

# PBA series

Piezo switches Ø 22 mm



## DISTINCTIVE FEATURES

Bushing diameter 16 (.630), 19 (.748), 22 (.866) or 30 mm (1.181)

Sealed to IP68 and IP69K (switches mounted on panel)

Easy to clean metal surface

Very long life expectancy

Ring or dot illumination



## ENVIRONMENTAL SPECIFICATIONS

- Sealing : IP68 per IEC 60529, IP69K per DIN 40050-9 (switches mounted on panel)
- Vibration resistance : 10-500 Hz / 10 g per IEC 60068-2-6
- Operating temperature : -40 °C to +75 °C (-40 °F to + 167 °F)
- EMC compatibility according to EN 61058-1 for the whole range
- EMC compatibility according to EN 61000-4 & EN61000-6-2 for model 1A (code 002)
- Extreme thermal shock may briefly trigger the switch



## ELECTRICAL SPECIFICATIONS

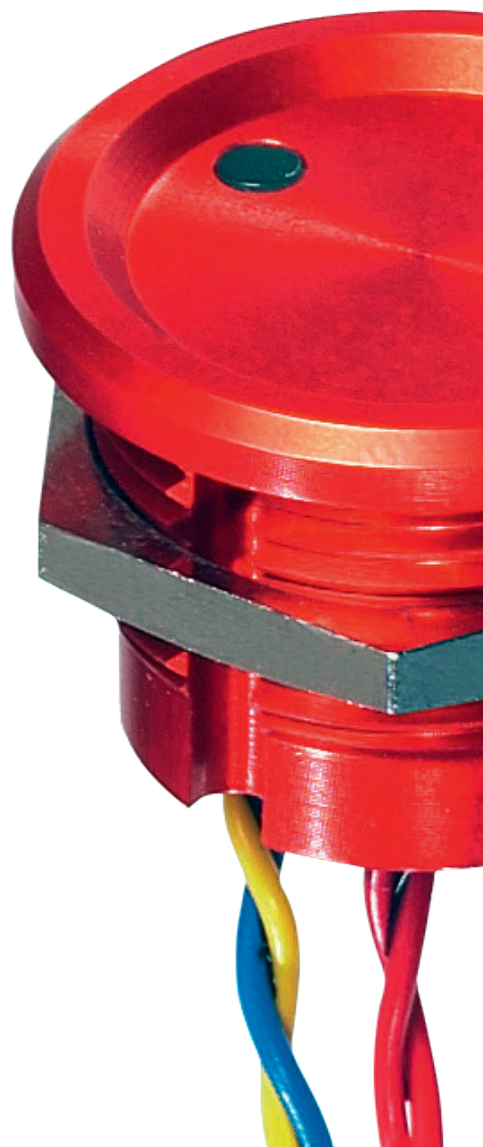
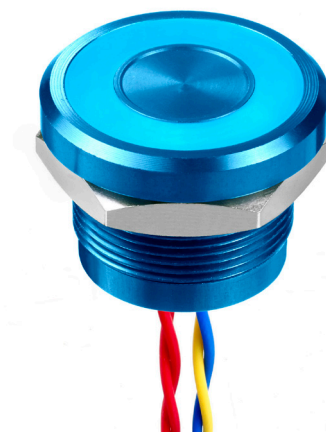
- Max. current/voltage rating with resistive load :
  - Function A : standard 200 mA 24 VAC/DC - option 1 A 24 VAC/DC
  - Function B : standard 100 mA 24 VAC/DC
- Switch resistance ON : 10 Ω max.
- Switch resistance OFF : 5 MΩ min.
- Life expectancy : 50 million cycles
- LED consumption : Illuminated dot 10 mA max.  
Illuminated ring 20 mA max. (functions A-B)
- Power consumption for function 1 :  
non-illuminated 10 mA - illuminated 30 mA



## GENERAL SPECIFICATIONS

- Operating force : 2 to 6 N
- Torque : 2.5 Nm min. - 3 Nm max.

The company reserves the right to change specifications without notice.



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## MATERIALS

- Case : aluminum, anodized or stainless steel 316L
- Multi-wire leads section 0.22 mm<sup>2</sup> length 300 mm, twisted by pair
- Cable, length 300 mm, section depending on switch model
- PC terminals : bronze, tin plated

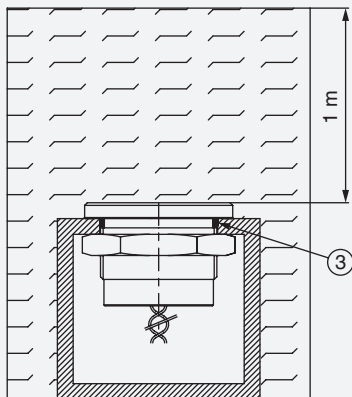
APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.

**Note :** to maintain the ESD performance, always add a ground washer when the panel is made of non-conductive material (PVC, polycarbonate).  
For part numbers, see "Mounting accessories" on the following pages.



## SEALING

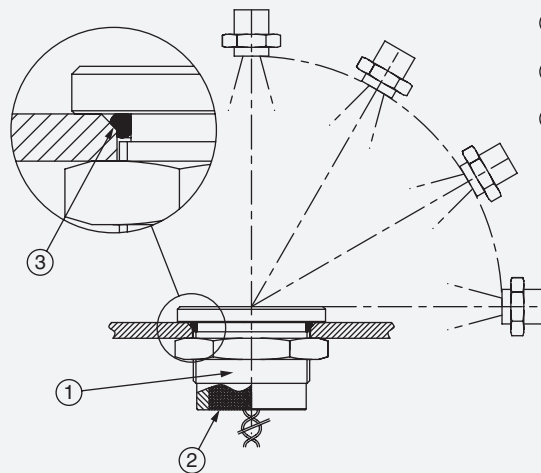
### SEALING IP68



### Continuous immersion in water IP68 test conditions

Continuous immersion in water  
(1 m, 24 hours)

### SEALING IP69K



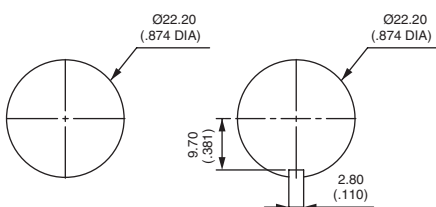
### High pressure, high temperature wash down IP69K test conditions

- . Pressure : 80 - 120 bars
- . Distance : 15 cm
- . Temperature : 80 °C ± 5 °C (176 °F ± 41 °F)
- . Flow : 14 - 16 l/mn
- . Duration : 30 seconds per position



## PANEL CUT-OUT

MODELS Ø22 (.866)

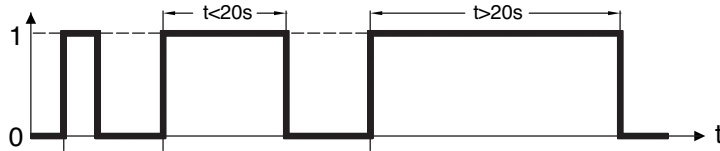




## ELECTRICAL FUNCTIONS

FINGER PRESSURE APPLIED TO SWITCH

1 : pressure / 0 : no pressure

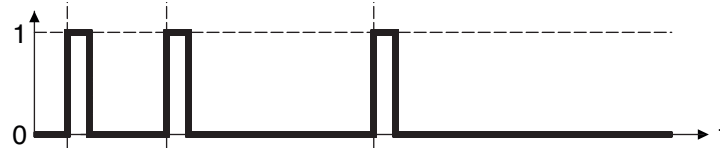


OUTPUT

1 : closed output / 0 : open output

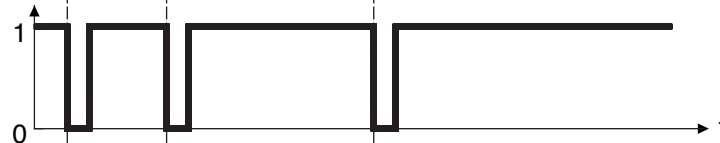
Momentary NO (pulse)

No external power supply required



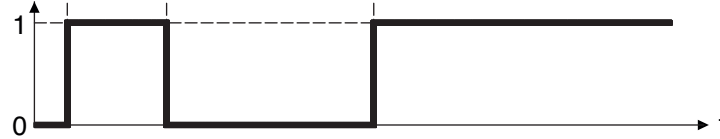
Momentary NC (pulse)

No external power supply required



Latching (ON - OFF)

Requires external power supply



## WIRING DIAGRAMS

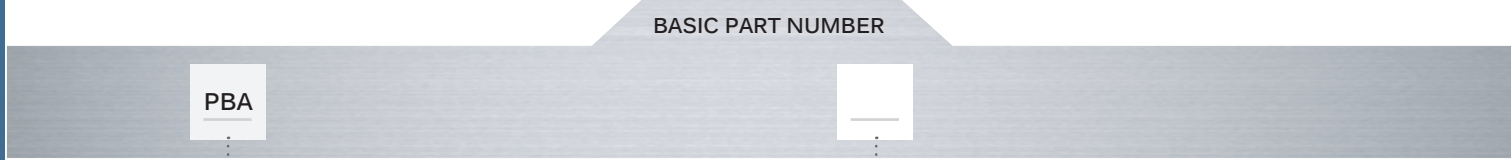
	Non-illuminated	1 LED *	2 LEDs	3 LEDs
Momentary NO				
Momentary NC				
Latching (ON - OFF)				

Legend : C : yellow, D : blue, B : black , A : same color as LED      \* LED color is indicated by protective resin color on bottom of unit.

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## BUILD YOUR PART NUMBER



SERIES

BUSHINGS / OPERATORS

**R2**

Flat, operator height 3 mm (.118) - Not available w. illuminated ring.

**RY**

With chamfer, operator height 4.5 mm (.177). Available with thin or large illuminated ring only.

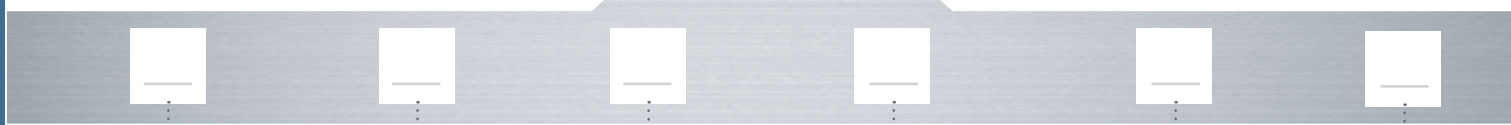
**R6**

With finger location, operator height 3 mm (.118). Not available with illuminated ring.

**RZ**

Flat, operator height 4.5 mm (.177). Available with thin or large illuminated ring only.

### OPTIONS



ELECTRICAL FUNCTIONS

TERMINALS

COLORS / MATERIALS

RATINGS

TYPE OF ILLUMINATION/VOLTAGE

<b>A</b>	NO (pulse)
<b>B</b>	NC (pulse)
<b>1</b>	ON - OFF (requires external power supply - Illumination types V, Y and Z only - only one LED color)

<b>F</b>	Flying leads
<b>C</b>	Cable

<b>0</b>	Natural anodized
<b>1</b>	Blue anodized
<b>2</b>	Black anodized
<b>3</b>	Green anodized
<b>5</b>	Gold anodized
<b>6</b>	Red anodized
<b>B</b>	Stainless steel 316L

Bold = standard

<b>000</b>	Standard
<b>002</b>	1 A 24 VAC/DC (NO pulse only, function A)

<b>Blank</b>	Non-illuminated
<b>C</b>	thin ring - 5 VDC
<b>D</b>	thin ring - 12 VDC
<b>E</b>	thin ring - 24 VDC
<b>F</b>	large ring - 5 VDC
<b>G</b>	large ring - 12 VDC
<b>H</b>	large ring - 24 VDC
<b>L*</b>	dot - 5 VDC
<b>P*</b>	dot - 12 VDC
<b>J*</b>	dot - 24 VDC
<b>V*</b>	dot - µcontroller driven
<b>Y</b>	thin ring - µcontroller driven
<b>Z</b>	large ring - µcontroller driven

\*Dot illumination only available with LED colors 0B, 0G, 0S, 0Y, 0W and SG.

LED COLORS

LED COLORS (CONTINUED)

<b>Blank</b>	Non-illum.
<b>0B</b>	Blue
<b>0G</b>	Green
<b>0S</b>	Red
<b>0Y</b>	Yellow
<b>0W</b>	White

<b>SG</b>	Red/green (dot only)
<b>2A</b>	Red/green
<b>2B</b>	Red/yellow
<b>2C</b>	Red/blue
<b>2D</b>	Red/white

<b>2E</b>	Green/blue
<b>2F</b>	Green/yellow
<b>2G</b>	Green/white
<b>2H</b>	Blue/yellow
<b>2I</b>	Blue/white
<b>2K</b>	Yellow/white

<b>3A</b>	Red/green/blue
<b>3B</b>	Red/green/yellow
<b>3D</b>	Red/green/white
<b>3E</b>	Red/blue/yellow
<b>3F</b>	Red/blue/white
<b>3G</b>	Red/yellow/white

<b>3H</b>	Green/blue/yellow
<b>3I</b>	Green/blue/white
<b>3J</b>	Green/yellow/white
<b>3K</b>	Blue/yellow/white

## ABOUT THIS SERIES

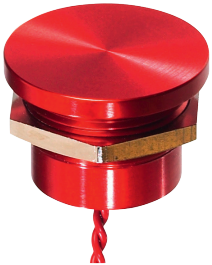
**Notice** : please note that not all combinations of above numbers are available. Refer to the following pages for further information.

**Mounting accessories** : standard hardware supplied : 1 hex nut 10-856-0 (25 mm ac. flats) and 1 O-ring  
Always add a ground washer U5737 when the panel is non-conductive (PVC, polycarbonate).

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## NON-ILLUMINATED OPERATOR HEIGHT 3 MM



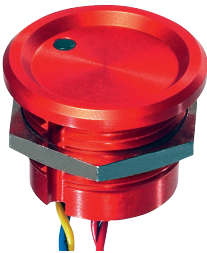
Flat

PBAR2

With finger location

PBAR6

## WITH ILLUMINATED DOT OPERATOR HEIGHT 3 MM



Flat

PBAR2

With finger location

PBAR6

## WITH THIN ILLUMINATED RING OPERATOR HEIGHT 4.50



Flat

PBARZ

With chamfer

PBARY

## WITH LARGE ILLUMINATED RING OPERATOR HEIGHT 4.50

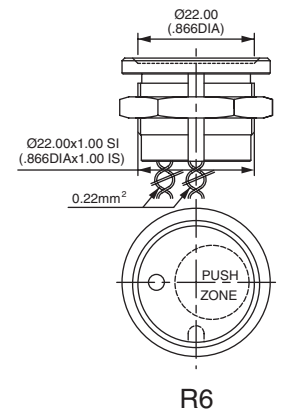
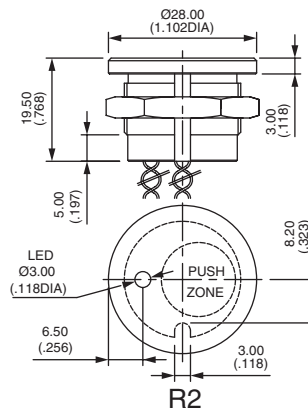
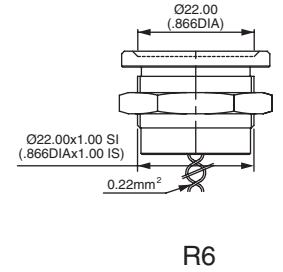
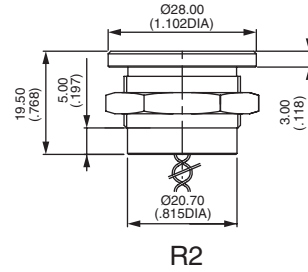


Flat

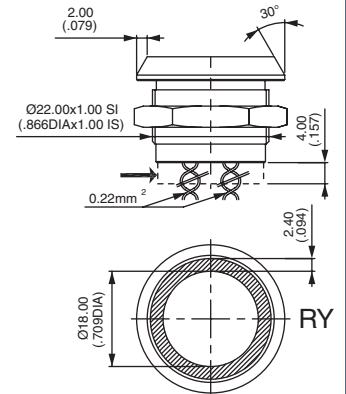
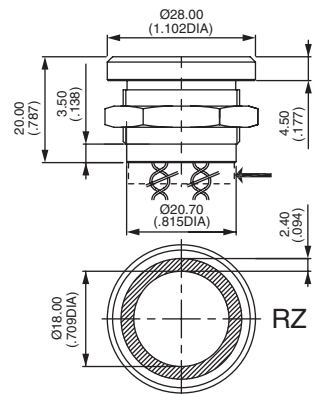
PBARZ

With chamfer

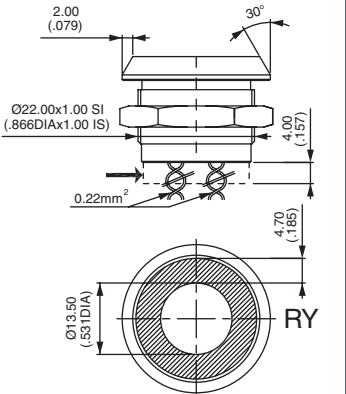
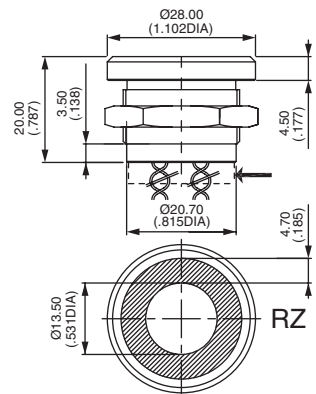
PBARY



### → DIMENSION OF ON-OFF MODELS



### → DIMENSION OF ON-OFF MODELS



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## ELECTRICAL FUNCTIONS

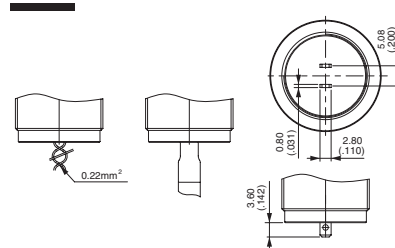


- A NO pulse
- B NC pulse
- 1 ON - OFF - Requires external power supply - Illumination types V, Y and Z only - one LED color only.

## TERMINALS



- F Flying leads
- C Cable



## CASE COLORS / MATERIALS



- 0 **Natural anodized aluminum**
- 1 Blue anodized aluminum
- 2 **Black anodised aluminum**
- 3 Green anodized aluminum
- 5 Gold anodized aluminum
- 6 Red anodised aluminum
- B **Stainless steel 316L**

Bold = standard



0

1

2

3

5

6

B

## RATINGS



- 000 Standard
- 002 1 A 24 VAC or DC (NO pulse only, function A)

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## TYPE OF ILLUMINATION / VOLTAGE



**Blank** Non-illuminated



- C** Thin ring - 5 VDC
- D** Thin ring - 12 VDC
- E** Thin ring - 24 VDC
- Y** Thin ring -  $\mu$ controller driven



- F** Large ring - 5 VDC
- G** Large ring - 12 VDC
- H** Large ring - 24 VDC
- Z** Large ring -  $\mu$ controller driven



- L** Dot - 5 VDC
- P** Dot - 12 VDC
- J** Dot - 24 VDC
- V** Dot -  $\mu$ controller driven

⚠ Dot illumination only available with LED colors : 0B, 0G, 0S, 0Y, 0W and SG.

## LED COLORS



**Blank** Non-illuminated

Integrated LED resistor

### Illuminated 1 LED \*

- 0B** : blue - **0G** : green - **0S** : red - **0Y** : yellow - **0W** : white
- SG** : red/green (reversed polarity LED - for dot illumination only)

### Illuminated 2 LEDs

- 2A** : red/green - **2B** : red/yellow - **2C** : red/blue - **2D** : red/white - **2E** : green/blue - **2F** : green/yellow - **2G** : green/white
- 2H** : blue/yellow - **2I** : blue/white - **2K** : yellow/white

### Illuminated 3 LEDs

- 3A** : red/green/blue - **3B** : red/green/yellow - **3D** : red/green/white - **3E** : red/blue/yellow - **3F** : red/blue/white
- 3G** : red/yellow/white - **3H** : green/blue/yellow - **3I** : green/blue/white - **3J** : green/yellow/white - **3K** : blue/yellow/white

\* LED color is indicated by protective resin color on bottom of unit.



0B



0G



0S



0Y



0W