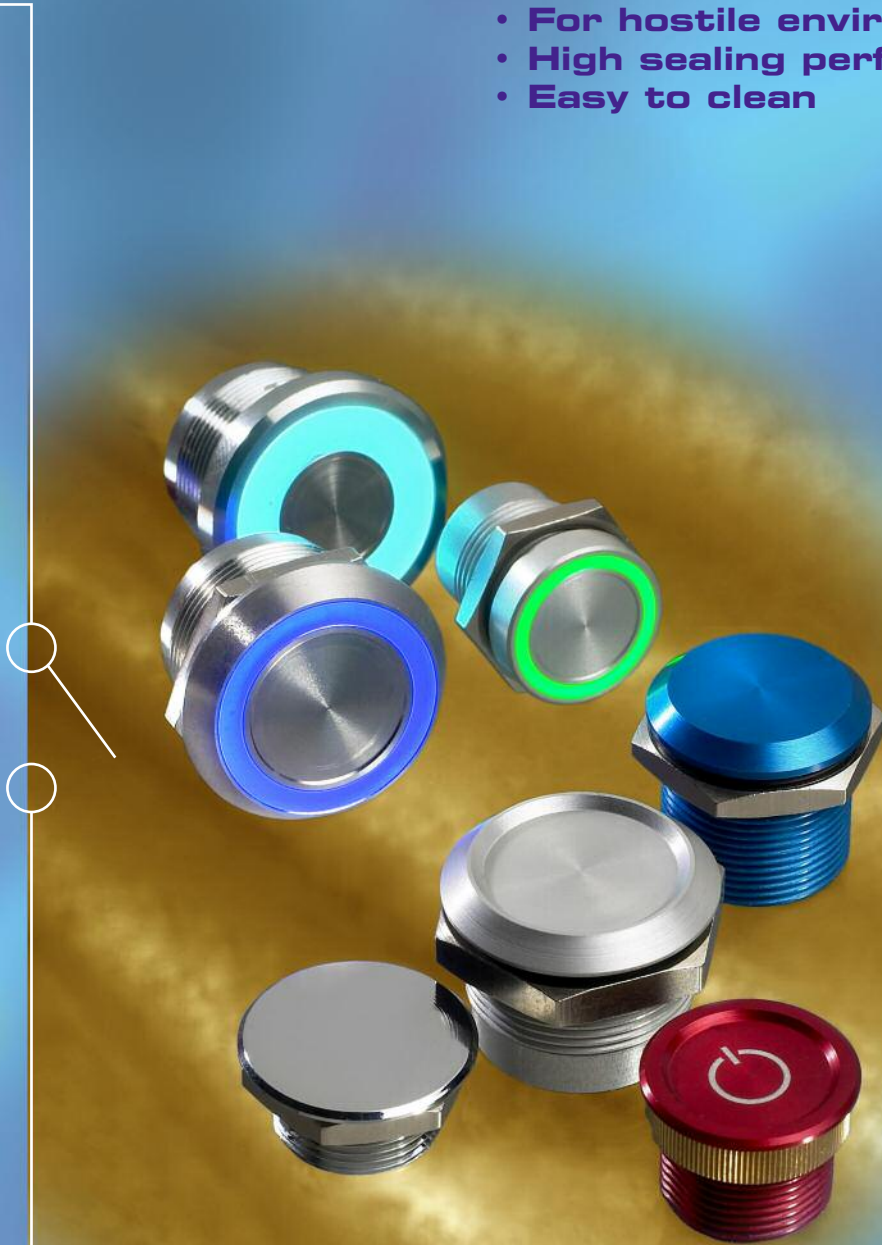# APEM

- For hostile environments
- High sealing performance
- Easy to clean

Wide range of custom options

Vertical integration and high technical expertise

VERTICAL INTEGRATION

From raw material transformation to finished products, APEM controls all phases of production, including screw machining, moulding, plating, marking and reliability testing. Product tooling, assembly machinery and test equipment are manufactured in-house by APEM's manufacturing engineering team.

HIGH TECHNICAL EXPERTISE

With over 50 years of switch design and manufacturing experience, APEM has developed into a world leader in the field of switching. APEM's R&D and design engineering departments develop new and custom products using the leading CAD/CAM software (AutoCAD, CATIA, Pro/ENGINEER...).

MANUFACTURING

Screw machining

Strength/stroke measuring equipment
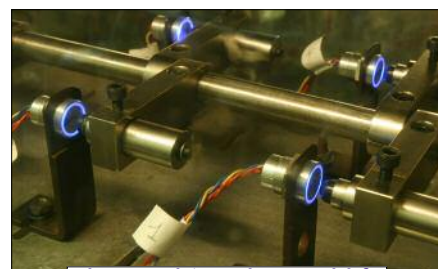
Laser etching

Electrical test

QUALIFICATION

Salt spray

Temperature

Electrical/mechanical life

APEM's vertical integration and engineering expertise have led to the development of custom piezo switches, designed to specific customer specifications. All APEM's piezo switches are produced in-house using high speed screw machining, allowing the manufacture of an endless array of shapes with minimum investment.

Product description

PBA piezo switches are based on the principle of piezoelectricity. The piezoelectric effect is the ability of some materials to generate an electric potential in response to an applied mechanical stress. The piezoelectric effect is also reversible; when an electric field is applied, a strain is produced. This technology is at the core of many high-end applications, including laser mirror alignment, fuel injectors and ultrasonic submarine detectors.

Metal case

Piezoelectric disk

Electronic circuit
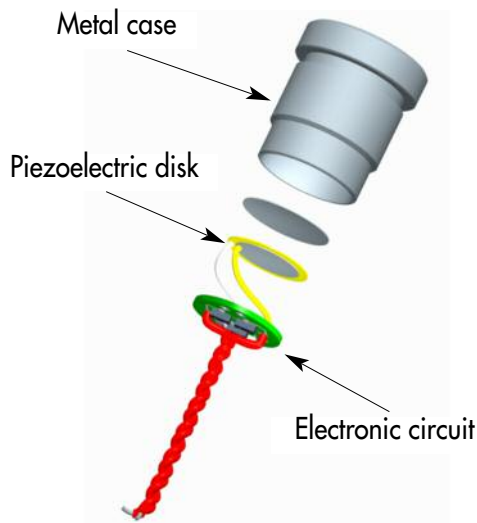
In APEM piezo switches, a force applied to the switch surface transfers to the piezo disk creating an electrical pulse. This electrical signal is converted to an expected electrical output through a customizable electronic circuit. The duration of the electrical signal depends on the speed, force and duration of actuation.

The output of the switch is closed for a specified pulse duration depending on the electrical function chosen (see next page).

Advantages

APEM piezo switches are based on a solid-state output allowing for a **very long life expectancy** (more than 50 millions cycles), ideal for demanding applications where reliability is most important.

The flat actuation surface is completely closed, preventing the intrusion of liquids or other contaminants, **perfect for surface cleaning** required in the medical and food-processing industries.

High performance sealing (IP68 and IP69K) is achieved due to the one-piece construction of the switch.

No external power supply is required.

The screw-machined metal housing construction and APEM's vertical integration allow for the manufacture of a **variety of shapes**.

A few applications

Medical
(sealing, no retention area)

Bath
(sealing)

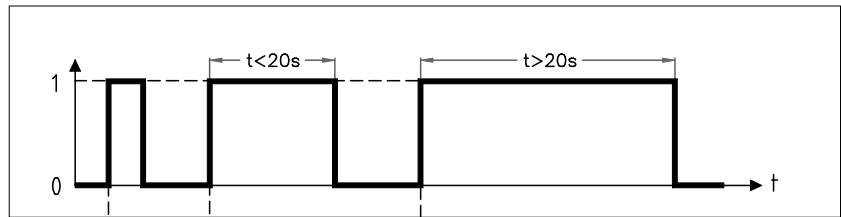**Mining**
(ATEX versions)

Food-processing
(IP69K sealing)

PBA series

Piezo switches

Electrical functions
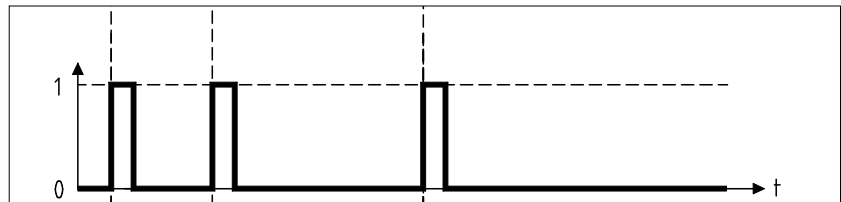
FINGER PRESSURE
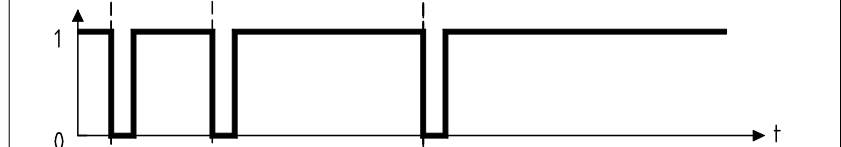**applied to switch**

1 = pressure
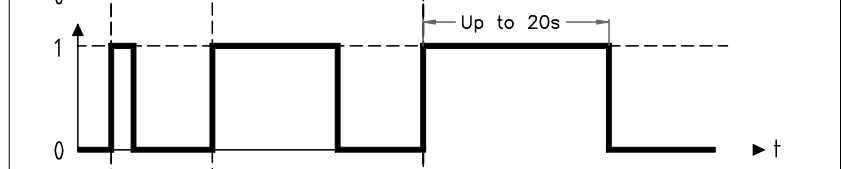*0 = no pressure*

OUTPUT

- Momentary NO (pulse)
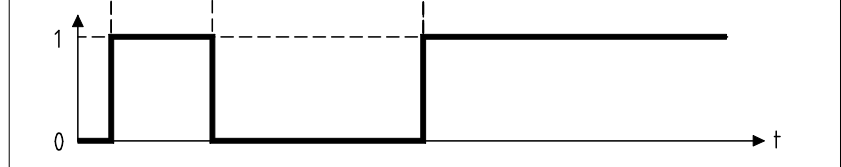No external power supply required

- Momentary NC (pulse)
No external power supply required

- Momentary NO
  prolongated pulse
No external power supply required

- Latching (ON - OFF)
Requires external power supply

1 = closed output   0 = open output

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)
Momentary NO prolongated pulse	WHITE / WHITE	WHITE / WHITE (C D)	RED / RED (A B A)	
Latching (ON - OFF)	WHITE 9-24V AC/DC WHITE / RED / RED	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 colour as LED   * LED colour is indicated by the bottom of the product.

Due to a modular construction, custom configurations can be produced using the following options, combined or not with standard elements, to meet your requirements.

❑ **Shapes**

❑ **Materials, colours**
Violet or dark grey anodized
aluminium, gold plated...
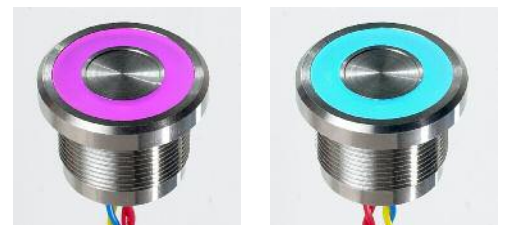Other : on request

❑ **Marking**
Laser etching on stainless steel
and anodized aluminium
Other : on request

❑ **Illumination**
Other LED colours (pink, ice blue...)
Custom illumination control
(LED connected to the load, blinking LED)
High intensity LEDs
Specific LED voltage
AC LED power supply

PBA series

Piezo switches

Custom configurations

❑ **Electrical functions**
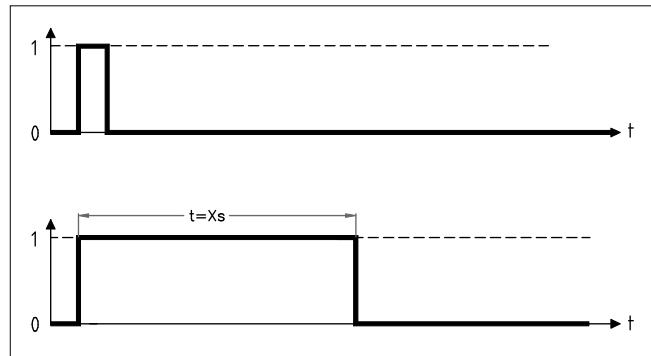
- Programmed pulse duration

FINGER PRESSURE
applied to switch

OUTPUT

1 = pressure,
0 = no pressure

- Other : on request

❑ **Terminals**
Screw or quick-connect/solder
Different wire lengths and colours
Cables and connectors on specifications (for example teflon)

❑ **Anti-vandal piezo switches**
Impact resistance up to IK10

❑ **Specific mounting**
Rear mounting, for flush version

ENVIRONMENTAL SPECIFICATIONS

- Sealing : IP68 per IEC 529, IP69K per DIN 40050-9 (switches mounted on panel or not)
- Vibration resistance : 10-500 Hz / 10 g per IEC 60068-2-6
- Operating temperature : -40°C to +75°C
- 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)

MATERIALS

- Case : aluminium, anodized - or stainless steel (303 or 316L) or brass, chrome plated
- Multi-wire leads section 0,22 mm^2 length 300 mm, twisted by pair
- Cable, length 300 mm, section depending on switch model
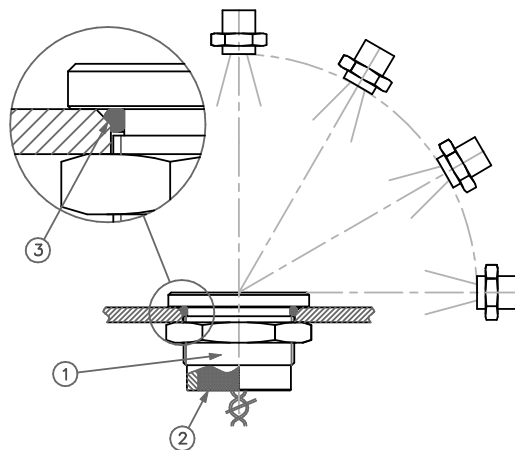- PC terminals : bronze, tin plated

ELECTRICAL AND GENERAL SPECIFICATIONS

- Max. current/voltage rating : 1A 24VAC/DC or 200mA 24VAC/DC depending on version
- Switch resistance ON : 10Ω max.
- Switch resistance OFF : 5MΩ min.
- Operating force : 2 to 6N
- Life expectancy : 50 million cycles
- LED consumption : Illuminated dot : 10mA - Illuminated ring : 20mA
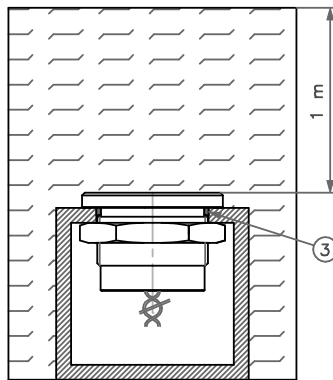
SEALING IP68	SEALING IP69K

① One-piece bushing
② Epoxy sealed terminals
③ O-ring

Continuous immersion in water

IP68 test conditions

Continuous immersion in water (1m, 24 hours)

High pressure, high temperature wash down

IP69K test conditions

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

Dimensions : first dimensions are in mm while inches are shown as bracketted numbers.
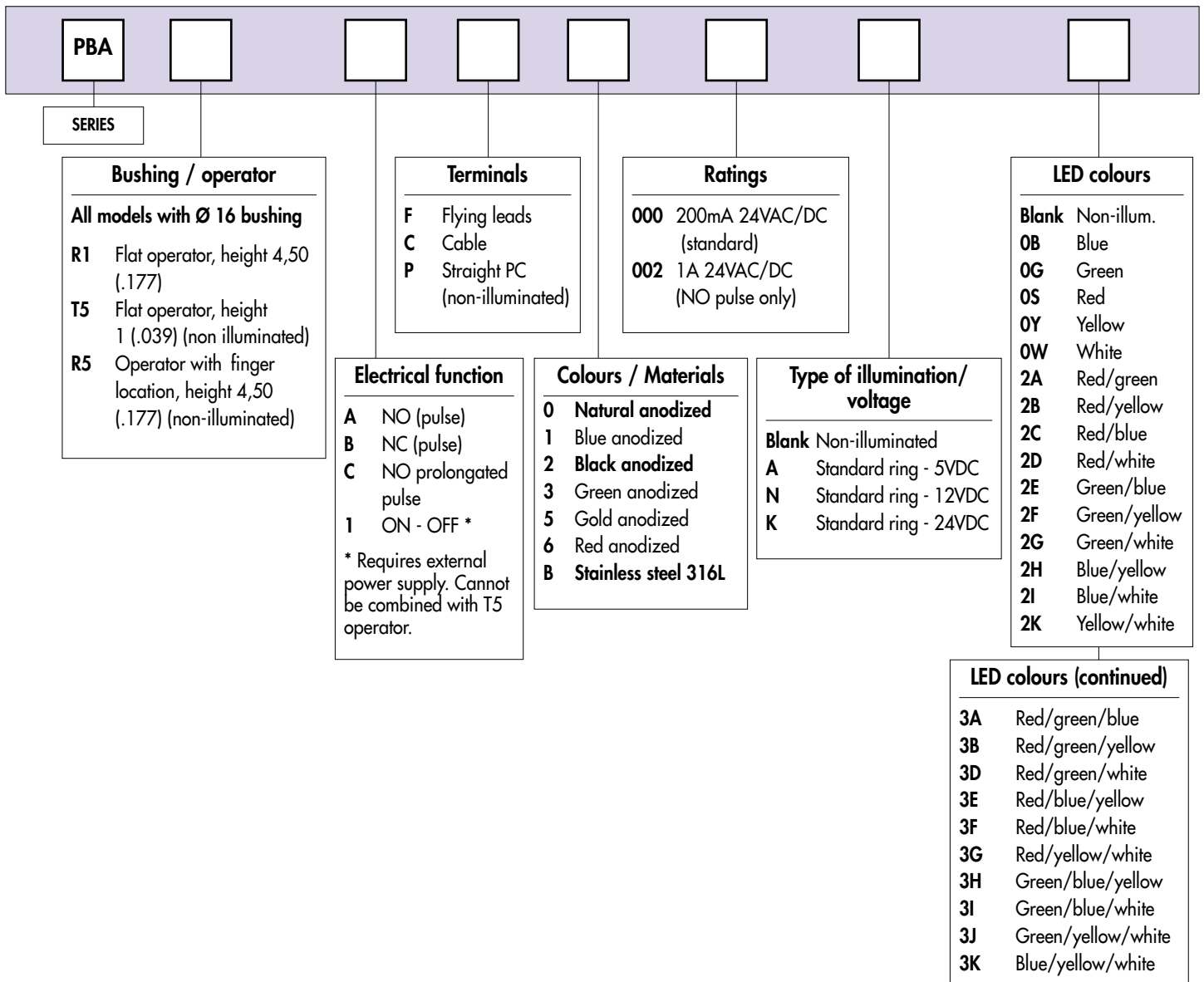
Tolerance : The general tolerance for dimensions in this brochure is ± 0,3 (.012).

Dimensions, specifications and data shown in this brochure are subject to change without notice.

PBA series

Piezo switches Ø 16 (.630)

Overview

PBA	☐	☐	☐	☐	☐	☐	☐

SERIES

Bushing / operator

All models with Ø 16 bushing

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)

Terminals

F Flying leads
C Cable
P Straight PC (non-illuminated)

Electrical function

A NO (pulse)
B NC (pulse)
C NO prolongated pulse
1 ON - OFF *

* Requires external power supply. Cannot be combined with T5 operator.

Colours / Materials

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

Ratings

000 200mA 24VAC/DC (standard)
002 1A 24VAC/DC (NO pulse only)

Type of illumination/ voltage

Blank Non-illuminated
A Standard ring - 5VDC
N Standard ring - 12VDC
K Standard ring - 24VDC

LED colours

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 colours (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 refer to our "Custom configurations" pages.

⚠ **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 U4116 (19 mm ac. flats) and 1 O-ring
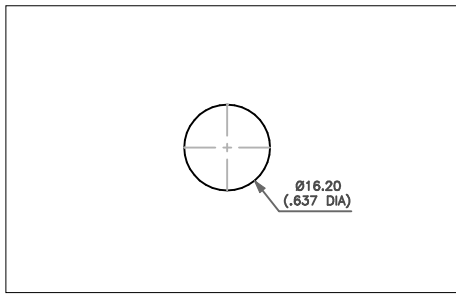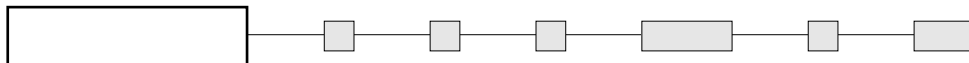
Packaging unit : 20 or 40 pieces

Ø16.20
(.637 DIA)

• Operator Ø 18 mm (.708)

Shown with flying lead terminals.

MODEL STRUCTURE

Non-illuminated, operator height 4,50 mm (.177)

PBAR1AF2000
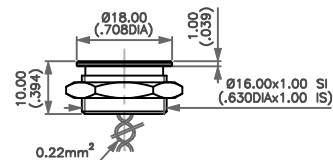
Flat
PBAR1

With finger location
PBAR5

Ø18.00 (.708DIA) 4.50 (.177)
20.00 (.787)
0.22mm² 5.00 (.197)
R1
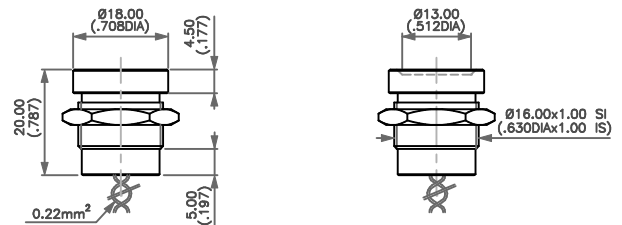
Ø13.00 (.512DIA)
Ø16.00x1.00 SI (.630DIAx1.00 IS)
R5

Non-illuminated, operator height 1 mm (.039)

PBAT5AF0000

Flat
PBAT5

Ø18.00 (.708DIA) 1.00 (.039)
10.00 (.394)
Ø16.00x1.00 SI (.630DIAx1.00 IS)
0.22mm²

With standard illuminated ring

PBAR1AF000A0B

Flat operator, height 4,50 (.177)
PBAR1

Ø16.00x1.00 SI (.630DIAx1.00 IS)
4.50 (.177) 5.00 (.197)
Ø18.00 (.708DIA)
20.00 (.787)
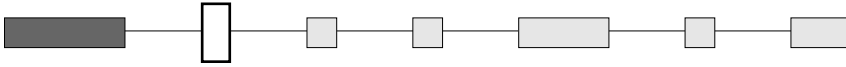0.22mm²

Ø13.50 (.531DIA)
1.20 (.047)
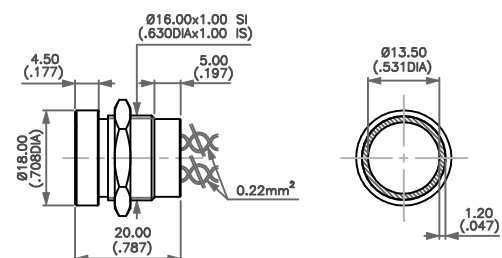
Wire colours : see "Electrical functions" page.

PBA series

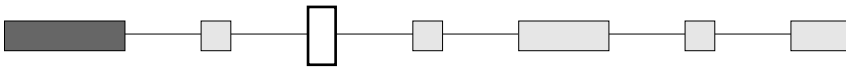Piezo switches Ø 16 (.630)
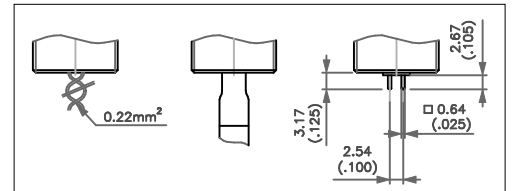
Options

ELECTRICAL FUNCTION

A	NO pulse
B	NC pulse
C	NO prolongated pulse
1	ON - OFF - Requires external power supply - Cannot be combined with T5 operator.

TERMINALS

F	Flying leads
C	Cable
P	Straight PC (non-illuminated models only)

CASE COLOURS / MATERIALS

Code	Colour
0	**Natural anodized aluminium**
1	Blue anodized aluminium
2	**Black anodised aluminium**

Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	**Stainless steel 316L**

0   1   2   3   5   6   B

RATINGS

| 000 | 200mA 24VAC or DC (standard) |
| 002 | 1A 24VAC or DC (NO pulse only) |

TYPE OF ILLUMINATION / VOLTAGE

Blank : non-illuminated

	5VDC	12VDC	24VDC
◯	A	N	K
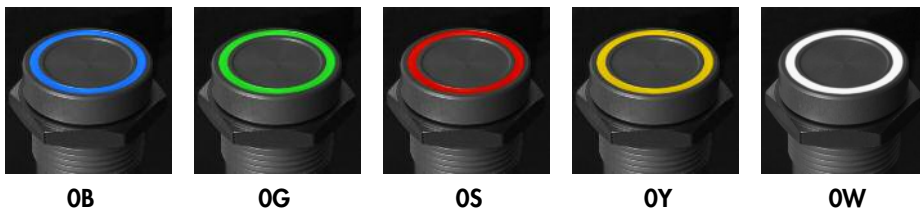
LED COLOURS

Integrated LED resistor

Blank : non-illuminated

| 0B | 0G | 0S | 0Y | 0W |

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 colour is indicated by the bottom of the product.

PBA series

Piezo switches Ø 19 (.748)

Overview

PBA ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

SERIES

Bushing / operator

R9 Bushing Ø 19 (.748), flat operator, height 3 (.118)

RA Bushing Ø 19 (.748), with chamfer, height 3 (.118)

Terminals

F Flying leads
C Cable

Ratings

000 200mA 24VAC/DC (std)

002 1A 24VAC / DC (NO pulse only)

LED colours

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

Electrical function

A NO (pulse)
B NC (pulse)
C NO prolongated pulse
1 ON - OFF*

* requires external power supply.

Colours / Materials

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

Type of illumination/voltage

Blank Non-illuminated
A Standard ring - 5VDC
N Standard ring - 12VDC
K Standard ring - 24VDC

LED colours (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 refer to our "Custom configurations" pages.

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

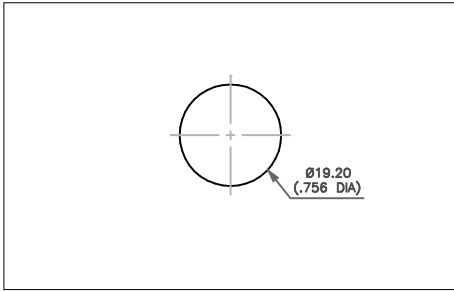**Mounting accessories** : standard hardware supplied :1 hex nut U6450 (22 mm ac. flats) and 1 O-ring

Packaging unit : 20 pieces

Ø19.20
(.756 DIA)

• Operator Ø 22 mm (.866)

Shown with flying lead terminals.

MODEL STRUCTURE

Non-illuminated - operator height 3 mm (.118)

Flat
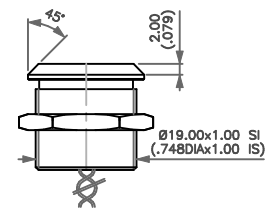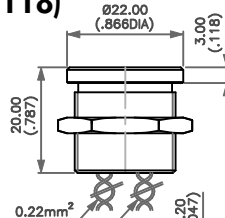**PBAR9**

With chamfer
PBARA

PBARAAF1000

Ø22.00 (.866DIA)
3.00 (.118)
20.00 (.787)
0.22mm²

45°
2.00 (.079)
Ø19.00x1.00 SI (.748DIAx1.00 IS)
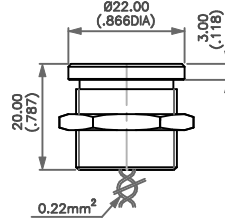
R9   RA

With standard illuminated ring - operator height 3 mm (.118)

Flat
PBAR9

With chamfer
PBARA

PBAR9AF0000A0S

Ø22.00 (.866DIA)
3.00 (.118)
20.00 (.787)
0.22mm²
1.20 (.047)
Ø13.50 (.531DIA)

45°
2.00 (.079)
Ø19.00x1.00 SI (.748DIAx1.00 IS)
1.20 (.047)
Ø13.50 (.531DIA)
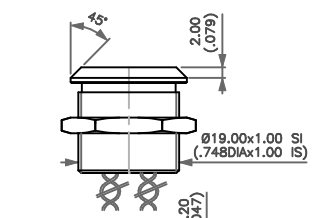
R9   RA

Wire colours : see "Electrical functions" page.

ELECTRICAL FUNCTION
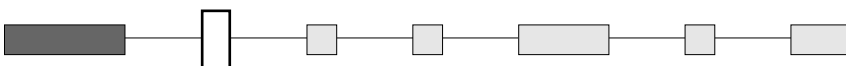
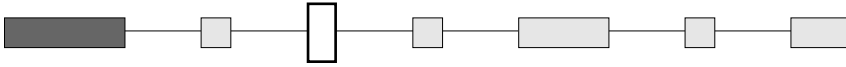|	
A	NO pulse
B	NC pulse
C	NO prolongated pulse
1	ON - OFF - Requires external power supply.

PBA series

Piezo switches Ø 19 (.748)

Options

TERMINALS

F   Flying leads
C   Cable

0.22mm²

CASE COLOURS / MATERIALS

Code	Colour
0	**Natural anodized aluminium**
1	Blue anodized aluminium
2	**Black anodised aluminium**

Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	**Stainless steel 316L**

0   1   2   3   5   6   B

RATINGS
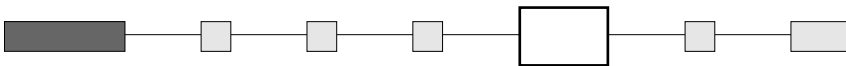
000   200mA 24VAC or DC (standard)
002   1A 24VAC or DC (NO pulse only)

TYPE OF ILLUMINATION / VOLTAGE

	5VDC	12VDC	24VDC
◯	**A**	**N**	**K**

LED COLOURS

Integrated LED resistor

Blank : non-illuminated

| 0B | 0G | 0S | 0Y | 0W |

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 colour is indicated by the bottom of the product.

PBA series

Piezo switches Ø 22 (.866)

Overview

PBA								

SERIES

Bushing / operator

All models with Ø 22 bushing

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.*

Terminals

F Flying leads
C Cable
Z Solder lug/ quick-connect

Ratings

000 200mA 24VAC/DC (std)
002 1A 24VAC/DC (NO pulse only)

LED colours

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

Colours / Materials

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

Type of illumination/voltage

Blank Non-illuminated
C thin ring - 5VDC
D thin ring - 12VDC
E thin ring - 24VDC
F large ring - 5VDC
G large ring - 12VDC
H large ring - 24VDC
L dot - 5VDC
P dot - 12VDC
J dot - 24VDC

Electrical function

A NO (pulse)
B NC (pulse)
C NO prolongated pulse
1 ON - OFF*

* requires external power supply.

LED colours (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 refer to our "Custom configurations" pages.

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

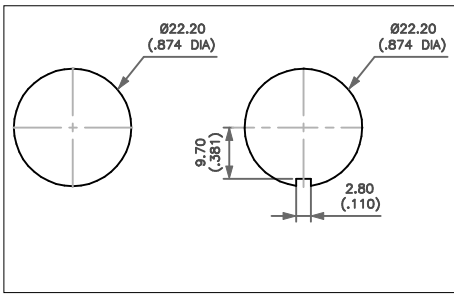**Mounting accessories** : standard hardware supplied :1 hex nut U6440 (25 mm ac. flats) and 1 O-ring

Packaging unit : 20 pieces

Ø22.20 (.874 DIA)
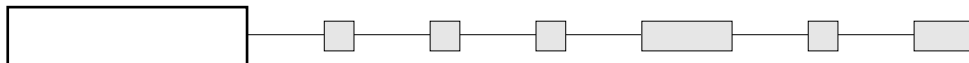Ø22.20 (.874 DIA)
9.70 (.381)
2.80 (.110)

• Operator Ø 28 mm (1.102)

MODEL STRUCTURE

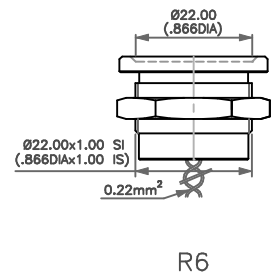**Wire colours** : see "Electrical functions" page.

Non-illuminated - operator height 3 mm (.118)

Flat
PBAR2

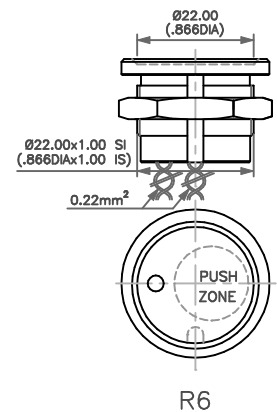With finger location
PBAR6

PBAR2AF6000

Ø28.00 (1.102DIA)
19.50 (.768)
5.00 (.197)
Ø20.70 (.815DIA)
R2

Ø22.00 (.866DIA)
3.00 (.118)
Ø22.00x1.00 SI (.866DIAx1.00 IS)
0.22mm²
R6
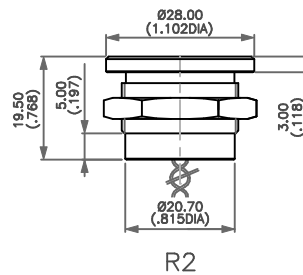
With illuminated dot - operator height 3 mm (.118)

Flat
PBAR2

With finger location
PBAR6

PBAR6AF6000L0G

Ø28.00 (1.102DIA)
19.50 (.768)
3.00 (.118)
5.00 (.197)
LED Ø3.00 (.118DIA)
6.50 (.256)
8.20 (.323)
PUSH ZONE
3.00 (.118)
R2

Ø22.00 (.866DIA)
Ø22.00x1.00 SI (.866DIAx1.00 IS)
0.22mm²
PUSH ZONE
R6
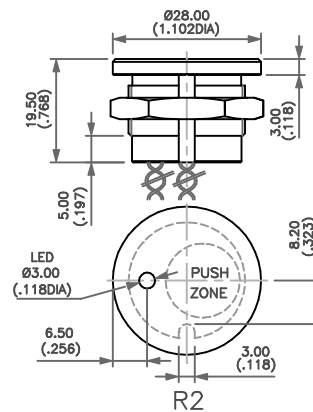
With thin illuminated ring - operator height 4,50 (.177)

Flat
PBARZ

With chamfer
PBARY

PBARYAF0000C0B

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)
0.22mm²
2.40 (.094)
Ø18.00 (.709DIA)
RY
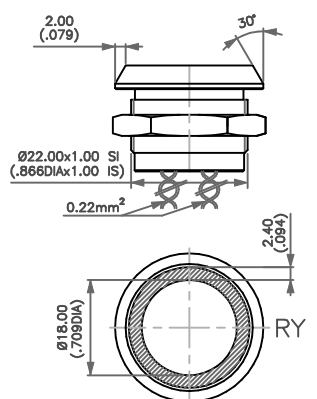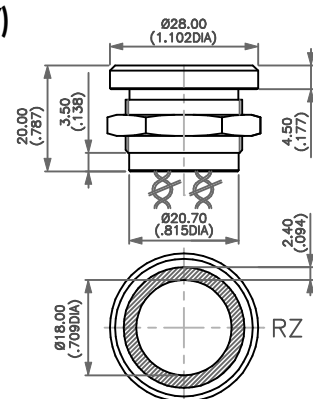
PBA series

Piezo switches

Illuminated and non-iluminated

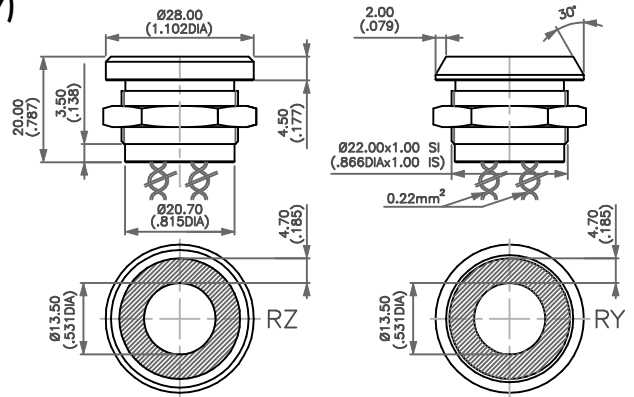### With large illuminated ring - operator height 4,50 (.177)

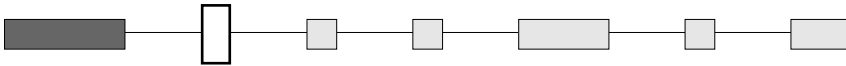PBARYAF0000F0B

Flat
PBARZ

With chamfer
PBARY

Ø28.00 (1.102DIA)
20.00 (.787)
3.50 (.138)
Ø20.70 (.815DIA)
Ø13.50 (.531DIA)
RZ

2.00 (.079)
30°
4.50 (.177)
Ø22.00x1.00 SI (.866DIAx1.00 IS)
0.22mm²
4.70 (.185)
Ø13.50 (.531DIA)
RY

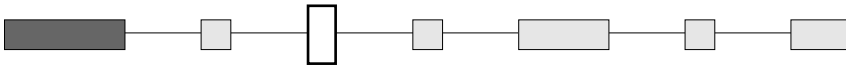### ELECTRICAL FUNCTION

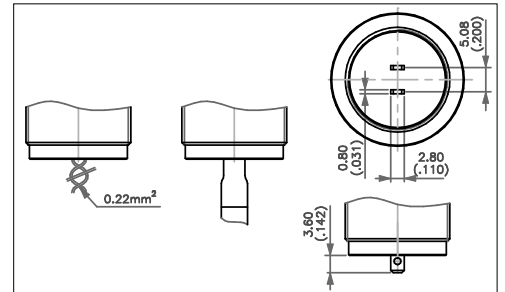A   NO pulse
B   NC pulse
C   NO prolongated pulse
1   ON - OFF - Requires external power supply

TERMINALS

F   Flying leads
C   Cable
Z   Solder lug / quick-connect

5.08 (.200)
0.80 (.031)
2.80 (.110)
0.22mm²
3.60 (.142)

CASE COLOURS / MATERIALS

Code	Colour
0	**Natural anodized aluminium**
1	Blue anodized aluminium
2	**Black anodised aluminium**

Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	**Stainless steel 316L**

0   1   2   3   5   6   B

RATINGS
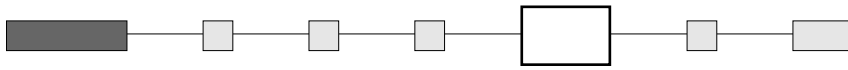
000   200mA 24VAC or DC (standard)
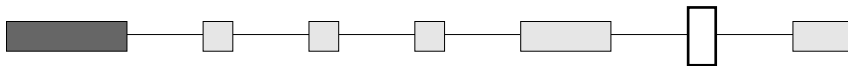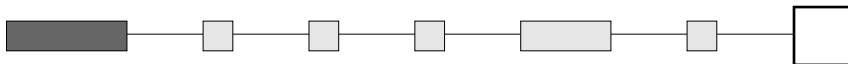**002**   1A 24VAC or DC (NO pulse only)

TYPE OF ILLUMINATION / VOLTAGE

	5V	12V	24V
○	C	D	E
◉	F	G	H
·	L	P	J

LED COLOURS

Integrated LED resistor

Blank : non-illuminated

0B	0G	0S	0Y	0W

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 colour is indicated by the bottom of the product.

PBA series

ATEX approved piezo switches

Distinctive features - Specifications - Overview

❑ **Approved according to the ATEX 94/9/CE directive**

❑ **Sealed to IP66 (mounted on panel)**

❑ **Easy to clean metal surface**

❑ **Long life**

❑ **Illuminated models**

ELECTRICAL SPECIFICATIONS

- Rated voltage : 5V to 24 VAC/DC max.
- Rated current : 200mA max. at 6VAC/DC
  50mA max. at 24VAC/DC
  (power limited to 1,2W for user group II)
- Contact resistance (ON) : 10Ω max.
- Insulation resistance (OFF) : 5MΩ min.
- Make impulse time : depending on actuating force and speed
- LED : 5VDC, 10mA to 20mA depending on model
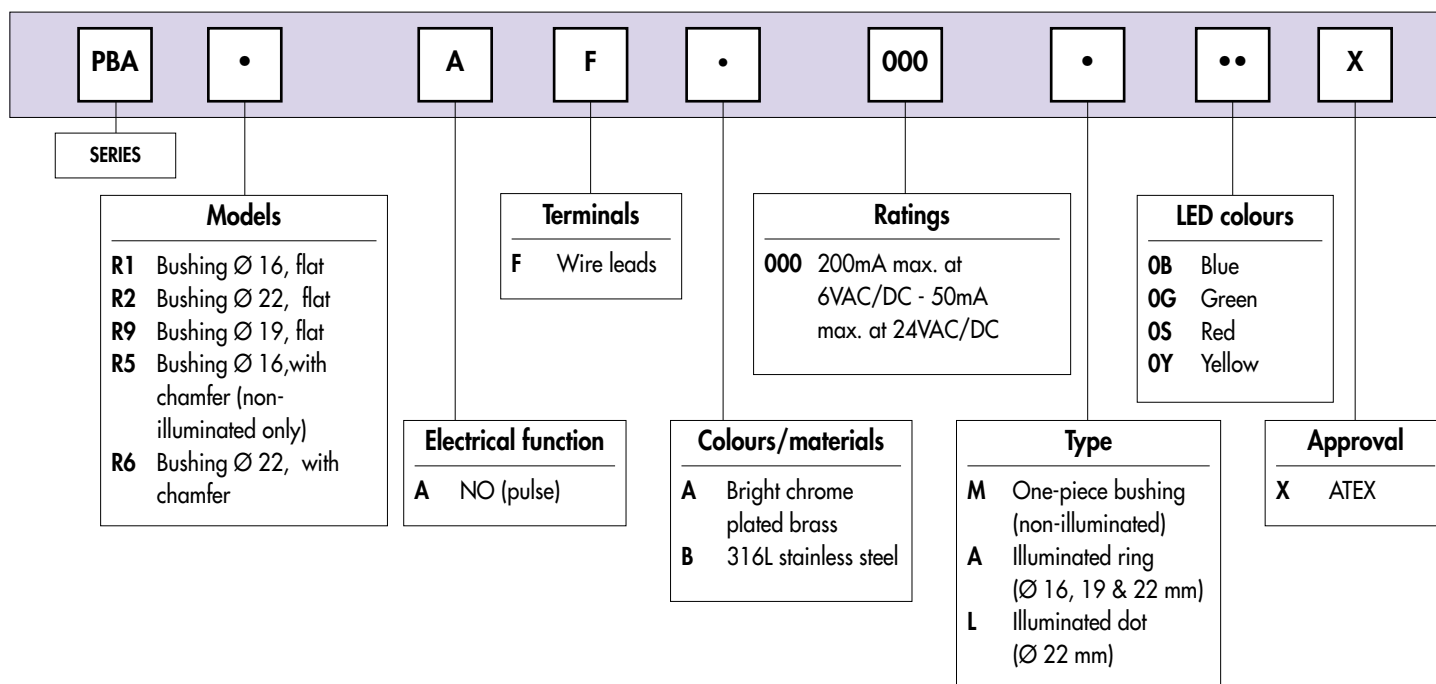
GENERAL SPECIFICATIONS

- Operating force : 2 to 6N
- Torque : 2,5 Nm max.
- Life expectancy : 50 million cycles
- Operating temperature : -40°C to +55°C
- EMC compatibility according to EN 61058-1
- In accordance with EN 60079-0, EN 60079-11, EN 61241-0, EN 61241-11, EN 60079-26 and EN 50303
- Sealing : IP66 per IEC 60529 (switches mounted on panel)

MATERIALS

- Case : bright chrome plated brass or 316L stainless steel
- Terminals : multi-wire leads 0,22 mm^2, length 300 mm (11.81)

Standard hardware supplied: 1 hex nut U4116 (19 mm ac. flats), U6450 (22 mm ac. flats) or U6440 (25 mm ac. flats), 1 O-Ring and 1 ground connector U5735, U5736 or U5737.

Packaging units :
- bushing Ø 16 : 40 pieces
- illuminated bushing Ø 16 : 20 pieces
- bushing Ø 19 : 20 pieces
- bushing Ø 22 : 20 pieces

Instructions for use :
see instruction notice NTPBA006.

| PBA | • | A | F | • | 000 | • | •• | X |

SERIES

Models

R1	Bushing Ø 16, flat
R2	Bushing Ø 22, flat
R9	Bushing Ø 19, flat
R5	Bushing Ø 16, with chamfer (non-illuminated only)
R6	Bushing Ø 22, with chamfer

Electrical function

A	NO (pulse)

Terminals

F	Wire leads

Colours/materials

A	Bright chrome plated brass
B	316L stainless steel

Ratings

000	200mA max. at 6VAC/DC - 50mA max. at 24VAC/DC

Type

M	One-piece bushing (non-illuminated)
A	Illuminated ring (Ø 16, 19 & 22 mm)
L	Illuminated dot (Ø 22 mm)

LED colours

0B	Blue
0G	Green
0S	Red
0Y	Yellow

Approval

X	ATEX

PBA series
ATEX approved piezo switches
Illuminated and non-illuminated

- **Highest classifications**
- **Universal**

1 = very high protection level

I = mines

Ⓔx **II 1 G D ; I M 1**

II = surface industries

M1 = very high protection level
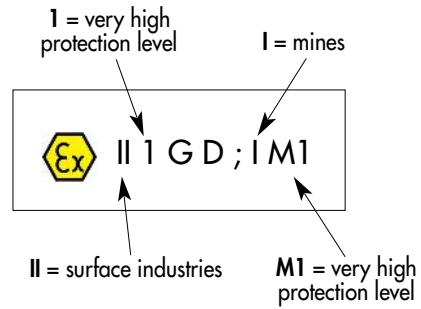
Dia. 16 (.630) bushing - illuminated ring

Stainless steel 316L, blue LED
PBAR1AFB000A0BX

Ø16.00x1.00 SI (.630DIAx1.00 IS)
4.50 (.177)
5.00 (.197)
Ø18.00 (.708DIA)
AWG24
20.00 (.787)
Ø13.50 (.531DIA)
6.35 x 0.8 (.250 x .031)
1.20 (.047)
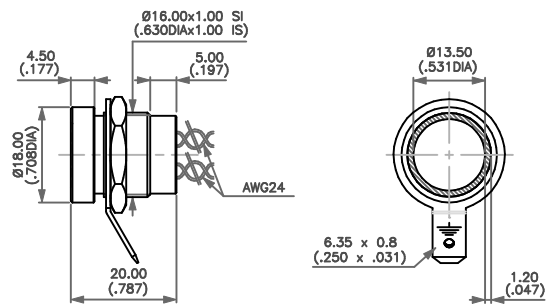
CPBAATEX1—A

Dia. 19 (.748) bushing - illuminated ring

Stainless steel 316L, blue LED
PBAR9AFB000A0BX

Ø19.00x1.00 SI (.748DIAx1.00 IS)
3.00 (.118)
Ø22.00 (.866DIA)
AWG24
20.00 (.787)
Ø13.50 (.531DIA)
6.35 x 0.8 (.250 x .031)
1.20 (.047)
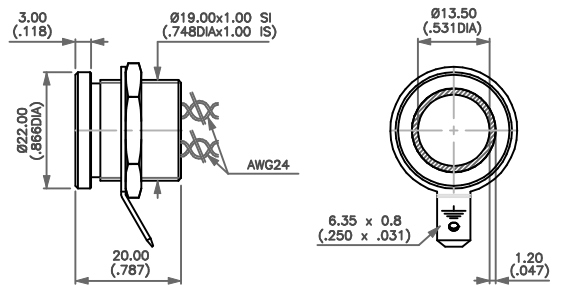
CPBAATEX2—A

Dia. 22 (866) bushing - non-illuminated

Stainless steel 316L
PBAR2AFB000MX

Ø22.00x1.00 SI (.866DIAx1.00 IS)
3.00 (.118)
Ø28.00 (1.102DIA)
AWG24
5.00 (.197)
19.50 (.768)
6.35 x 0.8 (.250 x .031)
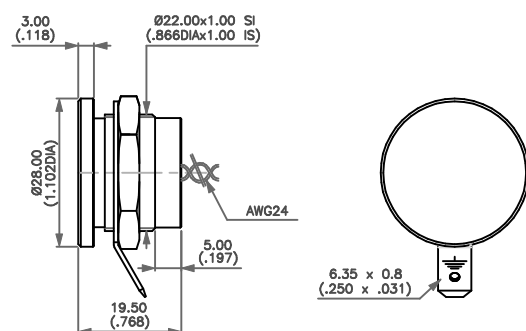
CPBAATEX3—A

INERIS

(2) Equipment or Protective Systems Intended for use
in Potentially explosive atmospheres
Directive 94/9/EC

(1) PRODUCTION QUALITY ASSURANCE NOTIFICATION

(3)	Notification number	:	**INERIS 08ATEXQ408**
(4)	Equipment or Components as listed	:	Electrical Equipment of categories 1 and M1 intended to be used in gaseous dust explosive atmospheres.
(5)	Manufacturer	:	**APEM** 55, avenue Edouard Herriot BP 1 F-82303 CAUSSADE CEDEX
(6)	Place of production	:	**APEM** 55, avenue Edouard Herriot BP 1 F-82303 CAUSSADE CEDEX

(7) INERIS, notified body N°0080 for Annex IV in accordance with article 9 of the Council Directive 94/9/EC of 23 march 1994, notifies to the applicant that the actual manufacturer has a production quality system which complies to Annex IV of the Directive.

(8) This notification is based on audit report N °**P99823** issued on **October 30th, 2008.**

Results of periodical re-assessment of the quality system are a part of this notification.

(9) This notification is valid until **October 1st, 2011** and can be withdrawn if the manufacturer no longer satisfies the requirements of annex IV.

(10) According to Article 10(1) of the Directive 94/9/EC, the CE marking shall be followed by the identification Number 0080 identifying the notified body involved in the production control stage.

Verneuil-en-Halatte, 2008.21.11

The Director of the Organisation Certified,
By delegation
D. CHARPENTIER
Deputy Manager of Certification

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Institut national de l'environnement industriel et des risques
Etablissement public à caractère industriel et commercial - RCS Senlis B 381 984 921 - Siret 381 984 921 00019 - APE 743B

Shower
(IP68 sealing)

Home automation
(design, customization)

Bath
(IP68 sealing, customization)

Car wash
(IP68 sealing, long life)

Marine
(IP68 sealing, design)

Medical
(easy to clean surface, no retention area)

Food processing
(IP69K sealing)

Mining
(ATEX versions)

APEM,
a world of switching capabilities

The APEM group is one of the world's largest manufacturers of switches, switch panels and joysticks.

APEM designs, develops, manufactures and sells electro-mechanical components to multiple industrial markets including: instrumentation, medical, security, communications, industrial automation, military and transport.

Other APEM metallic products

■ Stainless steel keypads

Stainless steel keypads and keyboards are particularly resistant to harsh environments: extreme climatic conditions, vandalism, stains... They meet EMC international standards and feature good tactile feedback and IP65 front face sealing.

■ Custom switch panels

APEM provides custom solutions to specific panel requirements. Custom panels incorporate several technologies such as LED illumination and backlighting, ESD and EMC protection, IP67 sealing, custom mounting...

Applications for these products include transport and utility vehicles, agricultural equipment and boats.

■ AV pushbutton switches

The AV series is a range of very robust pushbutton switches consisting of 2 families: anti-vandal and security pushbutton switches. This range features a large variety of models, with different bushing diameters, numerous materials and many electrical functions. Marking and illumination options are also available.
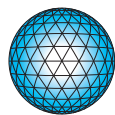
◉ APEM

Addresses of sales subsidiaries and distributors network

on apem.com