PBA series

Piezo switches Ø 16 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

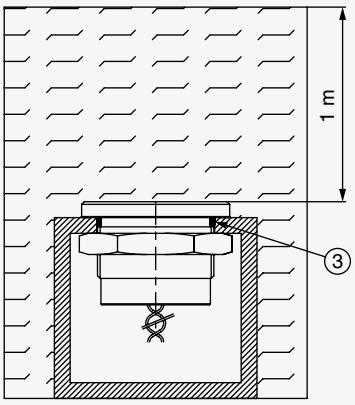
- Case : aluminum, anodized or stainless steel 316L
- Multi-wire leads section 0.22 mm^2 length 300 mm, twisted by pair
- Cable, length 300 mm, section depending on switch model
- PC terminals : bronze, tin plated

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.

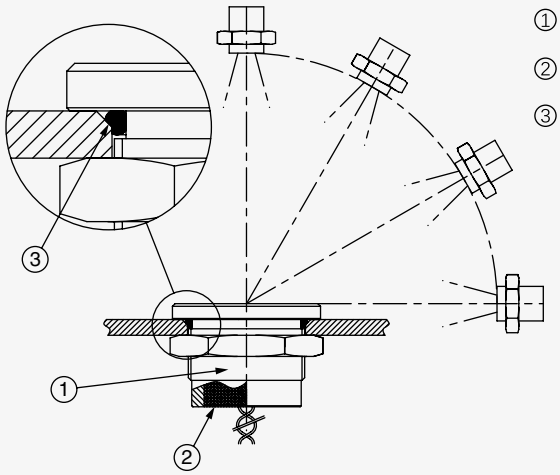
SEALING

SEALING IP68



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

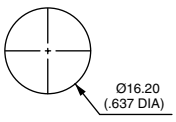
SEALING IP69K



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 Ø16 (.630)



PBA series

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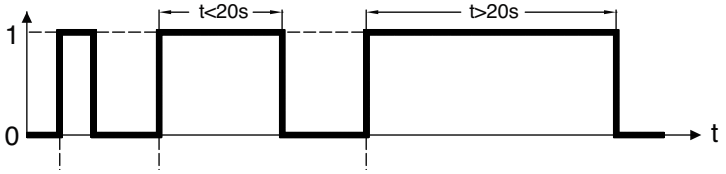
ELECTRICAL FUNCTIONS

FINGER PRESSURE APPLIED TO SWITCH

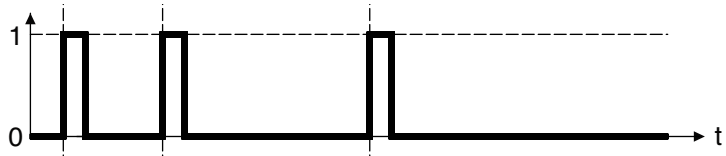
1 : pressure / **0** : no pressure



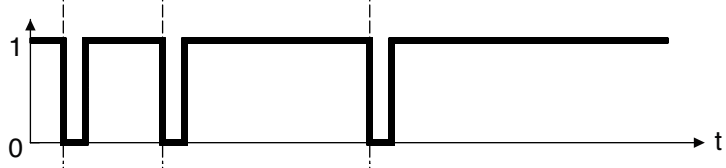
OUTPUT

1 : closed output / **0** : open output

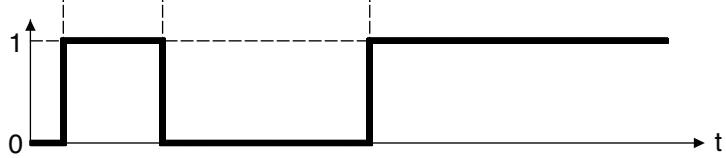
Momentary NO (pulse)
No external power supply required



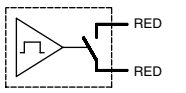
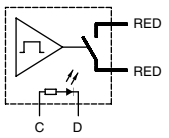
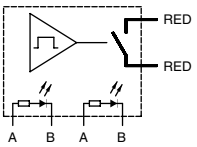
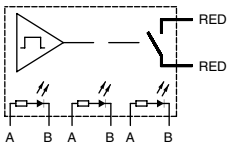
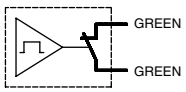
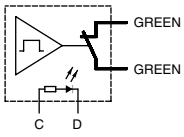
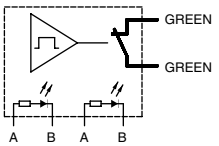
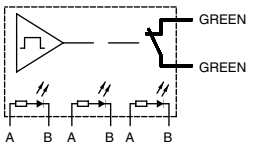
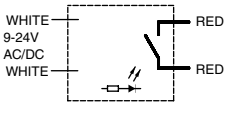
Momentary NC (pulse)
No external power supply required



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 16 mm

BUILD YOUR PART NUMBER

BASIC PART NUMBER

PBA

SERIES

BUSHINGS / OPERATORS

R1	Flat operator, height 4.50 (.177)
T5	Flat operator, height 1 (.039) (non illuminated)
R5	Operator with finger location, height 4.50 (.177) (non-illuminated)

OPTIONS

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.
0B	Blue
0G	Green
0S	Red
0Y	Yellow
0W	White
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

LED COLORS (CONTINUED)

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

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 and 1 O-ring.
Always add a ground washer U5735 (Ø16 mm) when the panel is non-conductive (PVC, polycarbonate).

PBA series

Piezo switches Ø 16 mm

Ø16 (.630) - NON-ILLUMINATED OPERATOR HEIGHT 4.50 MM

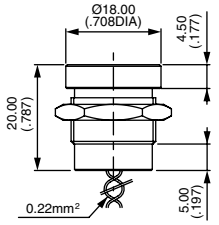


Flat

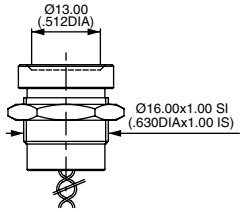
PBAR1

With finger location

PBAR5



R1



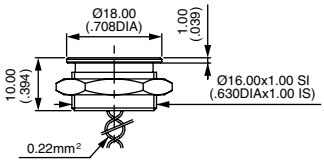
R5

Ø16 (.630) - NON-ILLUMINATED OPERATOR HEIGHT 1 MM



Flat

PBAT5

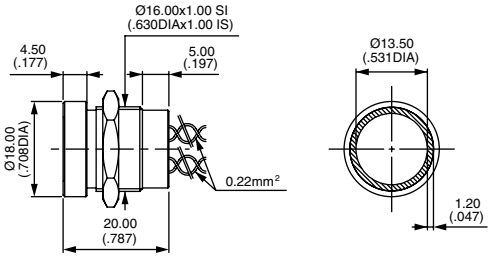


Ø16 (.630) - STANDARD ILLUMINATED RING OPERATOR HEIGHT 4.5 MM



Flat

PBAR1



PBA series

Piezo switches Ø 16 mm

ELECTRICAL FUNCTIONS

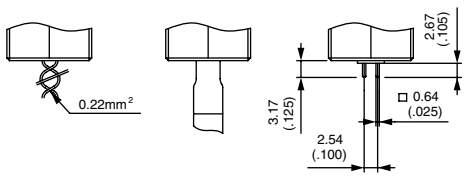
BASIC P/N [ ] [ ] [ ] [ ] [ ] [ ]

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

TERMINALS

BASIC P/N [ ] [ ] [ ] [ ] [ ] [ ]

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



CASE COLORS / MATERIALS

BASIC P/N [ ] [ ] [ ] [ ] [ ] [ ]

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



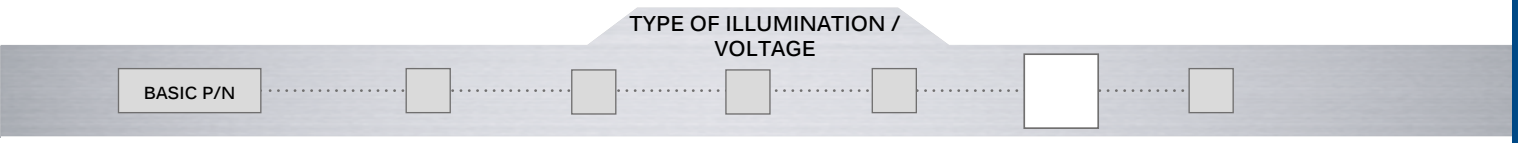
RATINGS

BASIC P/N [ ] [ ] [ ] [ ] [ ] [ ]

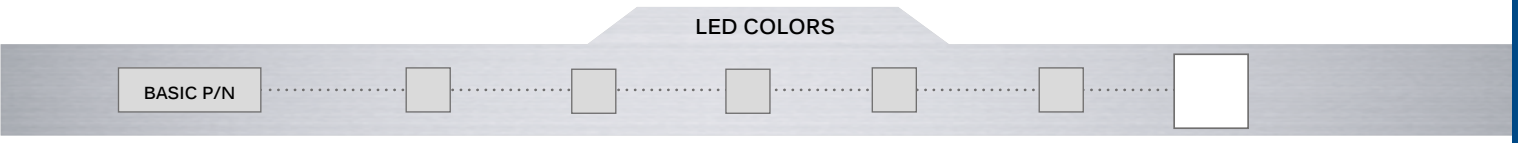
000	Standard
002	1 A 24 VAC or DC (NO pulse only, function A)

PBA series

Piezo switches Ø 16 mm



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



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