



## Datasheet

# RS PRO Sub-Miniature Pushbutton Switches

Stock number: **175-XXXX (Details as follows)**

EN



The picture above is for reference only.

### Specifications:

RATING : 2A/36VDC

ELECTRICAL LIFE : 200,000 make-and-break cycles at full load

MECHANICAL LIFE : 1,000,000 cycles

INSULATION RESISTANCE : 1,000 M $\Omega$  min. at 500VDC

DIELECTRIC STRENGTH : 2,000V RMS @ sea level

CONTACT RESISTANCE : 50 m $\Omega$  max.

OPERATION TEMPERATURE : -20°C~+70°C

TRAVEL: About 2.0 $\pm$ 0.20mm

OPERATION PRESSURE : 4.5N $\pm$ 1.5N

INGRESS PROTECTION : IP67

TORQUE : 11.5 kgf · cm

THICKNESS : 8.0mm (Max.)

Current limiting resistor is required to limit LED forward current to 20mA.

**RS Part no.**

**RS Part no.**

175-8552	MPB16-CARE-0-T1R-0V
175-8545	MPB16-CARE-1-T1R-0V
175-8540	MPB16-CARE-1-T1R-6V
175-8543	MPB16-CARE-1-T1R-12V
175-8541	MPB16-CARE-1-T1R-24V
175-8530	MPB16-CARE-3-T1R-0V
175-8526	MPB16-CARE-3-T1R-3V
175-8524	MPB16-CARE-3-T1R-6V
175-8529	MPB16-CARE-3-T1R-12V
175-8527	MPB16-CARE-3-T1R-24V
175-8537	MPB16-CARE-5-T1R-0V
175-8589	MPB16-CARE-5-T1R-3V
175-8587	MPB16-CARE-5-T1R-6V
175-8593	MPB16-CARE-5-T1R-12V
175-8590	MPB16-CARE-5-T1R-24V
175-8579	MPB16-CARE-6-T1R-0V
175-8575	MPB16-CARE-6-T1R-6V
175-8578	MPB16-CARE-6-T1R-12V
175-8555	MPB16-CARE-6-T1R-24V
175-8567	MPB16-CARE-7-T1R-0V
175-8561	MPB16-CARE-7-T1R-6V
175-8565	MPB16-CARE-7-T1R-12V
175-8563	MPB16-CARE-7-T1R-24V
175-8440	MPB16-CARE-A-T1R-0V
175-8471	MPB16-CARE-A-T1R-6V
175-8518	MPB16-CARE-A-T1R-12V
175-8473	MPB16-CARE-A-T1R-24V
175-8464	MPB16-CARE-RGB-T1R-0V
175-8439	MPB16-CARE-RGB-T1R-6V
175-8462	MPB16-CARE-RGB-T1R-12V
175-8460	MPB16-CARE-RGB-T1R-24V
175-8475	MPB16-CARP-0-T1R-0V
175-8449	MPB16-CARP-1-T1R-0V
175-8444	MPB16-CARP-1-T1R-6V
175-8447	MPB16-CARP-1-T1R-12V

175-8446	MPB16-CARP-1-T1R-24V
175-8512	MPB16-CARP-3-T1R-0V
175-8507	MPB16-CARP-3-T1R-3V
175-8506	MPB16-CARP-3-T1R-6V
175-8511	MPB16-CARP-3-T1R-12V
175-8510	MPB16-CARP-3-T1R-24V
175-8497	MPB16-CARP-5-T1R-0V
175-8493	MPB16-CARP-5-T1R-3V
175-8492	MPB16-CARP-5-T1R-6V
175-8515	MPB16-CARP-5-T1R-12V
175-8495	MPB16-CARP-5-T1R-24V
175-8483	MPB16-CARP-6-T1R-0V
175-8474	MPB16-CARP-6-T1R-6V
175-8482	MPB16-CARP-6-T1R-12V
175-8632	MPB16-CARP-6-T1R-24V
175-8730	MPB16-CARP-7-T1R-0V
175-8724	MPB16-CARP-7-T1R-6V
175-8727	MPB16-CARP-7-T1R-12V
175-8726	MPB16-CARP-7-T1R-24V
175-8712	MPB16-CARP-A-T1R-0V
175-8707	MPB16-CARP-A-T1R-6V
175-8738	MPB16-CARP-A-T1R-12V
175-8708	MPB16-CARP-A-T1R-24V
175-9131	MPB16-CARP-RGB-T1R-0V
175-9171	MPB16-CARP-RGB-T1R-6V
175-9133	MPB16-CARP-RGB-T1R-12V
175-9172	MPB16-CARP-RGB-T1R-24V

# Specifications:

## 1. Style :

This specification describes “Metal Pushbutton Switch ” , mainly used as signal switch of electric devices, with the general requirements of mechanical and electrical characteristic.

- ①Switch combination : Off-Mom. Single Pole
- ②Enclosure material : Aluminum alloy / Stainless steel.
- ③Operating Type : Momentary.
- ④Operating Temperature Range : -20 °C~+70 °C.
- ⑤Degrees of protection provided by enclosures  
IP code: IP67.

**2. Electrical Rating :** 2A /36VDC (resistive load).

**3. Type of Actuation :** Pushbutton Switch.

## 4. Test Sequence :

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
APPEARANCE	1	Visual Examination	By Visual Examination check without and out pressure & testing.	There shall be no defects that affect the serviceability of the product.
ELECTRIC PERFORMANCE	2	Contact Resistance	To be measured between the two terminals associated with each switch pole.	50mΩ Max.
	3	Insulation Resistance	Measurements shall be made following application of 500 VDC / 100mA potential across terminals and cover for 1 minute.	1000MΩ/500VDC min.
	4	Dielectric Withstanding Voltage	2000VAC(50Hz or 60Hz)/ between terminals /1minute.	There shall be no breakdown or flashover.

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
MECHANICAL PERFORMANCE	5	Operation pressure	MODEL-1305N MECHANICAL TEST 500gram · 1000gram · 2000gram.	4.5N±1.5N
	6	Operation Travel	Full Travel.	2.0mm±0.20
	7	Torque	Applied to nut.	11.5kgf · cm.
	8	Panel Thickness	Applied to nut.	8.0mm MAX.
OPERATING LIFE	9	Operating Life	<p>Measurements shall be made following the test forth below :</p> <p>① 2A / 36VDC.( resistive load)</p> <p>② Electronics Life Test : 200,000 cycles.</p> <p>③ Rate of Operation : 6-8 operation cycles per minute.</p> <p>④ Operating force:8N (MAX).</p>	<p>ⓄDielectric Strength : between terminals :1000VAC.</p> <p>ⓄInsulation Resistance : 1000MΩ (at 500VDC)min.</p> <p>ⓄContact Resistance : 150mΩ Max.</p>
			<p>① Mechanical Life Test : Resettable : 1,000,000 cycles.</p> <p>② Operating force:8N (MAX).</p>	<p>ⓄOperation pressure: 3N±1.5N (for Mechanical Life Test).</p>

Apr.27.2017

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
HUMIDITY RESISTANCE	10	Resistance Low Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature : $-20\pm 3^{\circ}\text{C}$ . ② Time : 96 hours.	As shown in item 2-4.
	11	Resistance High Temperature	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature : $70\pm 3^{\circ}\text{C}$ . ② Time : 96 hours.	As shown in item 2-4.
	12	Resistance Humidity	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for 1 hour before the measurements are made: ① Temperature: $40\pm 2^{\circ}\text{C}$ ② Relative Humidity: 90~95% ③ Time: 96 hours.	① Contact Resistance: 100 mΩ Max.  ② Insulation Resistance: 1000MΩ min.

	ITEM	DESCRIPTION	TEST CONDITIONS	REQUIREMENTS
HUMIDITY RESISTANCE	13	Salt spray Testing	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for an hour before the measurements are made: ①Temperature:35±2°C. ②The ratio of salt-water : 5%. ③The spray amount of salt- water : 1~2 ml/h. ④Time:48 hours.	The testing standard based on bubble, crack, And magnifying glass with gauge.
	14	Test of IP 67	Protected against the effects of Temporary immersion in water. (1m below the surface of the water for a duration of 30 min).	IP67 According to EN 60529 : 1991+A1 : 2000 IEC 60529 : 2001
RoHS	15	HSF	Refer RoHS Standard : The electronic electrical machinery product limits with six big chemical materials.	Cd : 100ppm Pb : 1000ppm Hg : 1000ppm Cr6+ : 1000ppm PBB、PBDE : 1000ppm
SOLDER HEAT RESISTANCE	16	Manual Soldering	■ hand Soldering : ①Soldering Temperature : 280°C. ②Duration of Solder Heated : 3 seconds (Max). ■ Precautions in Handling: ③Please make sure that there is no flux rose over the surface of the PCB.	①Shall be free from pronounced backlash and falling-off or breakage terminals.  ②As shown in item 2-4.

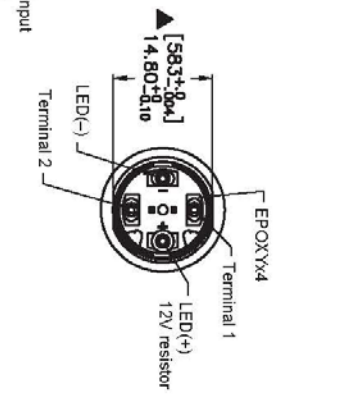
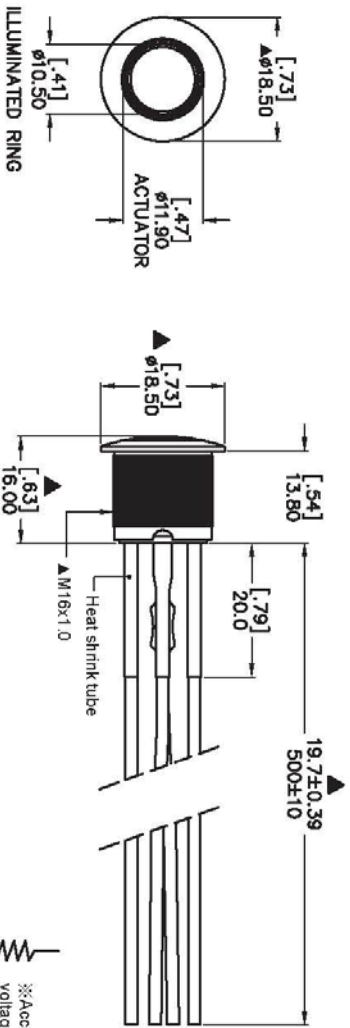
Wiring:

- 1.Solder the terminals using a 60W soldering iron at 280°C within 3 seconds. (Sn-Ag-Cu type solder is recommended.)
- 2.When soldering, be sure to keep the soldering iron as far away from the housing as possible.
- 3.Also ensure that no tensile force is applied to the terminal. Do not bend the terminal or apply excessive force to the terminal.

### 5. LED Specifications : (LED Without resistor)

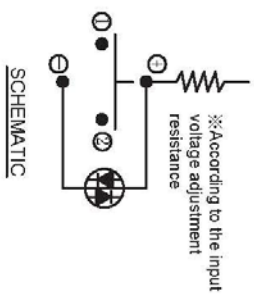
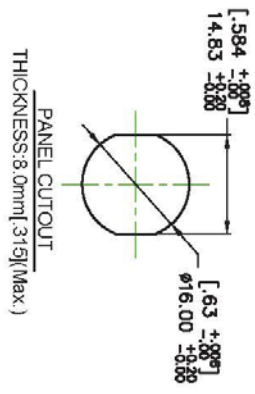
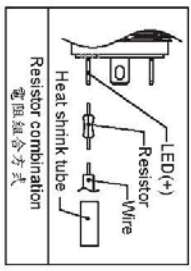
Color	VF(v) Min.	VF(v) MAX.	IF(Typ. )
White	2.8	3.7	20mA
Red	1.7	2.5	20mA
yellow	1.7	2.5	20mA
Blue	2.8	3.7	20mA
Green	2.8	3.7	20mA
Orange (Amber)	1.7	2.5	20mA





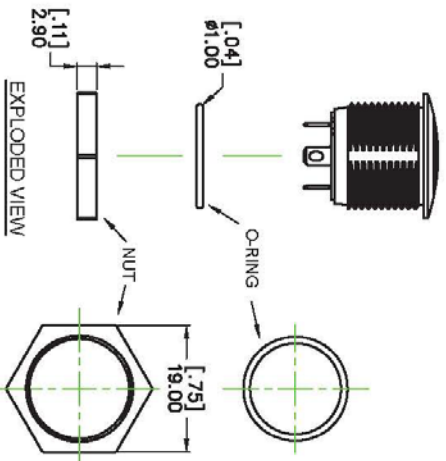
Multi-wire lead AWG20 section  
0.6mm<sup>2</sup> UL approved

SWITCH	WIRE
Terminal 1	BLACK
Terminal 2	BLACK
LED+	RED
LED-	GREEN



- Specifications:
- Rating : 2AV/36VDC.
  - Electrical Life : 200,000 Make-And-Break Cycles At Full Load
  - Mechanical Life : 1,000,000 Cycles.
  - Insulation Resistance : 1,000 MΩ Min. at 500VDC.
  - Dielectric Strength : 2,000V RMS@sea level.
  - Contact Resistance : 50 mΩ Max.  
Note: When the switches with the wire assembly, we only test the contact resistance and will not test the contact resistance on the wire.
  - Operation Temperature : -20°C~+70°C.
  - Travel : About 2.0mm±0.20mm
  - Operation Pressure : 4.5N±1.5N.
  - Ingress Protection : IP67.
  - Torque : 11.5 kgf · cm.
  - Current limiting resistor is required to limit LED forward current to 20mA.

- MATERIAL:
- Bushing: Aluminum alloy.
  - Base: PBT(UL-94V0).
  - Actuator: PC(Translucent UL-94V2).
  - Cap: Aluminum alloy.
  - Spring: Steel.
  - Sealing: Silicone(Translucent).
  - O-Ring: Silicone(Nickel Plated).
  - Nut: Brass(Nickel Plated).
  - Terminal: Brass Gold flash plated.
  - Contact: Silver alloy.



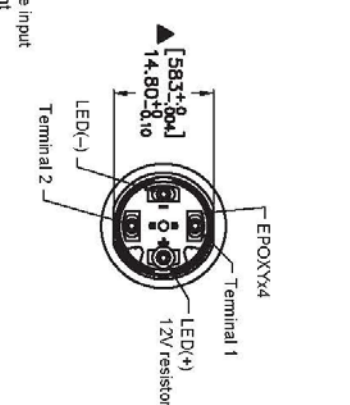
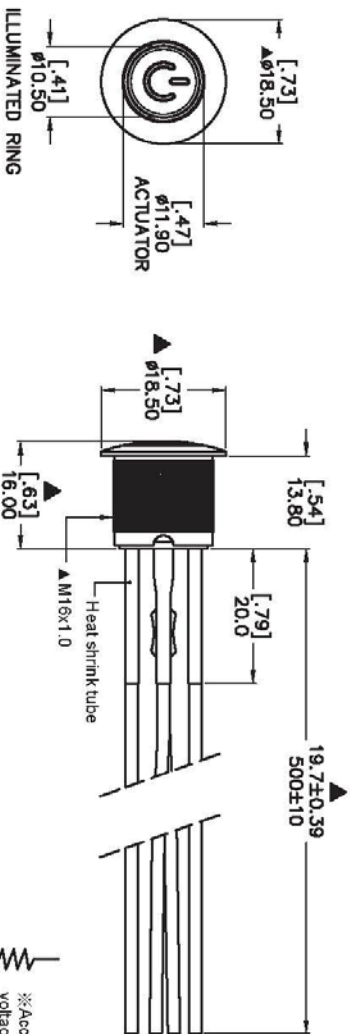
### MPB16-XXRE-X-XR-XV

Body type & color	Button type	Light type	LED color
CA AL alloy	R Round	E Ring	1 White
CB AL alloy	R Round	E Ring	3 Red
CB Black Anodized	R Round	E Ring	5 Yellow
	R Round	E Ring	6 Green
	R Round	E Ring	7 Blue

**TOLERANCE (公差):**

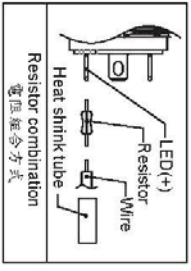
0.00 mm ± 0.25mm
0.0 mm ± 0.40mm
ANGULAR: ±5°

ACCESSORIES	Terminal plating
Resistance (About LED Voltage)	R Gold flash
0 Without Resistance	R Gold flash
3V LED input 3 VDC/47Ω	R Gold flash
6V LED input 6 VDC/180Ω	R Gold flash
12V LED input 12 VDC/470Ω	R Gold flash
24V LED input 24 VDC/1000Ω	R Gold flash
※ om's value of resistance tolerance: ±5%	
	J Solder terminal
	T1 Wire length 500mm

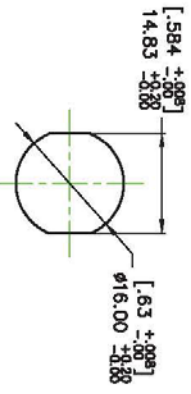


Multi-wire lead AWG20 section  
0.6mm<sup>2</sup>, UL approved

SWITCH	WIRE
Terminal 1	BLACK
Terminal 2	BLACK
LED+	RED
LED-	GREEN

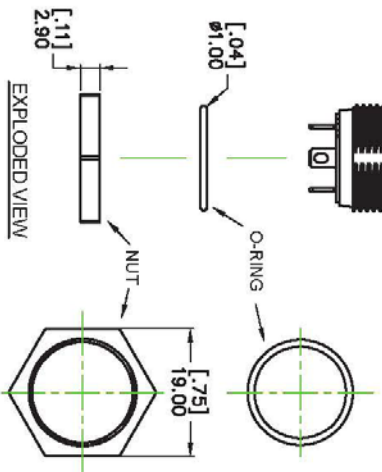


PANEL CUTOUT  
THICKNESS: 8.0mm( 315)(Max.)



- Specifications:
- Rating : 2A/36VDC
  - Electrical Life : 200,000 Make-And-Break Cycles At Full Load
  - Mechanical Life : 1,000,000 Cycles
  - Insulation Resistance : 1,000 MΩ Min. at 500VDC.
  - Dielectric Strength : 2,000V RMS@sea level.
  - Contact Resistance : 50 mΩ Max.
- Note : When the switches with the wire assembly, we only test the electric conduction and will not test the contact resistance on the wire.
- Operation Temperature : -20°C~+70°C.
  - Travel : About 2.0mm±0.20mm
  - Operation Pressure : 4.5N±1.5N
  - Ingress Protection : IP67.
  - Torque : 11.5 kgf · cm.
  - Current limiting resistor is required to limit LED forward current to 20mA.

- MATERIAL:
- Bushing : Aluminum alloy.
  - Base : PBT(UL-94V0).
  - Actuator : PC(Translucent UL-94V2).
  - Cap : Aluminum alloy.
  - Spring : Steel
  - Sealing : Silicone(Translucent).
  - O-ring : Silicone(Translucent).
  - Nut : Brass(Nickel Plated).
  - Terminal : Brass, Gold flash plated.
  - Contact : Silver alloy.

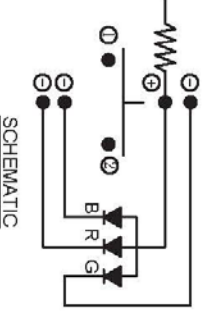
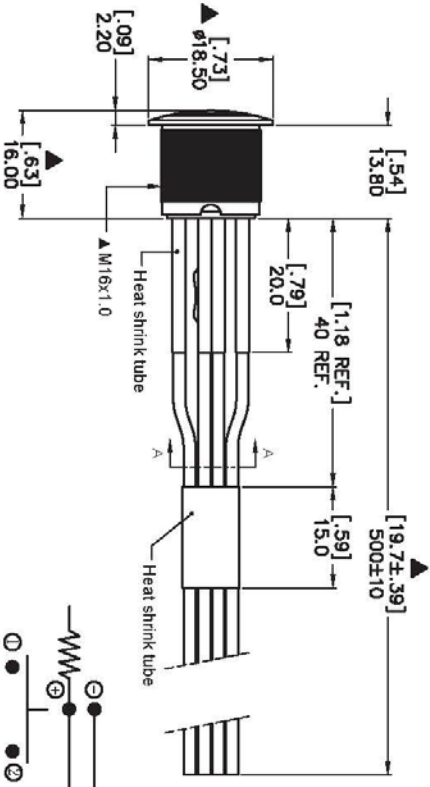
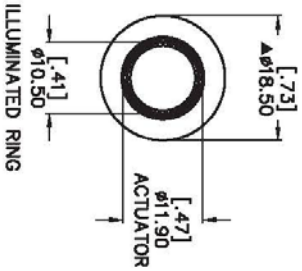
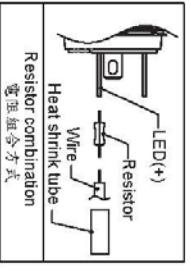


### MPB16-XXRP-X-XR-XV

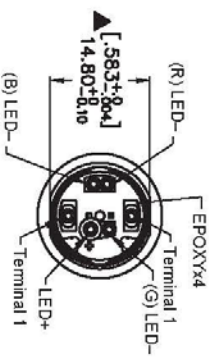
Body type & color	CA AL alloy Natural Anodized
CB	AL alloy Black Anodized
Button type	R Round
Light type	P Power Logo
LED color	1 White 3 Red 5 Yellow 6 Green 7 Blue
Accessories	Resistance (About LED Voltage) 0 Without Resistance 3V LED input 3 VDC/470 6V LED input 6 VDC/180Ω 12V LED input 12 VDC/470Ω 24V LED input 24 VDC/1000Ω
Terminal plating	R Gold Flash
Terminal shape	J Solder terminal T1 Wire length 500mm

\* ohms value of resistance tolerance ±5%

TOLERANCE (公差):  
0.00 mm ± 0.25mm  
0.0 mm ± 0.40mm  
ANGULAR: ±5°

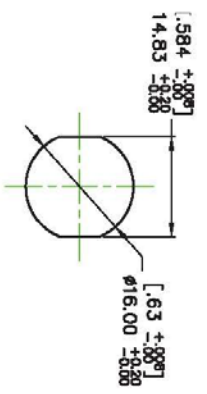


※ According to the input voltage adjustment resistance



Multi-wire lead AWG20 section  
0.6mm<sup>2</sup> UL approved

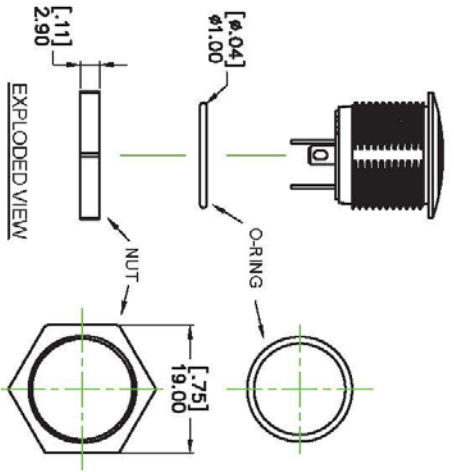
SWITCH	WIRE
Terminal 1	BLACK
Terminal 2	BLACK
LED+	WHITE
(R) LED-	RED
(B) LED-	BLUE
(G) LED-	GREEN



PANEL CUTOUT  
THICKNESS: 8.0mm(31.5)(Max.)

- Specifications:
- 1.Rating : 2A/36VDC.
  - 2.Electrical Life : 200,000 Make-And-Break Cycles At Full Load.
  - 3.Mechanical Life : 1,000,000 Cycles.
  - 4.Insulation Resistance : 1,000 MΩ Min. at 500VDC.
  - 5.Dielectric Strength : 2,000V RMS@sea level.
  - 6.Contact Resistance : 50 mΩ Max.
- Note: When the switches with the wire assembly, we only test the electric conduction and will not test the contact resistance on the wire.
- 7.Operation Temperature : -20°C~+70°C.
  - 8.Travel : About 2.0mm±0.20mm
  - 9.Operation Pressure : 4.5N±1.5N.
  - 10.Ingress Protection : IP67.
  - 11.Torque : 11.5 Kgf · cm.
  - 12.Current limiting resistor is required to limit LED forward current to 20mA.

- MATERIAL:
- Bushing: Aluminum alloy.
  - Base: PBT(UL-94V0).
  - Actuator: PC(Translucent UL-94V2).
  - Cap: Aluminum alloy.
  - Spring: Steel.
  - Sealing: Silicone(Translucent).
  - O-ring: Silicone(Translucent).
  - Nut: Brass(Nickel Plated).
  - Terminal: Brass, Gold flash plated.
  - Contact: Silver alloy.



MPB16-XXRP-X-R-XV

Body type & color	Al alloy
CA	Natural Anodized
CB	Black Anodized
Button type	Round
Light type	Ring
LED color	RED/RENVBLUE

Accessories	Resistance (about LED Voltage)
0	Without Resistance
3V	LED input 3 VDC, 47Ω
6V	LED input 6 VDC, 180Ω
12V	LED input 12 VDC, 470Ω
24V	LED input 24 VDC, 1000Ω

※ omits value of resistance tolerance: ±5%

Terminal plating	Gold Flash
Terminal shape	Solder terminal
Wire length	500mm

TOLERANCE (公差):

0.00 mm ± 0.25mm

0.0 mm ± 0.40mm

ANGULAR: ±5°