

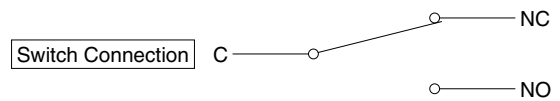
FH Miniature Lighted Pushbutton Switch

Only 19.8mm depth behind panel with built-in resistor

Built-in Resistor LED illumination makes free from wiring resistor.

■FEATURES

- Depth behind panel : Only 19.8mm
- Full Face and Spot display type available.
- 4pcs. LED illumination type.
- Built-in resistor for 5V,12V,24V use.
- Light Cartridge is removable from front panel.
- Button Size: 11.4mm square type, 11.4 × 16.4mm rectangular type
- Precision-snap action switch movement with coil spring assures long life and outstanding tactile feedback.
- Silver Contact(Gold-Plated) and W/E Alloy #1 Cross-bar Contact provided.
- Accessories: Barriers, Guard Covers, Sockets, etc.



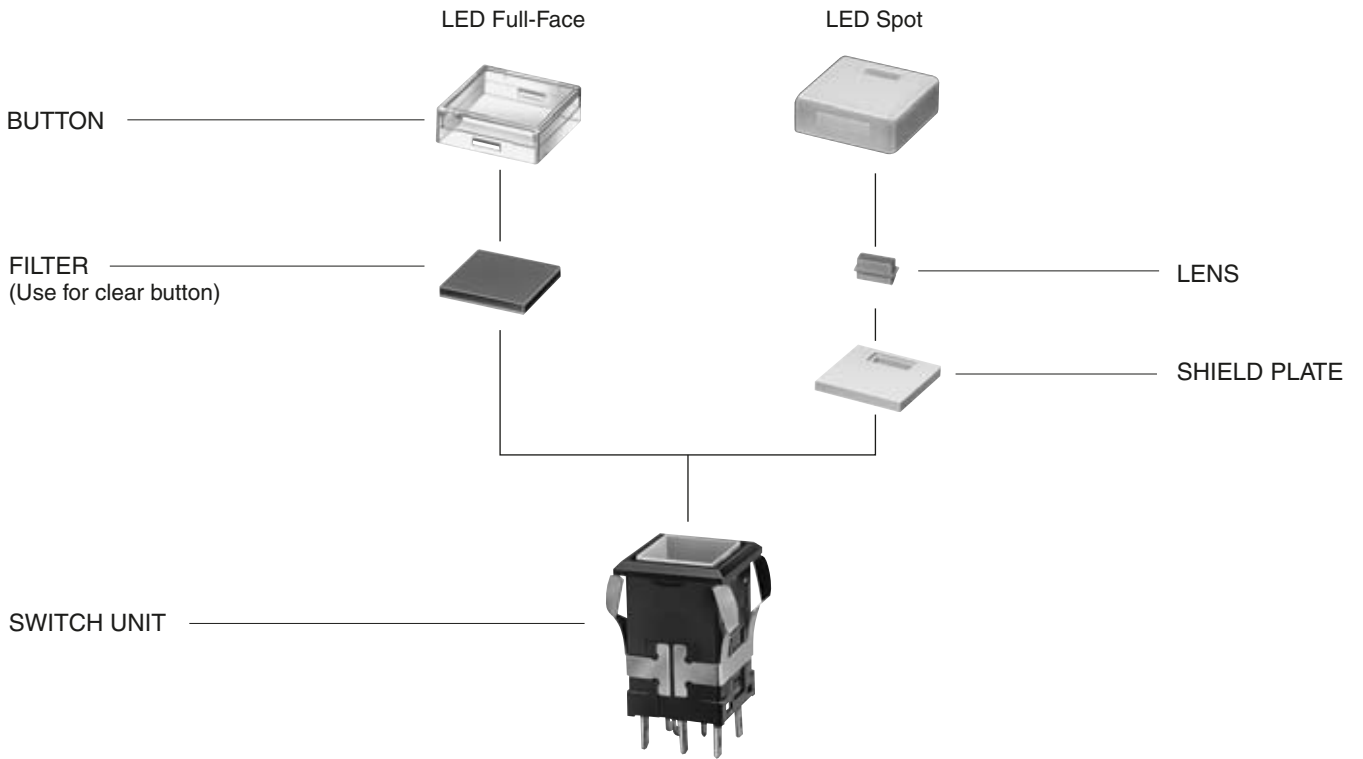
SPECIFICATIONS

Contact	Silver Contact (Gold-Plated)	W/E Alloy #1 Cross-bar Contact
Electrical Rating	AC125V,250V 5A(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
Mechanical Life	Momentary Action :more than 500,000 operations	Alternate Action : more than 200,000 operations
Electrical Life	More than 30,000 operations at max. rated load	
Ambient Temperature	-15°C to +50°C	
Ambient Humidity	80% RH (max.)	


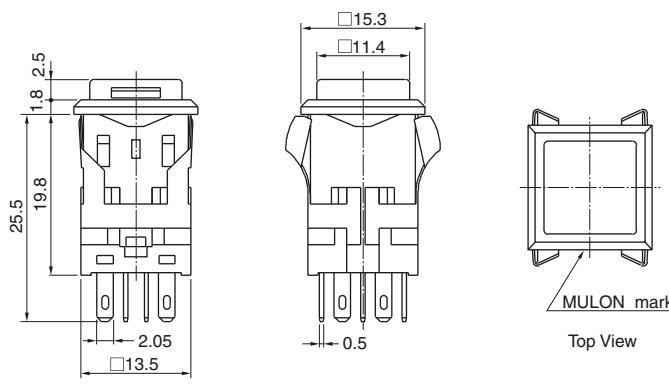

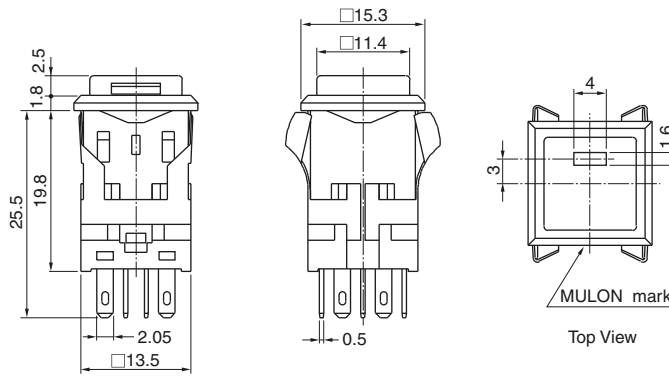
OPERATING CHARACTERISTICS

Operating Force (max.)	4.41N	Total Travel (max.)	2.5mm
------------------------	-------	---------------------	-------

STRUCTURE


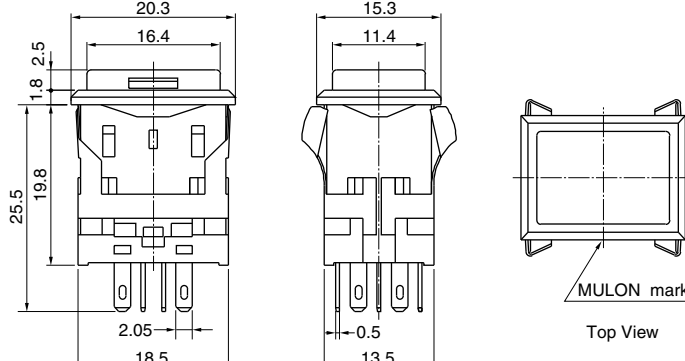

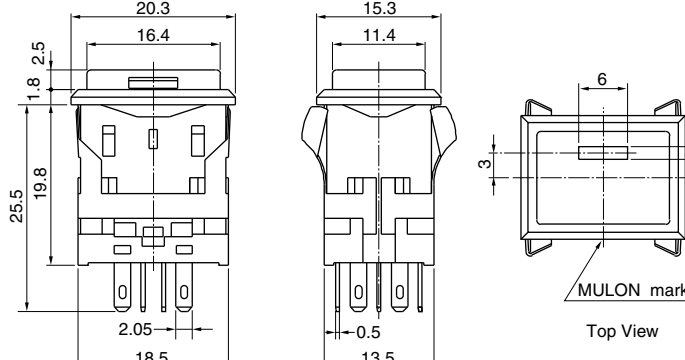


DIMENSIONS

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">11.4mm Square Button (Full-Face)</p> 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">11.4mm Square Button (Spot)</p> 	

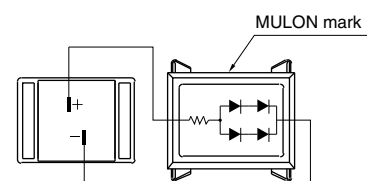
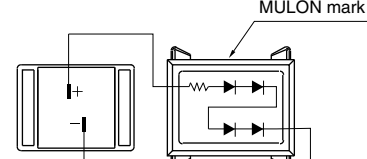
Tolerance : $\pm 0.4\text{mm}$

DIMENSIONS

<p>11.4×16.4mm Rect. Button(Full-Face)</p> 	
<p>11.4×16.4mm Rect. Button(Spot)</p> 	

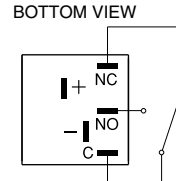
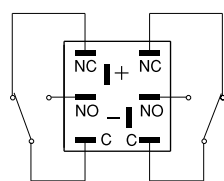
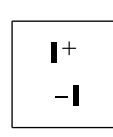
INTERNAL CONNECTION ARRANGEMENTS

● LED (Square, Rect.)

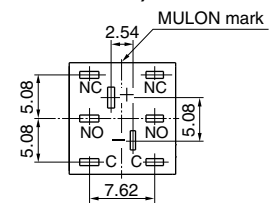
<p>LED (Full-Face)</p> <p>5 V</p>	<p>4 PCS. LED</p> 
<p>12 V 24 V</p>	

TERMINALS

● TERMINALS LAYOUT (Square, Rectangular)

<p>STDP</p> <p>BOTTOM VIEW</p> 	<p>DTDP</p> 	<p>INDICATOR</p> 
---	--	---

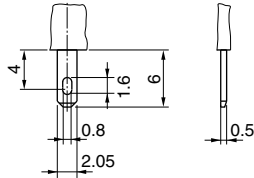
● TERMINALS DIMENSIONS (BOTTOM VIEW)



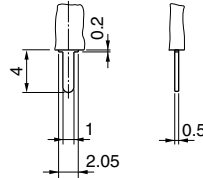
Tolerance : ±0.4mm

TERMINAL SHAPE

● TERMINAL SHAPE

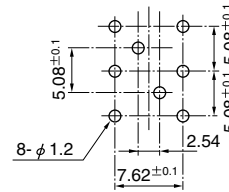


Soldering Terminal



PCB Terminal

● PCB HOLE DIMENSIONS (BOTTOM VIEW)



LED RATINGS

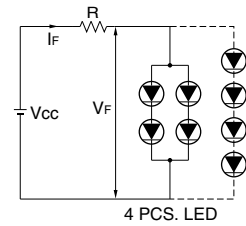
● LED RATINGS

	4 PCS. LED			
	DC5V(SERIES PARALLEL)		DC12, 24V (ALL SERIES)	
	Red, Yellow	Green	Red, Yellow	Green
Max. operating current I_{FM} (mA)	40	40	20	20
DC reverse voltage V_R (V)	10	10	20	20
Forward voltage V_F (V)	4	4.2	8	8.4
Recommended operating current I_F (mA)	15	25	8	13

※ In case of non-resistor type, suitable external current limiting resistors must be installed as shown by the table and formula.

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

V_{CC} : Supply Voltage
 V_F : Forward Voltage
 I_F : Forward Current



PANEL LAYOUT/PANEL CUT DIMENSIONS

● 11.4mm Square Button

Panel thickness: 1mm~3.2mm

		Panel Layout	Panel Cut Dimensions
Without Barriers	Independent		
	Serial (Horizontal)	※1	
	Serial (Vertical)	※2	

n : number of switches

PANEL LAYOUT/PANEL CUT DIMENSIONS

●11.4mm Square Button

Panel thickness : 1mm ~ 3.2mm
 Panel thickness for Guard Cover use : 1mm ~ 2.5mm

		Panel Layout	Panel Cut Dimensions
With Barriers	Independent		
	Serial (Horizontal)		
	Serial (Vertical)		
With Guard Covers	Independent		
	Serial (Horizontal)		

●11.4×16.4 Rect. Button

		Panel Layout	Panel Cut Dimensions
Without Barriers	Independent		
	Serial (Horizontal)		

n : number of switches
 Tolerance : ±0.4mm

PANEL LAYOUT/PANEL CUT DIMENSIONS

● 11.4mm×16.4mm Rectangular Button

		Panel Layout	Panel Cut Dimensions
Without Barriers	Independent		
	Serial (Vert.)		
With Barriers	Independent		
	Serial (Horiz.)		
	Independent		
With Barriers	Serial (Vert.)		
	Independent		
With Guard Covers	Independent		
	Serial (Horiz.)		

n : number of switches
 Panel thickness : 1mm~3.2mm
 Panel thickness for Guard Cover use : 1mm~2.5mm
 Tolerance : ±0.4mm

PANEL LAYOUT / PANEL CUT DIMENSIONS

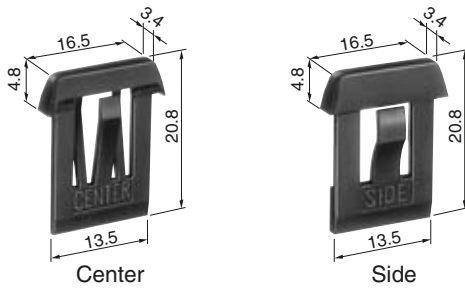
Without Barriers	With Barriers
<p style="text-align: center;">In case of block mounting, leave space between arrays as a figure.</p>	<p style="text-align: center;">In case of block mounting, leave space between arrays as a figure.</p>

ACCESSORIES

BARRIERS

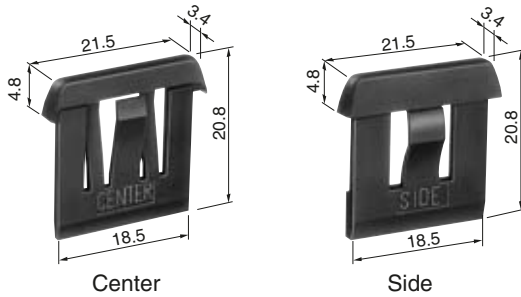
In case of mounting switches in series, barriers can be used to prevent inadvertent pushing neighbor switches.

● Short Barrier



PART NO.		
Color	Short Center Barrier	Short Side Barrier
Black	FH-592-K	FH-593-K
Gray	FH-592-G	FH-593-G

● Long Barrier (For Rectangular, Longer Side)

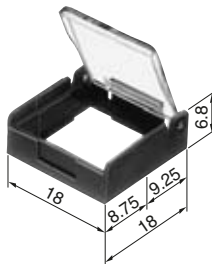


PART NO.		
Color	Long Center Barrier	Long Side Barrier
Black	FH-594-K	FH-595-K
Gray	FH-594-G	FH-595-G

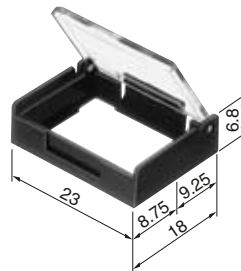
GUARD COVER

Guard Cover prevents inadvertent and unintentional operations. (cannot be used with barriers.)

● 11.4mm Square Button



● 11.4×16.4mm Rect. Button



PART NO.		
Sq.	Black	FH-596-K
	Gray	FH-596-G
Rect.	Black	FH-597-K
	Gray	FH-597-G

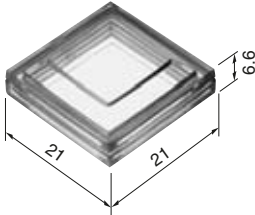
※The cover to be opened 90° and stopped.

Tolerance : ±0.4mm

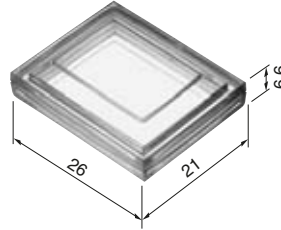
ACCESSORIES

Dust-Proof Cover

● 11.4mm Square Button

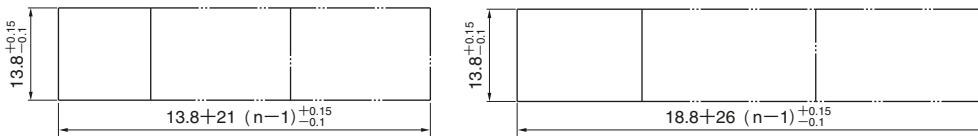


● 11.4×16.4mm Rectangular Button



PART NO.	
Square	Rectangular
FH-598	FH-599

● Panel Cut Dimensions for Dust-Proof Cover use.

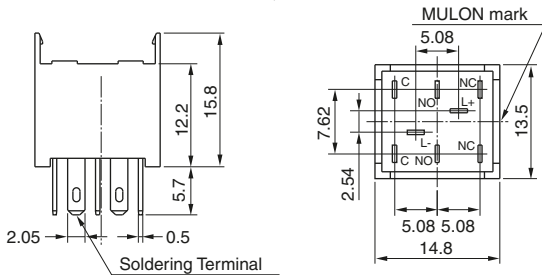


Panel Thickness : 1-2.5mm

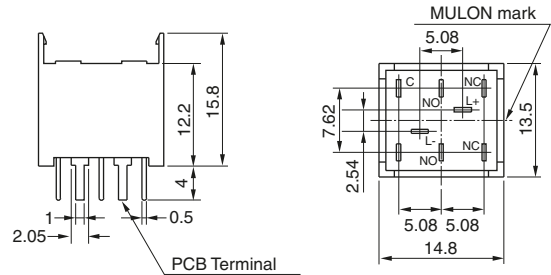
SOCKET

For easy maintenance. (Can be used for both square and rectangular)

● Soldering Terminal Socket



● PCB Terminal Socket

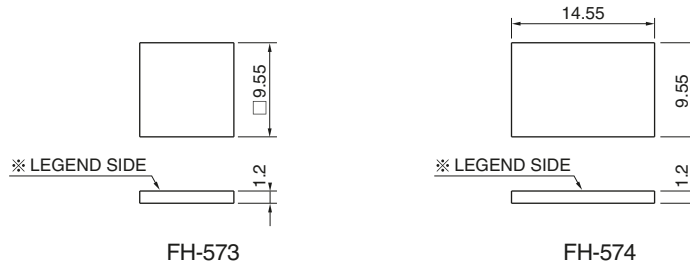


※ Switch Unit Terminal should be Soldering Type for both sockets.

PART NO	
Soldering Terminal Socket	PCB Terminal Socket
FH-0735	FH-0736

Tolerance : ±0.4mm

FILTER DIMENSIONS



Tolerance : ±0.4mm

REPLACEMENT PARTS

Please order buttons and filters as replacement parts as follow.

LED Full-Face



● BUTTON SHAPE

573	11.4mm Square Button
574	11.4×16.4mm Rect. Button

● BUTTON COLOR

R	Red
LG	Green
※ Y	Yellow
M	Milk White
C	Clear
K	Black
×	Without Button

● FILTER COLOR

1	Red
L2	Green
※ 3	Yellow
4	Milk White
0	Without Filter

LED SPOT



● BUTTON SHAPE

575	11.4mm Square Button
576	11.4×16.4mm Rect. Button

● BUTTON COLOR

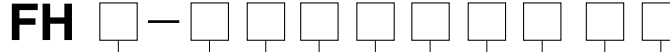
R	Red
G	Green
※ Y	Yellow
M	Milk White
B	Blue
K	Black
×	Without Button

● LED COLOR

1	Red
2	Green
※ 3	Yellow
4	Milk White
0	Without LED

ORDERING CODE

LED Full-Face



● OPERATION

M	Momentary
A	Alternate
L	Indicator

● CONTACT

0	Indicator
1	SPDT · Silver (Gold-Plated)
2	DPDT · Silver (Gold-Plated)
3	SPDT · W/E Alloy #1Crossbar
4	DPDT · W/E Alloy #1Crossbar

● BUTTON SHAPE

S	11.4mm Square Button
W	11.4 X 16.4mm Rect. Button

● Supply Voltage to LED

4	Non-Resistor (4 PCS. LED, All Series)
5	Non-Resistor (4 PCS. LED, Series Pararell)
6	5V Built-in Resistor (4 PCS. LED)
7	12V Built-in Resistor (4 PCS. LED)
8	24V Built-in Resistor (4 PCS. LED)
×	Without LED

● LED COLOR

70	Red (4 PCS. LED)
80	Green (4 PCS. LED)
90	Yellow (4 PCS. LED)
×	Without LED

● HOUSING COLOR

B	Black
G	Grey

● BUTTON COLOR

R	Red
G	Green
Y	Yellow
M	Milk White
C	Clear
×	Without Button

● MOUNTING ※1

1	For Vertical Mtg.
2	For Horizontal Mtg.

● TERMINAL

S	Soldering
---	-----------

● FILTER COLOR

1	Red
2	Green
3	Yellow
4	Milk White
×	Without Filter

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

※ "Yellow" color for LED/Button/Filter is actually "Orange Yellow".

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

LED SPOT



● OPERATION

M	Momentary
A	Alternate
L	Indicator

● CONTACT

0	Indicator
1	SPDT · Silver (Gold-Plated)
2	DPDT · Silver (Gold-Plated)
3	SPDT · W/E Alloy #1Crossbar
4	DPDT · W/E Alloy #1Crossbar

● BUTTON SHAPE

P	11.4mm Square Button
L	11.4 X 16.4mm Rect. Button

● Supply Voltage to LED

4	Non-Resistor (4 PCS. LED, All Series)
5	Non-Resistor (4 PCS. LED, Series Pararell)
6	5V Built-in Resistor (4 PCS. LED)
7	12V Built-in Resistor (4 PCS. LED)
8	24V Built-in Resistor (4 PCS. LED)
×	Without LED

● LED COLOR

70	Red (4 PCS. LED)
80	Green (4 PCS. LED)
90	Yellow (4 PCS. LED)
×	Without LED

● BUTTON COLOR

R	Red
G	Green
Y	Yellow
M	Milk White
B	Blue
K	Black
×	Without Button

● MOUNTING ※1

1	For Vertical Mtg.
2	For Horizontal Mtg.

● TERMINAL

S	Soldering
---	-----------

● FILTER COLOR

1	Red
2	Green
3	Yellow
4	Milk White

※ "Yellow" color for LED/Button/Filter is actually "Orange Yellow".

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