

PBA series

Piezo switches Ø 19 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 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 : 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 mm² length 300 mm, twisted by pair
- Cable, length 300 mm, section depending on switch model
- PC terminals : bronze, tin plated

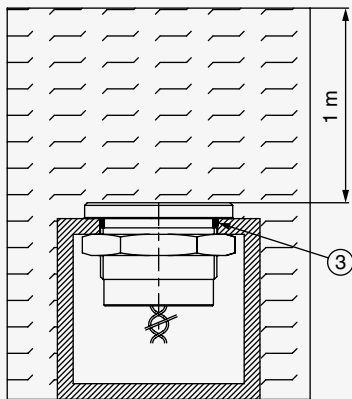
APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.

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.



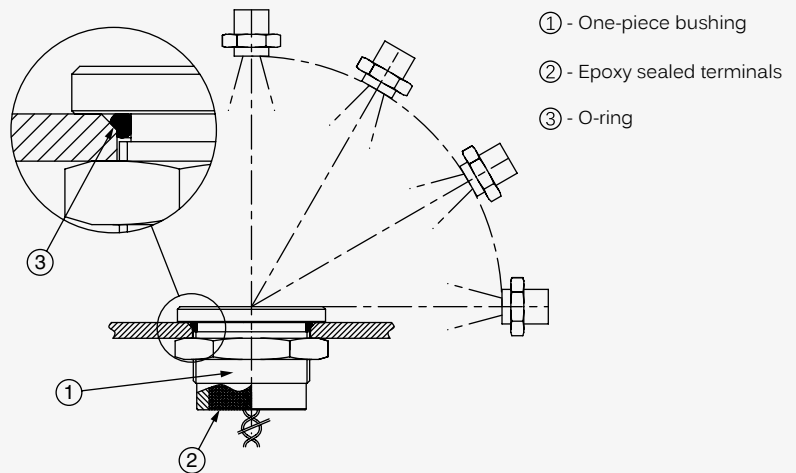
SEALING

SEALING IP68



Continuous immersion in water
IP68 test conditions
Continuous immersion in water
(1 m, 24 hours)

SEALING IP69K

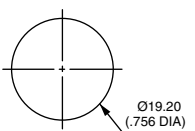


High pressure, high temperature wash down
IP69K test conditions
 . Pressure : 80 - 120 bars
 . Distance : 15 cm
 . Temperature : 80 °C ± 5 °C (176 °F ± 41 °F)
 . Flow : 14 - 16 l/mn
 . Duration : 30 seconds per position



PANEL CUT-OUT

MODELS Ø19 (.748)

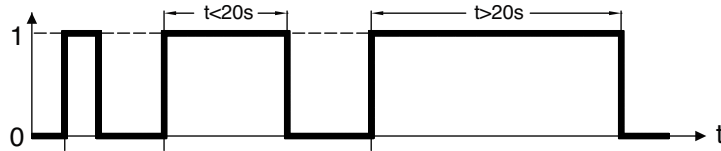




ELECTRICAL FUNCTIONS

FINGER PRESSURE APPLIED TO SWITCH

1 : pressure / 0 : no pressure

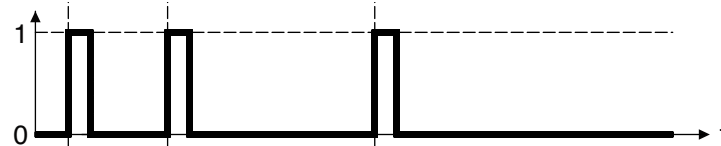


OUTPUT

1 : closed output / 0 : open output

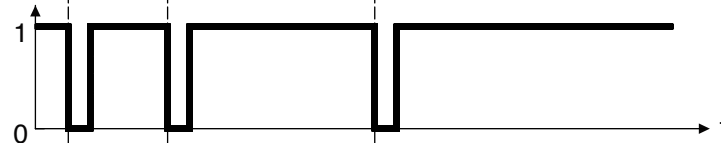
Momentary NO (pulse)

No external power supply required



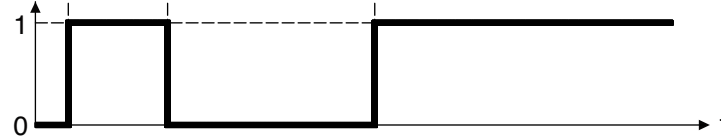
Momentary NC (pulse)

No external power supply required



Latching (ON - OFF)

Requires external power supply



WIRING DIAGRAMS

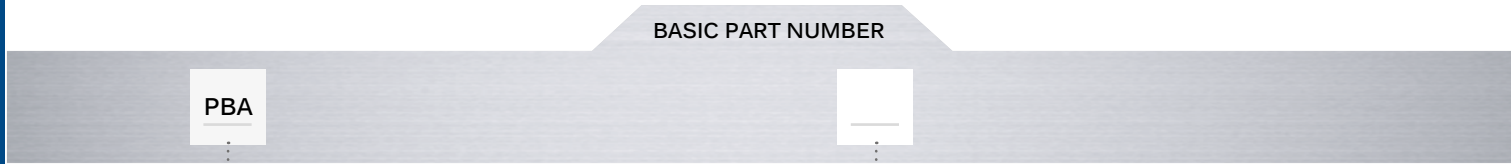
	Non-illuminated	1 LED *	2 LEDs	3 LEDs
Momentary NO				
Momentary NC				
Latching (ON - OFF)				

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

PBA series

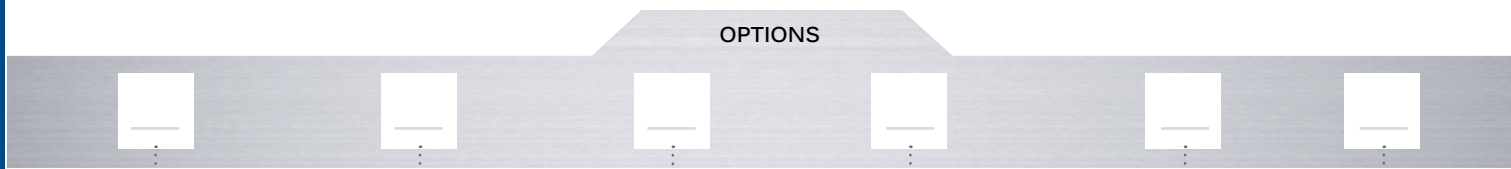
Piezo switches Ø 19 mm

BUILD YOUR PART NUMBER



BUSHINGS / OPERATORS

R9	Flat operator, height 3 (.118)
RA	With chamfer, height 3 (.118)



ELECTRICAL FUNCTIONS

A	NO (pulse)
B	NC (pulse)
1	ON - OFF (requires external power supply - cannot be combined with T5 operator - illumination type W only)

TERMINALS

F	Flying leads
C	Cable
P	Straight PC (T5 model, non-illuminated, functions A & B only)

COLORS / MATERIALS

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

Bold = standard

RATINGS

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

TYPE OF ILLUMINATION/ VOLTAGE

Blank	Non-illuminated
A	Standard ring - 5 VDC
N	Standard ring - 12 VDC
K	Standard ring - 24 VDC
W	Standard ring, microcontroller driven

LED COLORS

Blank	Non-illum.	2A	Red/green
0B	Blue	2B	Red/yellow
0G	Green	2C	Red/blue
0S	Red	2D	Red/white
0Y	Yellow	2E	Green/blue
0W	White	2F	Green/yellow


LED COLORS (CONTINUED)


2G	Green/white	3A	Red/green/blue	3H	Green/blue/yellow
2H	Blue/yellow	3B	Red/green/yellow	3I	Green/blue/white
2I	Blue/white	3D	Red/green/white	3J	Green/yellow/white
2K	Yellow/white	3E	Red/blue/yellow	3K	Blue/yellow/white
		3F	Red/blue/white		
		3G	Red/yellow/white		

For options not listed above, please contact APEM.

ABOUT THIS SERIES

On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart.

 **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 10-621 (19 mm ac. flats) and 1 O-ring.
Always add a ground washer U5736 (Ø19 mm) when the panel is non-conductive (PVC, polycarbonate).

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Ø19 (.748) - NON-ILLUMINATED OPERATOR HEIGHT 3 MM



- Flat
PBAR9
- With chamfer
PBARA

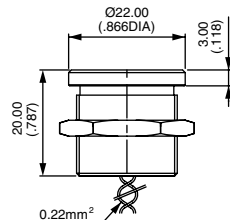
Wire colors : see "Wiring diagrams".

Ø19 (.748) - ILLUMINATED RING OPERATOR HEIGHT 3 MM

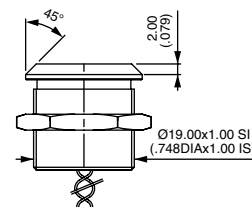


- Flat
PBAR9
- With chamfer
PBARA

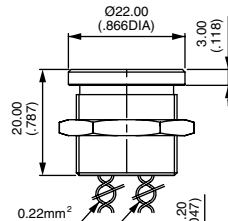
Wire colors : see "Wiring diagrams".



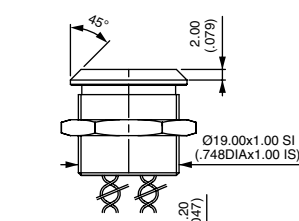
R9



RA



R9



RA

ELECTRICAL FUNCTIONS

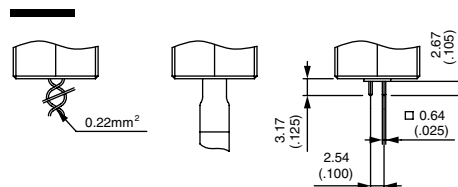


- A NO pulse
- B NC pulse
- 1 ON - OFF - Requires external power supply - Cannot be combined with T5 operator - Illumination type W only.

TERMINALS



- F Flying leads
- C Cable
- P Straight PC (T5 model, non-illuminated, functions A and B only)



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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)

TYPE OF ILLUMINATION / VOLTAGE



O

- Blank Non-illuminated
- A Thin ring - 5 VDC
- N Thin ring - 12 VDC
- K Thin ring - 24 VDC
- W Thin ring - µcontroller driven

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LED COLORS

BASIC P/N

Blank Non-illuminated

Integrated LED resistor

Illuminated 1 LED *

0B : blue - 0G : green - 0S : red - 0Y : yellow - 0W : white

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