation) |
| Ambient Storage Humidity | 45 to 85%RH max. (No Condensation) |
| RoHS (10 Substances) | Conform to standards |

https://www.sunmulon.co.jp/english/products/led_e/llc.html



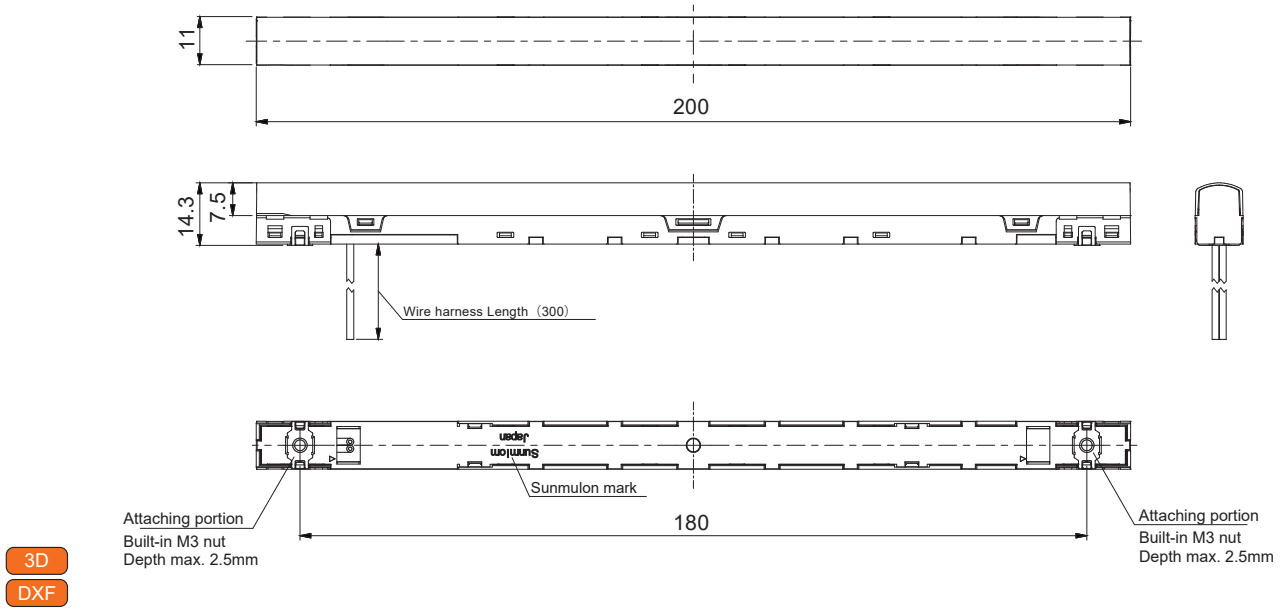
◇Dimensions : page LLC-2~3 ◇Ordering code : page LLC-4 ◇Internal connection arrangements : page LLC-5
 ◇LED specifications : page LLC-5 ◇Terminals : page LLC-6 ◇Mounting design / Panel cutout : page LLC-7~10

DIMENSIONS

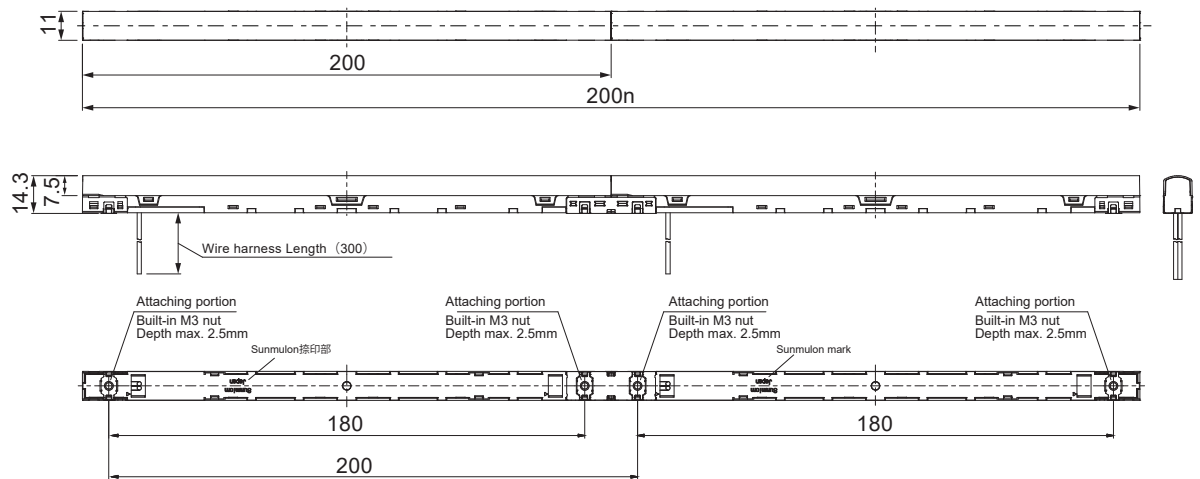
● Standard mounting



Individual



Multiple



• Maximum number of connected units is 5.

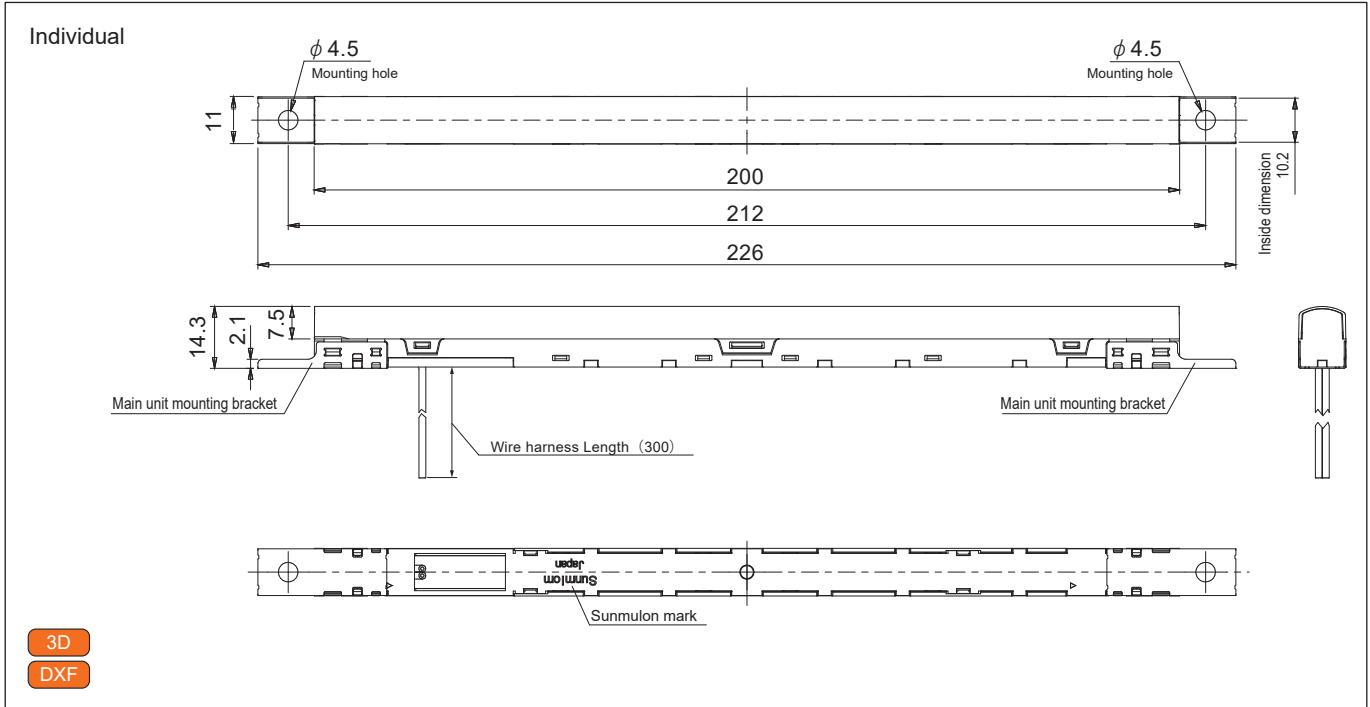
n : Number of Units

3D・DXF data download site : <https://www.sunmulon.co.jp/download/>

Tolerance : ± 0.4 mm

DIMENSIONS

● Bracket mounting



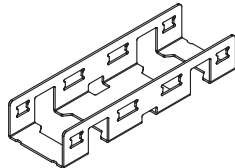
ACCESSORIES

| Name | Appearance | Classification | Part no. | Precautions for use |
|---------------|------------|--|----------|--|
| Joint fitting | | For standard mounting Joining fitting | LL-2010 | - For standard mounting only - Used to connect to the main unit. ※ Up to 5 units can be connected. |

● Joint fitting 1

Part no. LL-2010

Material : SUS t0.3



- ※ Please use it as a connecting auxiliary bracket when using it in conjunction with other products.
When using the product, please make sure that the joint fittings and the main unit are securely mated.
Also, be sure to tighten all screws in the main unit mounting area when securing the main unit.
- ※ Wiring for up to 5 units can be integrated.

3D · DXF data download site : <https://www.sunmulon.co.jp/download/>

Tolerance : ± 0.4 mm

ORDERING CODE

Full-Face

Assembled Part

LLC-200 W □ 3 □

● **SIZE**

| | |
|-----|--------|
| 200 | 200 mm |
|-----|--------|

● **SHAPE**

| | |
|---|-----------|
| W | Rectangle |
|---|-----------|

● **LED COLOR**

| | |
|-----|-------------|
| 701 | Red |
| 181 | Super-Green |
| 901 | Yellow |
| 161 | Super-White |

● **MOUNTING**

| | |
|---|----------|
| 1 | Standard |
| 2 | Bracket |

● **Supply Voltage to LED**

| | |
|---|-------------------------|
| 3 | DC24V Built-in resistor |
|---|-------------------------|

※ The cover is transparent.

※ For Standard mounting, M3 nut is built into the mounting section on the body side.

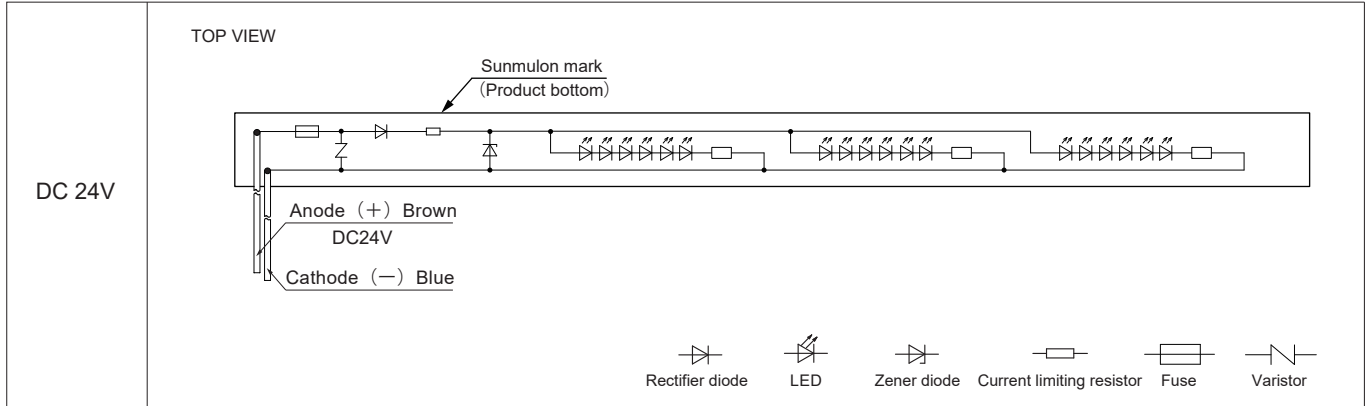
◇Dimensions : page LLC-2~3
 ◇LED specifications : page LLC-5

◇Internal connection arrangements : page LLC-5
 ◇Terminals : page LLC-6

◇Mounting design / Panel cutout : page LLC-7~10

INTERNAL CONNECTION ARRANGEMENTS

● Full-Face



LED SPECIFICATIONS

| Voltage (V) | Rated Current (mA) | | | |
|---------------|--------------------|-------------|--------|-------------|
| | Red | Super Green | Yellow | Super White |
| DC 24V (±10%) | 50 | 40 | 45 | 45 |

※ LED Lifetime About 30,000 hours
(Lights at the rated voltage at 25°C until the luminance is 70%.)

| | Red | Super Green | Yellow | Super White |
|---|-----|-------------|--------|-------------|
| (W) Typ. Power consumption (at rated voltage applied) | 1.2 | 1.0 | 1.1 | 1.1 |

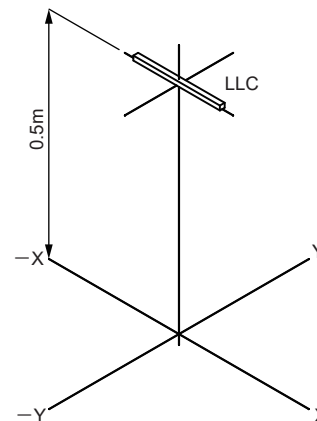
| | Red | Super Green | Yellow | Super White |
|--|-----|-------------|--------|-------------|
| (lx) Typ. Reference Illumination (at 0.5 m directly below) | 60 | 85 | 60 | 120 |

● Relative illuminance (Reference value)

※ When the illuminance directly below the product is set to 1 on flat surface 0.5 m below the product.

| Distance from center of X axis | -0.5m | -0.3m | 0m | 0.3m | 0.5m |
|--------------------------------|-------|-------|----|------|------|
| Relative value | 0.2 | 0.5 | 1 | 0.5 | 0.2 |

| Distance from center of Y axis | -0.5m | -0.3m | 0m | 0.3m | 0.5m |
|--------------------------------|-------|-------|----|------|------|
| Relative value | 0.2 | 0.5 | 1 | 0.5 | 0.2 |



【TA=25°C IF=20mA】

| | Red | Super Green | Yellow | Super White |
|--|-----|-------------|--------|------------------|
| Chromaticity coordinates ※Typ. | — | — | — | x 0.31 y 0.32 |
| Dominant wavelength λ _d (nm) ※Typ. | 617 | 525 | 590 | — |

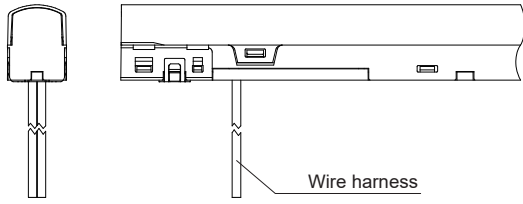
※ Chromaticity coordinates shall be based on the figure of CIE1931.

※ Dominant wavelength and chromaticity coordinates are measured values for LEDs alone.

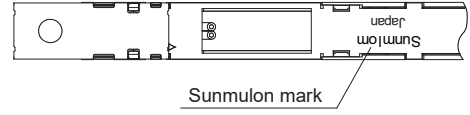
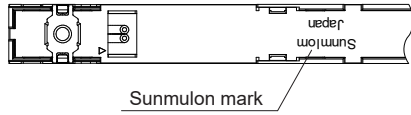
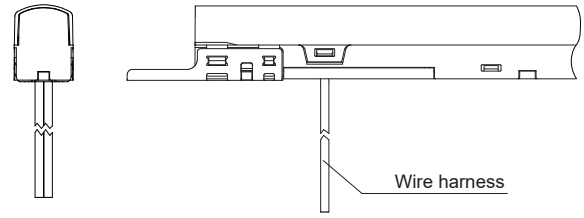
TERMINALS

● TERMINALS LAYOUT (BOTTOM VIEW)

Standard mounting



Bracket mounting

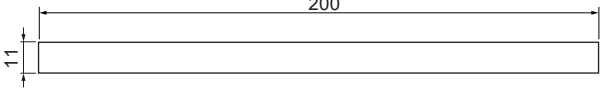
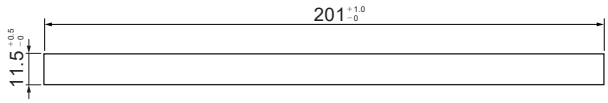
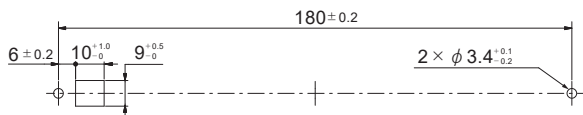
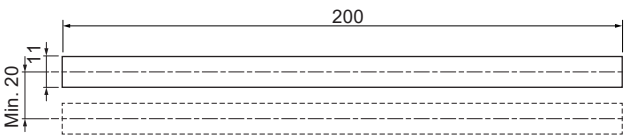
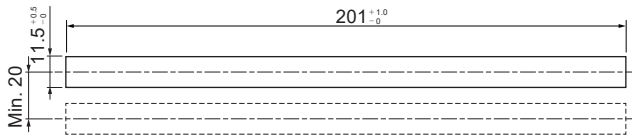
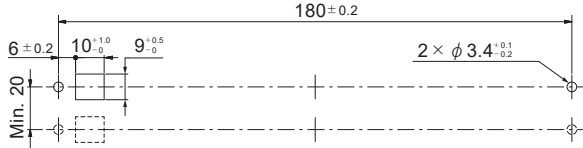


| | | |
|--------------------|-----------|-------------|
| Wire harness Color | Brown | Blue |
| Terminal | Anode (+) | Cathode (-) |

Wire harness : UL1007 AWG#22

MOUNTING DESIGN / PANEL CUTOUT

● Standard mounting

| Mounting design | Panel cutout (When using decorative frame) |
|---|--|
|  |  |
| | <p>Panel cutout</p>  |
| Mounting design | Panel cutout (When using decorative frame) |
|  |  |
| | <p>Panel cutout</p>  |
| <ul style="list-style-type: none"> • When mounting vertically, leave a distance of 20 mm or more at the center line for heat dissipation. • The maximum number of main unit is 5. | |

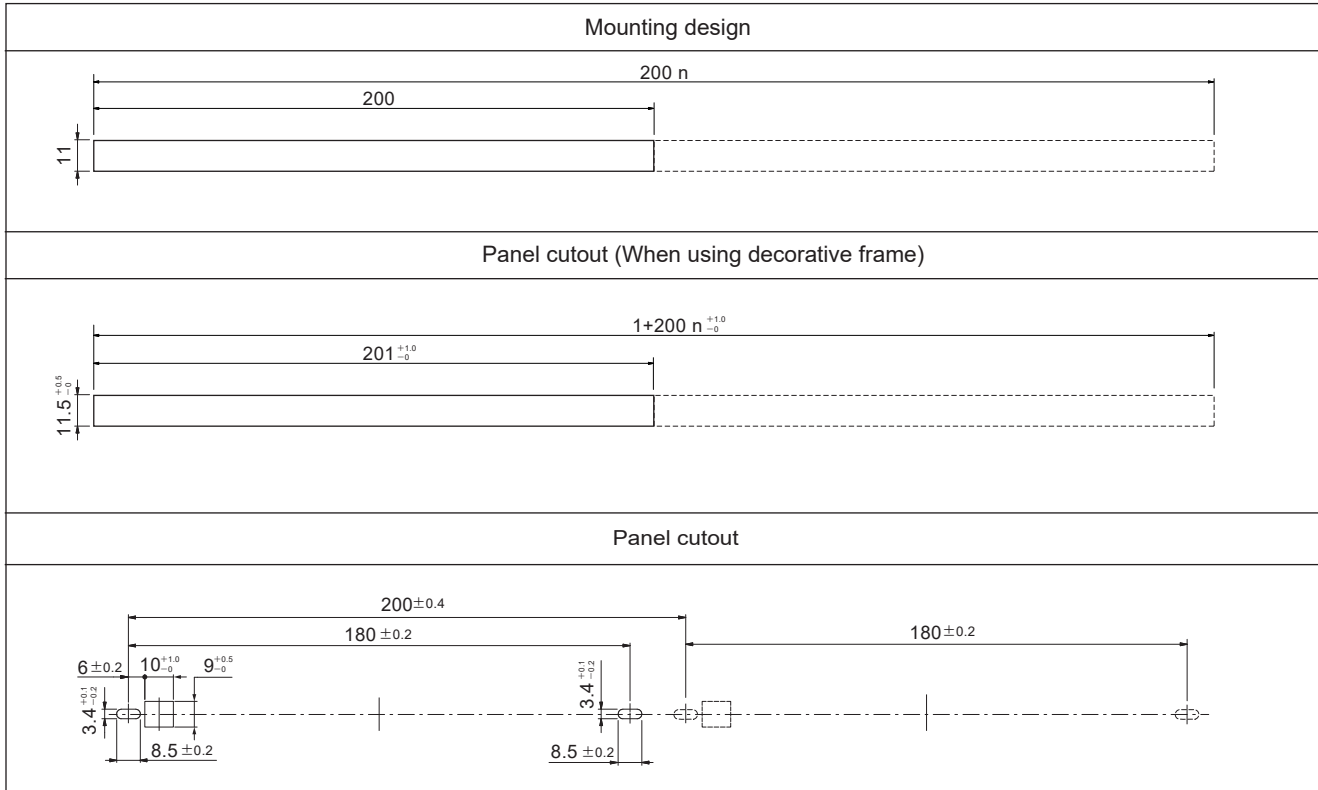
※ If the panel is to be finished (e.g. coated), make sure that the panel meets the specified dimensions after the coating.

※ After the panel-cutting process, make sure to remove burrs on the surface.

Tolerance : ± 0.4 mm

MOUNTING DESIGN / PANEL CUTOUT

● Standard mounting

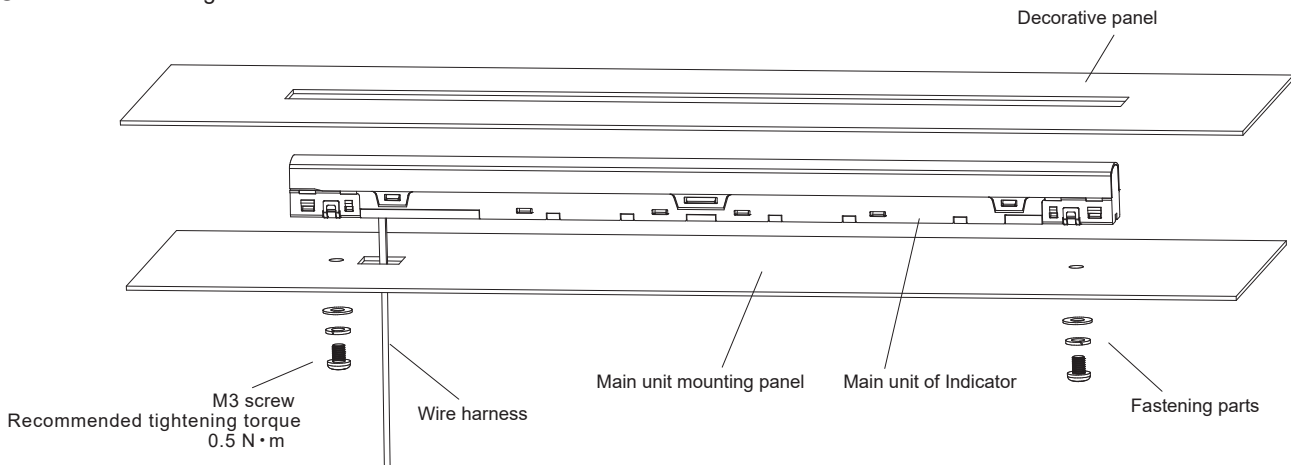


※ If the panel is to be finished (e.g. coated), make sure that the panel meets the specified dimensions after the coating.

n : Number of Units

MOUNTING DIAGRAM

● Standard mounting



- ※ Use M3 screw for mounting. (Maximum depth on the main unit side 2.5 mm)
- ※ Please prepare M3 screw, nut, washers and fastening parts before installation.
- ※ We do not sell fastening parts.
- ※ Depending on the number of units to be installed, consider the material, thickness, and construction of the mounting panel to be used.

Tolerance : $\pm 0.4 \text{ mm}$

MOUNTING DESIGN / PANEL CUTOUT

● Bracket mounting

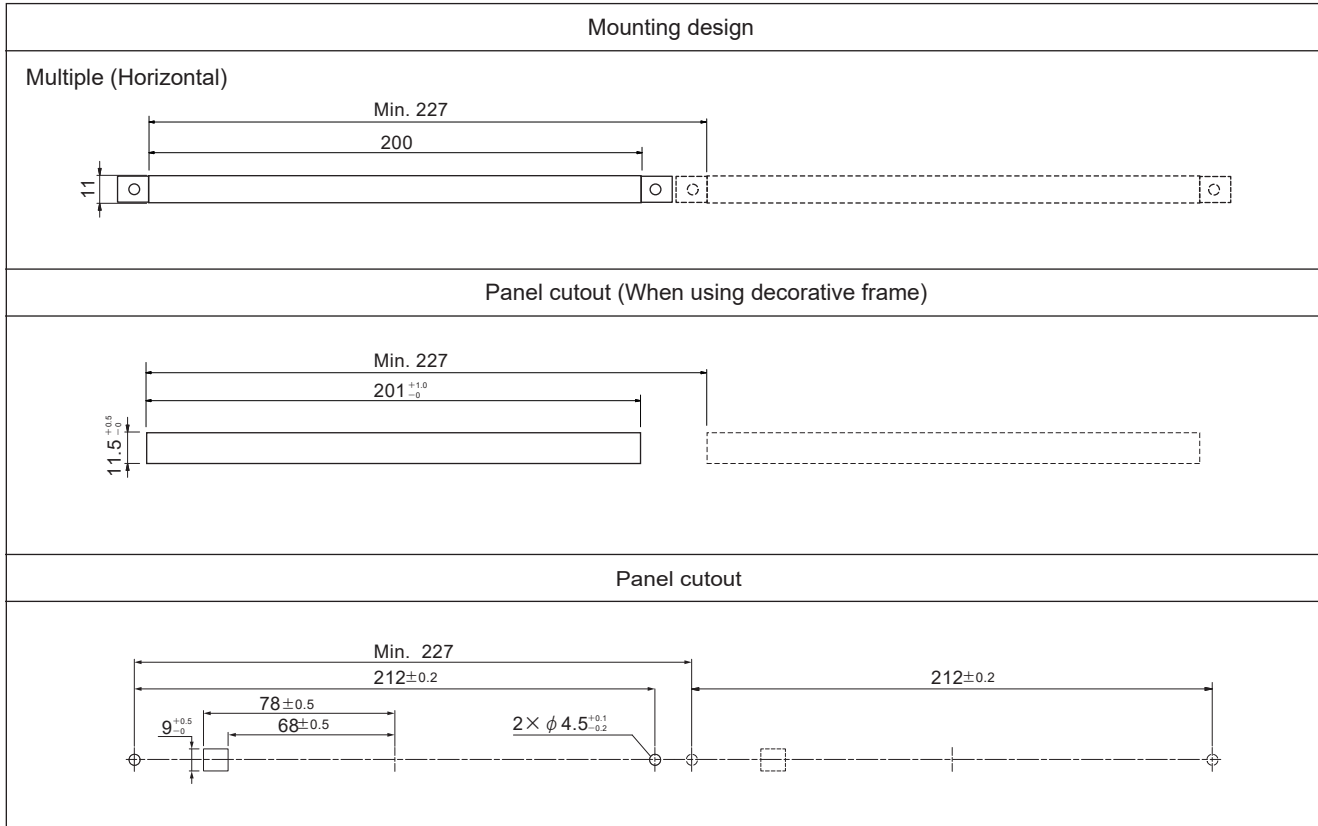
| Mounting design | Panel cutout (When using decorative frame) |
|---|---|
| | |
| | <p style="text-align: center;">Panel cutout</p> |
| Mounting design | Panel cutout (When using decorative frame) |
| | |
| | <p style="text-align: center;">Panel cutout</p> |
| <ul style="list-style-type: none"> • When mounting vertically, leave a distance of 20 mm or more at the center line for heat dissipation. • The maximum number of main unit is 5. | |

※ If the panel is to be finished (e.g. coated), make sure that the panel meets the specified dimensions after the coating.

Tolerance : ± 0.4 mm

MOUNTING DESIGN / PANEL CUTOUT

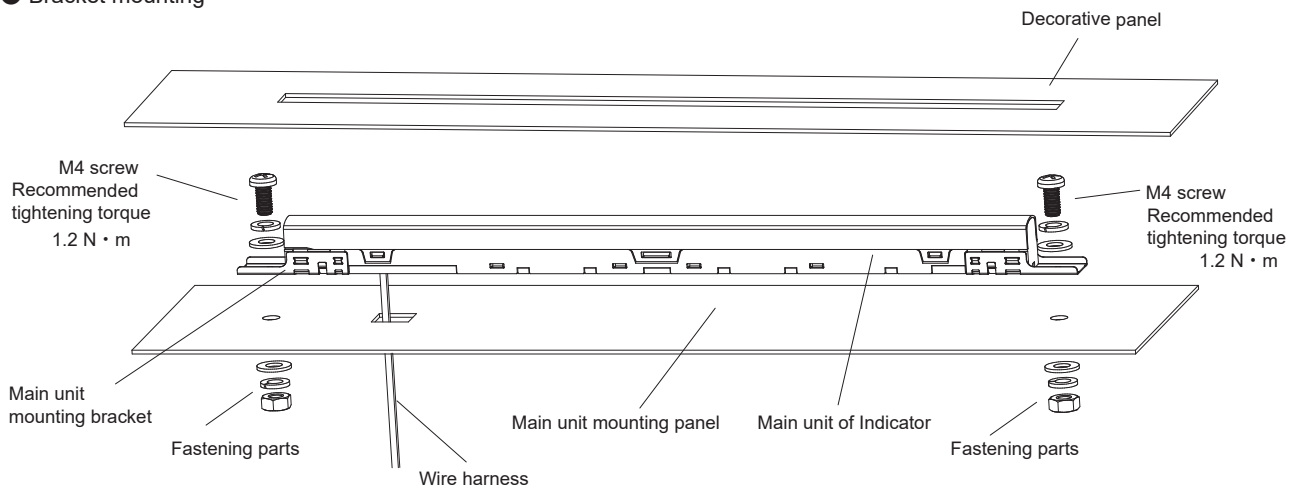
● Bracket mounting



※ If the panel is to be finished (e.g. coated), make sure that the panel meets the specified dimensions after the coating.

MOUNTING DIAGRAM

● Bracket mounting

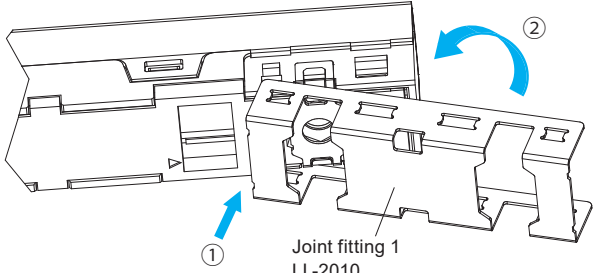
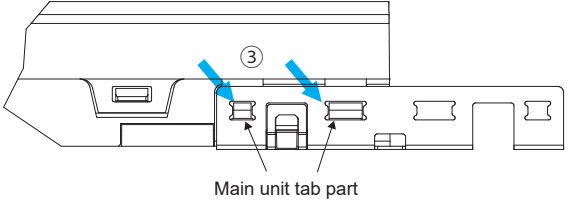
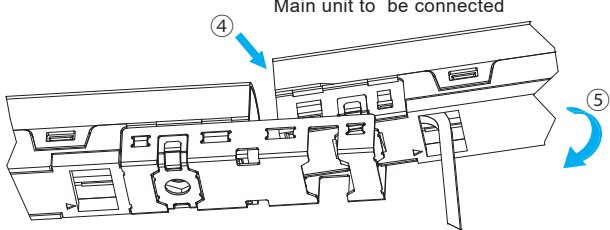
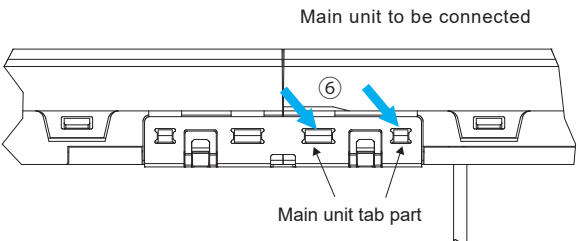


- ※ Use M4 screw for mounting.
- ※ Please prepare M4 screw, nut, washers and fastening parts before installation.
- ※ We do not sell fastening parts.
- ※ Depending on the number of units to be installed, consider the material, thickness, and construction of the mounting panel to be used.

Tolerance : ± 0.4 mm

ASSEMBLY

● Standard mounting

| | |
|---|--|
| <p>【1】</p> <p>① Align one side of joint fitting 1 with the main unit at an angle. ② Install the joint fitting 1 in the main unit.</p> |  |
| <p>【2】</p> <p>③ Insert the main unit tab part in the hole of joint fitting 1. Securely mate the two places on each side.</p> |  |
| <p>【3】</p> <p>④ Insert the joint fitting 1 at an angle into main unit to be connected. ⑤ Install the main unit in the joint fitting 1.</p> |  |
| <p>【4】</p> <p>⑥ Insert the main unit tab part in the hole of joint fitting 1. Securely mate the two places on each side.</p> <p>※ Up to 5 units can be connected. ※ Joint fitting 1(LL-2010) must be purchased separately.</p> |  |

PRECAUTIONS FOR CORRECT USE

1. Do not disassemble or modify the main unit as this may cause malfunctions or accidents.
2. When wiping off dirt on the indicator, wipe lightly with a soft, dry cloth.
Organic solvents such as thinner, benzene, alcohol, or other acidic chemicals may cause deformation, discoloration, or malfunction.
3. Avoid using the product in places where corrosive or silicon gas is generated, high temperature, high humidity, sea breeze or direct sunlight.
4. Take measures to prevent condensation and freeze.
5. Be careful of electrostatic breakdown when handling.
6. Handle with care when attaching joint fittings to the main unit.
7. The content of catalogs is subject to change without notice.
8. We do not warrant any malfunctions or damages caused by handling contrary to the precautions described in the catalog.
9. Due to variations in LEDs, individual LEDs and even the same model may differ in illuminating color and brightness.
10. LEDs are not replaceable, please replace the complete product.
11. Do not drop or otherwise apply strong force to indicator.
12. Do not impact or external force on the main unit. Doing so may cause malfunction.
13. LEDs cannot be lit directly by AC circuit should be provided rectifier smoothing circuit.
14. Turn off the power to the product before starting wiring.
15. Do not use a power supply outside the rated operating voltage range.
16. Depending on the mounting specifications and number of units, consider the material, thickness, and construction of the mounting panel.
17. Drawing the wiring harness with care to avoid external stress no damage to the wiring harness. Do not forcibly bend, pull, or push the wire harness.
18. Do not look directly at the light emitting part when it is lit. Doing so may be dangerous to your eyes.

※ For handling instructions and precautions other than the above, please refer to "Safety Precautions for All Indicators".

Safety Precautions for All Indicators

1. Notes on contents of Catalogs

- (1) Rated values, performance values, and specification values of Sunmulon products listed in this catalog are values acquired under respective conditions in independent testing, and do not guarantee values gained in combined conditions.
- (2) The ambient operating temperature(humidity) is guaranteed by evaluation based on characteristics, and does not guarantee continuous use for a long period of time near the upper or lower limit of the ambient operating temperature(humidity) or permanent use at that temperature(humidity).
- (3) Reference data and reference values listed in catalogs are for reference purposes only, and do not guarantee that the product will always operate appropriately in that range.
- (4) The specifications / appearance and accessories of Sunmulon products listed in catalogs are subject to change or termination of sales without notice, for improvement or other reasons.
- (5) The content of catalogs is subject to change without notice.

2. Note on applications

- (1) If using Sunmulon products in combination with other products, confirm the following suitability by yourself. Sunmulon shall provide no guarantees regarding the combination suitability.
 - (a) Regulations, standards, or laws to which your machinery, equipment, etc. must conform
 - (b) Functionality and safety of your machinery and equipment
- (2) Wiring and installation that ensures the Sunmulon product used in your system, machine, device, or the like can perform and function according to its specifications.
- (3) When using Sunmulon products, be cautious when implementing the following.
 - (a) Use of Sunmulon products with sufficient allowance for rating and performance.
 - (b) Safety design, including redundant design and malfunction prevention design that prevents other danger and damage even in the event that Sunmulon product fails.
- (4) Sunmulon products are designed and manufactured as general-purpose products for general industrial products. They are not intended for use in the following applications, and in the event that you use Sunmulon product for these applications, unless otherwise agreed upon between you and Sunmulon, Sunmulon shall provide no guarantees whatsoever regarding Sunmulon products.
 - (a) Safety devices intended for human body protection
 - (b) Direct control of transport equipment (railroads / airplanes / ships / vehicles / vehicle instruments, etc.)
 - (c) Space equipment, submarine equipment
 - (d) Nuclear power control equipment, radiation related equipment
 - (e) Combustion equipment, electric heat equipment
 - (f) Disaster prevention and security equipment
 - (g) Elevating equipment
 - (h) Amusement facilities
 - (i) Facilities subject to government or industry regulations
 - (j) Use in applications that require a high degree of safety, any other equipment, instruments, or the like that could endanger life or human health

3. Warranty

- (1) The warranty period for Sunmulon products shall be 1 year after purchase or delivery to the specified location.
- (2) Warranty scope should a failure occur in Sunmulon product during the above warranty period for reasons attributable to Sunmulon, then Sunmulon shall provide that product, free of charge, the same quantity. Further, in no event shall liability of Sunmulon exceed the individual price of the product on which liability is asserted.
- (3) Failures cause by the following reasons shall be deemed outside the scope of this warranty.
 - (a) The product was handled or used deviating from conditions / environment listed in the catalogs
 - (b) The failure was caused by reasons other than Sunmulon product
 - (c) Modification or repair was performed by a party other than Sunmulon
 - (d) Replacement of maintenance parts, installation of accessories, or the like was not performed properly in accordance with the user's manual and catalogs
 - (e) The failure could not have been predicted with the scientific and technical standards at the time when the product was shipped from Sunmulon
 - (f) The failure was due to other causes not attributable to Sunmulon (including cases of force majeure such as natural disasters and other disasters)
- (4) The warranty listed in this Safety Precautions is the full and complete warranty for Sunmulon products, and Sunmulon shall bear no liability whatsoever regarding special damages, indirect damages, incidental damages, or passive damages that occurred due to Sunmulon product.

4. Handling precautions for indicator

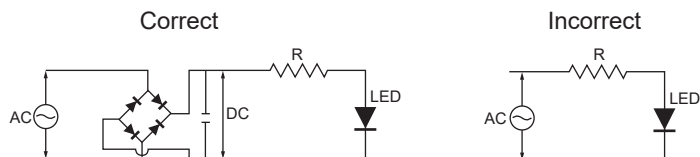
- (1) Wire the terminals with correct polarity. Connecting connectors backwards may cause a power short, resulting in burnout.
- (2) Turn off the power to the product before starting installation, removal, wiring, maintenance, or inspection. Failure to turn power off may cause electrical shock or fire.
- (3) Be careful of electrostatic breakdown when handling.
- (4) Do not drop or otherwise apply strong force to the indicator.
- (5) Do not place heavy objects on the indicator.
- (6) Do not operate or use the housing by itself. Use the indicator with assembled the cover.
- (7) When removing the cover and filter, using a sharp object (screwdrivers, tweezers, etc.), hard object (metal, etc.), or with a large or sudden force, may cause deform or damage the indicator.
- (8) Do not use the indicator under loads that exceed the rated capacity or other ratings. Doing so may result in burnout accidents.

Safety Precautions for All Indicators

- (9) Assemble correctly according to the handling instructions. Do not assemble or disassemble the product other than as described in the catalog, as this may cause defects or accidents.

(10) Illumination

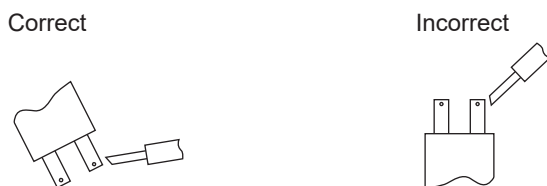
- (a) Do not apply a voltage between the LED terminal that is greater than the rated voltage. Doing so may damage the LED, cause lighting failure.
(b) LEDs cannot be lit directly by AC circuit should be provided rectifier smoothing circuit for products other than AC input type.



- (c) When wiring, pay attention to the polarity of the terminals.
(d) Simultaneous lighting may not be possible with Dual-Color, 3-Color illumination or Split-Face illumination, check the catalog.
(e) Apply voltage directly to LEDs of Non-built-in resistor type will damage the LEDs, so connect an appropriate external resistor.

(11) Wiring

- (a) When tightening terminals or connecting connectors, do not apply more force than necessary from the back side. Support the indicator with one hand as it may slip out of the front of the panel.
(b) Use the applicable connectors listed in the catalog for each model.
(c) Do not apply a soldering iron to the indicator housing. Doing so may deform the terminals and cause defects.
(d) Hand solder with the terminals facing down to prevent flux from penetrating into the indicator.



- (e) Use the appropriate wire size for the applied voltage and current, and solder properly. Use of the product with incomplete soldering may cause abnormal heat generation, resulting in a fire hazard.

(12) Usage environment

- (a) Do not use in the presence of flammable or explosive gases such as gasoline, thinner, LPG, etc.
(b) Avoid using the product in places where corrosive or silicon gas is generated, high temperature, high humidity, sea breeze or direct sunlight.
(c) Provide appropriate protection when using the product in places where it is exposed to water, oil, metal powder, or dust.
(d) Do not use the product in a place subject to vibration or shock. It may cause malfunction or damage.
(e) When installed in a close grouping or continuously lit, the ambient temperature may exceed the specified value due to heat generation. Take measures such as ventilation and lowering the operating voltage.
(f) When checking the actual equipment, load conditions and operating environment should be the same as the actual operating conditions.
(g) The ambient temperature for storage is -25°C to 65°C (No freeze, no condensation).

- (13) When wiping off dirt on the indicator, wipe lightly with a soft, dry cloth. Organic solvents such as thinner, benzene, alcohol, or other acidic chemicals may cause deformation, discoloration, or malfunction.

- (14) Store the product away from malignant gases, dust, high temperature and high humidity, and keep it in our packing condition.

(15) Periodic inspection and replacement

- (a) Although mechanical and electrical durability are listed in the specifications column, deterioration of various parts (deterioration of resins and corrosion of metal parts) is possible due to the operating environment and method of use. We ask that you implement inspections for Sunmulon products to prevent accidents from occurring by conducting periodic inspections and replacements.

(16) Service scope

- The price of Sunmulon products do not include the cost of services, such as dispatching technicians.