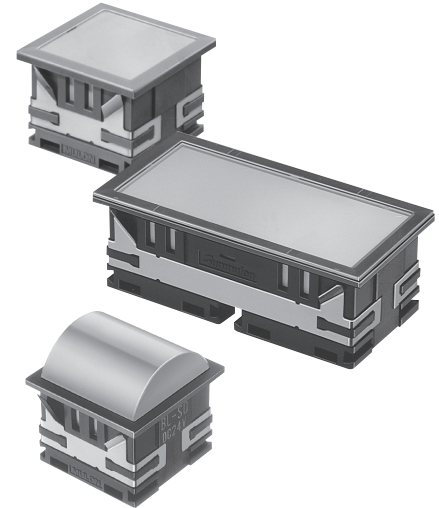


## BL Indicator

Easy matrix mounting available.  
Only 20 mm depth behind panel.

- Display surface : 25.3 mm, 25.3×55.5 mm  
(External dimension : 30 mm, 30×60.2 mm)
- Depth behind panel : 20 mm
- Terminal : Connector (Original connector)
- Mounting : Snap-in mounting (Matrix mounting with joint)
- Illumination type : Full-Face, 3-Color, 2-Split-Face, Negative
- Accessories : Wire harness

Negative illumination : The engraved letters are clearly visible only when the light is on, and when the light is off, the engraved characters are hidden by the semitransparent black cover.



### CHARACTERISTICS

	BL	Super BL
Display Surface Size	□ 25.3 mm,	25.3×55.5 mm
Illumination Color	Red, Green, Yellow	Red, Green, Yellow Super Blue, Super White Super Green, Multi
Illumination Type	Full-Face, 3-Color, 2-Split-Face, Negative	
Display Surface Shape	Flat, Dome	
Max. Number of Matrixes	Max. 10 columns×10 rows (Rectangles is calculated by two of square.)	
Supply Voltage	DC 12 V, 24 V±5%	
Consumption Current	67 mA max. (1 unit)	
Terminal Shape	Original connector (5 pins)	
Insulation Resistance	More than 100 MΩ at DC 500 V	
Dielectric Strength	AC 1500 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	85%RH max. (No Condensation)	
RoHS (10 Substances)	Conform to standards	

### SPECIFICATIONS

Display surface shape	Illumination type	BL		Super BL	
		Square	Rect.	Square	Rect.
Flat	Full-Face	A	A	A	A
	3-Color	A	A	A	A
	2-Split-Face (Vertical)	N/A	A	N/A	A
	2-Split-Face (Horizontal)	A	A	A	A
Dome	Full-Face	A	A	A	A
	3-Color	A	A	A	A
	2-Split-Face (Vertical)	N/A	N/A	N/A	N/A
	2-Split-Face (Horizontal)	N/A	N/A	N/A	N/A
Illumination Color	Red (7)	A	A	N/A	N/A
	Green (8)	A	A	N/A	N/A
	Yellow (9)	A	A	N/A	N/A
	Red (70)	N/A	N/A	A	A
	Green (80)	N/A	N/A	A	A
	Yellow (90)	N/A	N/A	A	A
	Super Blue (14)	N/A	N/A	A	A
	Super White (16)	N/A	N/A	A	A
	Super Green (18)	N/A	N/A	A	A

A : Applicable N/A : Not applicable

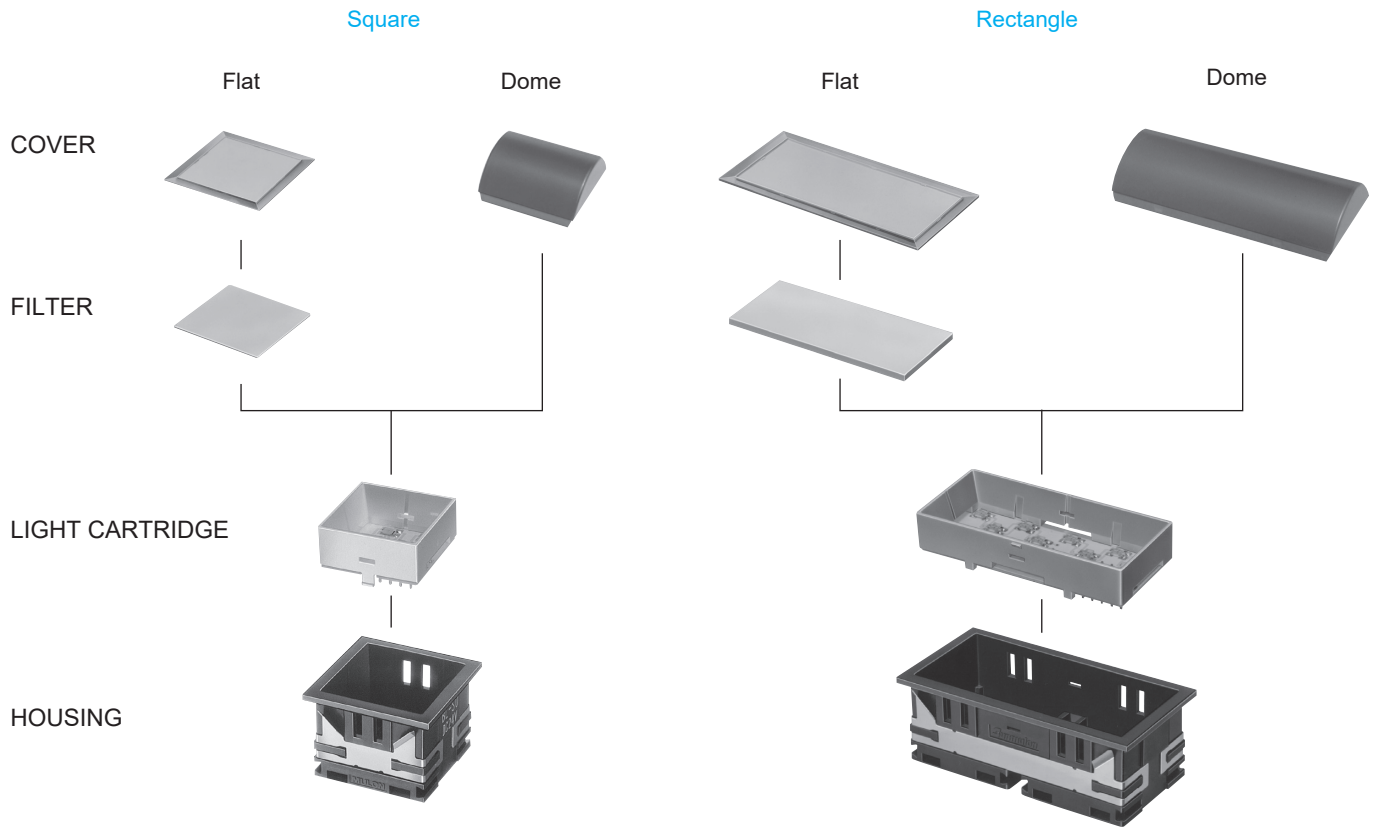
※ BL LEDs color Red (7), Green (8), Yellow (9) are dimmer than Super BL LEDs color Red (70), Green (80), Yellow (90).

[https://www.sunmulon.co.jp/english/products/led\\_e/bl.html](https://www.sunmulon.co.jp/english/products/led_e/bl.html)

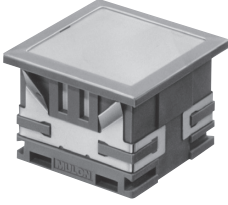
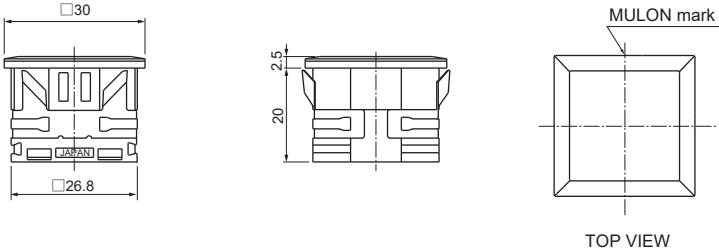
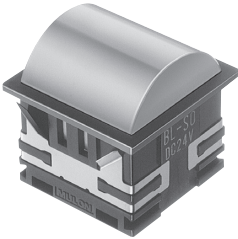
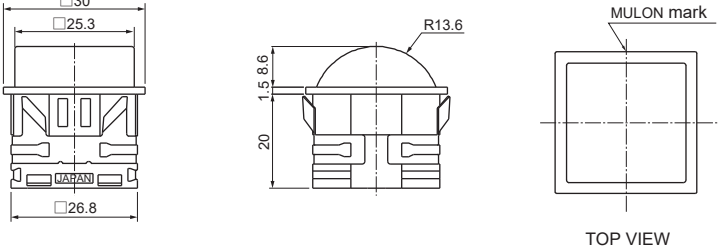
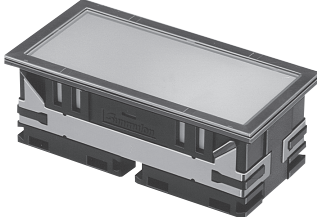
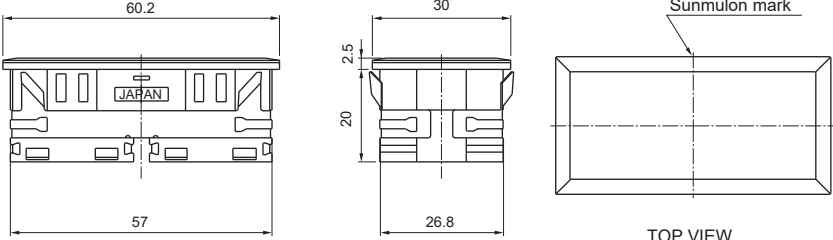
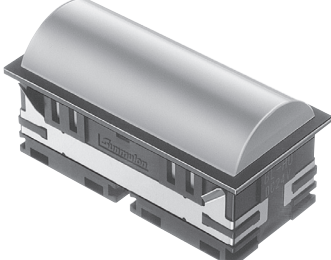
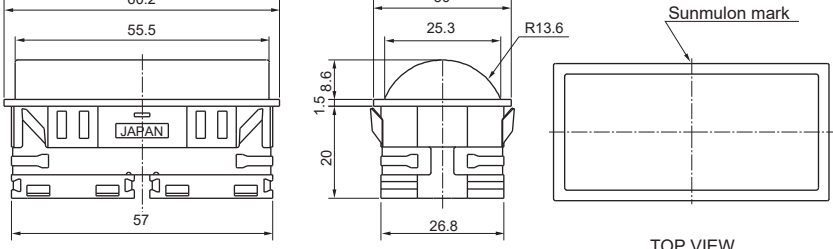


- |   |                                  |                               |
|---|----------------------------------|-------------------------------|
| ◇Dimensions : page BL-3~4                         | ◇Accessories : page BL-5         | ◇Ordering code : page BL-6~16 |
| ◇Internal connection arrangements : page BL-18~19 | ◇LED specifications : page BL-20 | ◇Terminals : page BL-21       |
| ◇Mounting design / Panel cutout : page BL-21      |                                  |                               |

# STRUCTURE



## DIMENSIONS

<p>Square Flat</p>  <p>3D DXF</p> <p>The cover surface has a blasted finish.</p>	 <p>TOP VIEW</p>
<p>Square Dome</p>  <p>3D DXF</p>	 <p>TOP VIEW</p>
<p>Rectangle Flat</p>  <p>3D DXF</p> <p>The cover surface has a blasted finish.</p>	 <p>TOP VIEW</p>
<p>Rectangle Dome</p>  <p>3D DXF</p>	 <p>TOP VIEW</p>

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

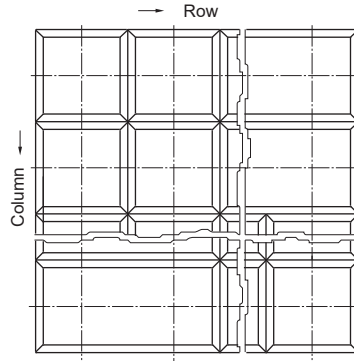
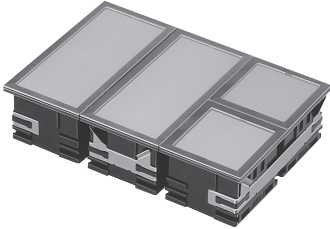
Tolerance : ± 0.4 mm

# DIMENSIONS

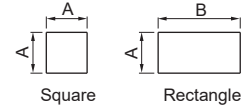
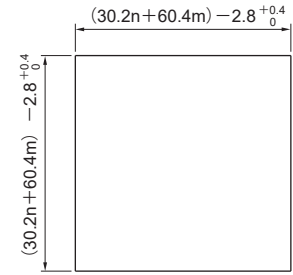
## ● Matrix Mounting

Recommended panel thickness : 1 to 4 mm

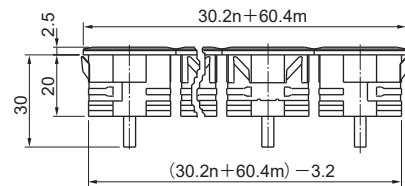
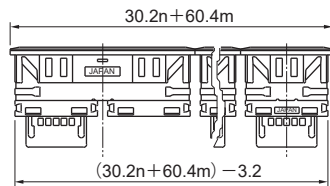
### Without Matrix frame



#### PANEL CUTOUT

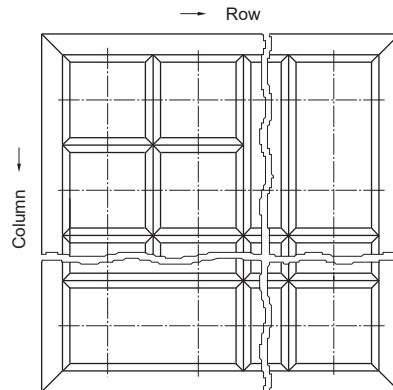


※ n : Number of A size (Row/Column)  
m : Number of B size (Row/Column)

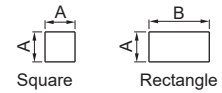
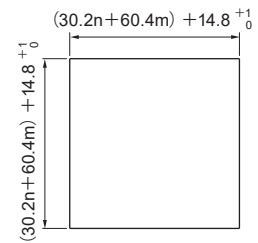


Recommended panel thickness : 1 to 6 mm

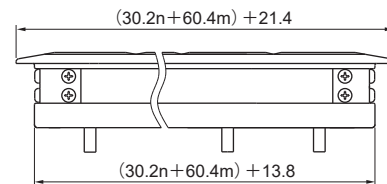
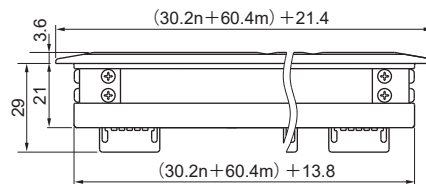
### With Matrix frame



#### PANEL CUTOUT







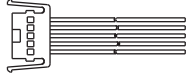




※ n : Number of A size (Row/Column)  
m : Number of B size (Row/Column)



※ Refer to page BL-16 the ordering code for Matrix.

Tolerance : ± 0.4 mm

## ACCESSORIES

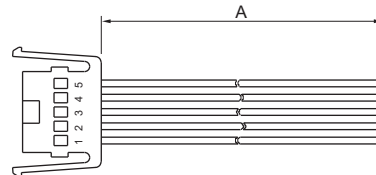
Name	Appearance	Classification	Part no.		Precautions for use
Connector		Housing	BL-0077		- 1 Housing and 5 contacts set. - Contact is Honda Tsushin Kogyo's product HKP-F403. ※ Please specify whether or not to attach it by ordering code.
		Contact			
Contact pulling tool		For contact	—		- Honda Tsushin Kogyo's product HKP-KF. We do not sell this product.
Contact crimping tool		Crimping tool	—		- Honda Tsushin Kogyo's product KP-309. We do not sell this product.
Wire harness		Wire harness	50 cm	CL-0230	- For other dimensions, please contact us. ※ The pin assignment is different from AL and TL.
			100 cm	CL-0231	
Matrix frame mounting bracket		For Matrix mounting	BL-0073		- Fittings that secure the matrix frame to the panel. ※ The quantity required for with matrix frame type will be attached.
Joint		For Matrix mounting	BL-0065		- Connect and secure the products when making matrix mounting.
Removing tool		For removal cover	SJ-0010-1		- Be used to remove cover from housing.
Removing tool		For removal light cartridge	CL-0218		- Be used to remove light cartridge from housing.

### Wire harness

Part no.	CL-0230	CL-0231
A length	50 cm	100 cm

Wire : UL1061 AWG26

- ※ For other dimensions, please contact us.
- ※ The pin assignment is different from AL and TL.

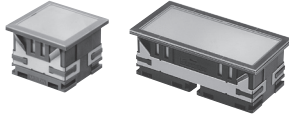


※ No number on the actual item.

Pin No.	1	2	3	4	5
Wire Color	Red	Green	Yellow	Blue	Gray

# ORDERING CODE (BL) 【Full-Face】

Assembled Part  
Flat



BL — [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

● **SHAPE**

S0	Square Flat
W0	Rectangle Flat

● **LED COLOR**

7	Red
8	Green
9	Yellow ※1)
X	Without LED

● **COVER COLOR**

C	Transparent
SK	Semitransparent (For Negative) ※2)
X	Without cover ※3)

● **HOUSING COLOR**

K	Black
H	Gray

● **MOUNTING** ※5)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V
X	Without LED

● **TERMINAL**

K	Connector with Accessories ※4)
N	Connector without Accessories

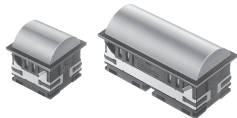
● **FILTER COLOR**

1	Red
2	Green
3	Yellow ※1)
4	Milk-white ※2)
X	Without filter ※3)

● **NOTES**

- ※1) The color of "Yellow" for LED (9) and filter (3) is actually "Orange Yellow" not Lemon Yellow.
- ※2) For Negative illumination, specify filter Milk-white (4). The filter for negative illumination has black silk printing on one side.
- ※3) For without cover (X), specify without filter (X). Filters can be ordered separately.
- ※4) For the connector, refer to Accessories page.
- ※5) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

Assembled Part  
Dome



BL — [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] X [ ] [ ] [ ]

● **SHAPE**

T0	Square Dome
H0	Rectangle Dome

● **LED COLOR**

7	Red
8	Green
9	Yellow ※1)
X	Without LED

● **COVER COLOR**

R	Red
G	Green
Y	Yellow ※1)
M	Milk-white

● **HOUSING COLOR**

K	Black
H	Gray

● **MOUNTING** ※3)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V
X	Without LED

● **TERMINAL**

K	Connector with Accessories ※2)
N	Connector without Accessories

● **FILTER COLOR**

X	Without filter
---	----------------

● **NOTES**

- ※1) The color of "Yellow" for LED (9) and cover (Y) is actually "Orange Yellow" not Lemon Yellow.
- ※2) For the connector, refer to Accessories page.
- ※3) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

◇Dimensions : page BL-3~4      ◇Accessories : page BL-5      ◇Internal connection arrangements : page BL-18  
 ◇LED specifications : page BL-20      ◇Terminals : page BL-21      ◇Mounting design / Panel cutout : page BL-21

## ORDERING CODE (BL) 【Full-Face】

LIGHT CARTRIDGE ※1)



● **SHAPE**

S0	Square
W0	Rectangle

**BL** — □

□ **K** □

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector
---	-----------

Housing and contacts are not attached.

● **LED COLOR**

7	Red
8	Green
9	Yellow

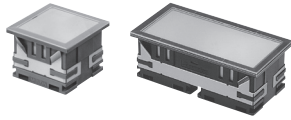
Yellow is actually "Orange Yellow" not Lemon Yellow.

● **NOTES**

※1) If cover or filter are required, please order separately.

# ORDERING CODE (BL) 【3-Color】

Assembled Part  
Flat



● **SHAPE**

S3	Square Flat
W3	Rectangle Flat

● **LED COLOR**

78	3 Color
----	---------

It emits Red, Green and Yellow light.

● **COVER COLOR**

C	Transparent
SK	Semitransparent (For Negative) ※1)
X	Without cover ※2)

● **HOUSING COLOR**

K	Black
H	Gray

● **MOUNTING** ※4)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector with Accessories ※3)
N	Connector without Accessories

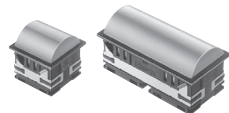
● **FILTER COLOR**

4	Milk-white ※1)
X	Without filter ※2)

● **NOTES**

- ※1) For Negative illumination, specify filter Milk-white (4). The filter for negative illumination has black silk printing on one side.
- ※2) For without cover (X), specify without filter (X). Filters can be ordered separately.
- ※3) For the connector, refer to Accessories page.
- ※4) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

Assembled Part  
Dome



● **SHAPE**

T3	Square Dome
H3	Rectangle Dome

● **LED COLOR**

78	3 Color
----	---------

It emits Red, Green and Yellow light.

● **COVER COLOR**

M	Milk-white
---	------------

● **HOUSING COLOR**

K	Black
H	Gray

● **MOUNTING** ※2)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector with Accessories ※1)
N	Connector without Accessories

● **FILTER COLOR**

X	Without filter
---	----------------

● **NOTES**

- ※1) For the connector, refer to Accessories page.
- ※2) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

◇Dimensions : page BL-3~4

◇Accessories : page BL-5

◇Internal connection arrangements : page BL-18

◇LED specifications : page BL-20

◇Terminals : page BL-21

◇Mounting design / Panel cutout : page BL-21



## ORDERING CODE (BL) 【3-Color】

LIGHT CARTRIDGE ※1)



● **SHAPE**

S3	Square
W3	Rectangle

BL —  78 K

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector
---	-----------

Housing and contacts are not attached.

● **LED COLOR**

78	3 Color
----	---------

It emits Red, Green and Yellow light.

● **NOTES**

※1) If cover or filter are required, please order separately. Flat covers should be Transparent or Semitransparent (For Negative) with Milk-white filter.  
For Dome covers, use Milk-white.

# ORDERING CODE (BL) [2-Split-Face]

Assembled Part  
Flat



BL

1

2

1

2

● **SHAPE**

S2	Square Flat
W1	Rectangle Flat (Vertical)
W2	Rectangle Flat (Horizontal)

● **LED COLOR** ※1)

7	Red	Put the color numbers into frame 1, 2. (2-Split-Face combination) 77, 78, 79, 87, 88, 89, 97, 98, 99
8	Green	
9	Yellow	

● **COVER COLOR**

C	Transparent
SK	Semitransparent (For Negative) ※2)
X	Without cover ※3)

● **HOUSING COLOR**

K	Black
H	Gray

● **MOUNTING** ※5)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V
X	Without LED

● **TERMINAL**

K	Connector with Accessories ※4)
N	Connector without Accessories

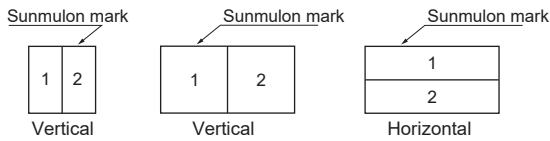
● **FILTER COLOR** ※1) ※2) ※3)

1	Red	Put the color numbers into frame 1, 2.
2	Green	
3	Yellow	
4	Milk-white	
X	Without filter	

The combination of With filter and Without filter cannot be specified.

● **NOTES**

- ※1) How to specify the color of LED and filter  
Select the color symbols listed in the ordering code, and put them into the frame 1 and 2 referring to the figure below.  
The numbers in the figure match the location specified in the ordering code.  
The color of "Yellow" for LED (9) and filter (3) is actually "Orange Yellow" not Lemon Yellow.



- ※2) For Negative illumination, specify filter Milk-white (4). The filter for negative illumination has black silk printing on one side.
- ※3) For without cover (X), specify without filter (X). Filters can be ordered separately.
- ※4) For the connector, refer to Accessories page.
- ※5) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

LIGHT CARTRIDGE ※1)



BL

1

2

K

● **SHAPE**

S1	Square Flat
W1	Rectangle Flat (Vertical)
W2	Rectangle Flat (Horizontal)

● **LED COLOR**

7	Red	Put the color numbers into frame 1, 2. (2-Split-Face combination) 77, 78, 79, 87, 88, 89, 97, 98, 99
8	Green	
9	Yellow	

Yellow (9) is actually "Orange Yellow" not Lemon Yellow.

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector
---	-----------

Housing and contacts are not attached.

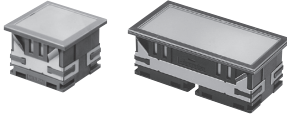
● **NOTES**

- ※1) If cover or filter are required, please order separately.

◇Dimensions : page BL-3~4      ◇Accessories : page BL-5      ◇Internal connection arrangements : page BL-18  
◇LED specifications : page BL-20      ◇Terminals : page BL-21      ◇Mounting design / Panel cutout : page BL-21

# ORDERING CODE (Super BL) [Full-Face]

Assembled Part  
Flat



● **SHAPE**

S0	Square Flat
W0	Rectangle Flat

● **LED COLOR**

70	Red
80	Green
90	Yellow ※1)
14	Super-Blue
16	Super-White
18	Super-Green
X	Without LED

● **COVER COLOR**

C	Transparent
SK	Semitransparent (For Negative) ※2)
X	Without cover ※3)

● **HOUSING COLOR**

K	Black
H	Gray

● **TERMINAL**

K	Connector with Accessories ※4)
N	Connector without Accessories

● **FILTER COLOR**

1	Red
2	Green
3	Yellow ※1)
4	Milk-white ※2)
X	Without filter ※3)

● **MOUNTING** ※5)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

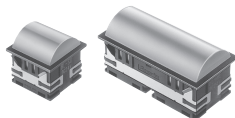
● **Supply Voltage to LED**

2	DC12V
3	DC24V
X	Without LED

● **NOTES**

- ※1) The color of "Yellow" for LED (9) and filter (3) is actually "Orange Yellow" not Lemon Yellow.
- ※2) For Negative illumination, specify filter Milk-white (4). The filter for negative illumination has black silk printing on one side.
- ※3) For without cover (X), specify without filter (X). Filters can be ordered separately.
- ※4) For the connector, refer to Accessories page.
- ※5) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

Assembled Part  
Dome



● **SHAPE**

T0	Square Dome
H0	Rectangle Dome

● **LED COLOR**

70	Red
80	Green
90	Yellow ※1)
14	Super-Blue
16	Super-White
18	Super-Green
X	Without LED

● **COVER COLOR**

R	Red
G	Green
Y	Yellow ※1)
M	Milk-white

● **HOUSING COLOR**

K	Black
H	Gray

● **TERMINAL**

K	Connector with Accessories ※2)
N	Connector without Accessories

● **FILTER COLOR**

X	Without filter
---	----------------

● **MOUNTING** ※3)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V
X	Without LED

● **NOTES**

- ※1) The color of "Yellow" for LED (9) and cover (Y) is actually "Orange Yellow" not Lemon Yellow.
- ※2) For the connector, refer to Accessories page.
- ※3) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

◇Dimensions : page BL-3~4

◇Accessories : page BL-5

◇Internal connection arrangements : page BL-18

◇LED specifications : page BL-20

◇Terminals : page BL-21

◇Mounting design / Panel cutout : page BL-21

# ORDERING CODE (Super BL) 【Full-Face】

LIGHT CARTRIDGE ※1)



● **SHAPE**

S0	Square
W0	Rectangle

BL — □

□

K

□

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector
---	-----------

Housing and contacts are not attached.

● **LED COLOR**

70	Red
80	Green
90	Yellow
14	Super-Blue
16	Super-White
18	Super-Green

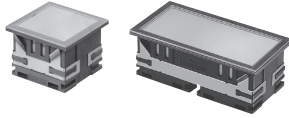
Yellow is actually "Orange Yellow" not Lemon Yellow.

● **NOTES**

※1) If cover or filter are required, please order separately.

## ORDERING CODE (Super BL) [3-Color]

Assembled Part  
Flat



● **SHAPE**

S3	Square Flat
W3	Rectangle Flat

● **LED COLOR**

7080	3 Color
------	---------

It emits Red, Green and Yellow light.

● **COVER COLOR**

C	Transparent
SK	Semitransparent (For Negative) ※1)
X	Without cover ※2)

● **HOUSING COLOR**

K	Black
H	Gray

● **MOUNTING** ※4)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector with Accessories	※3)
N	Connector without Accessories	

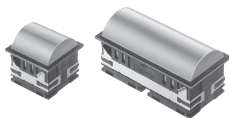
● **FILTER COLOR**

4	Milk-white	※1)
X	Without filter	※2)

● **NOTES**

- ※1) For Negative illumination, specify filter Milk-white (4). The filter for negative illumination has black silk printing on one side.
- ※2) For without cover (X), specify without filter (X). Filters can be ordered separately.
- ※3) For the connector, refer to Accessories page.
- ※4) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

Assembled Part  
Dome



● **SHAPE**

T3	Square Dome
H3	Rectangle Dome

● **LED COLOR**

7080	3 Color
------	---------

It emits Red, Green and Yellow light.

● **COVER COLOR**

M	Milk-white
---	------------

● **HOUSING COLOR**

K	Black
H	Gray

● **MOUNTING** ※2)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector with Accessories	※1)
N	Connector without Accessories	

● **FILTER COLOR**

X	Without filter
---	----------------

● **NOTES**

- ※1) For the connector, refer to Accessories page.
- ※2) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

◇Dimensions : page BL-3~4

◇Accessories : page BL-5

◇Internal connection arrangements : page BL-18

◇LED specifications : page BL-20

◇Terminals : page BL-21

◇Mounting design / Panel cutout : page BL-21

# ORDERING CODE (Super BL) [3-Color]

LIGHT CARTRIDGE ※1)



● **SHAPE**

S3	Square
W3	Rectangle

BL — □ 7080 K □

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector
---	-----------

Housing and contacts are not attached.

● **LED COLOR**

7080	3 Color
------	---------

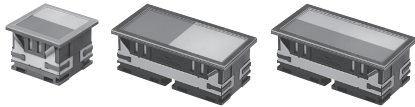
It emits Red, Green and Yellow light.

● **NOTES**

※1) If cover or filter are required, please order separately. Flat covers should be Transparent or Semitransparent (For Negative) with Milk-white filter. For Dome covers, use Milk-white.

# ORDERING CODE (Super BL) [2-Split-Face]

Assembled Part  
Flat



● **SHAPE**

S1	Square Flat
W1	Rectangle Flat (Vertical)
W2	Rectangle Flat (Horizontal)

● **LED COLOR** ※1)

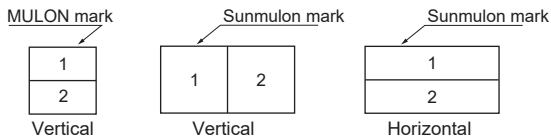
70	Red	Put the color numbers into frame 1, 2. (2-Split-Face combination) 7070, 7080, 7090, 8070, 8080, 8090, 9070, 9080, 9090
80	Green	
90	Yellow	

● **COVER COLOR**

C	Transparent
SK	Semitransparent (For Negative) ※2)
X	Without cover ※3)

● **NOTES**

- ※1) How to specify the color of LED and filter  
Select the color symbols listed in the ordering code, and put them into the frame 1 and 2 referring to the figure below.  
The numbers in the figure match the location specified in the ordering code.  
The color of "Yellow" for LED (9) and filter (3) is actually "Orange Yellow" not Lemon Yellow.



- ※2) For Negative illumination, specify filter Milk-white (4). The filter for negative illumination has black silk printing on one side.  
※3) For without cover (X), specify without filter (X). Filters can be ordered separately.  
※4) For the connector, refer to Accessories page.  
※5) Snap spring metal plates come out Left / Right direction for Vertical mounting, and Top / Bottom direction for Horizontal mounting to avoid interfering mutually. Therefore, in case of independent use, it does not matter. (select 1 Horizontal ordinary)

BL — [ ] [ 1 | 2 ] [ ] [ ] [ 1 | 2 ] [ ] [ ] [ ]

● **MOUNTING** ※5)

1	For Horizontal Mtg.
2	For Vertical Mtg.
X	Without Snap spring

● **Supply Voltage to LED**

2	DC12V
3	DC24V
X	Without LED

● **TERMINAL**

K	Connector with Accessories ※4)
N	Connector without Accessories

● **FILTER COLOR** ※1) ※2) ※3)

1	Red	Put the color numbers into frame 1, 2.  Without filter : XX
2	Green	
3	Yellow	
4	Milk-white	
X	Without filter	

The combination of With filter and Without filter cannot be specified.

● **HOUSING COLOR**

K	Black
H	Gray

LIGHT CARTRIDGE ※1)



● **SHAPE**

S1	Square Flat
W1	Rectangle Flat (Vertical)
W2	Rectangle Flat (Horizontal)

● **NOTES**

- ※1) If cover or filter are required, please order separately.

BL — [ ] [ 1 | 2 ] K [ ] [ ]

● **Supply Voltage to LED**

2	DC12V
3	DC24V

● **TERMINAL**

K	Connector
---	-----------

Housing and contacts are not attached.

● **LED COLOR**

70	Red	Put the color numbers into frame 1, 2. (2-Split-Face combination) 7070, 7080, 7090, 8070, 8080, 8090, 9070, 9080, 9090
80	Green	
90	Yellow	

Yellow (9) is actually "Orange Yellow" not Lemon Yellow.

◇Dimensions : page BL-3~4

◇Accessories : page BL-5

◇Internal connection arrangements : page BL-19

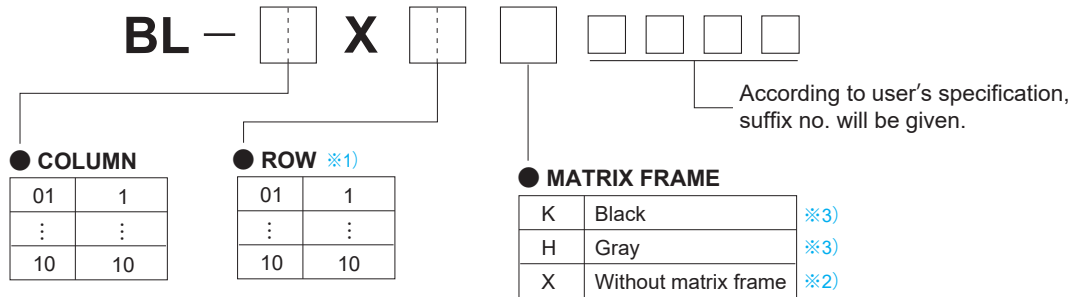
◇LED specifications : page BL-20

◇Terminals : page BL-21

◇Mounting design / Panel cutout : page BL-21

# ORDERING CODE [Matrix]

## MATRIX INDICATOR



- ※1) Rectangles should be calculated as two square. Please specify the number of columns and rows by referring to the figure below. A maximum of 10 rows and 10 columns can be specified.
- ※2) One column × one row (01×01), one column × number of rows (01×□), number of columns × one row (□×01) cannot be specified without matrix frame.
- ※3) Assemblies with matrix frames cannot be changed after ordering.

◆Please specify the desired matrix shape and the single model to be placed by number as shown in the table below.

### [Example to specify]

**BL** — 02 **X** 03 **K**            

No entry is required on the customer's side.

MATRIX FRAME

ROW

COLUMN

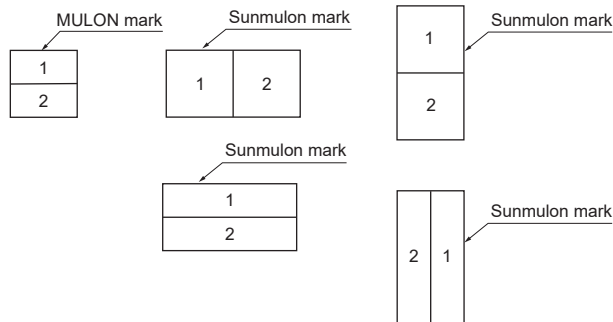
No.	Part no.	Q'ty
1	BL-W09CK4K3X	1
2	BL-S07CK1K3X	1
3	BL-W378CK4K3X	1
4	BL-S08CK5K3X	1
5		
6		
7		
⋮		

→ ROW

	01	02	03	04	05	06	07	08	09	10
01	1	2								
02	3	4								
03										
04										
05										
06										
07										
08										
09										
10										

COLUMN ↓

### Matrix mounting orientation of single unit





## REPLACEMENT PARTS

### ● Full-Face COVER/FILTER

		Shape	Red	Green	Yellow	Milk-white	Transparent	Semitransparent	Negative
COVER	Square	Flat	/	/	/	/	BL-0068-CC	BL-0068-SK	/
		Dome	BL-0322-LR	BL-0322-LG	BL-0322-LY	BL-0322-LM	/	/	/
	Rectangle	Flat	/	/	/	/	BL-0139-CC	BL-0139-SK	/
		Dome	BL-0323-LR	BL-0323-LG	BL-0323-LY	BL-0323-LM	/	/	/
FILTER	Square	A	BL-0208-LR	BL-0208-LG	BL-0208-LY	BL-0208-LM	/	/	BL-0213-LM
	Rectangle	C	BL-0149-LR	BL-0149-LG	BL-0149-LY	BL-0149-LM	/	/	BL-0215-LM

※ The filter for negative illumination has black silk printing on one side.

### ● 3-Color • Multi-Color COVER/FILTER

		Shape	Milk-white	Transparent	Semitransparent	Negative
COVER	Square	Flat	/	BL-0068-CC	BL-0068-SK	/
		Dome	BL-0322-LM	/	/	/
	Rectangle	Flat	/	BL-0139-CC	BL-0139-SK	/
		Dome	BL-0323-LM	/	/	/
FILTER	Square	A	BL-0208-LM	/	/	BL-0213-LM
	Rectangle	C	BL-0149-LM	/	/	BL-0215-LM

※ The filter for negative illumination has black silk printing on one side.

### ● 2-Split-Face COVER/FILTER

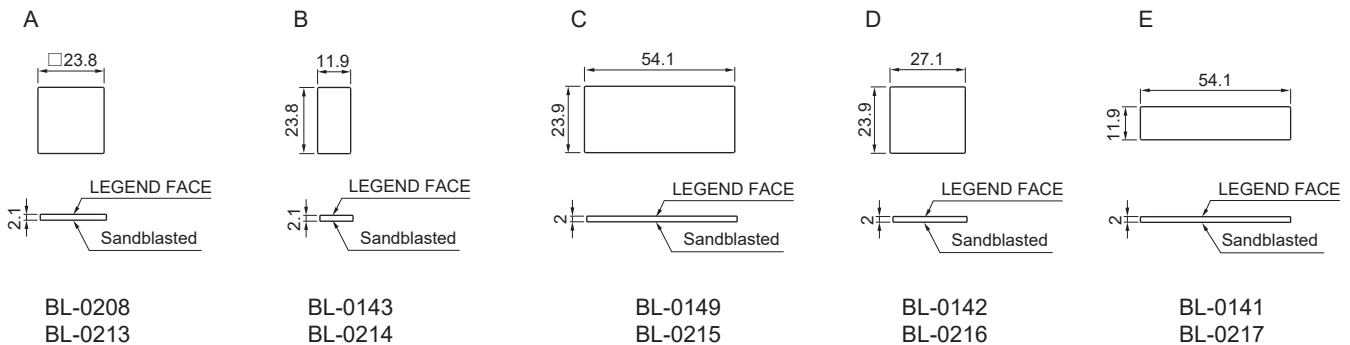
		Shape	Red	Green	Yellow	Milk-white	Transparent	Semitransparent	Negative
COVER	Square	Flat	/	/	/	/	BL-0068-CC	BL-0068-SK	/
	Rectangle		/	/	/	/	BL-0139-CC	BL-0139-SK	/
FILTER	Square	B	BL-0143-LR	BL-0143-LG	BL-0143-LY	BL-0143-LM	/	/	BL-0214-LM
	Rectangle Vertical	D	BL-0142-LR	BL-0142-LG	BL-0142-LY	BL-0142-LM	/	/	BL-0216-LM
	Rectangle Horizontal	E	BL-0141-LR	BL-0141-LG	BL-0141-LY	BL-0141-LM	/	/	BL-0217-LM

※ The filter for negative illumination has black silk printing on one side.

### ● DIVIDER

	Square • Rectangle Vertical	Rectangle Horizontal
Part no.	BL-0144	BL-0145

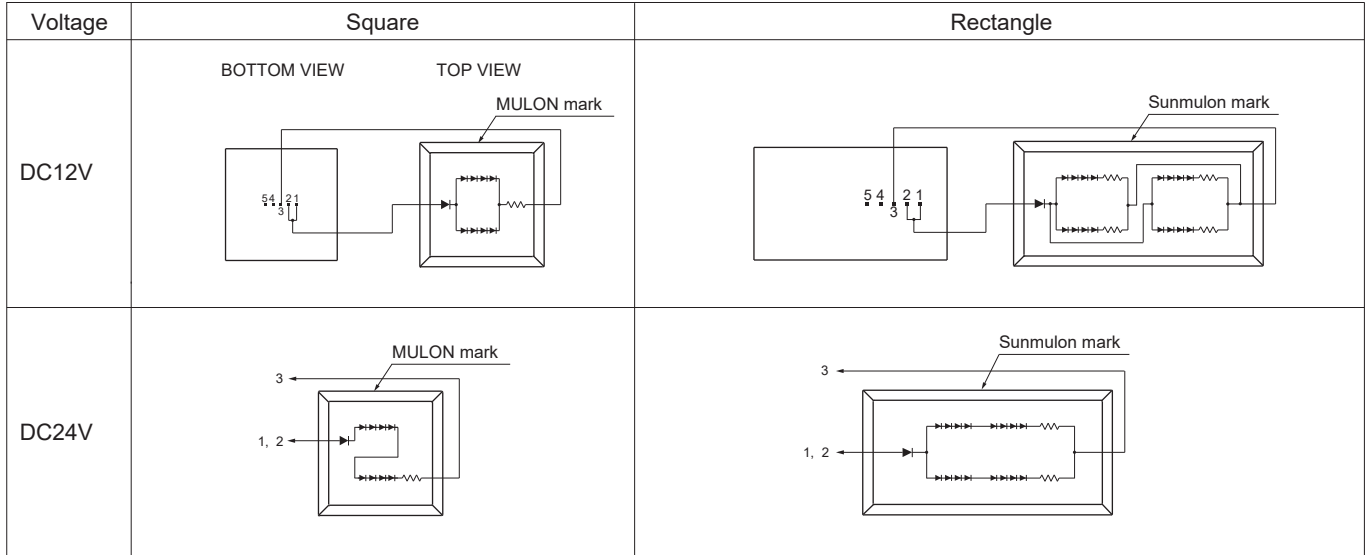
## FILTER DIMENSIONS



Tolerance : ± 0.4 mm

## INTERNAL CONNECTION ARRANGEMENTS

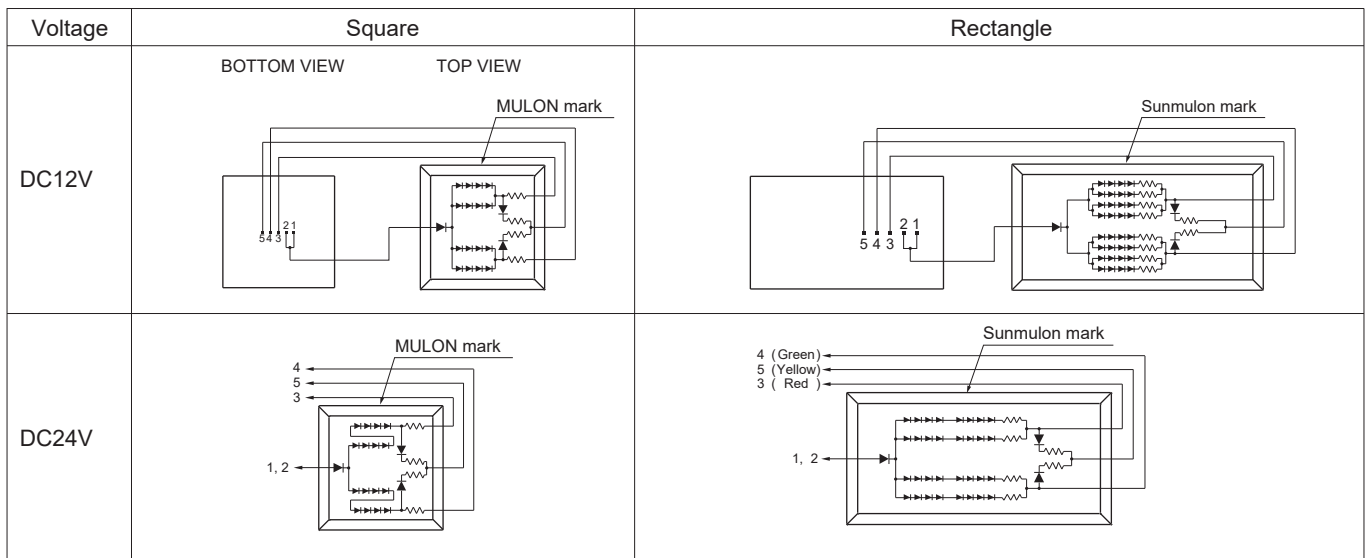
### ● Full-Face (Common for BL, Super BL)



※ LED color Super Blue (14) • Super White (16) • Super Green (18) are also connected to Pin No. 4.

※ Varistors are connected to LED color Super Blue (14) • Super White (16) • Super Green (18).

### ● 3-Color (Common for BL, Super BL)




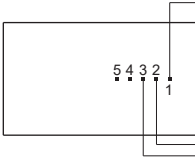
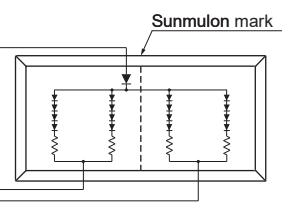

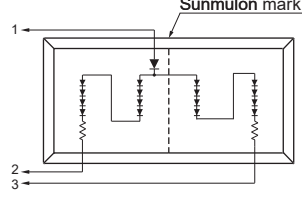
### ● 3-Color combination (Common for each voltage)

Terminals	LED Color
1, 2-3	Red
1, 2-4	Green
1, 2-5	Yellow

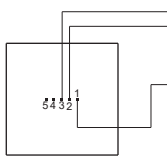
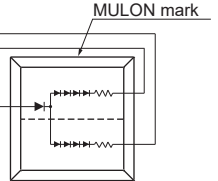
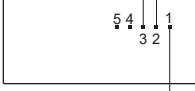
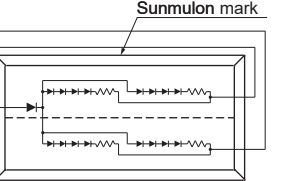
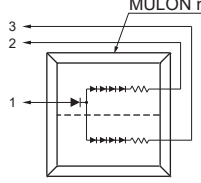
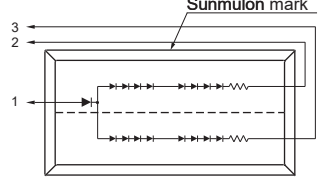
## INTERNAL CONNECTION ARRANGEMENTS

### ● 2-Split-Face (Common for BL, Super BL)

Vertical

Voltage	Square	Rectangle
DC12V		<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>BOTTOM VIEW</p>  </div> <div style="text-align: center;"> <p>TOP VIEW</p>  </div> </div>
DC24V		<div style="text-align: center;"> <p>Sunmulon mark</p>  </div>

Horizontal

Voltage	Square	Rectangle
DC12V	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>BOTTOM VIEW</p>  </div> <div style="text-align: center;"> <p>TOP VIEW</p>  </div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>BOTTOM VIEW</p>  </div> <div style="text-align: center;"> <p>TOP VIEW</p>  </div> </div>
DC24V	<div style="text-align: center;"> <p>MULON mark</p>  </div>	<div style="text-align: center;"> <p>Sunmulon mark</p>  </div>

## LED SPECIFICATIONS

### ● Full-Face

	Voltage	Rated Current (mA)								
		BL			Super BL					
		Red	Green	Yellow	Red	Green	Yellow	Super Blue	Super White	Super Green
Square	DC12V $\pm 5\%$	5	15	7	16	34	20	15	11	11
	DC24V $\pm 5\%$	2.5	10	3.5	8	17	10	8	6	6
Rectangle	DC12V $\pm 5\%$	10	25	12	31	67	41	31	22	22
	DC24V $\pm 5\%$	5	18.5	6.5	16	34	20	15	11	11

### ● 3-Color

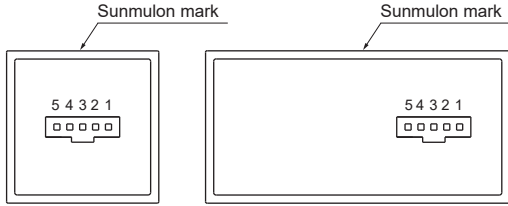
	Voltage	Rated Current (mA)					
		BL			Super BL		
		Red	Green	Yellow	Red	Green	Yellow
Square	DC12V $\pm 5\%$	5	15	14	16	34	37
	DC24V $\pm 5\%$	2.5	10	10	8	17	21
Rectangle	DC12V $\pm 5\%$	10	25	25	31	67	67
	DC24V $\pm 5\%$	5	18.5	20	16	34	38

### ● 2-Split-Face

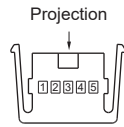
	Voltage	Rated Current (mA)					
		BL			Super BL		
		Red	Green	Yellow	Red	Green	Yellow
Square	DC12V $\pm 5\%$	2.5	7	3.5	8	17	10
	DC24V $\pm 5\%$	2.5	10	3.5	8	17	10
Rectangle	DC12V $\pm 5\%$	5	12	6.5	16	34	20
	DC24V $\pm 5\%$	2.5	10	3.5	8	17	10

# TERMINALS

## ● TERMINALS LAYOUT (BOTTOM VIEW)



## ● Connector



Terminal layout with the projection on top.  
No number on the actual item.

## ● Applicable wire

Wire size	Coating outer diameter
AWG # 24-28	1.0—1.5 mm

## ● BL

Pin No.	Square			Rectangle			
	Full-Face	2-Split-Face	3-Color	Full-Face	2-Split-Face Vert.	2-Split-Face Horiz.	3-Color
1	Anode (+)	Anode (+)	Anode (+)	Anode (+)	Anode (+)	Anode (+)	Anode (+)
2	Anode (+)	Cathode (-)	Anode (+)	Anode (+)	Cathode (-)	Cathode (-)	Anode (+)
3	Cathode (-)	Cathode (-)	Cathode (-) R	Cathode (-)	Cathode (-)	Cathode (-)	Cathode (-) R
4	-	-	Cathode (-) G	-	-	-	Cathode (-) G
5	-	-	Cathode (-) Y	-	-	-	Cathode (-) Y

## ● Super BL

Pin No.	Square				Rectangle			
	Full-Face		2-Split-Face	3-Color	Full-Face		2-Split-Face	3-Color
	Red·Green·Yellow	Super Blue·White·Green			Red·Green·Yellow	Super Blue·White·Green		
1	Anode (+)	Anode (+)	Anode (+)	Anode (+)	Anode (+)	Anode (+)	Anode (+)	Anode (+)
2	Anode (+)	Anode (+)	Cathode (-)	Anode (+)	Anode (+)	Anode (+)	Cathode (-)	Anode (+)
3	Cathode (-)	Cathode (-)	Cathode (-)	Cathode (-) R	Cathode (-)	Cathode (-)	Cathode (-)	Cathode (-) R
4		Cathode (-)		Cathode (-) G		Cathode (-)		Cathode (-) G
5				Cathode (-) Y				Cathode (-) Y

※ Simultaneous lighting is impossible while Pin No. 3, 4, 5 for 3-Color type.

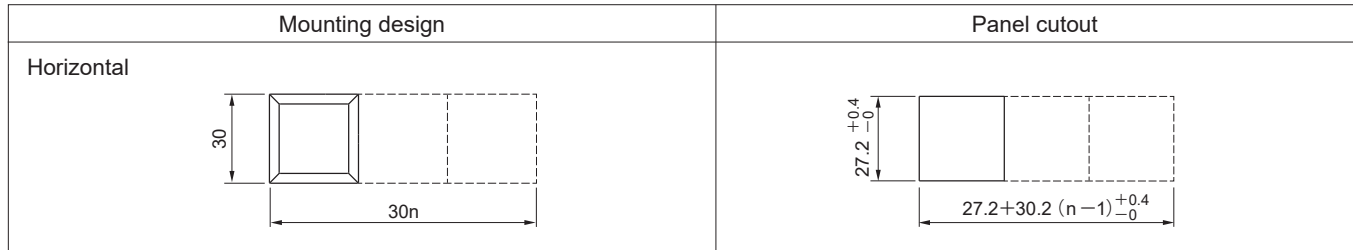
※ The pin assignment is different from AL and TL.

※ LED color : R (Red), G (Green), Y (Yellow)

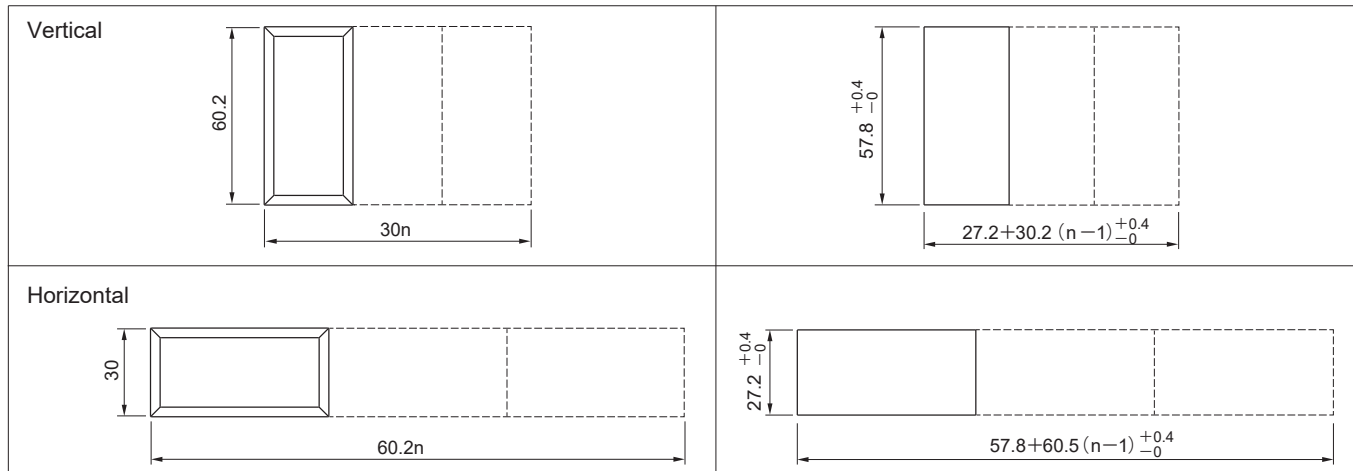
# MOUNTING DESIGN / PANEL CUTOUT

## ● Square

Recommended panel thickness : 1 to 4 mm



## ● Rectangle



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

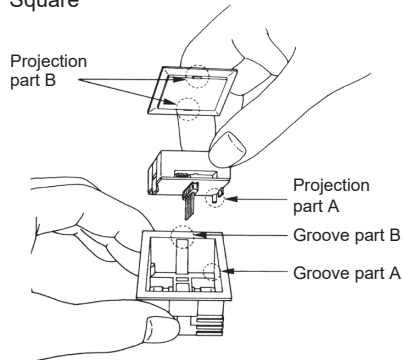
※ After the panel-cutting process, make sure to remove burrs on the surface.

n : Number of Units

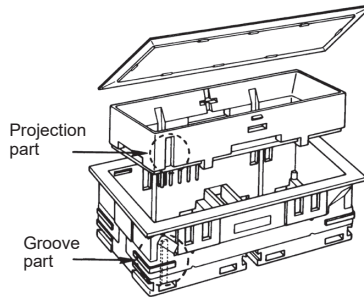
Tolerance : ± 0.4 mm

## 1. Fitting Light cartridge

Square



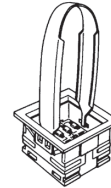
Rectangle



There is a proper direction for combining the light cartridge and the housing. As shown in the above, insert the light cartridge by aligning the projection part A with the groove part A and the projection part B with the groove part B.

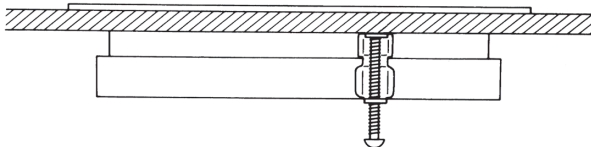
## 2. Removing Light cartridge

Adsorb the removing tool (SJ-0010-1) on the cover surface and pull it straight out.



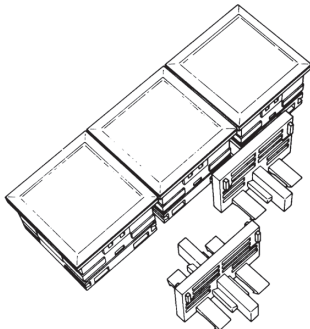
After removing the cover and filter, hang the cartridge with the removing tool (CL-0218) in the groove, and pull it straight out.

## 3. Fixing of the assembly with matrix frame to the panel



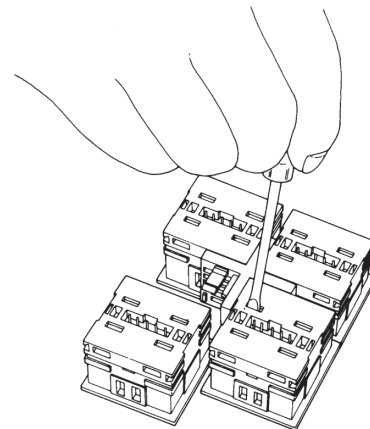
Place the assembly on top of the panel and secure with mounting screws from the back of the panel.

## 4. Assembly without Matrix frame



1. Remove the snap-spring from the housing.
2. Turn over all the housing, secure them to the assembly, insert the joints, and push them in until the joints are flush with the bottom of the housing.  
In the case of the assembly of two square and one rectangle, as shown in the above, one joint is used.
3. Assemblies using square only have no joint orientaion. Assemblies using rectangle only or square and rectangle, the short part of the joint should always be in the center of the rectangle.
4. Attach the snap spring to all around the housing except vertically or horizontally at the four corners of the housing.

## 5. Removing the assembly



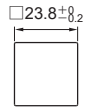
Hang the joint with the removing tool (CL-0218) in the groove, and pull it straight.

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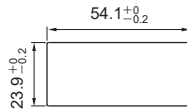
## PRECAUTIONS FOR CORRECT USE

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If preparing the character film separately, use a heat-resistant film with a thickness of 0.1 mm.  
For dimensions, please refer to the figure below.



Square



Rectangle

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

Tolerance :  $\pm 0.4$  mm

As of March 2023

## 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 caused 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.

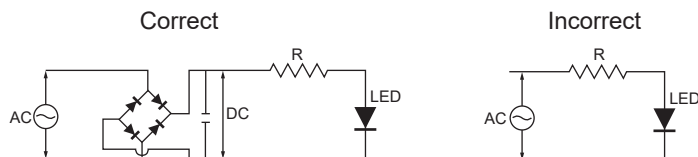


## Safety Precautions for All Indicators

- (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

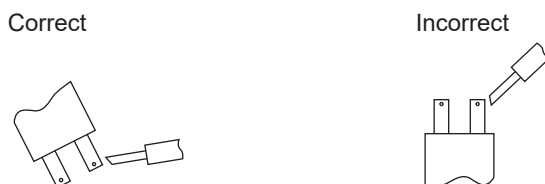
- (a) Do not apply a voltage between the LED terminal that is greater than the rated voltage. Doing so may damage the LED, cause lighting failure.  
(b) LEDs cannot be lit directly by AC circuit should be provided rectifier smoothing circuit for products other than AC input type.



- (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  $-25^{\circ}\text{C}$  to  $65^{\circ}\text{C}$  (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.