# Sunmulon

EH Illuminated Pushbutton Switch

Only 22.5mm depth behind panel with built-in resistor

Bright and Variable Illumination makes easy planning of multiple design.

■FEATURES

- Depth behind panel : Only 22.5mm
- LED Full-Face, Split-Face, Dual-Color, Spot Illumination available.
- Hi-Bright LED Super Blue, Super White, Super Green added to Red, Green, Yellow.
- Built-in resistor for 5V,12V,24V use.
- Light Cartridge is removable from front panel.
- Button Size : 14.2mm square type, 14.2×20.4mm rectangular type
- Precision-snap action switch movement with coil spring assures long life and outstanding tactile feedback.
- Silver Contact(Gold-Plated) and Cross-bar Contact provided.
- Accessories: Barriers, Guard Covers, etc.
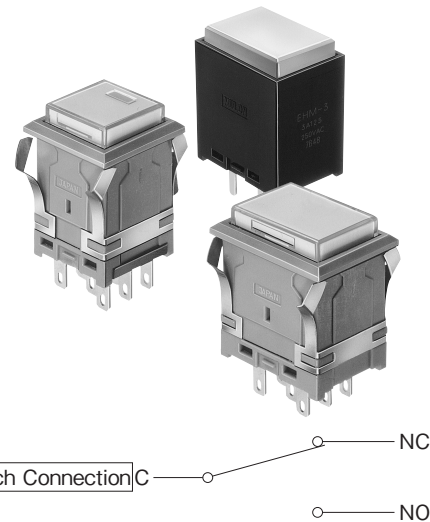
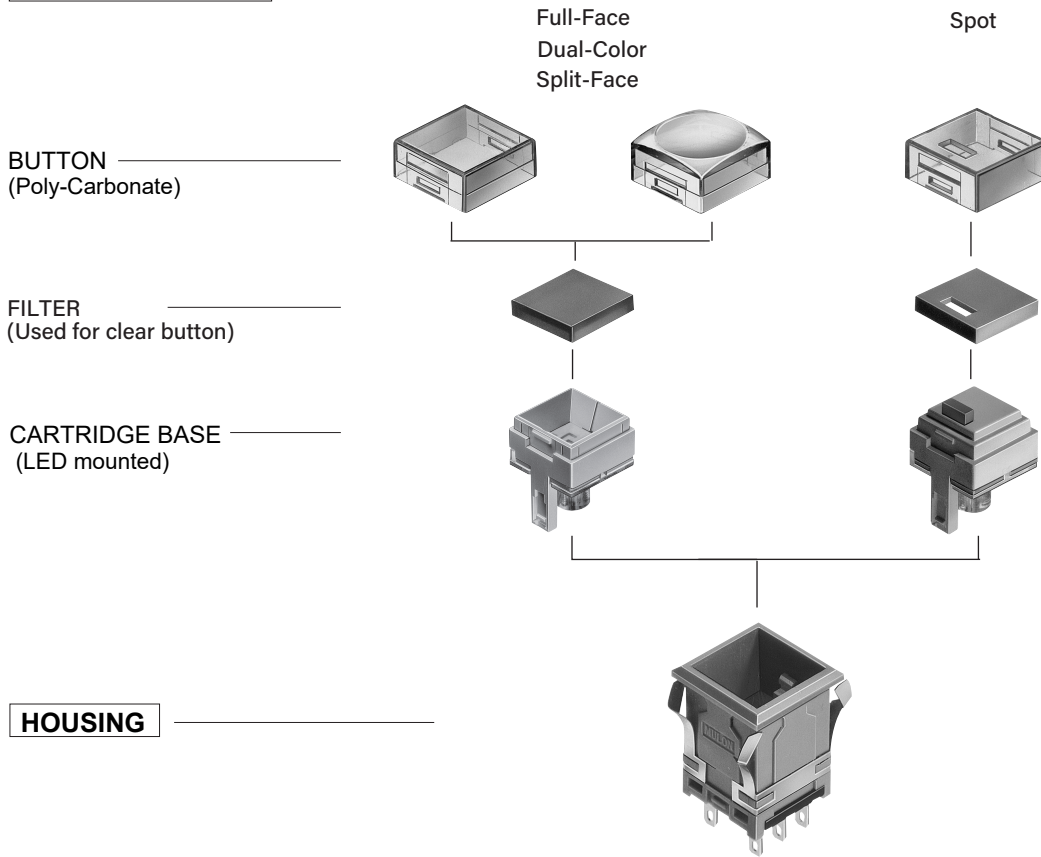**Note : UL certification has been obtained for the Switch unit (LIGHT CARTRIDGE with HOUSING).**

Switch Connection C — NC, NO

SPECIFICATIONS

Contact	Silver Contact (Gold-Plated)	Cross-bar Contact
Electrical Rating	AC125V,250V 3A(Resistive)	AC125V 0.1A, DC30V 0.1A(Resistive)
Insulation Resistance	More than 100MΩ at 500V DC	
Dielectric Strength	1000V AC RMS between NC and NO terminal 1500V AC RMS between terminals and ground 50/60Hz for 60sec. at normal ambient temperature and humidity	600V AC RMS between NC and NO terminal 1500V AC RMS between terminals and ground 50/60Hz for 60sec. at normal ambient temperature and humidity
Contact Resistance	Less than 30mΩ (Initial) at DC6V 1A	Less than 50mΩ (Initial) at DC6V 0.1A
Vibration	Frequency of vibration 10 to 55 Hz, Amplitude 1.5mm (operating limit)	
Shock resistance	30G (operating limit), 50G (sustained)	
Mechanical Life	Alternate Action : more than 200,000 operations Momentary Action :more than 2,000,000 operations	
Electrical Life	More than 100.000 operations at max. rated load	
Ambient Temperature	−15℃ ～ 50℃	
Ambient Humidity	80% RH (max.)	

OPERATING CHARACTERISTICS

Operating Force (MAX)	4.41N	Total Travel (mm MAX)	3

sunmulon

STRUCTURE

LIGHT CARTRIDGE

Full-Face
Dual-Color
Split-Face

Spot

BUTTON
(Poly-Carbonate)

FILTER
(Used for clear button)

CARTRIDGE BASE
(LED mounted)

HOUSING
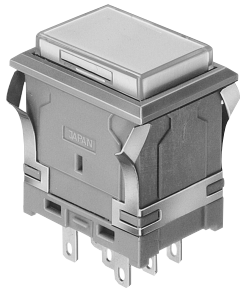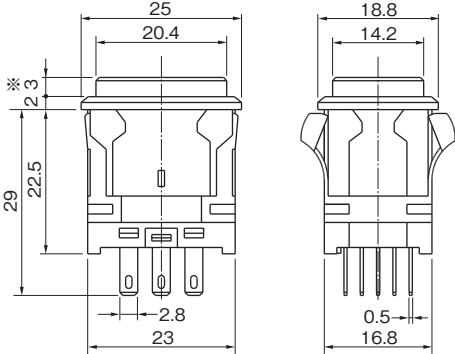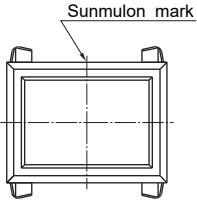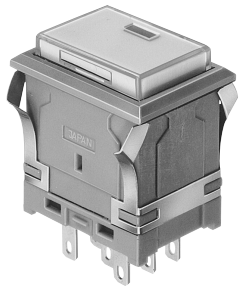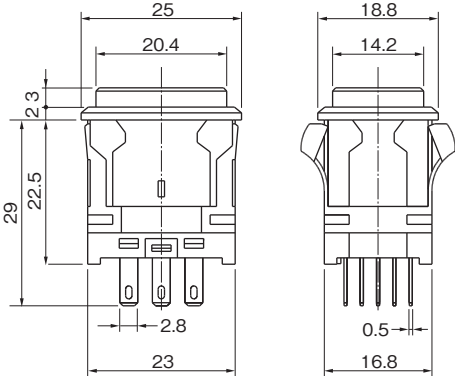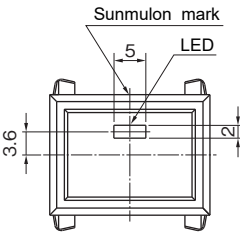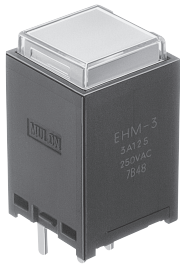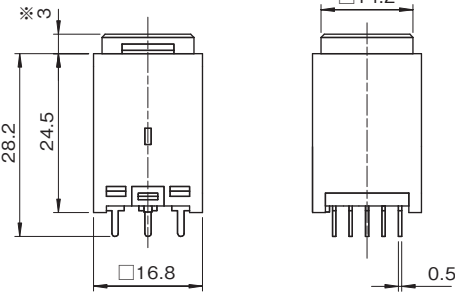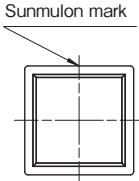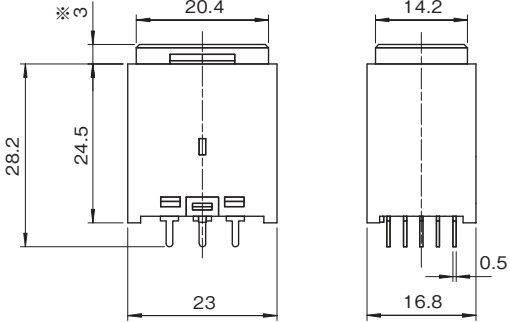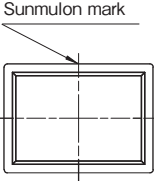
DIMENSIONS

| With Flange | 14.2mm Square Button (Full-Face) | □18.8 □14.2 ※2.3 29 22.5 2.8 □16.8 0.5 Sunmulon mark TOP VIEW ※3.9 for Concave Button |
| | 14.2mm Square Button (Spot) | □18.8 □14.2 2.3 29 22.5 2.8 □16.8 0.5 Sunmulon mark LED 5 3.6 2 TOP VIEW |

Tolerance : ±0.4mm

DIMENSIONS

| With Flange | 14.2 × 20.4mm Rect. Button (Full-Face) |
| 14.2 × 20.4mm Rect. Button (Spot) |

With Flange

14.2 × 20.4mm Rect. Button (Full-Face)

25 / 20.4 / ※2.3 / 29 / 22.5 / 2.8 / 23

18.8 / 14.2 / 0.5 / 16.8

Sunmulon mark

TOP VIEW

※3.9 for Concave Button

14.2 × 20.4mm Rect. Button (Spot)

25 / 20.4 / 2.3 / 29 / 22.5 / 2.8 / 23

18.8 / 14.2 / 0.5 / 16.8

Sunmulon mark / LED / 5 / 3.6 / 2

TOP VIEW

Without Flange

14.2 mm Square Button

EHM-3 / 3A125 / 250VAC / 7B4B

※3 / 28.2 / 24.5 / □16.8

□14.2 / 0.5

Sunmulon mark

TOP VIEW

※3.9 for Concave Button

14.2 × 20.4mm Rect. Button

EHM-3 / 3A125 / 250VAC / 7B4B

※3 / 28.2 / 24.5 / 23

20.4

14.2 / 0.5 / 16.8

Sunmulon mark

TOP VIEW

※3.9 for Concave Button

●TERMINAL SHAPE

5.9 / 7.5 / 2 / 1.2 / 2.8 / 0.5
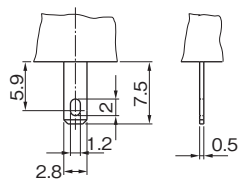
#110 TAB, Soldering Terminal

0.7 / 4 / 1 / 2.8 / 0.5
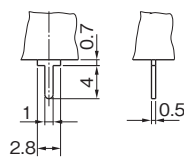
PCB Terminal

●TERMINALS DIMENSIONS (BOTTOM VIEW)

※Blue dotted line : SPDT

8-φ1.2 / 5.08±0.1 / 5.08±0.1 / 5.08±0.1 / 5.08±0.1 / 5.08±0.1
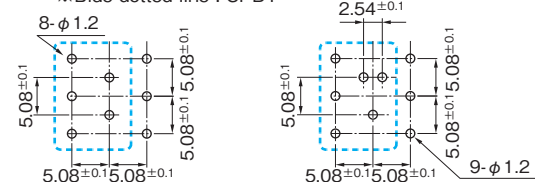
Full-Face single color,
Spot Illumination

2.54±0.1 / 5.08±0.1 / 5.08±0.1 / 5.08±0.1 / 5.08±0.1 / 5.08±0.1 / 9-φ1.2

Dual-Color, Split-Face

Tolerance : ±0.4mm

INTERNAL CONNECTION ARRANGEMENTS

● Standard LED (Red, Green, Yellow)

		Full-Face	Dual-Color	Split-Face
Standard LED (70, 80, 90)	5V	BOTTOM VIEW TOP VIEW Sunmulon mark L- L+	Sunmulon mark L1 L2 LC	L1 L2 Sunmulon mark LC
	12V 24V	Sunmulon mark L- L+	Sunmulon mark L1 L2 LC	L2 L1 Sunmulon mark LC *Cannot apply built-in resistor type for 24V
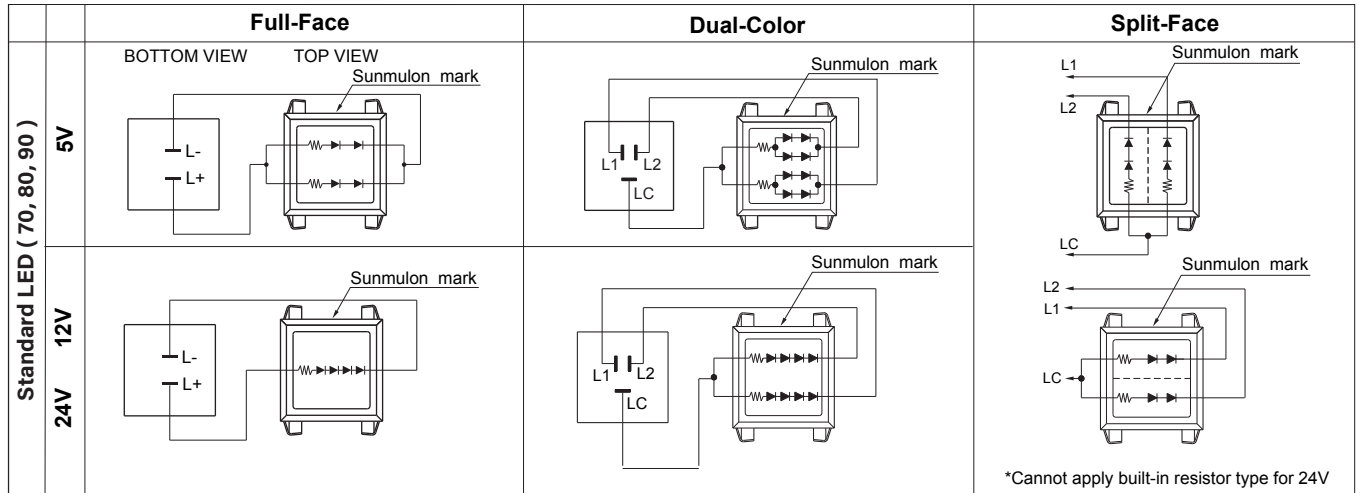
● Dual-Color Combination

LC-L1	Red	Green	Yellow
LC-L2	Green	Yellow	Red

●High-Brightness LED (Super Blue, Super White , Super Green)

		Full-Face	Dual-Color	Split-Face
High-Brightmess LED (14, 16, 18)	5V	BOTTOM VIEW TOP VIEW Sunmulon mark L- L+	Sunmulon mark L1 L2 LC	Sunmulon mark L1 L2 LC
	12V 24V	Sunmulon mark L- L+	Sunmulon mark L1 L2 LC	L2 L1 Sunmulon mark LC *Cannot apply built-in resistor type for 24V
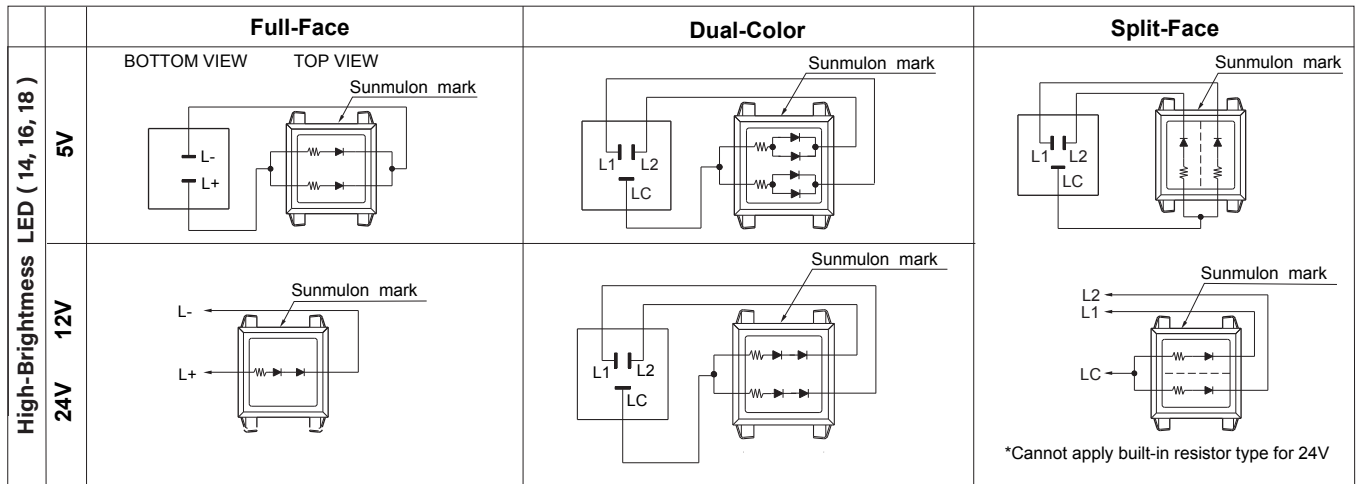
● Dual-Color Combination

LC-L1	Super-Blue	Super-White	Super-Green
LC-L2	Super-White	Super-Green	Super-Blue

●Standard LED and High-Brightness LED combination

		Dual-Color	Split-Face (Vert.)	Split-Face (Horz.)
Standard and High-Brightness LED	5V	BOTTOM VIEW TOP VIEW Sunmulon mark L1 L2 LC	Sunmulon mark L1 L2 LC	L2 L1 Sunmulon mark LC
	12V 24V	Sunmulon mark L1 L2 LC	Sunmulon mark L1 L2 LC *Cannot apply built-in resistor type for 24V	L2 L1 Sunmulon mark LC *Cannot apply built-in resistor type for 24V
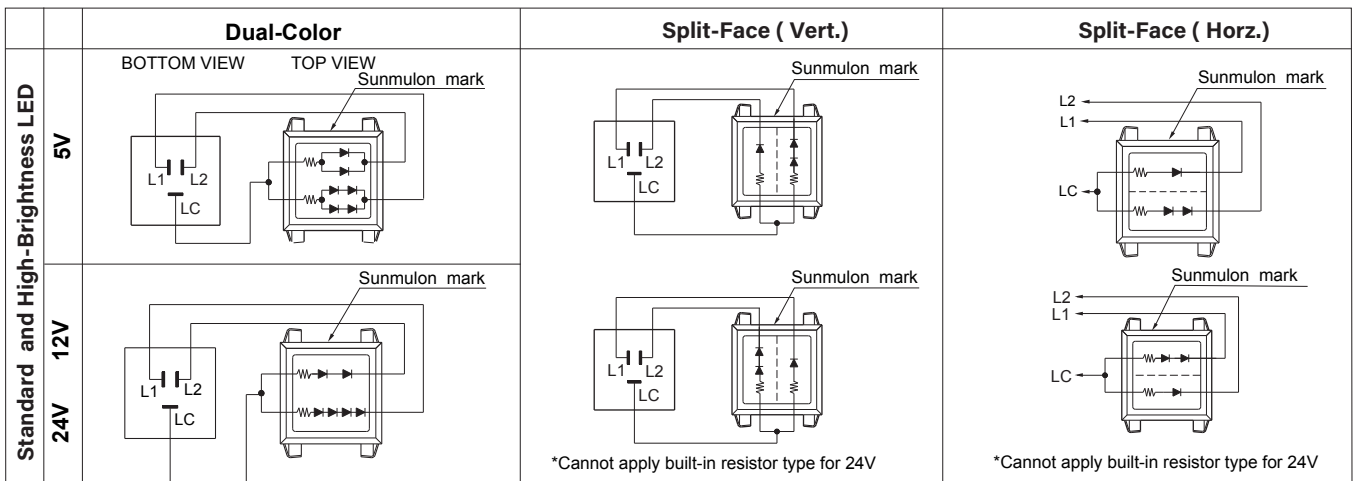
● Dual-Color Combination

LC-L1	Red	Red	Red	Yellow
LC-L2	Super-Blue	Super-White	Super-Green	Super-Blue

INTERNAL CONNECTION ARRANGEMENTS

● **LED Spot (Square, Rectangular)**

		Full-Face
LED Spot	**5V, 12V, 24V**	BOTTOM VIEW TOP VIEW Sunmulon mark L- L+
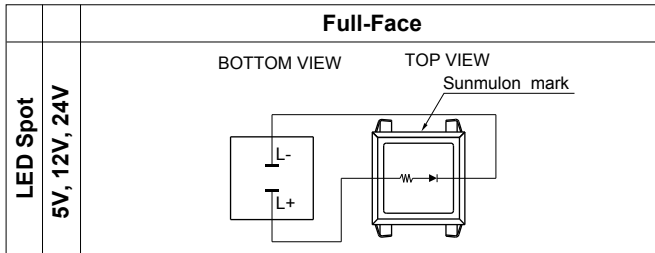
TERMINALS

● **TERMINALS LAYOUT (Square, Rectangular)**

	SPDT	DPDT
Full-Face, Spot	BOTTOM VIEW NO L- NC C L+	NO NO L- NC NC C L+ C
Split-Face, Dual-Color	BOTTOM VIEW NO L1 L2 NC C LC	NO L1 L2 NO NC NC C LC C

● **TERMINALS DIMENSIONS (BOTTOM VIEW)**

Sunmulon mark
NO   NO
L(-)
NC   NC
C L(+) C
5.08 5.08 5.08 6.4
5.08 5.08
φ1.2, 0.9H

Sunmulon mark   2.54
NO L1 L2 NO
NC   NC
C   LC   C
5.08 5.08 5.08 6.4
5.08 5.08
φ1.2, 0.9H
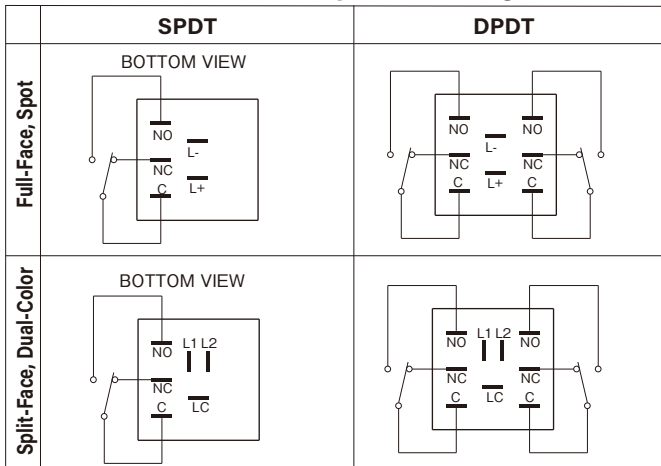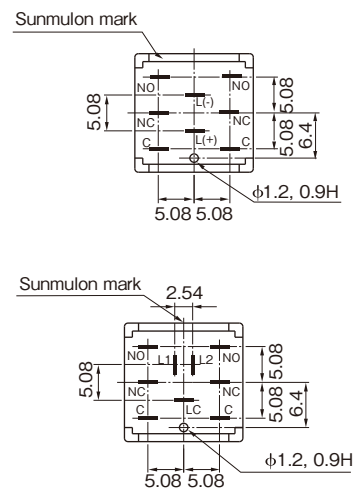
LED DATA

※ Red=R, Yellow=Y, Green=G , Super Blue=SB, Super White=SW, Super Green=SG

● **LED RATINGS**

DC Supply Voltage (V)	Full-face, Dual-Color			Split-Face			Hi-Bright Full-face			Hi-Bright Dual-Color			Hi-Bright Sprit-face			Spot	
	Current Rating (mA)															Current Rating (mA)	
	R	G	Y	R	G	Y	SB	SW	SG	SB	SW	SG	SB	SW	SG		
5(±5%)		30					12	18	10	12	18	10	6	9	5	R	5
					15											G	20
																Y	10
12(±5%)		15					6	10	6	6	10	6	6	10	6	R	5
																G	20
																Y	10
24(±5%)		9					6	10	6	6	10	6				R	5
																G	20
																Y	10

● EXTERNAL RESISTOR

Switches are normally fitted with internal resistors to operate on 5,12, 24V DC supply.
In case of non-resistor type, suitable external current limiting resistors must be installed as shown by the table and formula.

ITEM	Full-Face, Dual-Color						Split-Face			Hi-Bright Full-Face, Dual-Color						Hi-Bright Split-Face			Spot		
	DC5V			DC12V, 24V			DC5V,12V,24V			DC5V			DC12V,24V			DC5V,12V,24V			DC5V,12V,24V		
	R	G	Y	R	G	Y	R	G	Y	SB	SW	SG	SB	SW	SG	SB	SW	SG	R	G	Y
Max. operating current I_{FM} (mA)	50	40	50	25	20	25	25	20	25	40	40	40	20	20	20	20	20	20	10	30	20
DC reverse voltage V (V)	10	10	10	20	20	20	10	10	10	5	5	5	10	10	10	5	5	5	5	5	4
Forward voltage V_F (V)	3.8	4.2	3.8	7.6	8.4	7.6	3.8	4.2	3.8	2.9	2.9	3.0	5.8	5.8	6.0	2.9	2.9	3.0	1.9	2.1	1.9
Recommended operating current I_F (mA)	30	30	30	15	15	15	15	15	15	12	18	10	6	10	6	6	10	6	5	20	10
Current Reduced Factor (Over 25°C working Temperature)	0.66mA/°C			0.33mA/°C			0.33mA/°C			0.54mA/°C			0.27mA/°C			0.27mA/°C			0.13 mA/°C	0.4 mA/°C	0.26 mA/°C
Pulse Lighting — Pulse Width PW (μS)				100			100						100	1000		100	1000		100		
Pulse Lighting — Duty Ratio D_R				10^{-1}			10^{-1}						10^{-1}	1/20		10^{-1}	1/20				
Pulse Lighting — I_{FM} (mA)				90			90						50	48		50	48		50		
Wiring diagram		Fig. 1		Fig. 2			Fig. 2				Fig. 1		Fig. 2			Fig. 2			Fig. 1		

Fig. 1

Fig. 2

The value of the series resistor can be determined by the formula:

$$R = \frac{V_{CC} - V_F}{I_F}$$

Vcc: Supply Voltage
V_F: Forward Voltage
I_F: Forward Current With Guard Cover

Panel Layout/Panel Cut Dimensions

● 14.2mm Square

Panel thickness: 1.0 — 3.2mm

		Panel Layout	Panel Cut Dimensions
Without Barriers	Independent	18.8 / 18.8	17.1 $^{+0.15}_{-0.1}$
	Serial (Horizontal)	18.8 / 18.8n$^{±0.5}$	17.1+18.8(n−1)$^{+0.15}_{-0.1}$
	Serial (Vertical)	18.8 / 18.8n$^{±0.5}$	
With Barriers	Independent	20 / 24.1	17.1 $^{+0.15}_{-0.1}$
	Serial (Horizontal)	20 / 24.1+19.6(n−1)$^{±1}$	22.4+19.6(n−1)$^{+0.15}_{-0.1}$
	Serial (Vertical)	20 / 24.1+19.6(n−1)$^{±1}$	

In case of Serial (Vertical) mounting, please add 002 suffix to ordering code of switch, which retaining clip come out horizontally.

In case of Serial (Vertical) mounting, please add 002 suffix to ordering code of switch, which retaining clip come out horizontally.

In case of using GUARD COVER, panel cut dimension is same as "With Barriers".

n : number of switches   Tolerance : ± 0.4mm

Panel Layout / Panel Cut Dimensions

● **14.2 × 20.4mm Rectangular**

Panel thickness: 1.0 — 3.2mm

		Panel Layout	Panel Cut Dimensions
Without Barriers	Independent (Horizontal)	18.8 / 25	$17.1^{+0.15}_{-0.1}$ / $23.3+25(n-1)^{+0.15}_{-0.1}$
	Serial (Horizontal)	18.8 / $25n^{\pm0.5}$	
	Independent (Vertical)	25 / 18.8	$23.3^{+0.15}_{-0.1}$ / $17.1+18.8(n-1)^{+0.15}_{-0.1}$
	Serial (Vertical)	25 / $18.8n^{\pm0.5}$ In case of Serial (Vertical) mounting, please add 002 suffix to ordering code of switch, which retaining clip come out horizontally.	
With Barriers	Independent (Horizontal)	20 / 30.3	$17.1^{+0.15}_{-0.1}$ / $28.6+25.8(n-1)^{+0.15}_{-0.1}$
	Serial (Horizontal)	20 / $30.3+25.8(n-1)^{\pm1}$	In case of using GUARD COVER, panel cut dimension is same as "With Barriers".
	Independent (Vertical)	26.2 / 24.1	$23.3^{+0.15}_{-0.1}$ / $22.4+19.6(n-1)^{+0.15}_{-0.1}$
	Serial (Vertical)	26.2 / $24.1+19.6(n-1)^{\pm1}$ In case of Serial (Vertical) mounting, please add 002 suffix to ordering code of switch, which retaining clip come out horizontally.	

※ Panel Cut Dimension should be after panel paintings.

| Note	Without Barriers	With Barriers
In case of Group Mounting, please leave space as below. ( ) Vertical Mounting	more than 6.0 mm (more than 3.0) more than 3.0 mm (more than 6.0)	more than 6.0 mm 0.9 more than 3.0 mm

n : number of switches
Tolerance : ±0.4mm

ACCESSORIES

BARRIERS
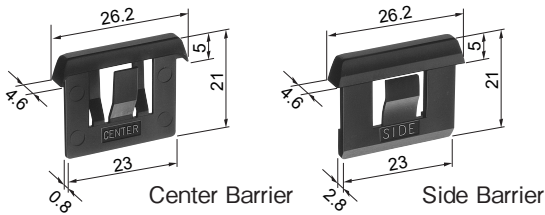
In case of mounting switches in series, Barriers can be used to prevent inadvertent pushing neighbor switch.

● Short Barrier

Center Barrier   Side Barrier
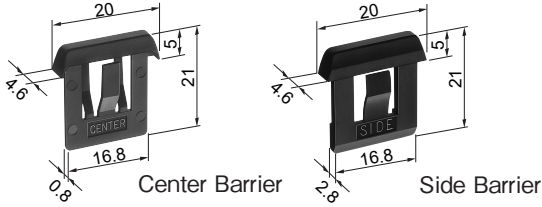
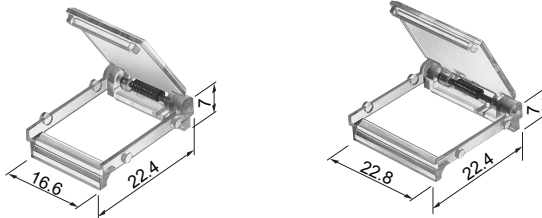| PART NO.		
Color	Short Center Barrier	Short Side Barrier
Black	EH-1084-K	EH-1085-K
Gray	EH-1084-H	EH-1085-H

● Long Barrier (Rectangular, Longer Side)

Center Barrier   Side Barrier

PART NO.		
Color	Long Center Barrier	Long Side Barrier
Black	EH-1086-K	EH-1087-K
Gray	EH-1086-H	EH-1087-H

GUARD COVER

Guard Cover prevents inadvertent and unintentional operations. In EH series.
Guard Cover should be used with Side /Center Barriers for Guard Cover.
Panel cut-out dimension is same as "with barrier". Cannot be used for Concave Button.
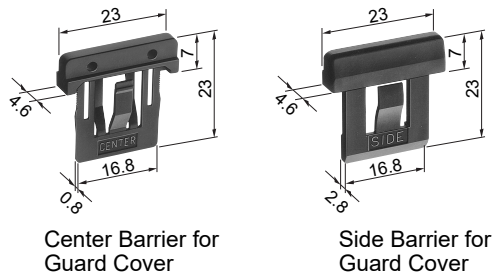Can not be used with MATRIX FITTING FRAME.

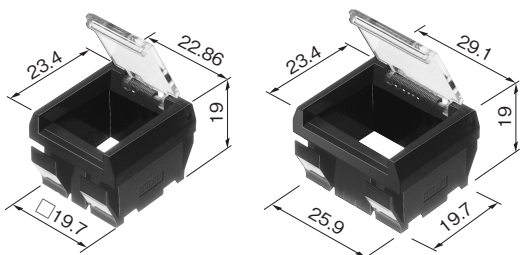● 14.2mm Square   ● 14.2×20.4mm Rectangular

PART NO.	
Square	EH-1080
Rect.	EH-1081

* The Guard Cover to be opened 180° and returned by spring force.

Center Barrier for
Guard Cover

Side Barrier for
Guard Cover

PART NO.		
Color	Center Barrier for Guard Cover	Side Barrier for Guard Cover
Black	EH-1091-K	EH-1092-K
Gray	EH-1091-H	EH-1092-H

GUARD COVER for Without -Flange type

PART NO.		
Color	14.2mm Square	for 14.2 x 20.4mm Rect.
Black	EH-1545-K	EH-3409-K
Gray	EH-1545-H	EH-3409-H

* The Guard Cover to be opened 180° and returned by spring force.

● Panel Cut Dimensions

$20.5^{+0.15}_{-0.1}$

$20.8+22.9 (n-1)^{+0.15}_{-0.1}$

$20.5^{+0.15}_{-0.1}$

$27+29 (n-1)^{+0.15}_{-0.1}$
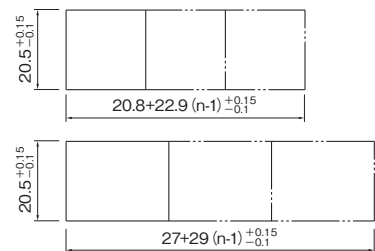
n : number of switches
Panel thickness: 1.0 ～ 3.2mm
Tolerance : ±0.4mm

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ACCESSORIES

Dust-Proof Cover

● 14.2mm Square

24.9 × 24.9 × 4.8

● 14.2×20.4mm Rectangular

24.1 × 30.1 × 4.8

● Panel Cut Dimensions

$17.1^{+0.5}_{-0.1}$ × $17.1^{+0.5}_{-0.1}$

$17.1^{+0.5}_{-0.1}$ × $23.3^{+0.5}_{0}$
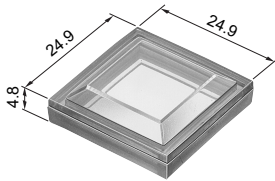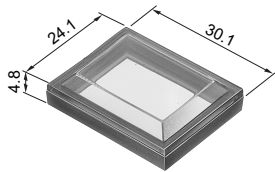
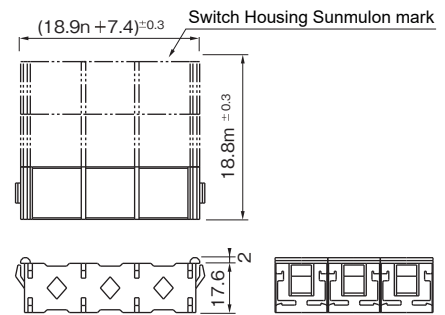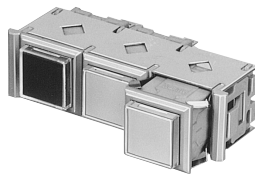| PART NO	
14.2mm Square	14.2×20.4mm Rectangular
DH-361	EH-1083
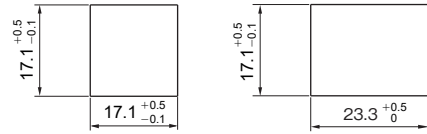
* Dust-Proof Cover is for Independent use only. Can not be used for Serial, Matrix.

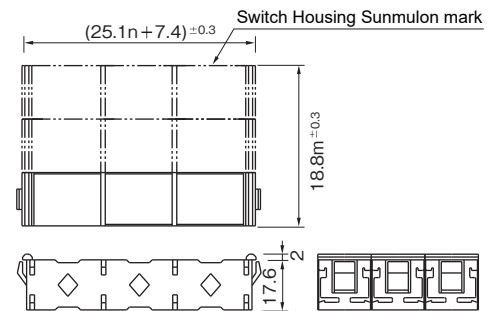Panel thickness: 1.0 ～ 2.5mm

MATRIX FITTING FRAME

● 14.2mm Square

$(18.9n + 7.4)^{\pm 0.3}$ Switch Housing Sunmulon mark

$18.8m^{\pm 0.3}$

17.6 / 2

● 14.2 × 20.4mm Rectangular

$(25.1n + 7.4)^{\pm 0.3}$ Switch Housing Sunmulon mark

$18.8m^{\pm 0.3}$

17.6 / 2
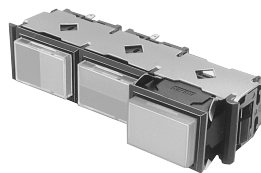
*) In case of using MATRIX FITTING FRAME, please use Virtical mounting type (002) Switch, which retaining clip come out horizontally.

Panel Cut Dimensions	**14.2mm Square**	**14.2 × 20.4mm Rectangular**
	$(18.9n + 4.6)^{+0.5}_{-0}$	$(25.1n + 4.6)^{+0.5}_{-0}$
	$(18.8m - 0.2)^{+0.5}_{-0}$	$(18.8m - 0.2)^{+0.5}_{-0}$

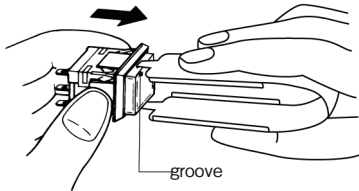| Color	14.2mm Square	14.2 x 20.4mm Rectangular
Black	EH-1610-K□	EH-1815-K□
Gray	EH-1610-H□	EH-1815-H□

□ = number of switch (1-15)
n : number of switches (Horizontal)
m : number of switches (Vertical)
Panel thickness: 1.0~3.2mm

Tolerance : ±0.4mm

±

EH

Sunmulon

1. Removing Light Cartridge

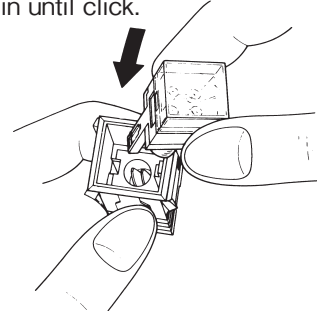Hang the cartridge with hooking Removing Tool in the groove, and pull out.

groove

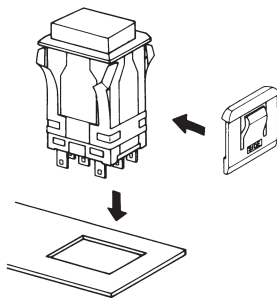| Light Cartridge Removing Tool	
Part No	SJ-0001

2. Fitting Light Cartridge

Insert Light Cartridge into Housing with right direction and push in until click.

3. Installing Barriers (Independent)

Install Side Barriers with Switch as shown.

● Installing Barriers (Serial)

Install Side Barriers with Switch and install Center Barrier between Switches.
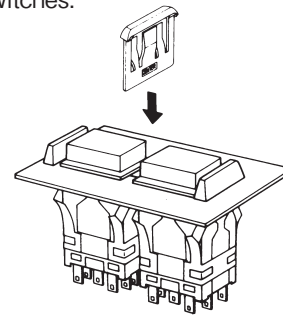
4. Installing Dustproof Cover

Put the switch through the Frame of cover and mount on panel. And then, install transparent cap with fitting projection and groove of frame.

Transparent Cap

Groove
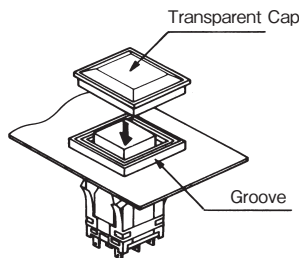
5. Fitting Socket

Insert Switch into Socket with right direction (Sunmulon mark of switch and socket should be same side) and push until stop.
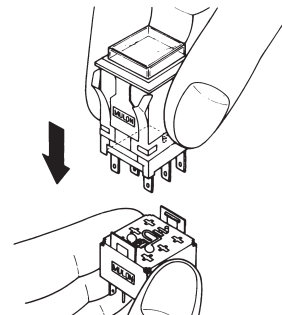
6. Installing Guard Cover

Independent mounting (Fig. 1)

Fit side barriers, cover and switch as shown and mount together.

Fit side barriers and switches and mount on panel, and install center barriers, finally install covers with extending barriers' head. (Fig.2)

Fig.1

Fig.2
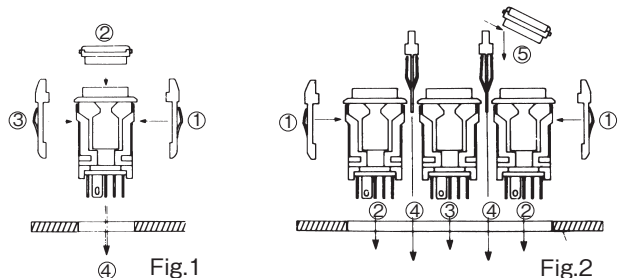
7. Matrix Fitting Frame

Install switches with frame and mount on panel as shown.

Virtical mounting type (002) Switch

ORDERING CODE (EH type)　Ordering as a Set ([Light Cartridge] + [Housing])

Full-Face, Dual- Color, Split-Face

| EH | □ | — | □ | □ | 1 2 | □ | □ | 1 2 | □ | □ |

● **OPERATION**

M	Momentary
A	Alternate

● **CONTACT**

3	SPDT Silver (Gold-Plated)
4	DPDT Silver (Gold-Plated)
5	SPDT Crossbar
6	DPDT Crossbar

● **BUTTON SHAPE ILLUMINATION TYPE**

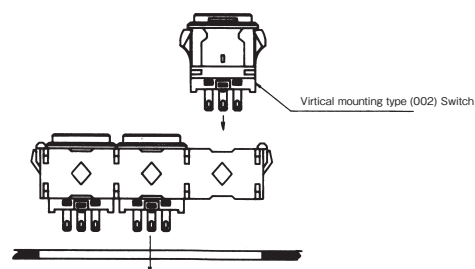|	S0	Square Full-Face		3)	K0	Concave B. Square Full-Face
	W0	Rect. Full-Face		3)	K1	Concave B. Square Split-Face (Vert.)
1)	S1	Square Split-Face (Vert.)		3)	K2	Concave B. Square Split-Face (Horiz.)
1)	S2	Square Split-Face (Horiz.)		3)	K3	Concave B. Square Dual-Color
1)	W1	Rect. Split-Face (Vert.)		3)	N0	Concave B. Rect. Full-Face
1)	W2	Rect. Split-Face (Horiz.)		3)	N1	Concave B. Rect. Split-Face (Vert.)
2)	S3	Square Dual-Color		3)	N2	Concave B. Rect. Split-Face (Horiz.)
2)	W3	Rect. Dual-Color		3)	N3	Concave B. Rect. Dual-Color

● **LED COLOR**

	70	Red
	80	Green
4)	90	Yellow
	14	Super Blue
	16	Super White
	18	Super Green

Full-Face: Put color no. into the frame 1
Split-Face: Put color no. into the frame 1,2
(7070 , 7080 , 7090 , 8070 , 8080 , 8090
9070 , 9080 , 9090 , 1414 , 1416 , 1418
1614 , 1616 , 1618 , 1814 , 1816 , 1818
7014 , 7016 , 7018 , 9014 , 1470 , 1670
1870 , 1490   Combination only)

Dual-Color: Put color no. into the frame 1,2
(7080 , 8090 , 9070 , 7014 , 7016 , 7018
9014 , 1416 , 1618 , 1814 Combination only)

● **Supply Voltage to LED**

1	5V Built-in Resistor
2	12V Built-in Resistor
3	24V Built-in Resistor(not for Split-Face)
4	5V Non-Resistor, Split-Face non resistor
5	12V Non-Resistor
6	24V Non-Resistor

In case of Split- Face non resistor type, please select 4 though the circuits are same for 5, 12, 24 v, for our convenience.

● **TERMINAL**

P	#110 Tab, Soldering
C	PCB

● **FILTER**

	1	Red
	2	Green
4)	3	Yellow
	4	Milk White
	6	Blue
★	X	Without Filter

Full-Face: Put color no. into the frame 1
Split-Face: Put color no. into the frame 1,2

★Generally, in case of using color button, Filter are not necessary.

● **BUTTON COLOR**

	R	Red
	G	Green
4)	Y	Yellow
	M	Milk White
	B	Blue
	C	Clear

● **HOUSING**

K	Black	KN	Black, without Flange
H	Gray	HN	Gray without Flange

● **NOTES**

1) In case of Split-Face, LED and Filter color location should be specified as follow:
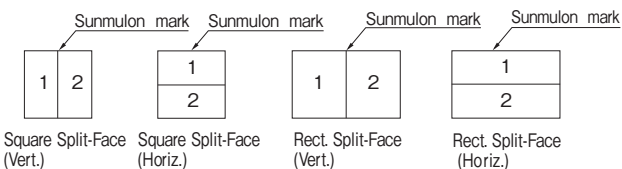
Sunmulon mark　Sunmulon mark　Sunmulon mark　Sunmulon mark

| 1 | 2 |
Square Split-Face (Vert.)

| 1 |
| 2 |
Square Split-Face (Horiz.)

| 1 | 2 |
Rect. Split-Face (Vert.)

| 1 |
| 2 |
Rect. Split-Face (Horiz.)

In case of Split-Face, button color should be C (clear).
2) In case of Dual-Color, button should be C (clear) with Milk-White Filter or Milk-White button.
3) Dimple Button type is only clear color. Therefore, button color should be C (clear).
4) Please be noted that the color of "Yellow" for LED, Button, Filter is actually "Oange Yellow" not Lemon Yellow.

Notes for Split-Face and Dual-Color Illumination type

In case of using Split- Face & Dual-Color , sometimes built-in resistor type Cannot be used because of heating . Please note followings:

[1] Split-Face

5V use : Select 1 (5V built-in resistor). Simultaneous lighting is possible.

12V use : Select 2 (12V built-in resistor). However in case of simultaneous lighting, please select 4 (non resistor) and apply external resistor 510 Ω 1/4W in series.

24V use : Either do or not do simultaneous lighting, cannot select 3 (24V built-in resistor). Please select 4 (non resistor) and apply external resistor 1.3kΩ 1/2W in series.
Simultaneous lighting is possible .

In 5V, 12V, 24V Split-Face non resistor type, they are the same circuits actually, however please select 4 (Split-Face non resistor) for our convenience.
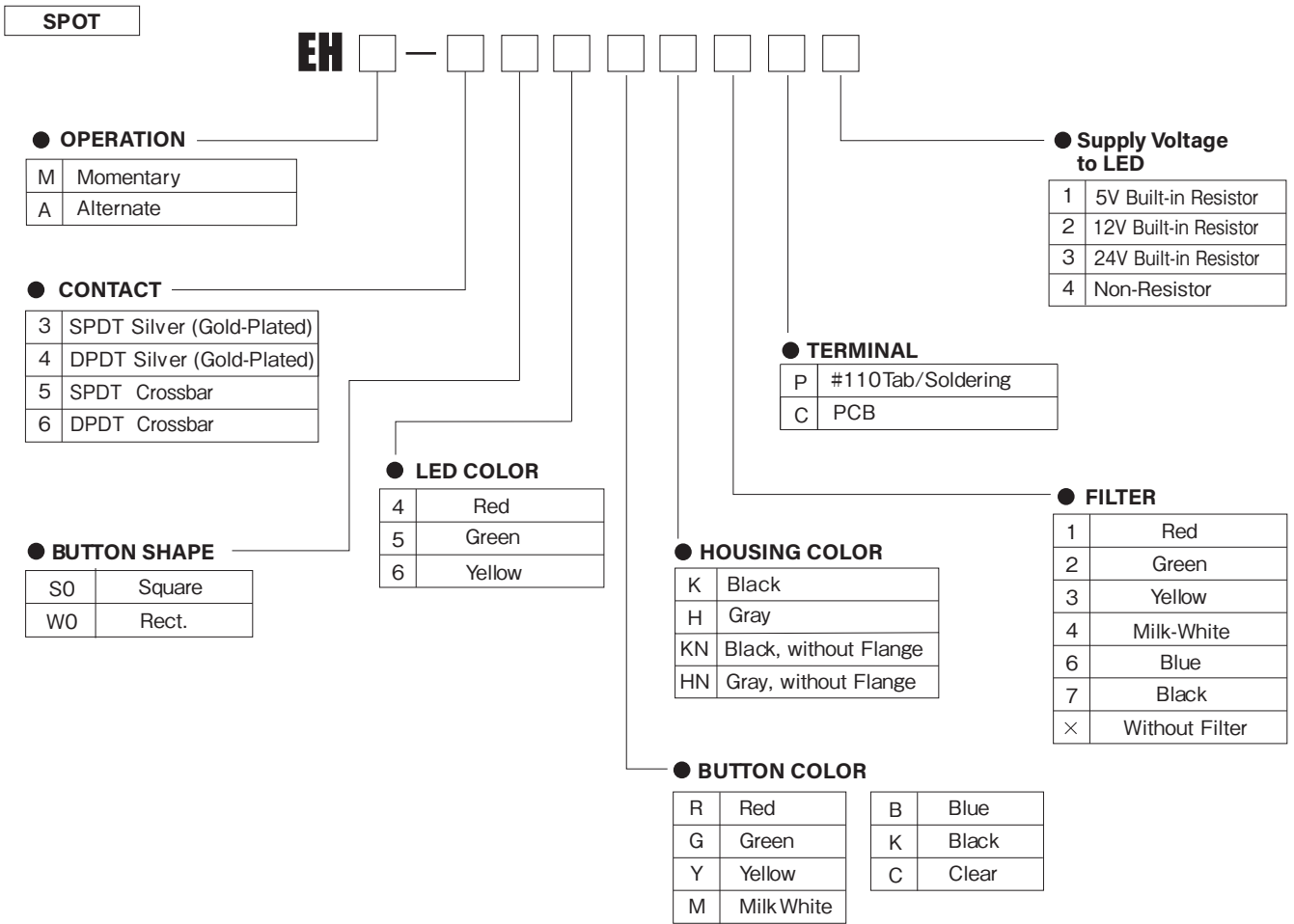
[2] Dual Color

It is impossible to do simultaneous lighting with all 5V,12V,24V. In case of simultaneous lighting , please select 4,5,6 respectively and apply external resistor 36Ω 1/4W, 270Ω 1/4W, 1.1kΩ 1/2W in series .

In 5V, 12V, 24V Dual-Color non resistor type, the circuit is different.

Even a case of "simultaneous lighting impossible", it is all right for couple of minutes.

Sunmulon

ORDERING CODE (EH type)   Ordering as a Set ([Light Cartridge] + [Housing])

SPOT

EH☐ — ☐☐☐☐☐☐☐☐

● **OPERATION**

M	Momentary
A	Alternate

● **CONTACT**

3	SPDT Silver (Gold-Plated)
4	DPDT Silver (Gold-Plated)
5	SPDT Crossbar
6	DPDT Crossbar

● **BUTTON SHAPE**

S0	Square
W0	Rect.

● **LED COLOR**

4	Red
5	Green
6	Yellow

● **BUTTON COLOR**

R	Red
G	Green
Y	Yellow
M	Milk White

B	Blue
K	Black
C	Clear

● **HOUSING COLOR**

K	Black
H	Gray
KN	Black, without Flange
HN	Gray, without Flange

● **TERMINAL**

P	#110 Tab/Soldering
C	PCB

● **Supply Voltage to LED**

1	5V Built-in Resistor
2	12V Built-in Resistor
3	24V Built-in Resistor
4	Non-Resistor

● **FILTER**

1	Red
2	Green
3	Yellow
4	Milk-White
6	Blue
7	Black
×	Without Filter

ORDERING CODE(EH type)　　　Ordering Individually ([Light Cartridge])

● **LIGHT CARTRIDGE**

Full-Face, Dual- Color, Split-Face

EH — ☐ **1 2** ☐ **1 2** ☐

● **BUTTON SHAPE ILLUMINATION TYPE**

S0	Square Full-Face
W0	Rect.　Full-Face
1) S1	Square Split-Face (Vert.)
1) S2	Square Split-Face (Horiz.)
1) W1	Rect. Split-Face (Vert.)
1) W2	Rect. Split-Face (Horiz.)
2) S3	Square Dual-Color
2) W3	Rect.　Dual-Color

3) K0	Concave B. Square Full-Face
3) K1	Concave B. Square Split-Face (Vert.)
3) K2	Concave B. Square Split-Face (Horiz.)
3) K3	Concave B. Square Dual-Color
3) N0	Concave B. Rect. Full-Face
3) N1	Concave B. Rect. Split-Face (Vert.)
3) N2	Concave B. Rect. Split-Face (Horiz.)
3) N3	Concave B. Rect. Dual-Color

● **LED COLOR**

70	Red	Full-Face : Put color no. into the frame 1
80	Green	Split-Face : Put color no. into the frame 1,2
4) 90	Yellow	(7070 , 7080 , 7090 , 8070 , 8080 , 8090
14	Super Blue	9080 , 9090 , 9090 , 1414 , 1416 , 1418
16	Super White	1614 , 1616 , 1618 , 1814 , 1816 , 1818
18	Super Green	7014 , 7016 , 7018 , 9014 , 1470 , 1670

1870 , 1490　Combination only)

Dual-Color : Put color no. into the frame 1,2
(7080 , 8090 , 9070 , 7014 , 7016 , 7018
9014 , 1416 , 1618 , 1814 Combination only)

● **Supply Voltage to LED**

1	5V Built-in Resistor
2	12V Built-in Resistor
3	24V Built-in Resistor(not for Split-Face)
4	5V Non-Resistor, Split-Face non resistor
5	12V Non-Resistor
6	24V Non-Resistor

In case of Split-Face non resistor type, please select 4 though the circuits are same for 5, 12, 24v, for our convenience.
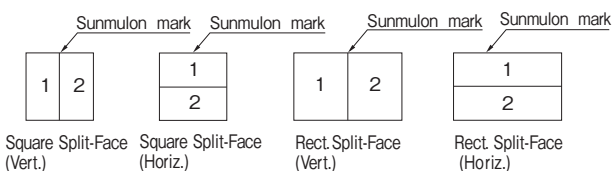
● **FILTER**

1	Red
2	Green
4) 3	Yellow
4	Milk White
6	Blue
X	Without Color Filter

● **BUTTON COLOR**

R	Red
G	Green
4) Y	Yellow
M	Milk White
C	Clear
B	Blue
X	Without Button

● **NOTES**

1) In case of Split-Face, LED and Filter location should be specified as follow:

Sunmulon mark	Sunmulon mark	Sunmulon mark	Sunmulon mark
1 2	1 / 2	1 2	1 / 2
Square Split-Face (Vert.)	Square Split-Face (Horiz.)	Rect. Split-Face (Vert.)	Rect. Split-Face (Horiz.)

In case of Split-Face ,button color should be C (clear).

2) In case of Dual-Color, button should be C (clear) with Milk-White filter or Milk-White button.

3) Concave Button type is only clear color. Therefore, button color should be C (clear).

4) Please be noted that the color of "Yellow" for LED, Button, Filter is actually "Orange Yellow" not Lemon Yellow.

Notes for Split-Face and Dual-Color Illumination type

In case of using Split-Face & Dual-Color, sometimes built-in resistor type cannot be used because of heating. Please note followings:

1️⃣ Split-Face

　5V use 　: Select 1 (5V built-in resistor.) Simultaneous lighting is possible

　12V use : Select 2 (12V built-in resistor). However in case of simultaneous lighting, please select 4 (non resistor) and apply external resistor 510 Ω 1/4W in series.

　24V use : Either do or not do simultaneous lighting, cannot select 3 (24V built-in resistor). Please select 4 (non resistor) and apply external resistor 1.3kΩ 1/2W in series.
　　　　　Simultaneous lighting is possible for both way.

In 5V, 12V, 24V Split-Face non resistor type, they are the same circuits actually, however please select 4 (Split-Face non resistor) for our convenience.

2️⃣ Dual Color

　It is impossible to do simultaneous lighting with all 5V,12V,24V. In case of simultaneous lighting , please select 4,5,6 respectively and apply external resistor 36Ω 1/4W, 270Ω 1/4W, 1.1kΩ 1/2W in series .

　In 5V, 12V, 24V Dual-Color non resistor type , the circuit is different.

　Even a case of "simultaneous lighting impossible", it is all right for couple of minutes.

Sunmulon

ORDERING CODE (EH type)   Ordering Individually ([Light Cartridge] , [Housing])

LIGHT CARTRIDGE

SPOT

EH — ☐☐☐☐ ☐

● **BUTTON SHAPE**

S0	Square
W0	Rect.

● **LED COLOR**

4	Red
5	Green
6	Yellow

● **BUTTON COLOR**

R	Red	M	Milk-White	C	Clear
G	Green	B	Blue	X	Without Button
Y	Yellow	K	Black		

● **Supply Voltage to LED**

1	5V Built-in Resistor
2	12V Built-in Resistor
3	24V Built-in Resistor
4	Non-Resistor

● **FILTER**

1	Red
2	Green
3	Yellow
4	Milk-White
6	Blue
7	Black
X	Without Filter

HOUSING (EH type)
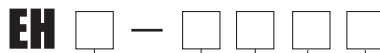
EH☐ — ☐☐☐ ☐

● **OPERATION**

M	Momentary
A	Alternate

● **CONTACT**

3	SPDT Silver (Gold-Plated)
4	DPDT Silver (Gold-Plated)
5	SPDT Crossbar
6	DPDT Crossbar

● **TERMINAL**

P	#110Tab/Solder
C	PCB

● **HOUSING COLOR**

K	Black
H	Gray
KN	Black, without Flange
HN	Gray, without Flange

● **BUTTON SHAPE ILLUMINATION TYPE**

S0	Square Full-Face, Spot
W0	Rect. Full-Face, Spot
S1	Square Split-Face, Dual-Color
W1	Rect. Split-Face, Dual-Color