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.

PBA series

Piezo switches Ø 22 mm

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
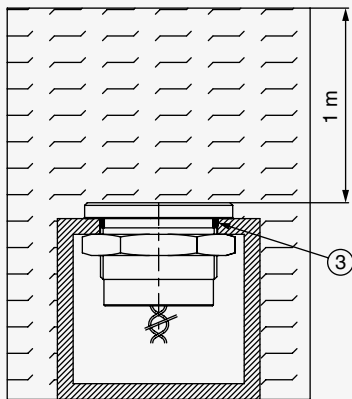- PC terminals : bronze, tin plated

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).
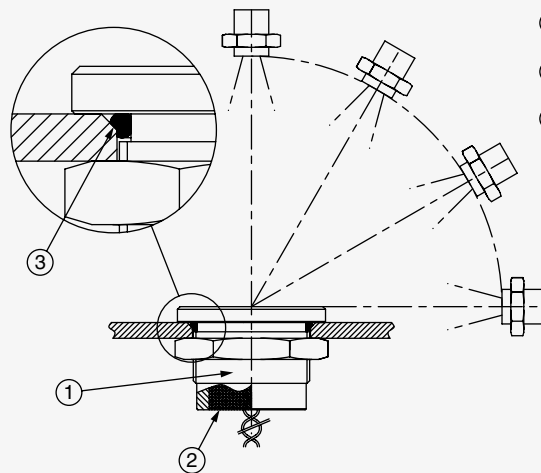For part numbers, see "Mounting accessories" on the following pages.

SEALING

SEALING IP68

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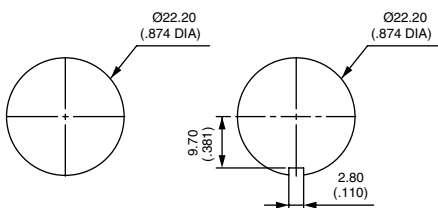Continuous immersion in water
(1 m, 24 hours)

SEALING IP69K

① - One-piece bushing

② - Epoxy sealed terminals

③ - O-ring

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
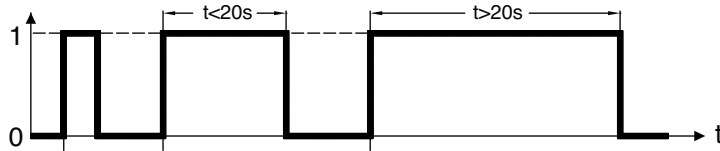. Duration : 30 seconds per position

PANEL CUT-OUT

MODELS Ø22 (.866)

Ø22.20
(.874 DIA)

Ø22.20
(.874 DIA)

9.70
(.381)

2.80
(.110)

PBA series

Piezo switches Ø 22 mm

⚡ ELECTRICAL FUNCTIONS

FINGER PRESSURE APPLIED TO SWITCH
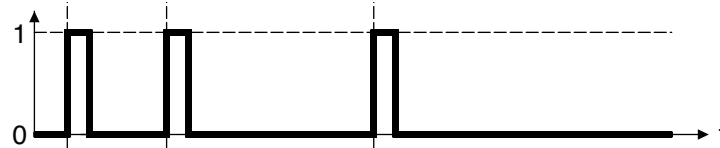**1** : pressure / **0** : no pressure

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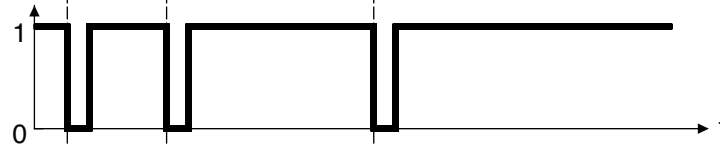**1 :** closed output / **0 :** open output

Momentary NO (pulse)
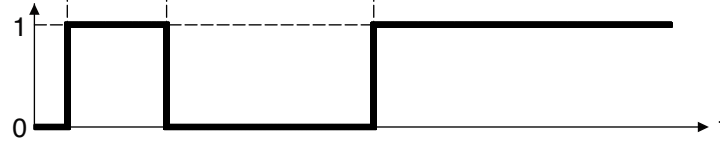No external power supply required

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	RED / RED	RED / RED — C D	RED / RED — A B A B	RED / RED — A B A B A B
Momentary NC	GREEN / GREEN	GREEN / GREEN — C D	GREEN / GREEN — A B A B	GREEN / GREEN — A B A B A B
Latching (ON - OFF)	WHITE 9-24V AC/DC WHITE — RED / RED	WHITE 9-24V AC/DC WHITE — RED / RED		

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 22 mm

⚙ BUILD YOUR PART NUMBER

BASIC PART NUMBER

| PBA | | |
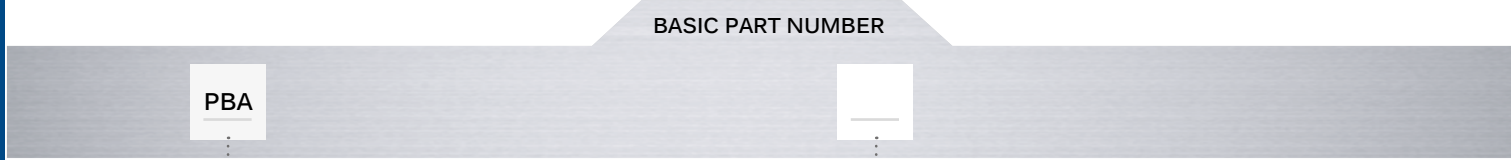
SERIES

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
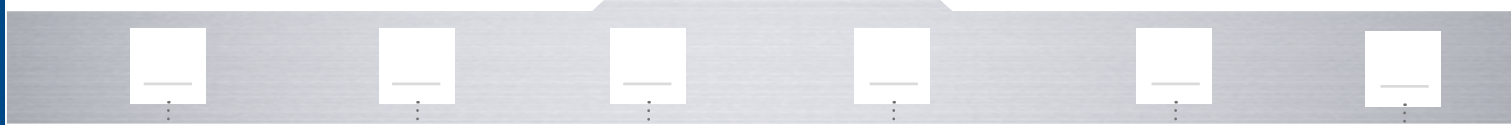
ELECTRICAL FUNCTIONS

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

TERMINALS

| F | Flying leads |
| C | Cable |

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
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

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

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

⚡ 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).

PBA series

Piezo switches Ø 22 mm

NON-ILLUMINATED
OPERATOR HEIGHT 3 MM

Flat
PBAR2

With finger location
PBAR6

Ø28.00
(1.102DIA)

19.50
(.768)

5.00
(.197)

3.00
(.118)

Ø20.70
(.815DIA)

R2

Ø22.00
(.866DIA)

Ø22.00x1.00 SI
(.866DIAx1.00 IS)

0.22mm²

R6

WITH ILLUMINATED DOT
OPERATOR HEIGHT 3 MM

Flat
PBAR2

With finger location
PBAR6

Ø28.00
(1.102DIA)

19.50
(.768)

3.00
(.118)

5.00
(.197)

8.20
(.323)

LED
Ø3.00
(.118DIA)

PUSH
ZONE

6.50
(.256)

3.00
(.118)

R2

Ø22.00
(.866DIA)

Ø22.00x1.00 SI
(.866DIAx1.00 IS)

0.22mm²

PUSH
ZONE

R6

WITH THIN ILLUMINATED RING
OPERATOR HEIGHT 4.50

Flat
PBARZ

With chamfer
PBARY

→ DIMENSION OF ON-OFF MODELS

Ø28.00
(1.102DIA)

20.00
(.787)

3.50
(.138)

4.50
(.177)

Ø20.70
(.815DIA)

2.40
(.094)

Ø18.00
(.709DIA)

RZ

2.00
(.079)

30°

Ø22.00x1.00 SI
(.866DIAx1.00 IS)

4.00
(.157)

0.22mm²

2.40
(.094)

Ø18.00
(.709DIA)

RY

WITH LARGE ILLUMINATED RING
OPERATOR HEIGHT 4.50
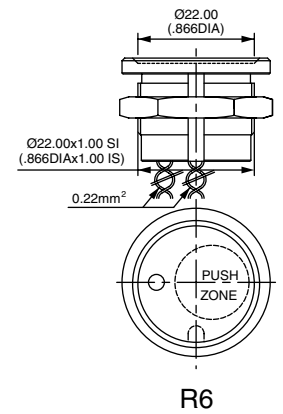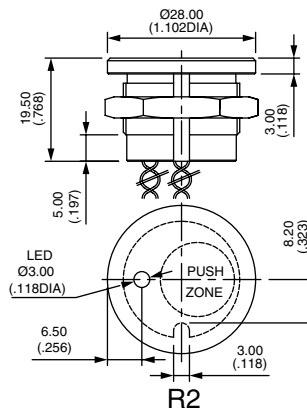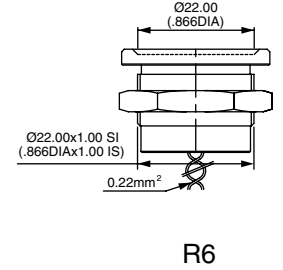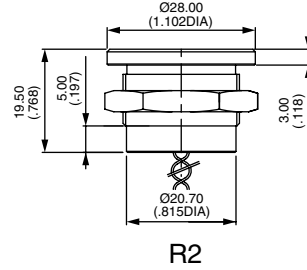
Flat
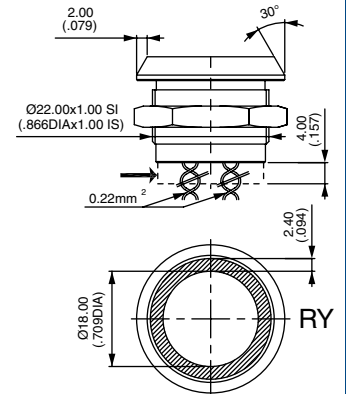**PBARZ**

With chamfer
PBARY

→ DIMENSION OF ON-OFF MODELS

Ø28.00
(1.102DIA)

20.00
(.787)

3.50
(.138)

4.50
(.177)

Ø20.70
(.815DIA)

4.70
(.185)

Ø13.50
(.531DIA)

RZ

2.00
(.079)

30°

Ø22.00x1.00 SI
(.866DIAx1.00 IS)

4.00
(.157)

0.22mm²

4.70
(.185)

Ø13.50
(.531DIA)

RY

PBA series

Piezo switches Ø 22 mm
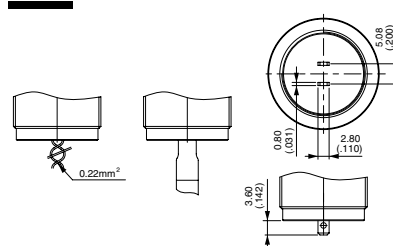
ELECTRICAL FUNCTIONS

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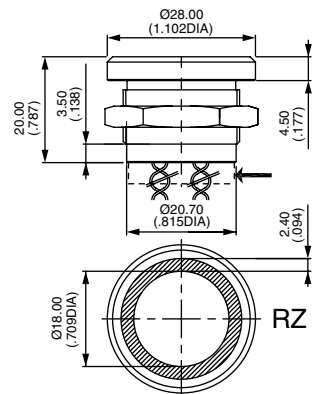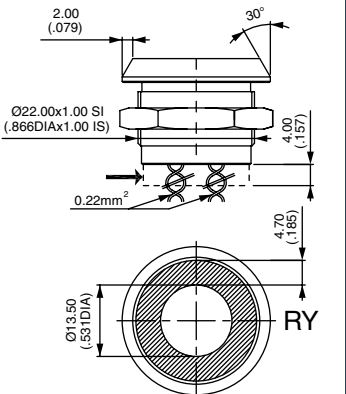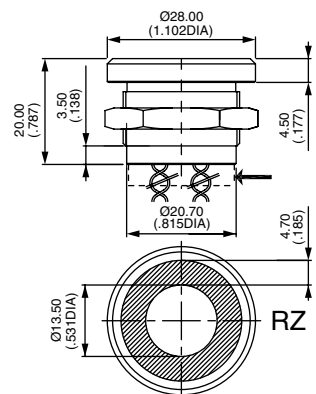
A NO pulse
B NC pulse
1 ON - OFF - Requires external power supply - Illumination types V, Y and Z only - one LED color only.

TERMINALS

| BASIC P/N | | | | | | | | |

F Flying leads
C Cable

0.22mm²

5.08 (.200)
0.80 (.031)
2.80 (.110)
3.60 (.142)

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

| 0 | 1 | 2 | 3 | 5 | 6 | B |

RATINGS

| BASIC P/N | | | | | | | | |

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

PBA series

Piezo switches Ø 22 mm

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 |

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