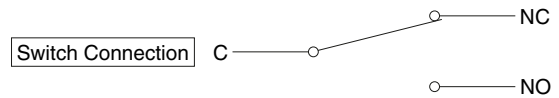
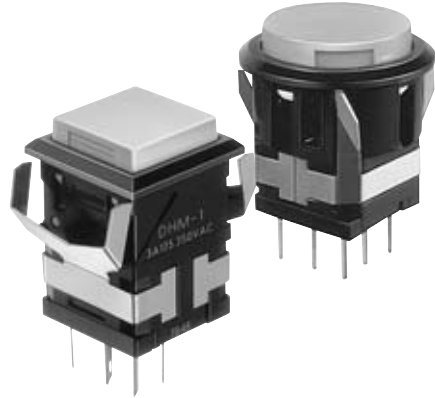


# DH Subminiature Lighted Pushbutton Switch

Only 21.5mm depth behind panel with LED Full Face, LED Spot and Lamp Illumination.

## FEATURES

- Depth behind panel : Only 21.5mm.
- LED Full Face, LED Spot and Lamp Illumination provided.
- Button size : 14.2mm square type, 20.2mm round type.
- Incorporated snap action switch is furnished with coil spring. It assures long life (Mechanical : 2,000,000 operations min.) and good switching touch (450g max.)
- Contact mechanism has wiping action, and it's self-cleaning effect permits high reliability.



## SPECIFICATIONS


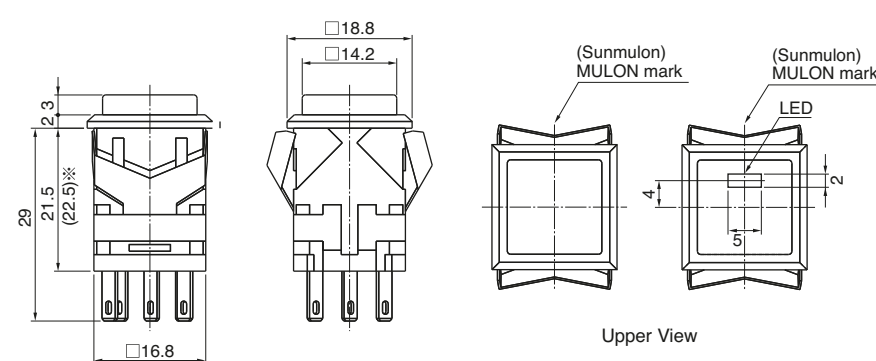

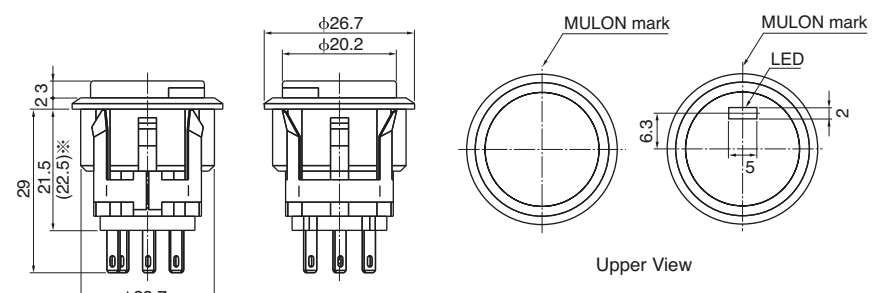
Contact	Silver	Gold Plated Silver
Rating	3A 125, 250V AC (Resistive Load)	
Insulation Resistance	Over 100MΩ at DC 500V meger	
Dielectric Strength	Between Terminals : 1,000V AC RMS	
	Between Terminals and Ground : 1,500V AC RMS	
	Between Lamp Terminals: 400V AC RMS	
	(Both 50~60Hz in normal temperature & humidity in one minute)	
Contact Resistance	Under 30mΩ (at initial) (at 1A 6V DC)	Under 50mΩ (at initial) by milliohmmeter
Mechanical Life	Momentary : 2,000,000 operations (min.), Alternate : 200,000 operations (min.)	
Electrical Life	100,000 operations (min., at rated load)	
Ambient Temperature	-15°C~50°C	
Ambient Humidity	Under 80% RH	

## OPERATING CHARACTERISTICS

Operating Force (max.)	4.41N	Total Travel (mm Max.)	3
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## DIMENSIONS

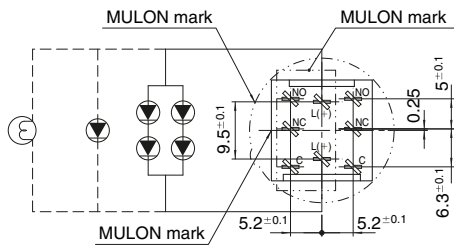
### ● LED Full Face/Spot/Lamp

<p>□ 14.2 Square Button</p>		 <p>※ PCB type</p>
<p>φ 20.2 Round Button</p>	 <p>Note : LED full face display is not available with φ20.2 Round type</p>	 <p>※ PCB type</p>

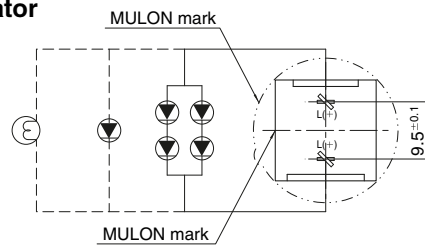
Tolerance : ±0.4mm

## TERMINAL LAYOUT / INTERNAL ARRANGEMENT

### ● Switch

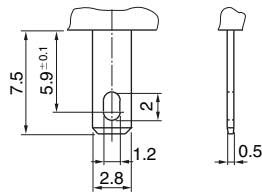


### ● Indicator

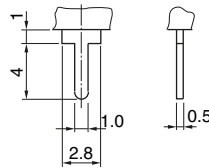


## TERMINAL DIMENSIONS

### ● TERMINAL SHAPE

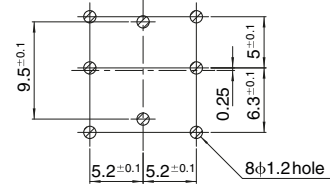


#110 Tab/Solder Terminal



Printed Circuit Terminal

### ● Printed Circuit Terminal Hole Dimensions (BOTTOM VIEW)



## LED/LAMP DATA

### ● LED Full Face Display(Calculated at 4 chips LED)

ITEM	LED Full Face	
	Parallel	
	Red, Yellow	Green
Max. Operating Current I <sub>FM</sub> (mA)	40	40
DC Reverse Voltage V <sub>R</sub> (V)	10	10
Forward Voltage V <sub>F</sub> (V)	4	4.2
Recommended Operating Current I <sub>F</sub> (mA)	15	25

※ In case of pulse lighting, please note following conditions.

I<sub>FM</sub>=120mA(DC current for one LED, all colors)

Where : Pulse width(PW)=100μsec.

Duty Ratio (DR)=10<sup>-1</sup>

### ● Lamp Rating

Voltage	Current (mA)	Life	Temperature
6V	200	5000H (Average)	Under 50°C (at button surface)
14V	80		
28V	40		

### ● LED Spot Display

ITEM	Red	Green	Yellow
Max. DC Current I <sub>FM</sub> (mA)	10	30	20
Reverse Voltage V <sub>R</sub> (V)	5	5	4
Forward Voltage V <sub>F</sub> (V)	1.9	2.1	1.9
Forward Current I <sub>F</sub> (mA)	5	20	10
Current reduced factor : (Over 25°C working temperature)	0.13mA/°C	0.4mA/°C	0.26mA/°C

※ In case of pulse lighting, please note following conditions.

I<sub>FM</sub>=50mA(DC current for one LED, all colors)

Where : Pulse width(PW)=100μsec.

Duty Ratio (DR)=10<sup>-1</sup>

## EXTERNAL / STABILIZED RESISTOR

Internal LED protective or Neon stabilized resistor are not incorporated. Refer to the following values for series connection.

### ● LED Full Face Display(Calculated at 4 chips LED)

Voltage(V)	Red, Yellow	Green
5V (±5%)	100Ω 1/8W	33Ω 1/8W
14V (±5%)	620Ω 1/4W	330Ω 1/4W
28V (±5%)	1500Ω 1/2W	820Ω 1/2W

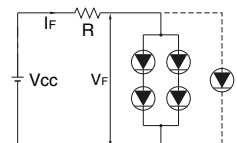
### ● LED Spot Display

Color	5V	12V	24V	Current(mA)
Red	620Ω 1/8W	2000Ω 1/8W	4300Ω 1/4W	5
Green	150Ω 1/8W	510Ω 1/4W	1100Ω 1W	20
Yellow	300Ω 1/8W	1000Ω 1/4W	2200Ω 1/2W	10

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

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

V<sub>CC</sub>: Supply Voltage  
V<sub>F</sub>: Forward Voltage  
I<sub>F</sub>: Forward Current



## PANEL LAYOUT / PANEL CUT DIMENSIONS

### ● 14.2 Square Button

Panel thickness 1mm~3.2mm

		Panel Layout	Panel Cut Dimensions
Without Barriers	Independent		
	Serial		
With Barriers	Independent		
	Serial		

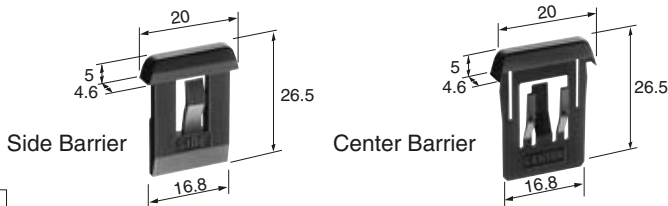
### ● φ20.2 Round Button

Panel Layout	Panel Cut Dimensions

## OPTIONAL ACCESSORIES

### Barriers

- Using Barriers helps prevent inadvertent actuation of neighboring switches with one push, if strip mounting is required. Also, they may improve panel appearance.

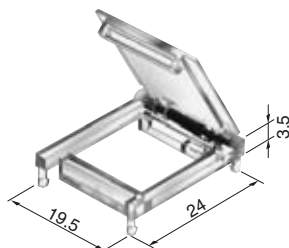


Color	Center Barrier	Side Barrier
Black	DH-324-B	DH-323-B
White	DH-324-W	DH-323-W

### Guard Cover

- Guard Cover prevents inadvertent or unintentional operations. Button cannot be operated unless open clear cover. Guard Cover is used with Guard Side or Guard Center Barriers. For strip mount, panel cutout dimensions are same as Barriers.

#### ● 14.2 Square Button



Guard Center Barrier



Guard Side Barrier

Guard Cover	DH-450
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\* Cover to be opened 180°

Color	Guard Center Barrier	Guard Side Barrier
Black	DH-443-B	DH-442-B
White	DH-443-W	DH-442-W

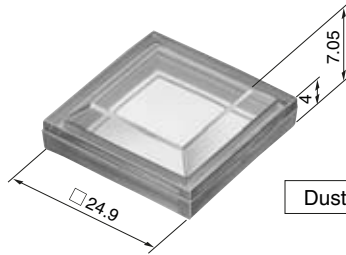
Tolerance : ±0.4mm

## ACCESSORIES

### Dust-Proof Cover

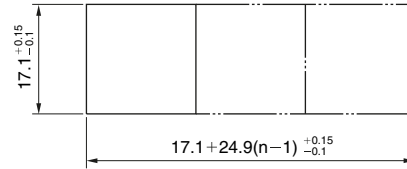
- Provides protection for switches or indicators from dust entering through the panel cutout.  
Please indicate parts numbers when order.

- 14.2 Square Button only



Dust-Proof Cover    DH-361

- Panel Cut Dimensions

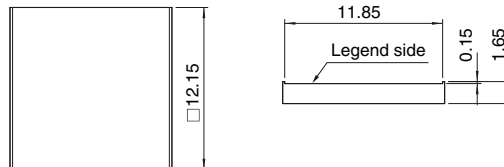


Panel thickness 1mm~2.5mm

n : Number of Switches

\* Dust-proof cover cannot be fitted with barriers or guard cover.

## FILTER DIMENSIONS



## REPLACEMENT PARTS

Please indicate parts Nos. when order

### LED Full Face Display

- One-piece type

Color		Part No.
		□14.2 Square
Solid Color	Red	DH-336-1LR
	Green	DH-336-1LG
	Yellow	DH-336-1LY
Projected Color	Milk White	DH-336-1M

- Three-piece type

Color		Part No.	
		□14.2 Square Button	□12.15 Square Filter
Solid Color	Red	DH-336-2C	DH-339-LR
	Green	DH-336-2C	DH-339-LG
	Yellow	DH-336-2C	DH-339-LY
Projected Color	Milk White	DH-336-2C	DH-339-M

- LED Spot Display

Color	Part No.	
	□14.2 Square Button	φ20.2 Round Button
Red	DH-301-R	DH-299-R
Milk White	DH-301-M	DH-299-M
Green	DH-301-G	DH-299-G
Yellow	DH-301-Y	DH-299-Y
Black	DH-301-K	DH-299-K

### Lamp Display

- One-piece type

Color	Part No.	
	□14.2 Square Button	φ20.2 Round Button
Red	DH-336-1R	DH-298-R
Green	DH-336-1G	DH-298-G
Yellow	DH-336-1Y	DH-298-Y
Black	DH-336-1K	DH-298-K
Milk White	DH-336-1M	DH-298-M

- Three-piece type

Color		Part No.	
		□14.2 Square Button	□12.15 Square Filter
Solid Color	Red	DH-336-2C	DH-339-R
	Milk White	DH-336-2C	DH-339-M
	Yellow	DH-336-2C	DH-339-Y
	Green	DH-336-2C	DH-339-G
Projected Color	Red	DH-336-1M	DH-339-R
	Yellow	DH-336-1M	DH-339-Y
	Green	DH-336-1M	DH-339-G

- Lamp

Voltage	Part No.
6V	MU-089-1
14V	MU-089-2
28V	MU-089-3

Tolerance : ±0.4mm

## ORDERING CODE

### LED Full Face Display

DH  -

● Operation

M	Momentary
A	Alternate
L	Indicator

● Contact Arrangement / Material

0	Indicator
1	Silver, SPDT
2	Silver, DPDT
3	Gold Plated Silver, SPDT
4	Gold Plated Silver, DPDT

● Button Shape

S	□14.2 Square
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● LED Color

70	Red
80	Green
※ 90	Yellow

● Terminal Shape

Blank	#110 Tab/Solder
C	Printed Circuit

● Filter Color (For Clear Button only)

Blank	Without Filter
1	Red
※ 3	Yellow
4	Green
5	Milk White

● Housing Color

B	Black
W	White

● Button Color

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

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

### LED Spot Display

DH  -

● Operation

M	Momentary
A	Alternate
L	Indicator

● Contact Arrangement / Material

0	Indicator
1	Silver, SPDT
2	Silver, DPDT
3	Gold Plated Silver, SPDT
4	Gold Plated Silver, DPDT

● Button Shape

S	□14.2 Square
R	φ20.2 Round

● Terminal Shape

Blank	#110 Tab/Solder
C	Printed Circuit

● Housing Color

B	Black
W	White

● Button Color

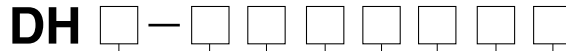
R	Red
Y	Yellow
G	Green
M	Milk White
K	Black
X	Without Button

● LED Color

4	Red
5	Green
6	Yellow

ORDERING CODE

Lamp Display



● Operation

M	Momentary
A	Alternate
L	Indicator

● Contact Arrangement / Material

0	Indicator
1	Silver, SPDT
2	Silver, DPDT
3	Gold Plated Silver, SPDT
4	Gold Plated Silver, DPDT

● Button Shape

S	□14.2 Square
R	φ20.2 Round

● Lamp Voltage

Blank	Without Socket
0	Without Lamp
1	6V
2	14V
3	28V

● Terminal Shape

Blank	#110 Tab/Solder
C	Printed Circuit

● Filter Color (For Clear Button only)

Blank	Without Filter
1	Red
3	Yellow
4	Green
5	Milk White

● Housing Color

B	Black
W	White

● Button Color

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

\* Clear Button is only for 14.2 Square type.