

# 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)



## 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

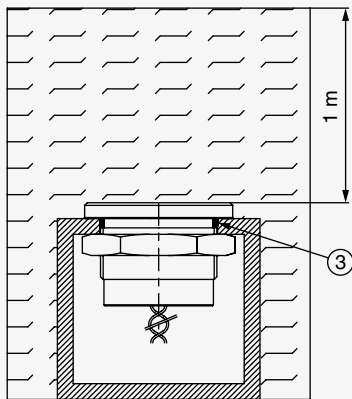
APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.

**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

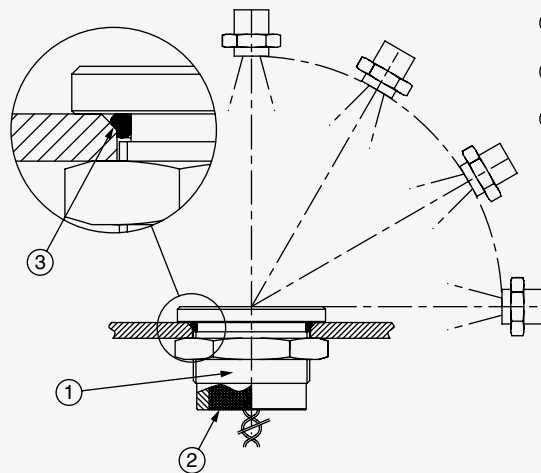
### SEALING IP68



#### Continuous immersion in water IP68 test conditions

Continuous immersion in water  
(1 m, 24 hours)

### SEALING IP69K



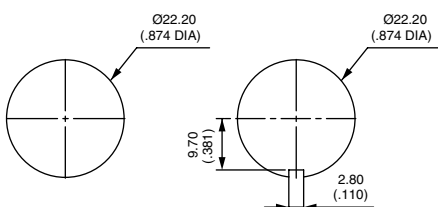
#### High pressure, high temperature wash down IP69K test conditions

- . 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)

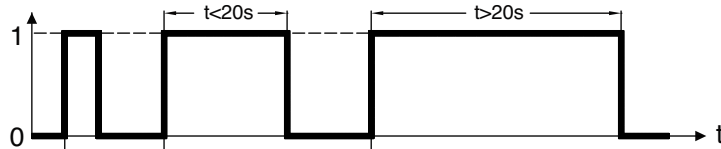




## ELECTRICAL FUNCTIONS

### FINGER PRESSURE APPLIED TO SWITCH

1 : pressure / 0 : no pressure

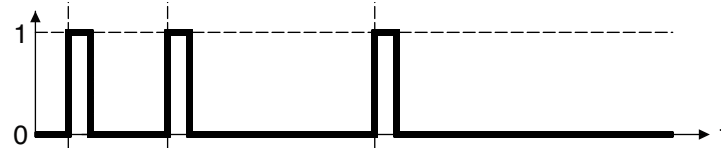


### OUTPUT

1 : closed output / 0 : open output

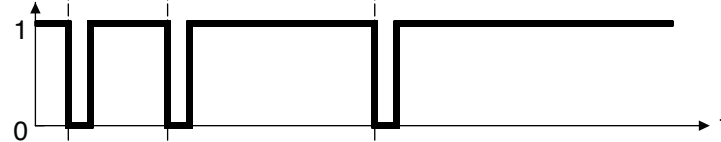
#### Momentary NO (pulse)

No external power supply required



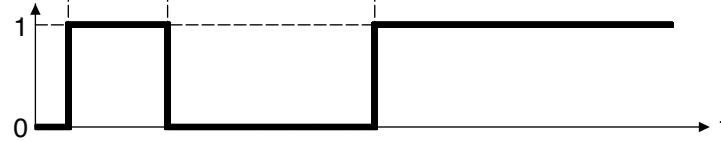
#### Momentary NC (pulse)

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)				

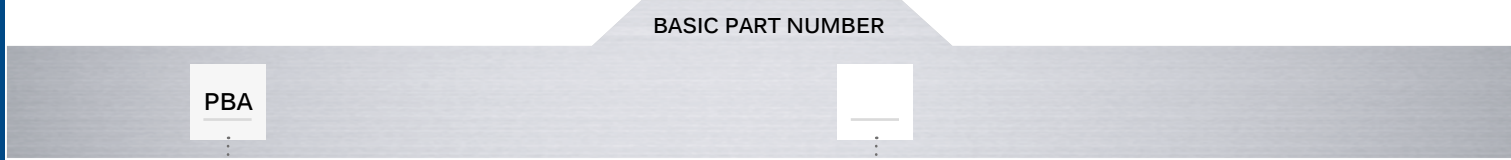
Legend : C : yellow, D : blue, B : black , A : same color as LED

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

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## BUILD YOUR PART NUMBER



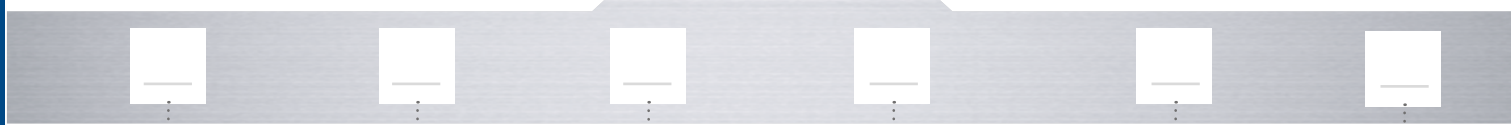
SERIES

BUSHINGS / OPERATORS

- R2** Flat, operator height 3 mm (.118) - Not available w. illuminated ring.
- R6** With finger location, operator height 3 mm (.118). Not available with illuminated ring.

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

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

- F** Flying leads
- C** Cable

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

Bold = standard

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

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

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

LED COLORS

LED COLORS (CONTINUED)

- Blank** Non-illum.
- 0B** Blue
- 0G** Green
- 0S** Red
- 0Y** Yellow
- 0W** White

- SG** Red/green (dot only)
- 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

- 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

## 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

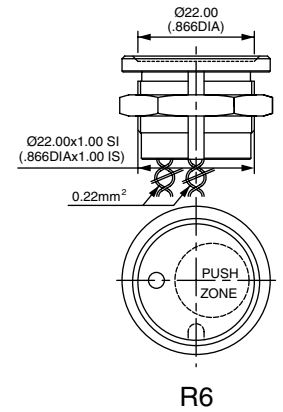
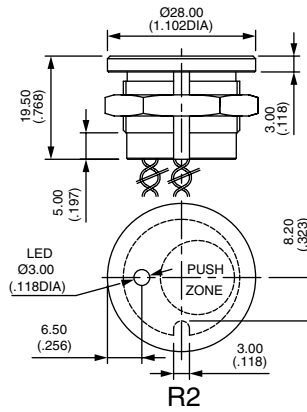
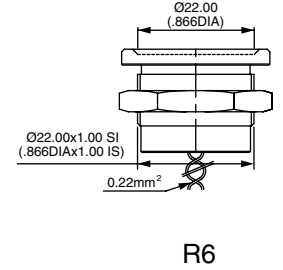
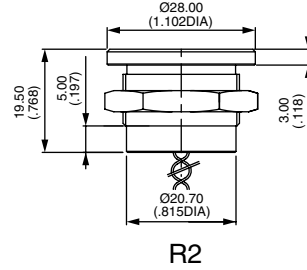


Flat

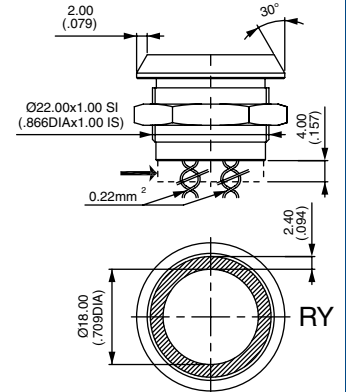
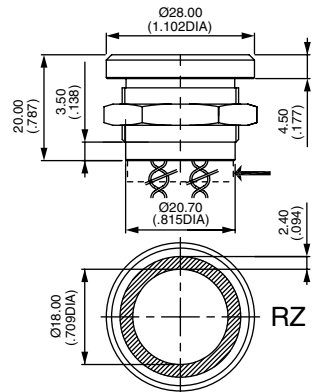
PBARZ

With chamfer

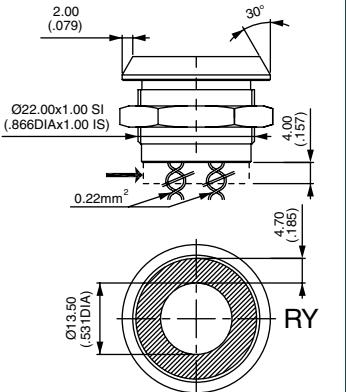
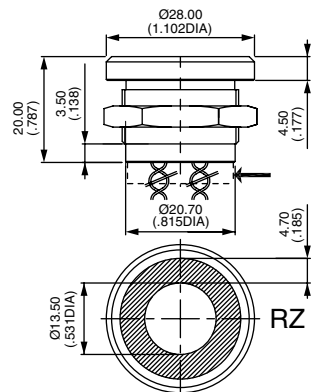
PBARY



### → DIMENSION OF ON-OFF MODELS



### → DIMENSION OF ON-OFF MODELS



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## ELECTRICAL FUNCTIONS

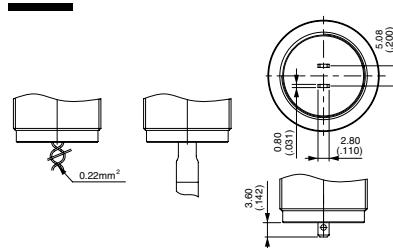


- A NO pulse
- B NC pulse
- 1 ON - OFF - Requires external power supply - Illumination types V, Y and Z only - one LED color only.

## 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

BASIC P/N

Blank Non-illuminated



**C** Thin ring - 5 VDC  
**D** Thin ring - 12 VDC  
**E** Thin ring - 24 VDC  
**Y** Thin ring - µcontroller driven



**F** Large ring - 5 VDC  
**G** Large ring - 12 VDC  
**H** Large ring - 24 VDC  
**Z** Large ring - µcontroller driven



**L** Dot - 5 VDC  
**P** Dot - 12 VDC  
**J** Dot - 24 VDC  
**V** Dot - µcontroller driven

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

## LED COLORS

BASIC P/N

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