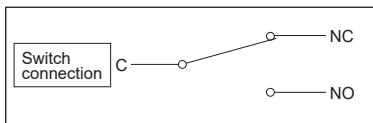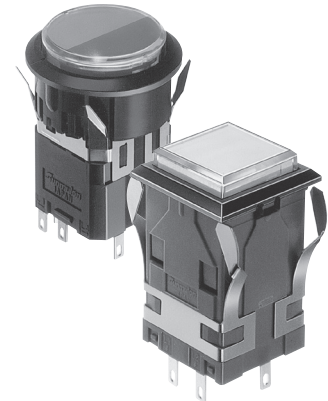# sunmulon

WH

WH Illuminated Pushbutton Switch

Only 35 mm depth behind panel.
Available from Full-Face to 4-Split-Face.

■ Depth behind panel：Only 35 mm

■ LED Full-Face, 2-3-4-Split-Face illumination available.

■ Terminal：#110 Tab・Soldering

■ Accessories：Barriers, Guard covers, Dust-proof / Oil Water-tight covers, etc.

Switch connection   C   NC
                            NO

CHARACTERISTICS

Button Size	Square：□19 mm Rectangle：19×26 mm Round：φ25 mm	
Contact Material	Silver contact	Cross-bar contact
Rating (Resistive Load)	AC 125 V 5 A AC 250 V 5 A	AC 125 V 0.1 A DC 30 V 0.1 A
Insulation Resistance	More than 100 MΩ at DC 500 V	
Dielectric Strength	AC 1000 V RMS between NC and NO terminal AC 2000 V RMS between terminals and ground 50/60 Hz for 60 sec. at normal ambient temperature and humidity	AC 600 V RMS between NC and NO terminal AC 2000 V RMS between terminals and ground 50/60 Hz for 60 sec. at normal ambient temperature and humidity
Contact Resistance	Less than 30 mΩ (Initial value) at DC 6 V 1 A	Less than 50 mΩ (Initial value) at DC 6 V 0.1 A
Vibration Resistance	10 to 55 Hz, Amplitude 1.5 mm	
Mechanical Life — Momentary	More than 1,000,000 operations	
Mechanical Life — Alternate	More than 200,000 operations	
Electrical Life (Resistive Load)	More than 50,000 operations at max. rated load	More than 100,000 operations at max. rated load
Operating Force	8.33 N max.	
Total Travel	3.2 mm max.	
Weight	Square：20 g Rectangle：27 g Round：25 g	
Ambient Operating Temperature	−15℃ to 50℃ （No Freeze, No Condensation）	
Ambient Operating Humidity	80%RH max. （No Condensation）	
Ambient Storage Temperature	−25℃ to 65℃ （No Freeze, No Condensation）	
Ambient Storage Humidity	80%RH max. （No Condensation）	

https://www.sunmulon.co.jp/english/products/switch_e/wh.html

SPECIFICATIONS

		Square	Rectangle	Round
Illumination type	Full-Face	**A**	A	A
	2-Split-Face (Vert.)	N/A	A	N/A
	2-Split-Face (Horiz.)	A	A	A
	3-Split-Face (Vert.)	N/A	A	A
	3-Split-Face (Horiz.)	N/A	A	A
	4-Split-Face	N/A	A	A
Contact	SPDT	A	A	A
	DPDT	A	A	A
	3PDT	N/A	A	N/A
Terminal	#110 Tab Soldering	A	A	A
RoHS (10 Substances)		Conform to standards		

A : Applicable   N/A : Not applicable

CONTACT RATINGS

● Silver contact

Voltage		Current (A) (Resistive load)
AC	125 V	5
	250 V	5
DC	8 V	2
	14 V	2
	30 V	1
	125 V	0.3

● Cross-bar contact

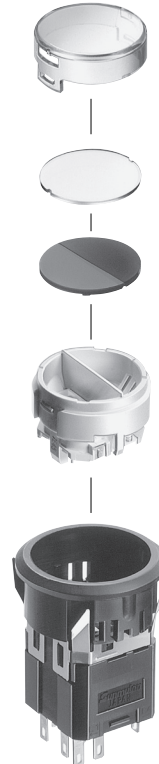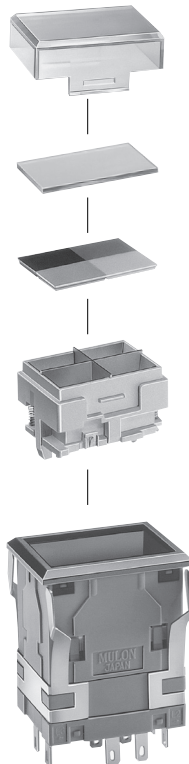| Rating	AC 125 V 0.1 A (Resistive load)
	DC 30 V 0.1 A (Resistive load)
Minimum applicable load	DC 5 V 1 mA (Resistive load)

STRUCTURE

Square・Rectangle

Round

LIGHT CARTRIDGE
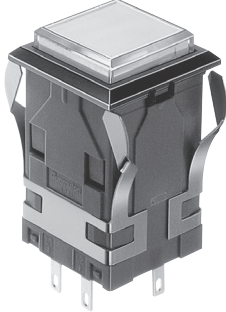
BUTTON
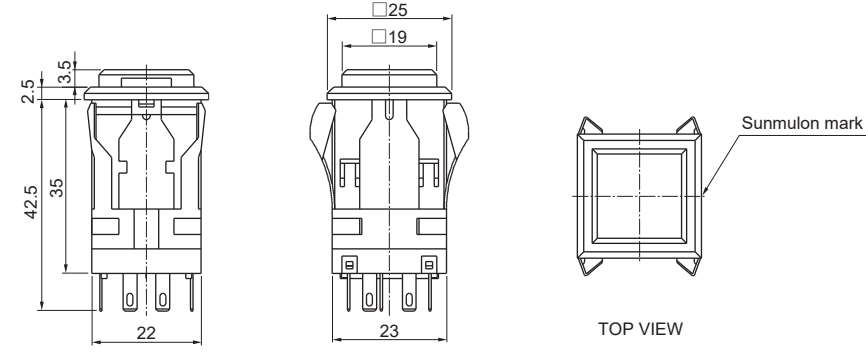
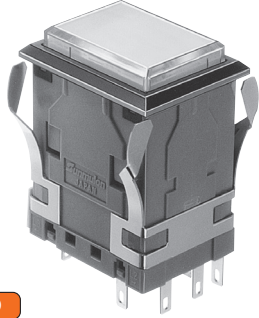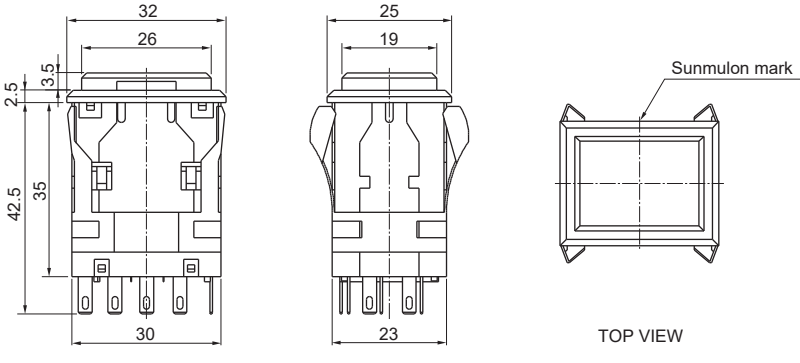LEGEND PLATE

FILTER

LED UNIT

HOUSING
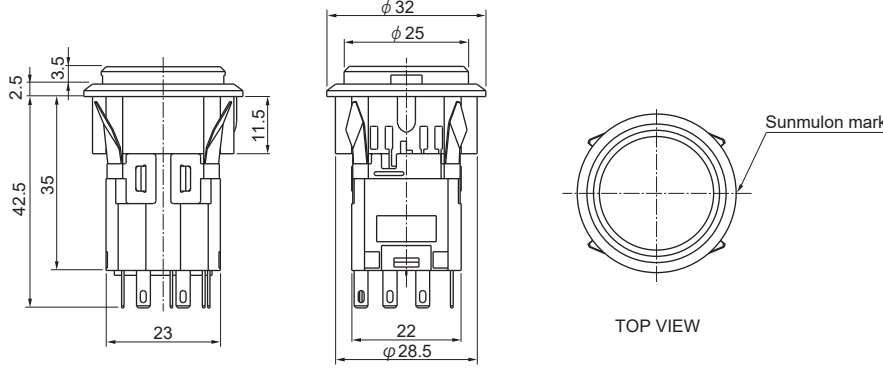
ILLUMINATION TYPES

Common for square, rectangle and round button.

LED color symbol | 70 | Red | | 80 | Green | | 90 | Yellow |

※ Yellow (90) is actually "ORANGE Yellow" not Lemon Yellow.

Full-Face	70 80 90
2-Split-Face	All combinations of LEDs are available. 2-Split-Face (Vertical) 2-Split-Face (Horizontal)
3-Split-Face	All combinations of LEDs are available. 3-Split-Face (Vertical) 3-Split-Face (Horizontal)
4-Split-Face	All combinations of LEDs are available. 4-Split-Face

● With Flange
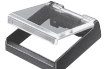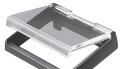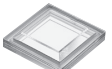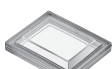
Square 3D DXF	□25 □19 2.5 3.5 42.5 35 22 23		Sunmulon mark TOP VIEW
Rectangle 3D DXF	32 26 2.5 3.5 42.5 35 30	25 19 23	Sunmulon mark TOP VIEW
Round 3D DXF	3.5 2.5 11.5 42.5 35 23	φ32 φ25 22 φ28.5	Sunmulon mark TOP VIEW

※ Without flange type can be also specified for Square and Rectangle.

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

Tolerance：± 0.4 mm

Name	Appearance	Classification	Part no.		Precautions for use
Barrier		Short center barrier	Black	WH-0738-K	- Cannot be used with guard cover and dust-proof / oil water-tight cover.
			Gray	WH-0738-G	
		Short side barrier	Black	WH-0739-K	
			Gray	WH-0739-G	
		Long center barrier	Black	WH-0741-K	- Cannot be used with guard cover and dust-proof / oil water-tight cover.
			Gray	WH-0741-G	
DXF		Long side barrier	Black	WH-0740-K	
			Gray	WH-0740-G	
Guard cover for without flange		For square button	Black	WH-0781-K	- Cannot be used with barrier and dust-proof / oil water-tight cover.
			Gray	WH-0781-G	
		For rectangle button	Black	WH-0782-K	- The cover to be opened 90° and returned by spring force.
DXF			Gray	WH-0782-G	
Dust-proof / oil water-tight cover for with flange		For square button	—	WH-0783	- Cannot be used with barrier and guard cover.
3D DXF		For rectangle button	—	WH-0784	- For using as oil water-tight, rubber packing needed. (Equivalent to IP63)
Rubber packing		For square button	—	WH-0767	- For using as oil water-tight, rubber packing needed.
		For rectangle button	—	WH-0768	
Removing tool		For removal light cartridge	—	SJ-0001	- Be used to remove light cartridge from housing.

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

◇Accessories' dimensions / Panel cutout：WH-19

Assembled Part (Light cartridge and Housing)

WH□－□□□ C □□ P □□

● **OPERATION**

L	Indicator
M	Momentary
A	Alternate

● **CONTACT**

0	Indicator
1	SPDT・Silver
2	DPDT・Silver
5	SPDT・Crossbar
6	DPDT・Crossbar
7	3PDT・Silver	※1)
9	3PDT・Crossbar	※1)

● **BUTTON SHAPE**

S0	Square	
W0	Rectangle	※1)
R0	Round	

● **LED COLOR**

70	Red	
80	Green	
90	Yellow	※2)

● **BUTTON COLOR**

C	Clear

● **OPTION**

010	Cathode common	
011	Vertical mounting	※4)
Blank	No option	

For other options except for the above, please contact us.

● **Supply Voltage to LED**

1	DC 5V Built-in resistor
2	DC12V Built-in resistor
3	DC24V Built-in resistor

● **TERMINAL**

P	♯110 Tab・Soldering

● **FILTER COLOR**

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

● **FLANGE / HOUSING COLOR**

K	Black	
H	Gray	
X	Without flange (for Square or Rectangle only)	※3)

Specify flange color for Square / Rectangle type
and housing color for Round type.

● **NOTES**

※1) 3PDT is for Rectangle only.

※2) The color of "Yellow" for LED (90) and filter (3) is actually "Orange Yellow" not Lemon Yellow.

※3) When using guard cover with square and rectangle button, specify flange color X (Without flange).

※4) Vertical mounting (011) is for Rectangle only.

ORDERING CODE 【Full-Face】

LIGHT CARTRIDGE

W□ − □ − □ − □□ □

● **OPERATION**

L	Indicator
H	Momentary・Alternate

● **BUTTON SHAPE**

S1	Square
W1	Rectangle
R1	Round

● **LED COLOR**

70	Red
80	Green
90	Yellow ※1)

● **FILTER COLOR**

R	Red
G	Green
Y	Yellow ※1)
M	Milk-white
X	Without filter

● **Supply Voltage to LED**

1	DC 5V Built-in resistor
2	DC12V Built-in resistor
3	DC24V Built-in resistor

● **OPTION**

010	Cathode common
Blank	No option

For other options except for the above, please contact us.

● **NOTES**

※1) The color of "Yellow" for LED (90) and filter (Y) is actually "Orange Yellow" not Lemon Yellow.

HOUSING

WH□ − □□□ − S□

● **OPERATION**

L	Indicator
M	Momentary
A	Alternate

● **CONTACT**

0	Indicator
1	SPDT・Silver
2	DPDT・Silver
5	SPDT・Crossbar
6	DPDT・Crossbar
7	3PDT・Silver ※1)
9	3PDT・Crossbar ※1)

● **FLANGE SHAPE**

S	Square
W	Rectangle ※1)
R	Round

● **FLANGE / HOUSING COLOR**

K	Black
H	Gray
X	Without flange (for Square or Rectangle only) ※2)

Specify flange color for Square / Rectangle type and housing color for Round type.

● **OPTION**

011	Vertical mounting ※3)
Blank	No option

For other options except for the above, please contact us.

● **NOTES**

※1) 3PDT is for Rectangle only.

※2) When using guard cover with square and rectangle button, specify flange color X (Without flange).

※3) Vertical mounting (011) is for Rectangle only.

ORDERING CODE 【2・3・4-Split-Face】

Assembled Part (Light cartridge and Housing)

WH□ － □□ 1 2 3 4 C □ 1 2 3 4 P □ □

● OPERATION

L	Indicator
M	Momentary
A	Alternate

● CONTACT

0	Indicator	
1	SPDT・Silver	
2	DPDT・Silver	
5	SPDT・Crossbar	
6	DPDT・Crossbar	
7	3PDT・Silver	※2)
9	3PDT・Crossbar	※2)

● BUTTON SHAPE・ILLUMINATION TYPE

S2	Square 2-Split-Face	
W1	Rect. 2-Split-Face (Vertical)	※2) ※4)
W2	Rect. 2-Split-Face (Horizontal)	※2) ※4)
W5	Rect. 3-Split-Face (Vertical)	※2) ※4)
W6	Rect. 3-Split-Face (Horizontal)	※2) ※4)
W7	Rect. 4-Split-Face	※2) ※4)
R2	Round 2-Split-Face	
R5	Round 3-Split-Face (Vertical)	
R6	Round 3-Split-Face (Horizontal)	
R7	Round 4-Split-Face	

● LED COLOR ※1)

70	Red	2-Split-Face : Put the color numbers into frame 1, 2.
80	Green	3-Split-Face : Put the color numbers into frame 1, 2, 3.
90	Yellow	4-Split-Face : Put the color numbers into frame 1, 2, 3, 4.

2-3-4-Split-Face : Simultaneous lighting is possible
except all green LED type with DC12V or DC24V.

● BUTTON COLOR

C	Clear

● FILTER COLOR ※1)

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

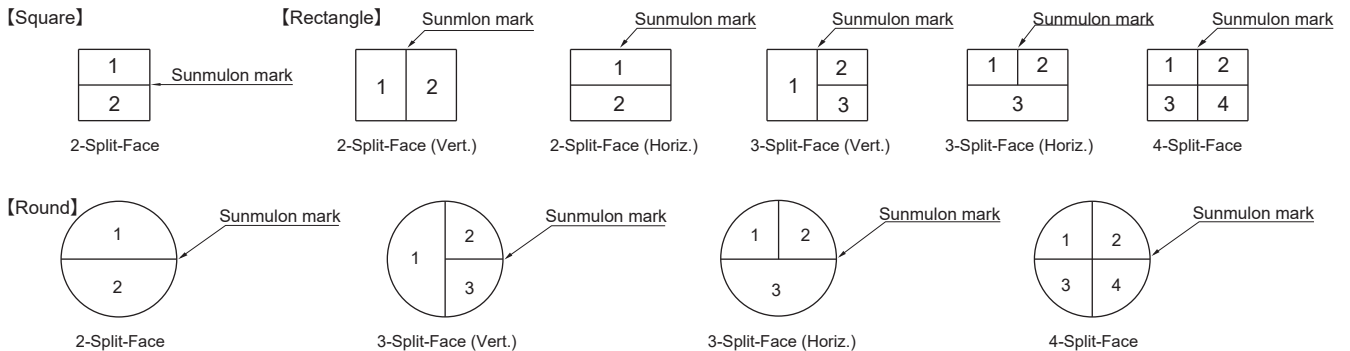The combination of With filter and Without filter cannot be specified.

● FLANGE / HOUSING COLOR

K	Black	
H	Gray	
X	Without flange (for Square or Rectangle only)	※3)

Specify flange color for Square / Rectangle type
and housing color for Round type.

● TERMINAL

P	＃110 Tab・Soldering

● Supply Voltage to LED

1	DC 5V Built-in resistor
2	DC12V Built-in resistor
3	DC24V Built-in resistor

● OPTION

010	Cathode common	
011	Vertical mounting	※4)
Blank	No option	

For other options except for the above, please contact us.

● 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, 2, 3 and 4, referring to the figure below.
The numbers in the figure match the location specified in the ordering code.
The color of "Yellow" for LED (90) and filter (3) is actually "Orange Yellow" not Lemon Yellow.

【Square】

1
2

Sunmulon mark

2-Split-Face

【Rectangle】

Sunmulon mark

1	2

2-Split-Face (Vert.)

Sunmulon mark

1	
2	

2-Split-Face (Horiz.)

Sunmulon mark

1	2
	3

3-Split-Face (Vert.)

Sunmulon mark

1	2
3	

3-Split-Face (Horiz.)

Sunmulon mark

1	2
3	4

4-Split-Face

【Round】

1
2

Sunmulon mark

2-Split-Face

2
1 / 3

Sunmulon mark

3-Split-Face (Vert.)

1	2
3	

Sunmulon mark

3-Split-Face (Horiz.)

1	2
3	4

Sunmulon mark

4-Split-Face

※2) 3PDT is for Rectangle only.

※3) When using guard cover with square and rectangle button, specify flange color X (Without flange).

※4) Vertical mounting (011) is for Rectangle only.

◇Dimensions：page WH-4　　　◇Accessories：page WH-5　　　◇Internal connection arrangements：page WH-13～14
◇LED specifications：page WH-15　　　◇Terminals：page WH-16
◇Mounting design / Panel cutout：page WH-17～18　　　◇Accessories' dimensions / Panel cutout：page WH-19

Sunmulon Co., Ltd.　　　**WH-8**

ORDERING CODE 【2・3・4-Split-Face】

LIGHT CARTRIDGE

W□ － □□ □ － 1234 － 1234 □ □

● OPERATION

L	Indicator
H	Momentary・Alternate

● BUTTON SHAPE

S	Square
W	Rectangle
R	Round

● BUTTON SHAPE・ILLUMINATION TYPE

2	Round・Square	2-Split-Face
3	Rect.	2-Split-Face (Vertical)
4	Rect.	2-Split-Face (Horizontal)
5	Round・Rect.	3-Split-Face (Vertical)
6	Round・Rect.	3-Split-Face (Horizontal)
7	Round・Rect.	4-Split-Face

● LED COLOR ※1)

70	Red	2-Split-Face : Put the color numbers into frame 1, 2.
80	Green	3-Split-Face : Put the color numbers into frame 1, 2, 3.
90	Yellow	4-Split-Face : Put the color numbers into frame 1, 2, 3, 4.

2-3-4-Split-Face : Simultaneous lighting is possible
except all green LED type with DC12V or DC24V.

● FILTER COLOR ※1)

R	Red	2-Split-Face : Put the color numbers into frame 1, 2.
G	Green	3-Split-Face : Put the color numbers into frame 1, 2, 3.
Y	Yellow	4-Split-Face : Put the color numbers into frame 1, 2, 3, 4.
M	Milk-white	For Without filter 2-Split-Face : Put XX into frame 1, 2.
X	Without filter	3-Split-Face : Put XXX into frame 1, 2, 3. 4-Split-Face : Put XXXX into frame 1, 2, 3, 4.

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

● Supply Voltage to LED

1	DC 5V Built-in resistor
2	DC12V Built-in resistor
3	DC24V Built-in resistor

● OPTION

010	Cathode common
Blank	No option

For other options except for the above, please contact us.
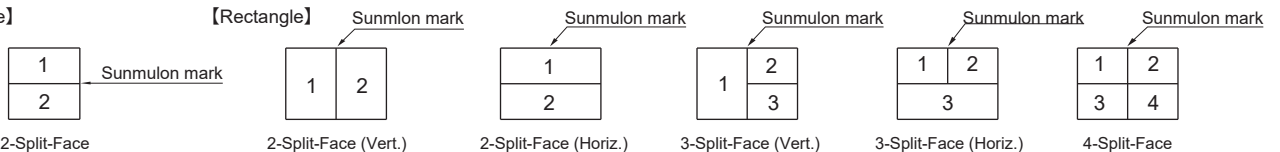
● NOTES

※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, 2, 3 and 4, referring to the figure below.
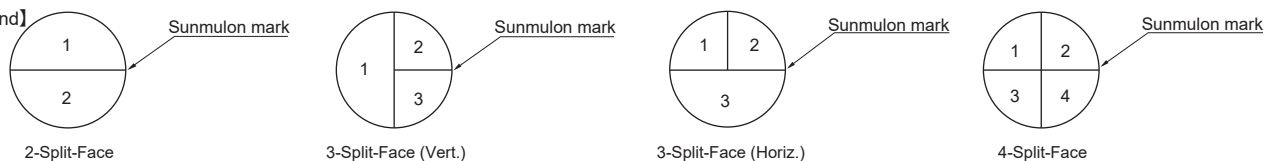The numbers in the figure match the location specified in the ordering code.
The color of "Yellow" for LED (90) and filter (3) is actually "Orange Yellow" not Lemon Yellow.

【Square】 2-Split-Face
【Rectangle】 2-Split-Face (Vert.) / 2-Split-Face (Horiz.) / 3-Split-Face (Vert.) / 3-Split-Face (Horiz.) / 4-Split-Face
【Round】 2-Split-Face / 3-Split-Face (Vert.) / 3-Split-Face (Horiz.) / 4-Split-Face

HOUSING

WH□ － □□□ － S□

● OPERATION

L	Indicator
M	Momentary
A	Alternate

● CONTACT

0	Indicator
1	SPDT・Silver
2	DPDT・Silver
5	SPDT・Crossbar
6	DPDT・Crossbar
7	3PDT・Silver ※1)
9	3PDT・Crossbar ※1)

● FLANGE SHAPE

S	Square
W	Rectangle ※1)
R	Round

● FLANGE / HOUSING COLOR

K	Black
G	Gray
X	Without flange (for Square or Rectangle only) ※2)

Specify flange color for Square / Rectangle type and housing color for Round type.

● OPTION

011	Vertical mounting ※3)
Blank	No option

For other options except for the above, please contact us.

● NOTES

※1) 3PDT is for Rectangle only.
※2) When using guard cover with square and rectangle button, specify flange color X (Without flange).
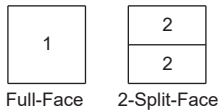※3) Vertical mounting (011) is for Rectangle only.

● Full-Face BUTTON／FILTER

		No.	Red	Green	Yellow	Milk-White	Clear
BUTTON	Square	—					WH-0677
	Rectangle	—					WH-0683
	Round	—					WH-2347
FILTER	Square	1	WH-0705-R	WH-0705-G	WH-0705-Y	WH-0705-M	
	Rectangle	3	WH-0706-R	WH-0706-G	WH-0706-Y	WH-0706-M	
	Round	7	WH-2349-RR	WH-2349-GG	WH-2349-YY	WH-2349-MM	

● Split-Face BUTTON／FILTER

			No.	Red	Green	Yellow	Milk-White	Clear
BUTTON	Square		—					WH-0677
	Rectangle		—					WH-0683
	Round		—					WH-2347
FILTER	Square	2-Split-Face	2	WH-0713-R	WH-0713-G	WH-0713-Y	WH-0713-M	
	Rectangle	2-3-Split-Face (Vert.)	4	WH-0715-R	WH-0715-G	WH-0715-Y	WH-0715-M	
		2-3-Split-Face (Horiz.)	5	WH-0714-R	WH-0714-G	WH-0714-Y	WH-0714-M	
		3-4-Split-Face	6	WH-0716-R	WH-0716-G	WH-0716-Y	WH-0716-M	
	Round	2-3-Split-Face	8	WH-2350-RR	WH-2350-GG	WH-2350-YY	WH-2350-MM	
		3-4-Split-Face	9	WH-2351-RR	WH-2351-GG	WH-2351-YY	WH-2351-MM	

【Square】

1
Full-Face

2
2
2-Split-Face

【Rectangle】

3
Full-Face

4 | 4
2-Split-Face (Vert.)

5
5
2-Split-Face (Horiz.)

4 | 6 / 6
3-Split-Face (Vert.)

6 | 6 / 5
3-Split-Face (Horiz.)

6 | 6 / 6 | 6
4-Split-Face

【Round】

7
Full-Face

8 / 8
2-Split-Face

8 | 9 / 9
3-Split-Face (Vert.)
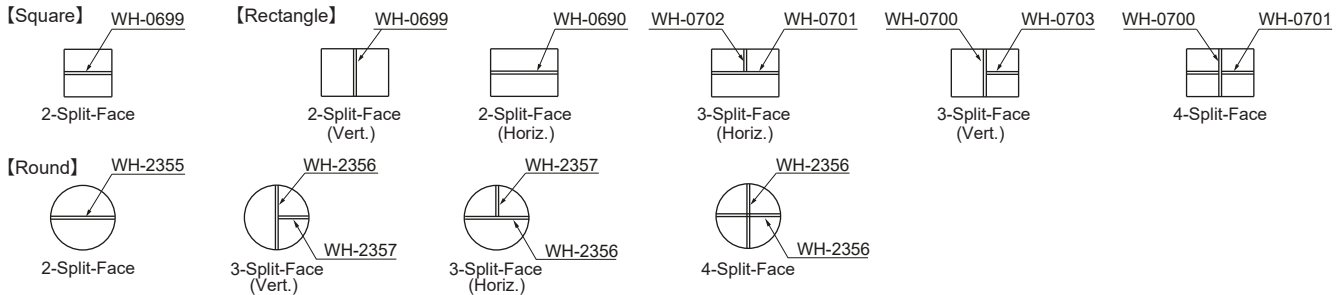
9 | 9 / 8
3-Split-Face (Horiz.)

9 | 9 / 9 | 9
4-Split-Face
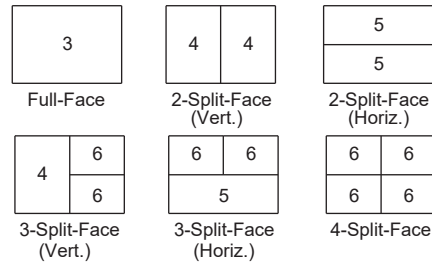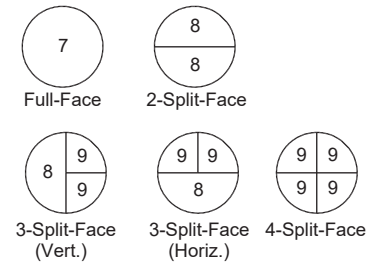
● DIVIDER

Place divider in the groove inside the LED unit, referring to the figure's position below.

【Square】 WH-0699
2-Split-Face

【Rectangle】 WH-0699
2-Split-Face (Vert.)

WH-0690
2-Split-Face (Horiz.)

WH-0702 / WH-0701
3-Split-Face (Horiz.)

WH-0700 / WH-0703
3-Split-Face (Vert.)

WH-0700 / WH-0701
4-Split-Face

【Round】 WH-2355
2-Split-Face

WH-2356 / WH-2357
3-Split-Face (Vert.)

WH-2357 / WH-2356
3-Split-Face (Horiz.)

WH-2356 / WH-2356
4-Split-Face

● LEGEND PLATE

Square	WH-0712-C
Rectangle	WH-0711-C
Round	WH-2348-CC

● FLANGE

Square	Black	WH-0679-K
	Gray	WH-0679-G
Rectangle	Black	WH-0685-K
	Gray	WH-0685-G

DXF
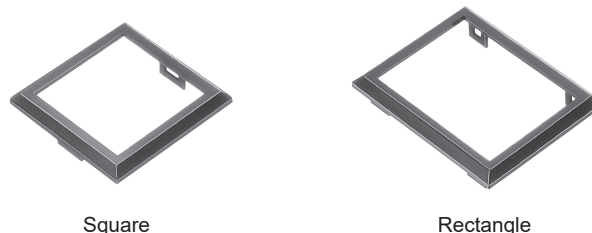
※ With flange or Without flange can be specified in the Ordering code page 6-9.

Square

Rectangle

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

Sunmulon Co., Ltd.

WH-10

● LONG SNAP SPRING

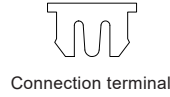| Part no.	WH-0676-2

The option code for vertical mounting with rectangle button (011), already assembled these 2 long snap springs into the product.
To change a horizontal mounting type to a vertical mounting type, replace 2 short snap springs with these 2 long snap springs.
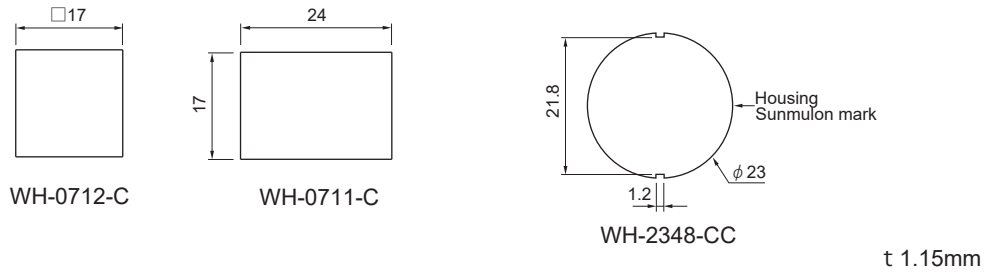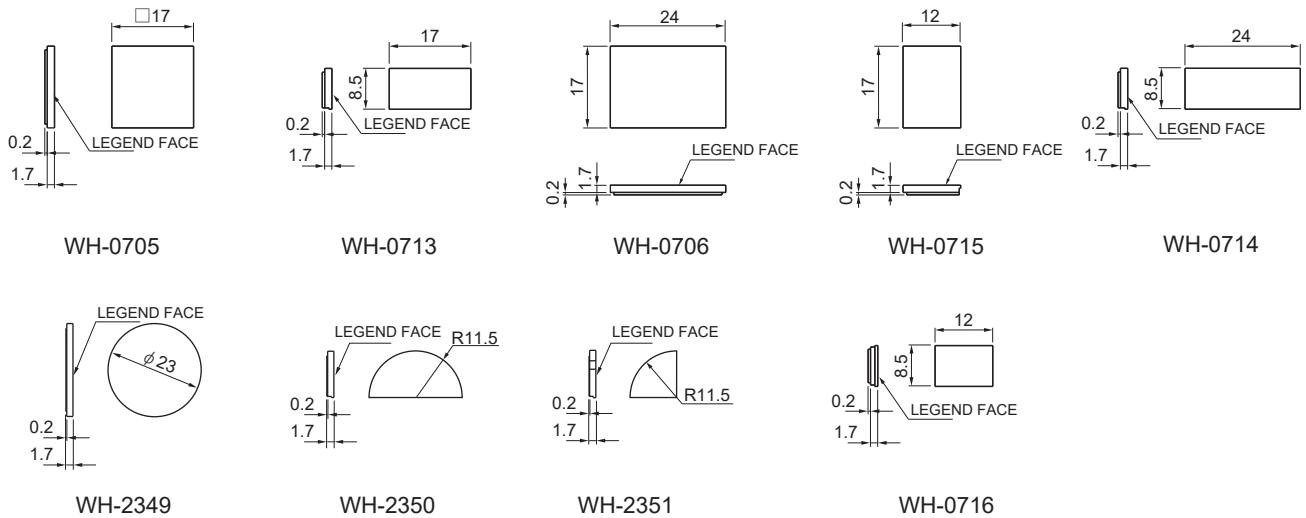
● CONNECTION TERMINAL

Part no.	WH-0669

If ordered as Assembled Part, connection terminal(s) is assembled into the product when shipped.
If ordered Housing only, connection terminal(s) is attached.

Connection terminal

LEGEND PLATE DIMENSIONS

□17

WH-0712-C

24

17

WH-0711-C

21.8

Housing
Sunmulon mark

φ23

1.2

WH-2348-CC

t 1.15mm

FILTER DIMENSIONS

□17

0.2

1.7

LEGEND FACE

WH-0705

17

8.5

0.2

1.7

LEGEND FACE

WH-0713

24

17

0.2 1.7

LEGEND FACE

WH-0706

12

17

0.2 1.7

LEGEND FACE

WH-0715

24

8.5

0.2

1.7

LEGEND FACE

WH-0714

LEGEND FACE

φ23

0.2

1.7

WH-2349

LEGEND FACE R11.5

0.2

1.7

WH-2350

LEGEND FACE

R11.5

0.2

1.7

WH-2351

12

8.5

0.2

1.7

LEGEND FACE

WH-0716

Tolerance : ± 0.4 mm

INTERNAL CONNECTION ARRANGEMENTS

● Full-Face

	Voltage	
Square	DC5V DC12V	BOTTOM VIEW / TOP VIEW — Sunmulon mark — L2, L1, LC
	DC24V	Sunmulon mark — L2, L1, LC
Rectangle	DC5V	Sunmulon mark — L3, L4, L2, L1, LC
	DC12V	Sunmulon mark — L3, L4, L2, L1, LC
	DC24V	Sunmulon mark — L3, L4, L2, L1, LC
Round	DC5V	Sunmulon mark — L4, L3, LC, L1, L2
	DC12V	Sunmulon mark — L4, L3, LC, L1, L2
	DC24V	Sunmulon mark — L4, L3, LC, L1, L2

※ • = Connecting point of connection terminal
※ If ordered as Assembled Part, connection terminal(s) is assembled into the product when shipped.
※ If ordered Housing only, connection terminal(s) is attached.
　Refer to "Installing connection terminal" on page WH-21 before use.
※ For Cathode Common type, LED polarity (current flow direction) is opposite.

Sunmulon Co., Ltd.

WH-12

INTERNAL CONNECTION ARRANGEMENTS

● 2-Split-Face

	Voltage	Vertical	Horizontal
Square	Common for each voltage		Sunmulon mark
Rectangle	DC5V		Sunmulon mark
	DC12V	BOTTOM VIEW TOP VIEW Sunmulon mark Common for each voltage	Sunmulon mark
	DC24V		Sunmulon mark
Round	DC5V		Sunmulon mark
	DC12V DC24V		Sunmulon mark

※ • = Connecting point of connection terminal
※ If ordered as Assembled Part, connection terminal(s) is assembled into the product when shipped.
※ If ordered Housing only, connection terminal(s) is attached.
   Refer to "Installing connection terminal" on page WH-21 before use.
※ For Cathode Common type, LED polarity (current flow direction) is opposite.

● 3-Split-Face

	Voltage	Vertical	Horizontal
Rectangle	Common for each voltage	BOTTOM VIEW — L3 L2 L4 L1 LC / TOP VIEW — Sunmulon mark	L3 L2 L4 L1 LC — Sunmulon mark
Round	Common for each voltage	L4 L3 LC L1 L2 — Sunmulon mark	L4 L3 LC L1 L2 — Sunmulon mark

● 4-Split-Face

	Voltage	4-Split-Face
Rectangle	Common for each voltage	BOTTOM VIEW — L3 L2 L4 L1 LC / TOP VIEW — Sunmulon mark
Round	Common for each voltage	L4 L3 LC L1 L2 — Sunmulon mark

※ • = Connecting point of connection terminal
※ If ordered as Assembled Part, connection terminal(s) is assembled into the product when shipped.
※ If ordered Housing only, connection terminal(s) is attached.
　Refer to "Installing connection terminal" on page WH-21 before use.
※ For Cathode Common type, LED polarity (current flow direction) is opposite.

LED SPECIFICATIONS 【Full-Face】

Voltage	Rated Current (mA)								
	Square			Rectangle			Round		
	Red	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow
DC 5V ±5%	8	16	12	16	32	24	16	32	24
DC12V ±5%	8	16	12	8	16	12	8	16	12
DC24V ±5%	4	8	6	4	8	6	4	8	6

LED SPECIFICATIONS 【2-Split-Face】

Voltage	Rated Current (mA) (per 1-Screen)											
	Square 2-Split-Face (Horiz.)			Rectangle 2-Split-Face (Vert.)			Rectangle 2-Split-Face (Horiz.)			Round 2-Split-Face (Horiz.)		
	Red	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow
DC 5V ±5%	4	8	6	8	16	12	8	16	12	8	16	12
DC12V ±5%	4	8	6	8	16	12	4	8	6	4	8	6
DC24V ±5%	4	8	6	8	16	12	4	8	6	4	8	6

※ Simultaneous lighting is possible except all green LED type with DC12V or DC24V.

LED SPECIFICATIONS 【3-Split-Face】

Voltage	Rated Current (mA) (per 1-Screen)					
	Red		Green		Yellow	
	A	B	A	B	A	B
DC 5V ±5%	8	4	16	8	12	6
DC12V ±5%	8	4	16	8	12	6
DC24V ±5%	8	4	16	8	12	6

● 3-Split-Face screen positions
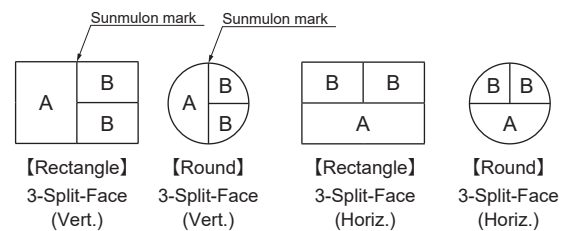
【Rectangle】 3-Split-Face (Vert.)　【Round】 3-Split-Face (Vert.)　【Rectangle】 3-Split-Face (Horiz.)　【Round】 3-Split-Face (Horiz.)

※ Simultaneous lighting is possible except all green LED type with DC12V or DC24V.

LED SPECIFICATIONS 【4-Split-Face】

Voltage	Rated Current (mA) (per 1-Screen)								
	Square			Rectangle			Round		
	Red	Green	Yellow	Red	Green	Yellow	Red	Green	Yellow
DC 5V ±5%	4	8	6	4	8	6	4	8	6
DC12V ±5%	4	8	6	4	8	6	4	8	6
DC24V ±5%	4	8	6	4	8	6	4	8	6

※ Simultaneous lighting is possible except all green LED type with DC12V or DC24V.

TERMINALS

● TERMINALS LAYOUT (BOTTOM VIEW)

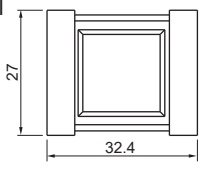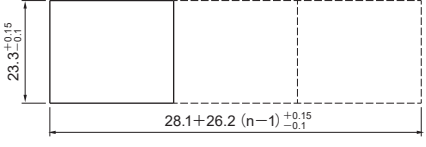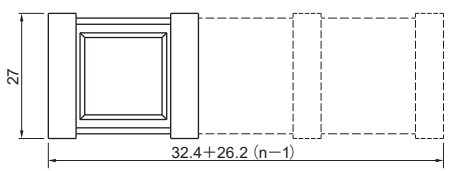|	SPDT	DPDT	3PDT	INDICATOR
Square				
Rectangle				
Round				

● TERMINALS DIMENSIONS (BOTTOM VIEW)

Square

Rectangle

Round
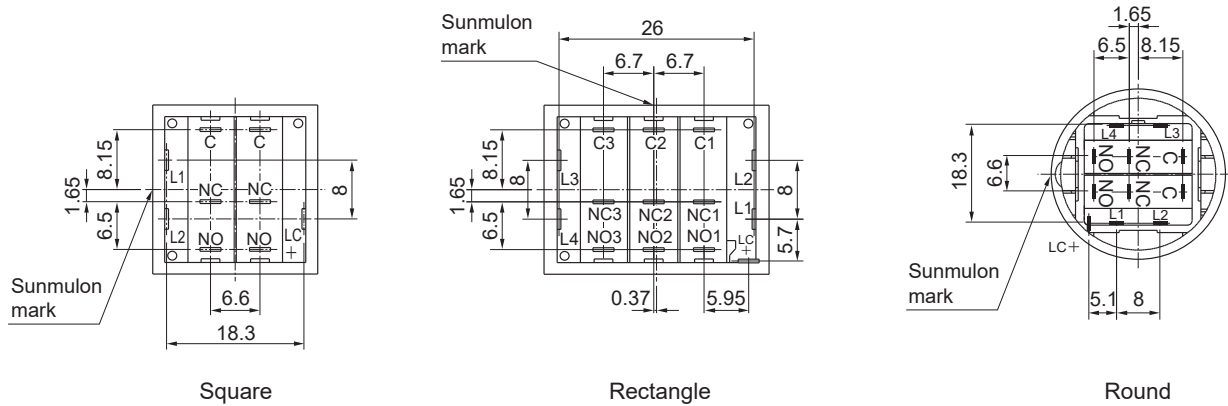
TERMINAL SHAPE
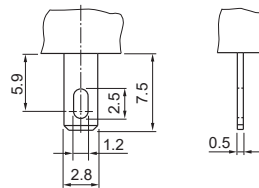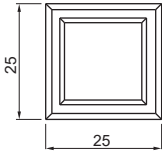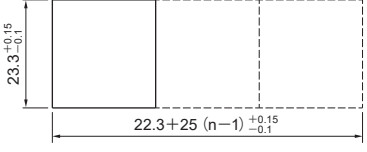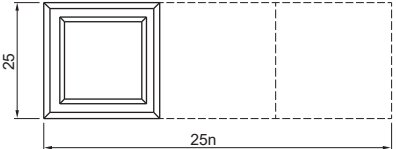
110 Tab・Soldering Terminal

Tolerance：±0.4 mm
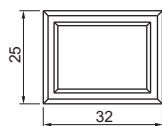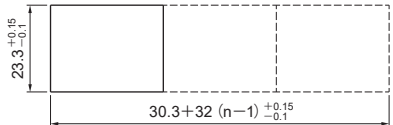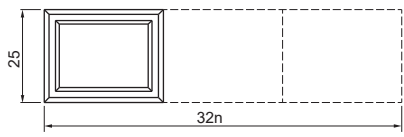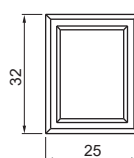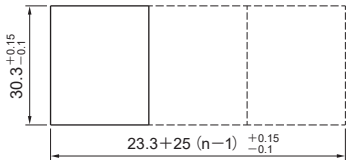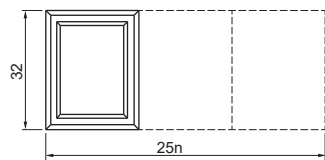
● Square

	Mounting design	Panel cutout
Without Barriers	**Individual** 25 25	Recommended panel thickness : 1 to 5 mm $23.3^{+0.15}_{-0.1}$ $22.3+25\,(n-1)^{+0.15}_{-0.1}$ **n : Number of Units**
	Multiple 25 25n	
With Barriers	**Individual** 27 32.4	Recommended panel thickness : 1 to 5 mm $23.3^{+0.15}_{-0.1}$ $28.1+26.2\,(n-1)^{+0.15}_{-0.1}$ **n : Number of Units**
	Multiple 27 $32.4+26.2\,(n-1)$	

※ Vertical consecutive (Multiple) mounting is impossible for Square button type.

● Rectangle

	Mounting design	Panel cutout
Without Barriers	**Individual (Horiz.)** 25 32	Recommended panel thickness : 1 to 5 mm $23.3^{+0.15}_{-0.1}$ $30.3+32\,(n-1)^{+0.15}_{-0.1}$ **n : Number of Units**
	Multiple (Horiz.) 25 32n	
	Individual (Vert.) 32 25	Recommended panel thickness : 1 to 5 mm $30.3^{+0.15}_{-0.1}$ $23.3+25\,(n-1)^{+0.15}_{-0.1}$ ※ For consecutive vertical mounting, specify option code "011" which is with long snap springs. **n : Number of Units**
	Multiple (Vert.) 32 25n	

※ If the panel is to be finished (e.g. coated), make sure that the panel meets the specified dimensions after the coating.
In case the panel cut dimension is too small, it may cause malfunction.
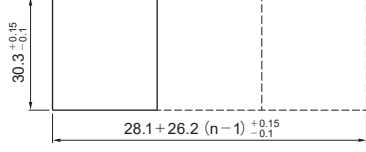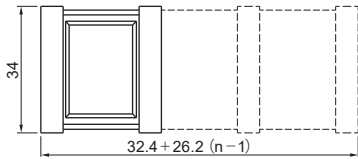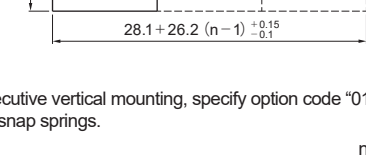
※ To change horizontal consecutive (Multiple) mounting to vertical consecutive (Multiple) mounting, 2 long snap springs
(Part no. WH-0676-2) for each button are required.

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

Tolerance：±0.4 mm
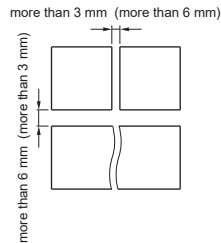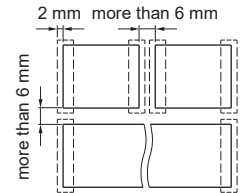
● Rectangle

	Mounting design	Panel cutout
With Barriers	**Individual (Horiz.)** 27 39.4	Recommended panel thickness : 1 to 5 mm $23.3 {}^{+0.15}_{-0.1}$
	Multiple (Horiz.) 27 $39.4 + 33.2\,(n-1)$	$35.1 + 33.2\,(n-1)\,{}^{+0.15}_{-0.1}$ n : Number of Units
	Individual (Vert.) 34 32.4	Recommended panel thickness : 1 to 5 mm $30.3 {}^{+0.15}_{-0.1}$
	Multiple (Vert.) 34 $32.4 + 26.2\,(n-1)$	$28.1 + 26.2\,(n-1)\,{}^{+0.15}_{-0.1}$ ※ For consecutive vertical mounting, specify option code "011" which is with long snap springs. n : Number of Units

※ To change horizontal consecutive (Multiple) mounting to vertical consecutive (Multiple) mounting for rectangle button, 2 long snap springs (Part no. WH-0676-2) for each button are required.

● Panel cut spacing dimensions for spaced individual mounting

With Flange
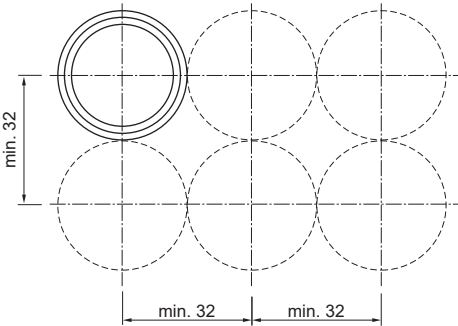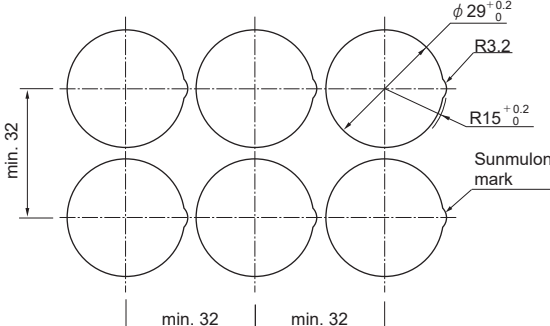
The figure is for horizontal individual. For vertical individual, the dimensions are shown in brackets.

more than 3 mm (more than 6 mm)

more than 6 mm (more than 3 mm)

With Barriers

2 mm more than 6 mm

more than 6 mm

● Round

Mounting design	Panel cutout
min. 32 min. 32 min. 32	Recommended panel thickness : 1 to 5 mm $\phi 29 {}^{+0.2}_{0}$ R3.2 $R15 {}^{+0.2}_{0}$ Sunmulon mark min. 32 min. 32 min. 32

※ If the panel is to be finished (e.g. coated), make sure that the panel meets the specified dimensions after the coating. In case the panel cut dimension is too small, it may cause malfunction.

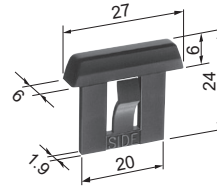※ After the panel-cutting process, make sure to remove burrs on the surface.
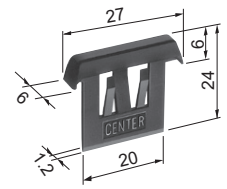
Tolerance：±0.4 mm

BARRIER

● SHORT BARRIER

Color	Side barrier	Center barrier
Black	WH-0739-K	WH-0738-K
Gray	WH-0739-G	WH-0738-G

※ Cannot be used with guard cover and dust-proof / oil water-tight cover.
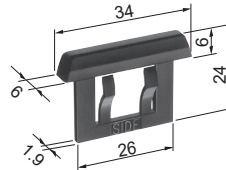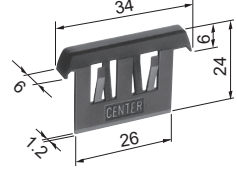
DXF

Side barrier

Center barrier

● LONG BARRIER

Color	Side barrier	Center barrier
Black	WH-0740-K	WH-0741-K
Gray	WH-0740-G	WH-0741-G

※ Cannot be used with guard cover and dust-proof / oil water-tight cover.

DXF

Side barrier

Center barrier

GUARD COVER

Color	Square	Rectangle
Black	WH-0781-K	WH-0782-K
Gray	WH-0781-G	WH-0782-G

※ Cannot be used with barrier and dust-proof / oil water-tight cover.
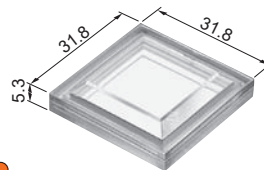※ The cover to be opened 90° and returned by spring force.
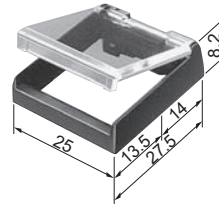
DXF

Square
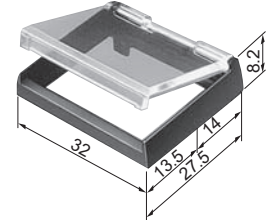
Rectangle

Dust-Proof / Oil Water-tight Cover

Square	WH-0783
Rectangle	WH-0784

※ Cannot be used with barrier and guard cover.
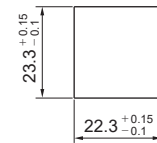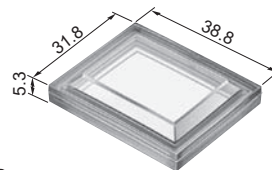※ For using as oil water-tight, following rubber packing needed. (Equivalent to IP63)

3D
DXF

Square

Panel cutout

$23.3 {}^{+0.15}_{-0.1}$

$22.3 {}^{+0.15}_{-0.1}$

Recommended panel thickness : 1 to 4.5 mm

3D
DXF

Rectangle

Panel cutout

$23.3 {}^{+0.15}_{-0.1}$

$30.3 {}^{+0.15}_{-0.1}$
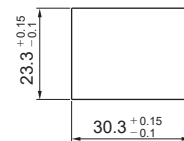
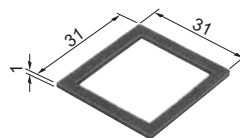Recommended panel thickness : 1 to 4.5 mm

RUBBER PACKING

Recommended panel thickness : 1 to 4 mm

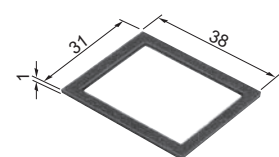| Square	WH-0767
Rectangle	WH-0768

※ For using as oil water-tight, this rubber packing needed.
   Please use together with the above dust-proof / oil water-tight cover.

Square

Rectangle

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

Tolerance：±0.4 mm

1. Removing Light cartridge

Be sure to remove with the removing tool (SJ-0001).
Hang the cartridge with the removing tool in the groove,
and pull it straight out.

※ In case removing in any other way than the above,
　 it may cause damage to the light cartridge.
※ Do not touch the other parts such as spring incorporated
　 in the light cartridge.
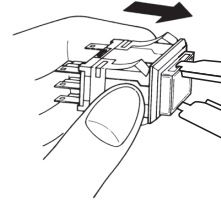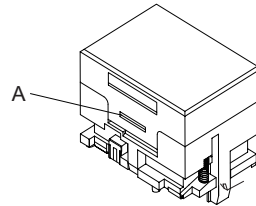
2. Fitting Light cartridge

Insert the light cartridge into the housing with correct position
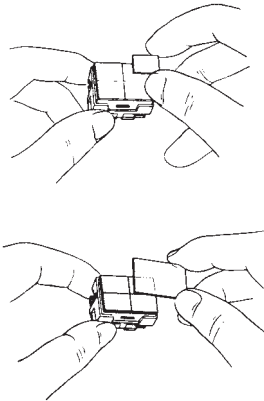of the metal fittings as shown.

Housing　　　　　　　　　　　　　　Light cartridge
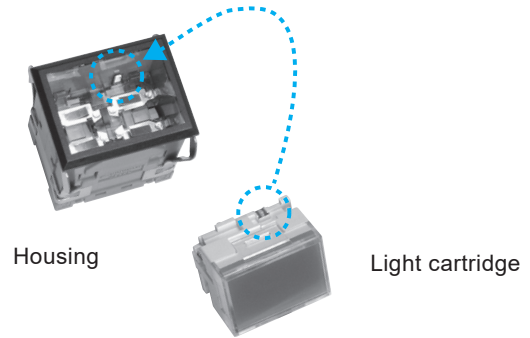
3. Removing Button

Remove the part A by pushing it open.

A

Do not reuse buttons that have been removed and deformed.

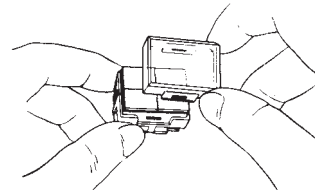**4.** Fitting Filter and Legend plate

Place the filter with the flat face upward
(and also with each flat of the side 　　 facing outward)
on to the LED unit, then put the legend plate on it.

When placing the filter on the LED unit, make sure it is
properly set on the LED unit.
If not, the button will not be fitted later.

For round type, align the legend plate with the groove on the
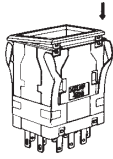button and attach it to the LED unit together with the button.

5. Fitting Button

Fit the button from above on the LED unit with the filter
and the legend plate attached.

※ If it is not assembled properly, it may cause malfunction.

6. Installing Flange (Square / Rectangle)

Align the groove on the flange (4 parts for rectangle & 2 parts for square) with the protruding portions on the housing. Fit the flange as shown until click.

7. Installing Connection Terminal

If ordered the housing only, install the attached connection terminal(s) by referring the table below. For installing, use the needle-nose pliers or tweezers to ensure that they are pushed all the way in.
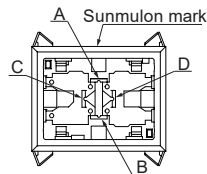
Square

		Mounting point	
		Full-Face	2-Split-Face
DC5V	LED	A	No need
DC12V	LED	A	No need
DC24V	LED	No need	No need

Connection terminal
（WH-0669）

A — Sunmulon mark
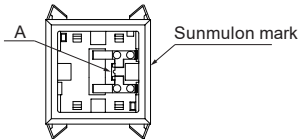
Rectangle

		Mounting point					
		Full-Face	2-Split (Vert.)	2-Split (Horiz.)	3-Split (Vert.)	3-Split (Horiz.)	4-Split-Face
DC5V	LED	A,B,C	C,D	A,B	C	B	No need
DC12V	LED	D	C,D	No need	C	B	No need
DC24V	LED	No need	C,D	No need	C	B	No need

A — Sunmulon mark
C   D
B

Round

		Mounting point				
		Full-Face	2-Split-Face	3-Split (Vert.)	3-Split (Horiz.)	4-Split-Face
DC5V	LED	A,B,C	A,B	C	B	No need
DC12V	LED	C	No need	C	B	No need
DC24V	LED	No need	No need	C	B	No need

A — Sunmulon mark
C   D
B
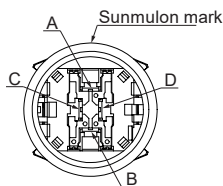
8. Indication of LED rated voltage and color (LED illuminated only)

Square・Rectangle   Round

24V RGY   24V RGYR

Rated voltage indication   Color symbol indication   Rated voltage indication   Color symbol indication
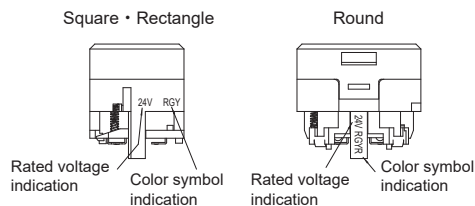
Supply voltage to LED is indicated on the side of the LED unit.
Use the voltage within ± 5%.
Do not apply strong shocks etc. to the resistor board.
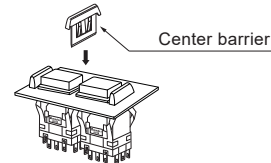
9. Installing Barriers (Square / Rectangle)

① Side Barriers

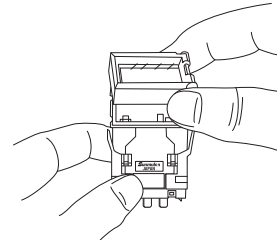After setting the side barriers on the sides of the housing, insert it into the panel cut-out.
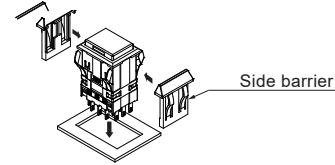
Side barrier

② Center Barriers

Insert the center barrier between the switches after mounting the switches with the side barriers into the panel cut-out.

Center barrier

10. Installing Guard Cover (Square / Rectangle)

Install in the same way as "6. Installing Flange".

11. Installing Dust-Proof Cover (Square / Rectangle)

（1） Use as Dust-proof cover

Cover （B）
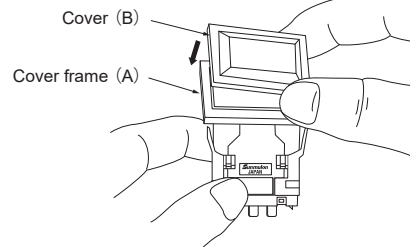
Cover frame （A）

Put the switch through the cover frame (A), and mount on the panel.
Afterwards press cover (B) into the groove of cover frame (A) from above and install it.

（2） Use as Oil and Water-tight cover

Rubber packing
For Square　：WH-0767
For Rectangle：WH-0768
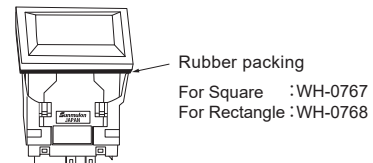
Rubber packing is required.
Please apply the rubber packing between the panel and the cover frame (A).

PRECAUTIONS FOR CORRECT USE

1. Solder quickly and correctly at 380℃ max. and for 3 seconds or less.
   Be careful not to touch the soldering iron to the main body.

2. Wait for one minute during and after soldering before exerting any external force on the solder.
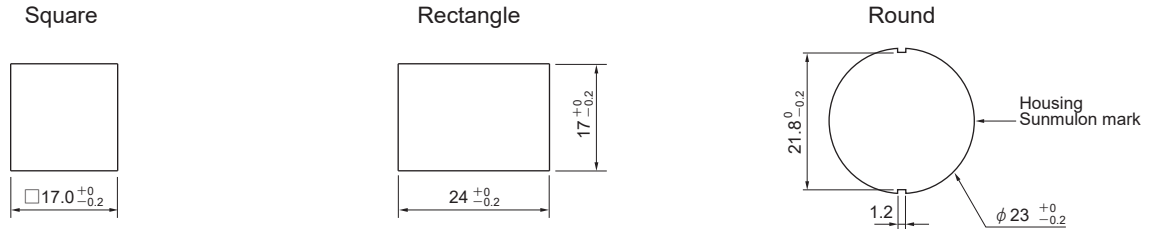
3. Character films are not included.
   If preparing the character film separately, use a heat-resistant film with a thickness of 0.1 mm.
   For dimensions, please refer to the figure below.

Square	Rectangle	Round

Square: $\square 17.0^{+0}_{-0.2}$

Rectangle: $17^{+0}_{-0.2}$ (height), $24^{+0}_{-0.2}$ (width)

Round: $21.8^{0}_{-0.2}$, 1.2, $\phi 23^{+0}_{-0.2}$, Housing — Sunmulon mark

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

Tolerance : ± 0.4 mm

Sunmulon Co., Ltd.

WH-22

Safety Precautions for All Illuminted Pushbutton Switches

1. Notes on contents of Catalogs

(1) Rated values, performance values, and specification values of Sumulon products listed in this catalog are values acquired under respective conditions in independent testing, and do not guarantee values gained in combined conditions.

(2) 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.

(3) The specifications / appearance and accessories of Sunmulon products listed in catalogs are subject to change or termination of sales without notice, for improvemnet or other reasons.

(4) 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 suitability by yourself. Sunmulon shall provide no guarantees regarding the combination suitability.

(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 Sumulon 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 equipmnt (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) Use in applications that require a high degree of safety, any other equipment, instruments, or the like that could endanger life or human health
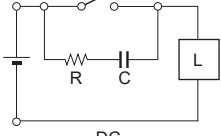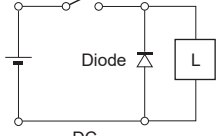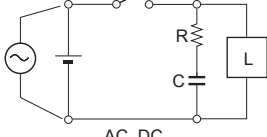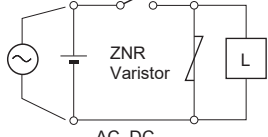

3. Warranty

(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) Modification or repair was performed by a party other than Sunmulon
(c) Replacement of maintenance parts, installation of accessories, or the like was not performed properly in accordance with the user's manual and catalogs
(d) The failure could not have been predicted with the scientific and technical standards at the time when the product was shipped from Sunmulon
(e) The failure was due to other causes not attributable to Sunmulon (including cases of force majeure such as natural disasters and other disasters)

(4) Sunmulon shall bear no liability regarding damages that occurred due to Sunmulon product.
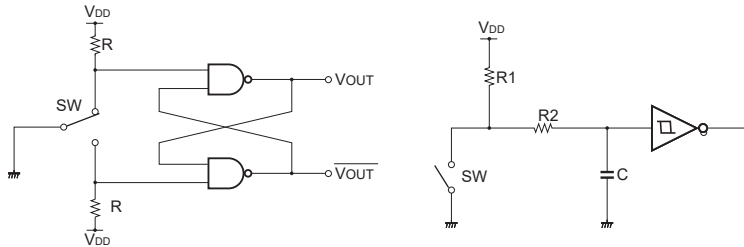

4. Handling precautions for switch

(1) Do not perform wiring with power supplied to the switch. Do not touch the terminals or other charged parts of the switch while power is being supplied. Doing so may result in electric shock.

(2) Be careful of electrostatic breakdown when handling.

(3) Do not drop or otherwise apply strong force to the switch.

(4) Do not place heavy objects on the switch.

(5) Do not operate or use the housing (switch unit) by itself. Use the switch with assembled the illuminated part (LED module or button).

(6) Pushbutton switches are designed to be operated by fingertips. Operating the switch using a sharp object (screwdrivers, tweezers, etc.), hard object (metal, etc.), or with a large or sudden force, may cause deform or damage the switch.

(7) Do not use the switch under loads that exceed the rated switching capacity or other contact ratings. Doing so may result in welding of the contact, or burnout accidents.

(8) For inductive load, the arc by back EMF may cause contact failure. Insertion of arc prevention circuit as the following is recommended.

Circuit	Element selection	Circuit	Element selection
DC	C : 1 to 0.5 μF × switch current (A) R : 0.5 to 1 Ω × switch voltage (V) The values may change according to the characteristics of the load. Determine ideal capacitance and resistance values through testing.	DC	The diode must withstand a peak inverse voltage 4 times higher than the power supply voltage and regarding a forward current must as high or higher than the load current.
AC, DC		AC, DC	Use a varistor that can withstand the power supply voltage sufficiently. (1.5 times or more)

(9) Following circuits show examples of an anti-chattering circuit.

(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.

Correct   Incorrect
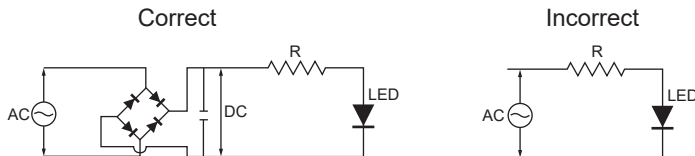
(c) When wiring, pay attention to the polarity of the terminals.
(d) Simultaneous lighting may not be possible with Dual-Color illumination or Split-Face illumination (2, 3, or 4 split illumination), check the catalog.
(e) Apply voltage directly to LEDs of Non-built-in resistor type will damage the LEDs, so connect an appropriate external resistor.

(11) Wiring
(a) Do not apply a soldering iron to the switch housing. Doing so may deform the terminals and cause defects.
(b) See catalog for models compatible with flux prevention measures terminal. Be careful not to allow flux to panetrate sliding parts such as buttons. Use non-corrosive rosin solution as flux for dip soldering.
(c) For soldering other than flux-preventive models, hand solder with the terminals facing down to prevent flux from penetrating into the switch.

Correct   Incorrect

(d) The housing of KA, K2, and K9 series are designed for reflow soldering.
(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.
(f) After wiring is completed, maintain an appropriate insulation distance.

*Sunmulon Co., Ltd.*   **PRECAUTION-2**

(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 exterior of the switch and accessories such as side plates, 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) When removing the illuminated part (or button) from the alternate switch housing, switch state should be in a free state.

Removal in a locked state may cause malfunction or damage to alternate switch.
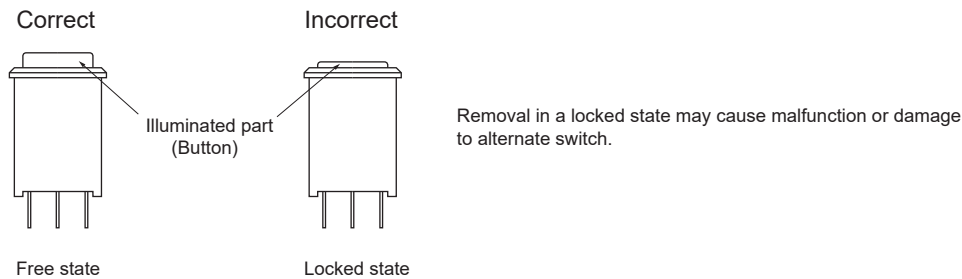
(16) Periodic inspection and replacement
    (a) Although mechanical and electrical durability are listed in the specifications column, deterioration of various parts (deterioration of resins and corrosion of metal parts) is possible due to the operating environment and method of use. We ask that you implement inspections for Sunmulon products to prevent accidents from occurring by conducting periodic inspections and replacements.
    (b) When the switch is left unused or stored for long periods, contact reliability may deteriorate due to oxidation of contacts, which may cause continuity failure, etc. Therefore, it is necessary to check the operation before use.

(17) Service scope
    The price of Sunmulon products do not include the cost of services, such as dispatching technicians.