



- Bushing diameter 16 mm, 19 mm or 22 mm
- 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 529, 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
- 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 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

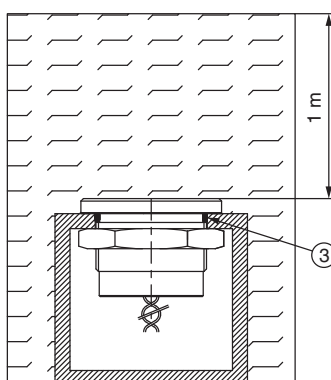
#### ELECTRICAL AND GENERAL SPECIFICATIONS

- Max. current/voltage rating :
  - Function A : standard 200mA 24VAC/DC - option 1A 24VAC/DC
  - Function B : standard 100mA 24VAC
- 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 - Illum. ring 20mA (functions A-B-C)
- Power consumption for function 1 : non-illum.10mA - illuminated 30mA

**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.

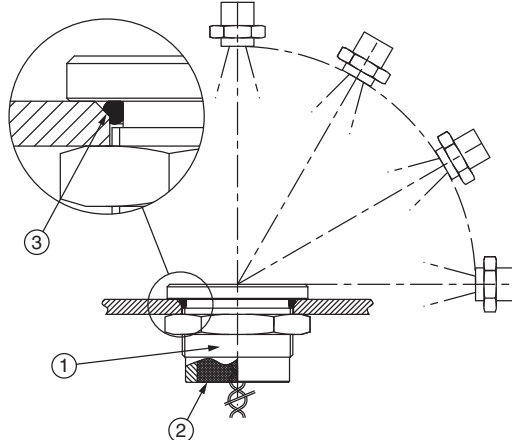
#### SEALING IP68



#### Continuous immersion in water IP68 test conditions

Continuous immersion in water  
(1m, 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
- Flow : 14 - 16 l/mn
- Duration : 30 seconds per position

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

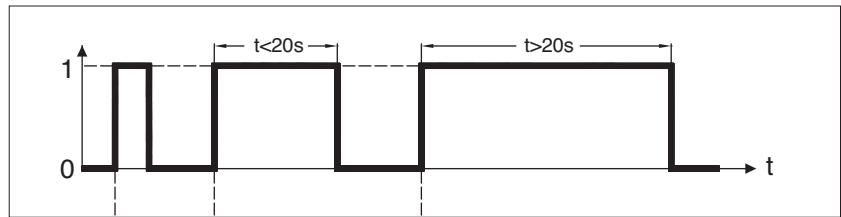
# PBA series

## Piezo switches

### Electrical functions

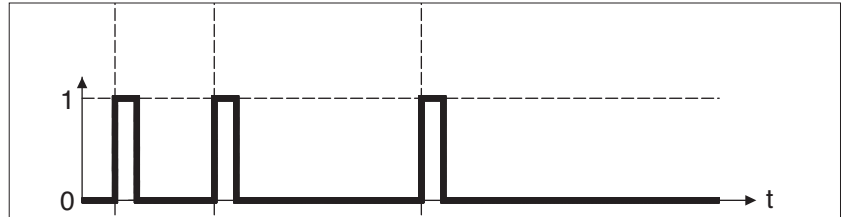
#### FINGER PRESSURE applied to switch

1 = pressure  
0 = no pressure

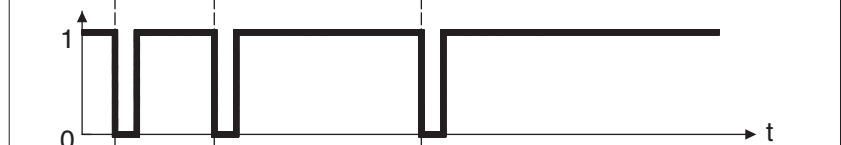


#### OUTPUT

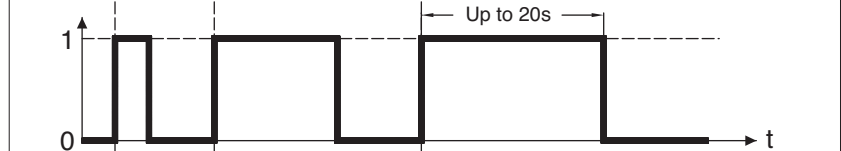
- Momentary NO (pulse)  
No external power supply required



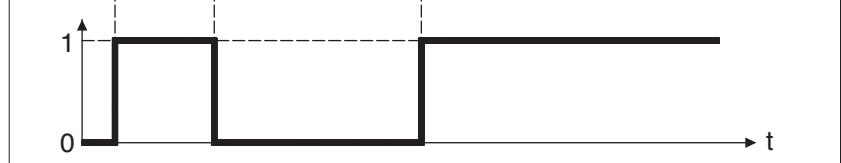
- Momentary NC (pulse)  
No external power supply required



- Momentary NO prolonged 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				
Momentary NC				
Momentary NO prolonged pulse				
Latching (ON - OFF)				

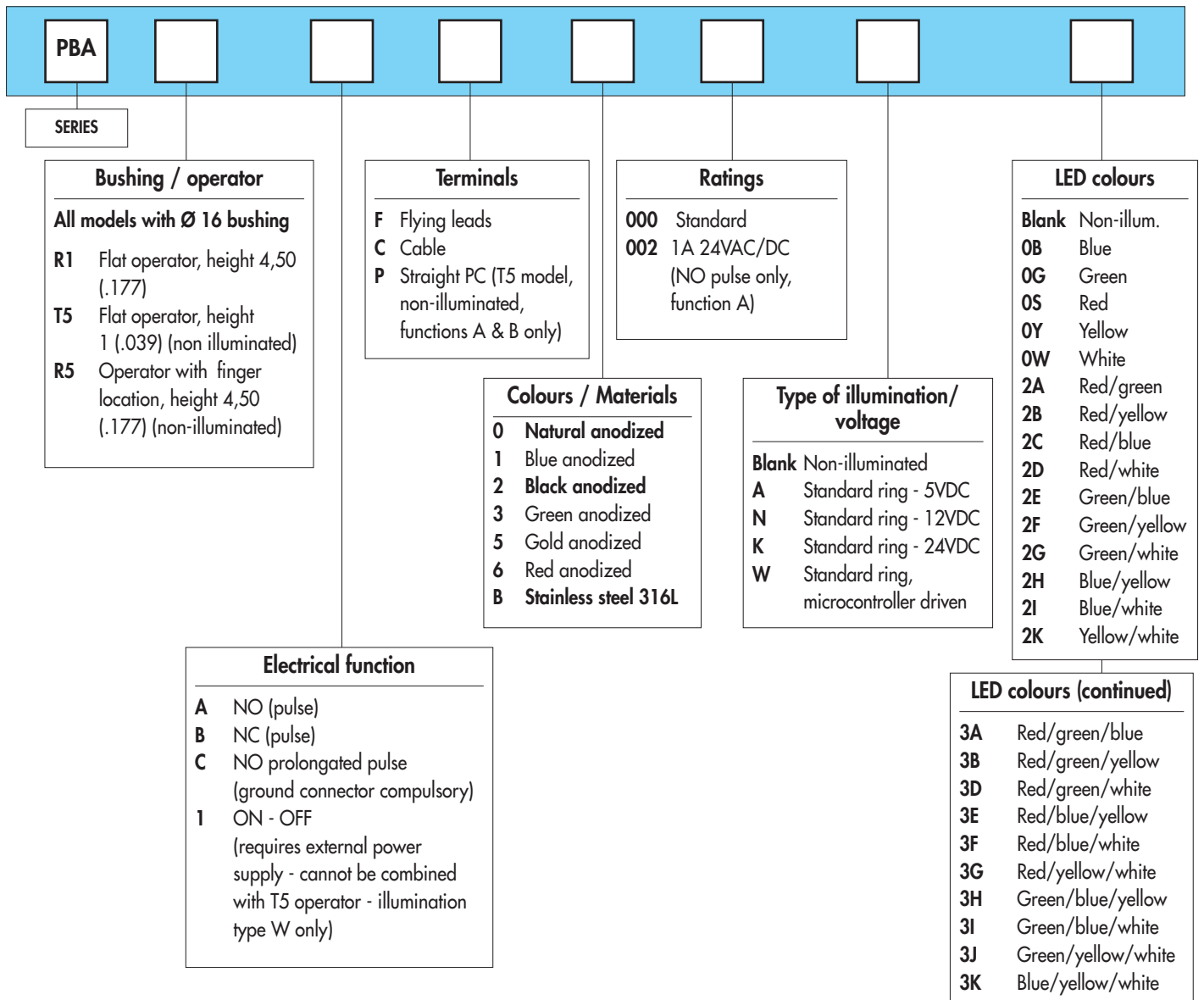
Legend : C = yellow, D = blue, B = black, A = same colour as LED

\* LED colour is indicated by the bottom of the product.

# PBA series

Piezo switches Ø 16 (.630)

Overview



B2

For options not listed above, please contact APEM.

**Dimensions** : first dimensions are in mm while inches are shown as bracketed numbers.



**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 U5735 when the panel is non-conductive (PVC, polycarbonate).

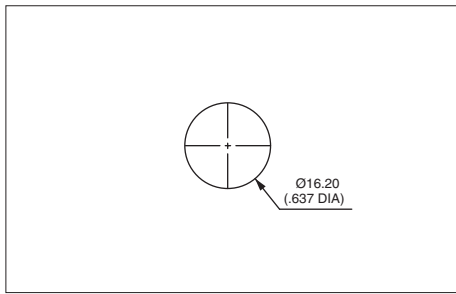


**Packaging unit** : 20 pieces (flying lead terminals) or 25 pieces (cable terminals)

# PBA series

## Piezo switches Ø 16 (.630)

Illuminated or non-illuminated



- Operator Ø 18 mm (.708)

Shown with flying lead terminals.

MODEL  
STRUCTURE



B2

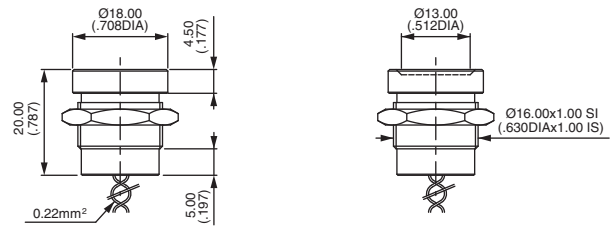
### Non-illuminated, operator height 4,50 mm (.177)



PBAR1AF2000

Flat  
PBAR1

With finger location  
PBAR5



R1

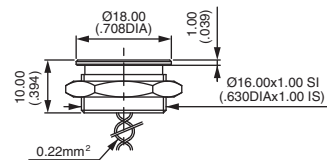
R5

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



PBAT5AF0000

Flat  
PBAT5

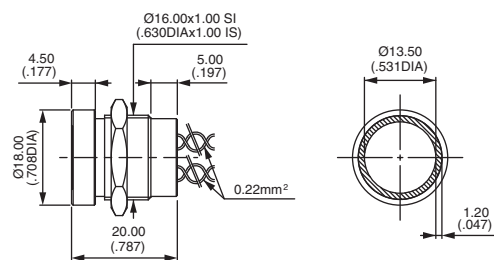


### With standard illuminated ring



PBAR1AF000A0B

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



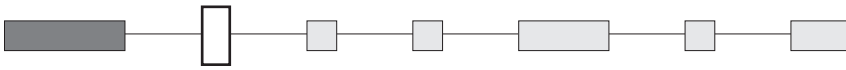
Wire colours : see "Electrical functions"

# PBA series

Piezo switches Ø 16 (.630)

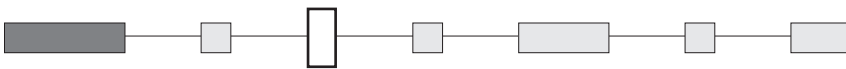
Options

## ELECTRICAL FUNCTION

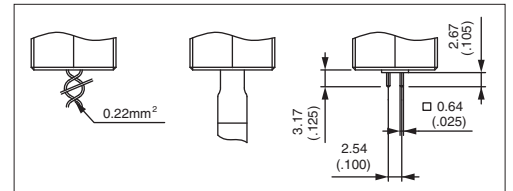


- A NO pulse
- B NC pulse
- C NO prolonged pulse - Ground connector U5735 compulsory, supplied with the switch.
- 1 ON - OFF - Requires external power supply - Cannot be combined with T5 operator.  
Illumination type W only.

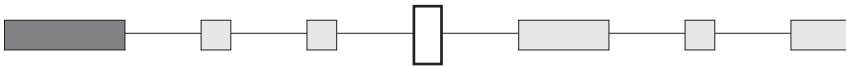
## TERMINALS



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



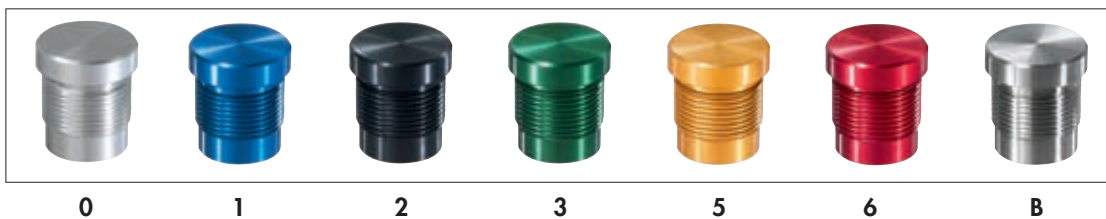
## CASE COLOURS / MATERIALS



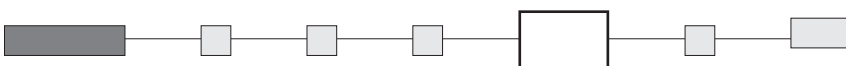
Code	Colour
0	Natural anodized aluminium
1	Blue anodized aluminium
2	Black anodised aluminium

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

Code	Colour
B	Stainless steel 316L



## RATINGS



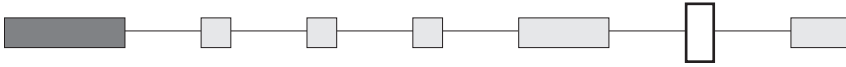
- 000 Standard
- 002 1A 24VAC or DC (NO pulse only, function A)

# PBA series

## Piezo switches Ø 16 (.630)

### Options

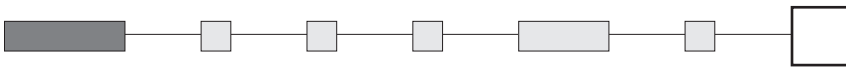
#### TYPE OF ILLUMINATION / VOLTAGE



Blank : non-illuminated

	5VDC	12VDC	24VDC	Microcontroller driven
○	A	N	K	W

#### LED COLOURS



Integrated LED resistor

Blank : non-illuminated



OB

OG

OS

OY

OW

#### Illuminated 1 LED \*

OB : blue - OG : green - OS : red - OY : yellow - OW : 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

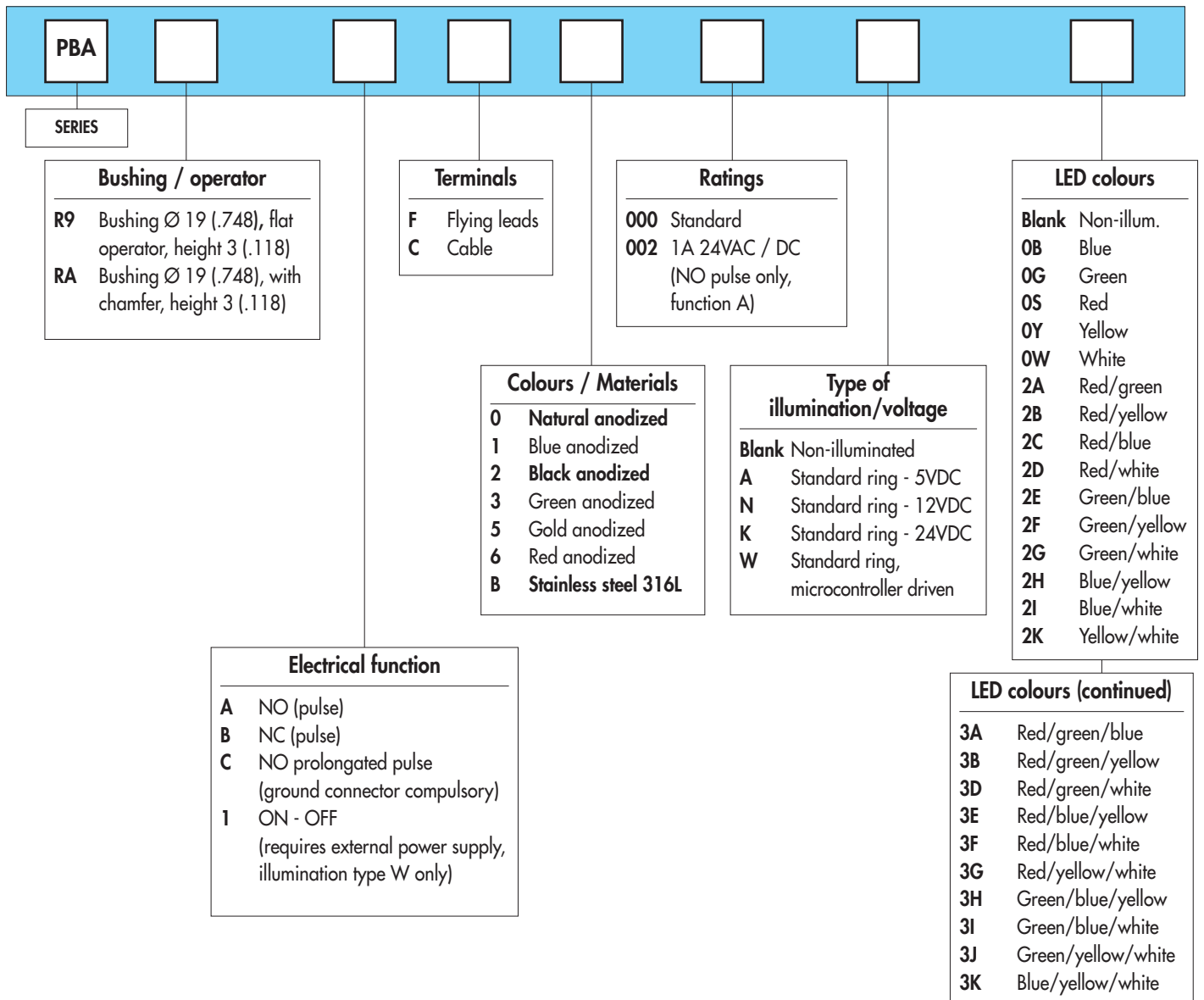
3A : red/green/blue - 3B : red/green/yellow - 3D : red/green/white - 3E : red/blue/yellow - 3F : red/blue/white  
3G : red/yellow/white - 3H : green/blue/yellow - 3I : green/blue/white - 3J : green/yellow/white - 3K : blue/yellow/white

\* LED colour is indicated by the bottom of the product.

# PBA series

Piezo switches Ø 19 (.748)

Overview



For options not listed above, please contact APEM.

**Dimensions** : first dimensions are in mm while inches are shown as bracketted numbers.



**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 10-855-0 (22 mm ac. flats) and 1 O-ring. Always add a ground washer U5736 when the panel is non-conductive (PVC, polycarbonate).

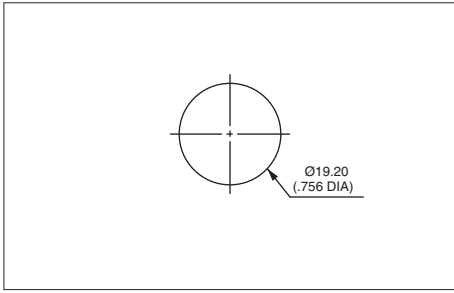


**Packaging unit** : 20 pieces (flying lead terminals) or 25 pieces (cable terminals)

# PBA series

## Piezo switches Ø 19 (.748)

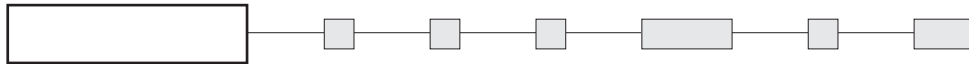
Illuminated or non-illuminated



- Operator Ø 22 mm (.866)

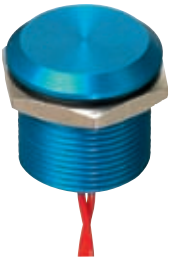
Shown with flying lead terminals.

### MODEL STRUCTURE



B2

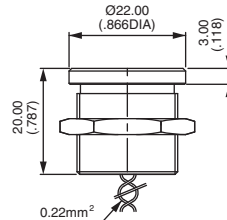
### Non-illuminated - operator height 3 mm (.118)



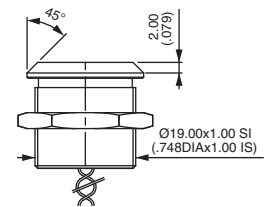
PBARAAF1000

Flat  
PBAR9

With chamfer  
PBARA



R9



RA

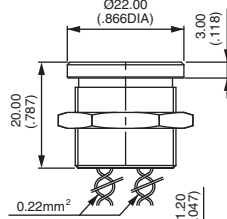
### With standard illuminated ring - operator height 3 mm



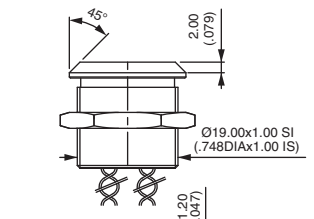
PBAR9AF0000A0S

Flat  
PBAR9

With chamfer  
PBARA



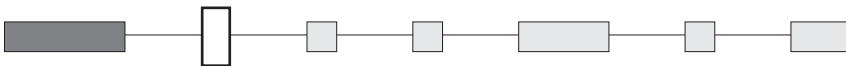
R9



RA

Wire colours : see "Electrical functions".

### ELECTRICAL FUNCTIONS



- A NO pulse
- B NC pulse
- C NO prolonged pulse - Ground connector U5736 compulsory, supplied with the switch.
- 1 ON - OFF - Requires external power supply - Illumination type W only.

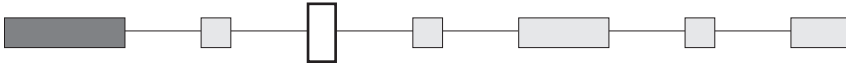


# PBA series

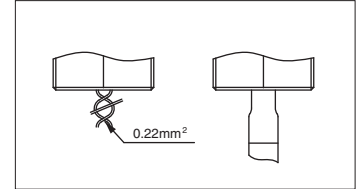
Piezo switches Ø 19 (.748)

Options

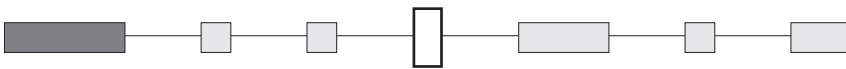
## TERMINALS



F Flying leads  
C Cable



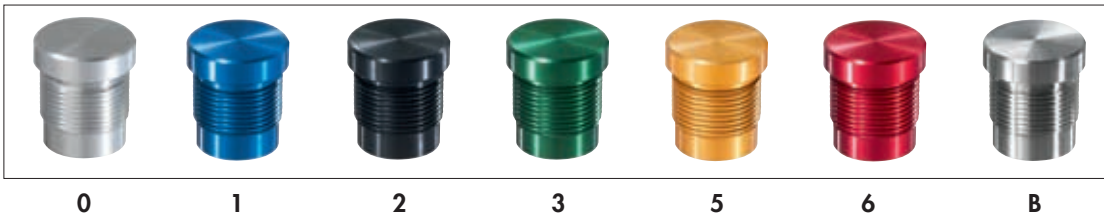
## CASE COLOURS / MATERIALS



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

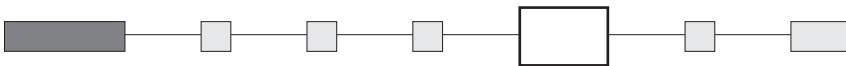
Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	Stainless steel 316L



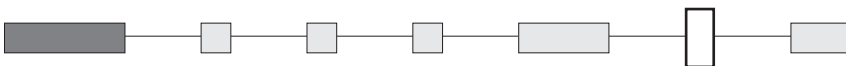
0 1 2 3 5 6 B

## RATINGS



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

## TYPE OF ILLUMINATION / VOLTAGE



	5VDC	12VDC	24VDC	Microcontroller driven
○	A	N	K	W

# PBA series

Piezo switches Ø 19 (.748)

Options

## LED COLOURS



Blank : non-illuminated



### 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

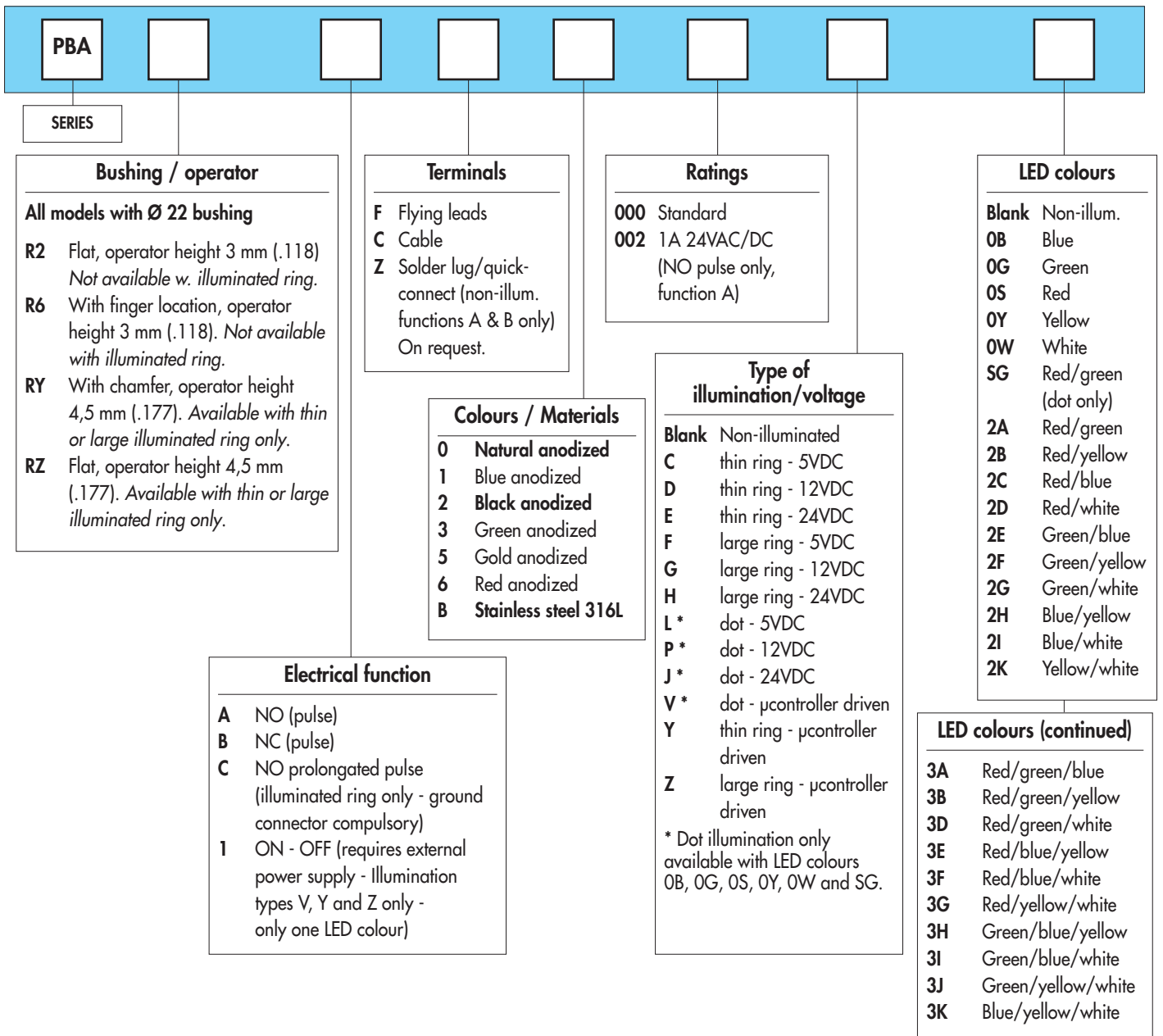
3A : red/green/blue - 3B : red/green/yellow - 3D : red/green/white - 3E : red/blue/yellow - 3F : red/blue/white  
3G : red/yellow/white - 3H : green/blue/yellow - 3I : green/blue/white - 3J : green/yellow/white - 3K : blue/yellow/white

\* LED colour is indicated by the bottom of the product.

# PBA series

Piezo switches Ø 22 (.866)

Overview



For options not listed above, please contact APEM.



**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).



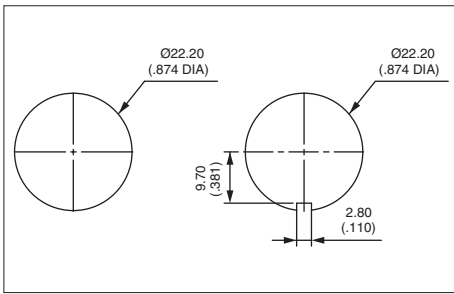
**Packaging unit** : 20 pieces (flying lead terminals) or 25 pieces (cable terminals)

# PBA series

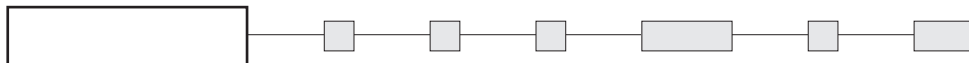
## Piezo switches Ø 22 (.866)

Illuminated or non-illuminated

- Operator Ø 28 mm (1.102)



MODEL  
STRUCTURE



Wire colours : see "Electrical functions".

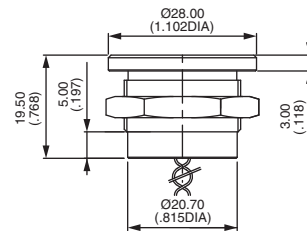
### Non-illuminated - operator height 3 mm (.118)



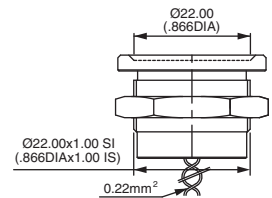
Flat  
PBAR2

With finger location  
PBAR6

PBAR2AF6000



R2



R6

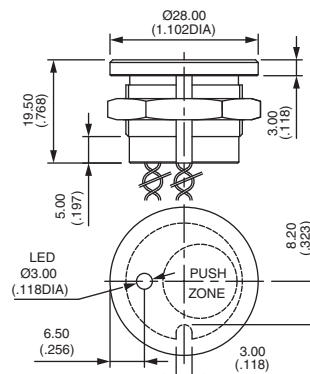
### With illuminated dot - operator height 3 mm (.118)



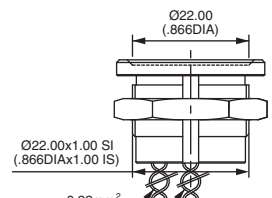
Flat  
PBAR2

With finger location  
PBAR6

PBAR6AF6000LOG



R2



R6

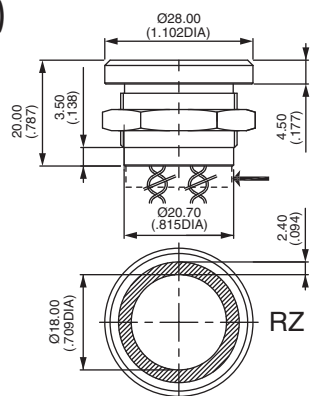
### With thin illuminated ring - operator height 4,50 (.177)



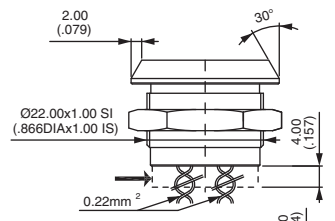
Flat  
PBARZ

With chamfer  
PBARZ

PBARZAF0000COB



RZ



RY

→ Dimension of ON-OFF models

# PBA series

Piezo switches Ø 22 (.866)

*Illuminated or non-illuminated*

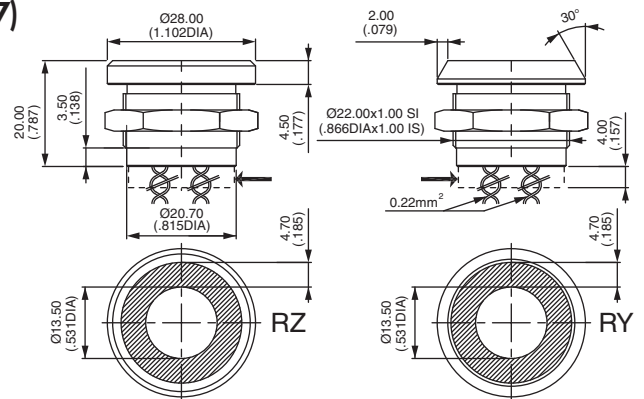
With large illuminated ring - operator height 4,50 (.177)



PBARYAF0000FOB

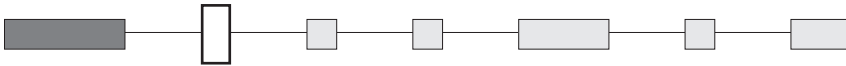
Flat  
PBARZ

With chamfer  
PBARY



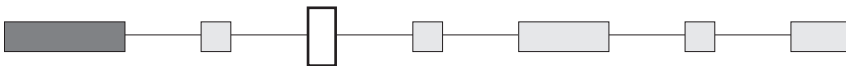
→ Dimension of ON-OFF models

## ELECTRICAL FUNCTIONS

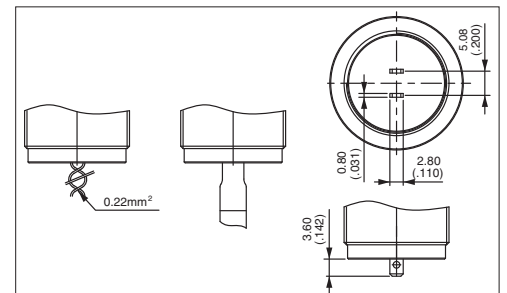


- A NO pulse
- B NC pulse
- C NO prolonged pulse (illuminated ring only) - Ground connector U5737 compulsory, supplied w. the switch.
- I ON - OFF - Requires external power supply - Illumination types V, Y and Z only - one LED colour only.

## TERMINALS



- F Flying leads
- C Cable
- Z Solder lug / quick-connect (non-illuminated, functions A and B only)  
On request.



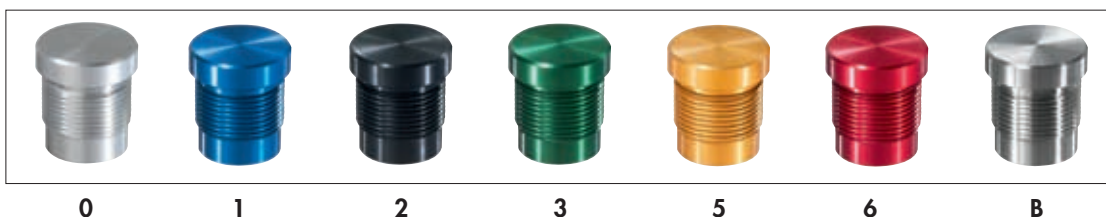
## CASE COLOURS / MATERIALS



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

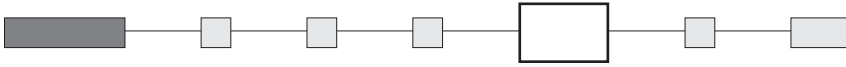
B

# PBA series

## Piezo switches Ø 22 (.866)

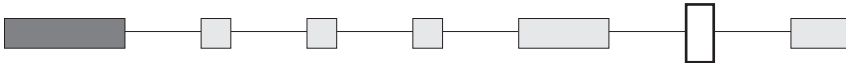
### Options

#### RATINGS




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

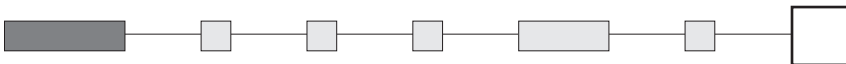
#### TYPE OF ILLUMINATION / VOLTAGE



	5V	12V	24V	Microcontroller driven
○	C	D	E	Y
◉	F	G	H	Z
•	L	P	J	V

 Dot illumination only available with LED colours OB, OG, OS, OY, OW and SG.

#### LED COLOURS



Integrated LED resistor

**Blank** : non-illuminated



OB

OG

OS

OY

OW

#### Illuminated 1 LED \*

**OB** : blue - **OG** : green - **OS** : red - **OY** : yellow - **OW** : 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 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

### MATERIALS

- Case : 316L stainless steel
- Terminals : multi-wire leads  
0,22 mm<sup>2</sup>, length 300 mm (11.81)

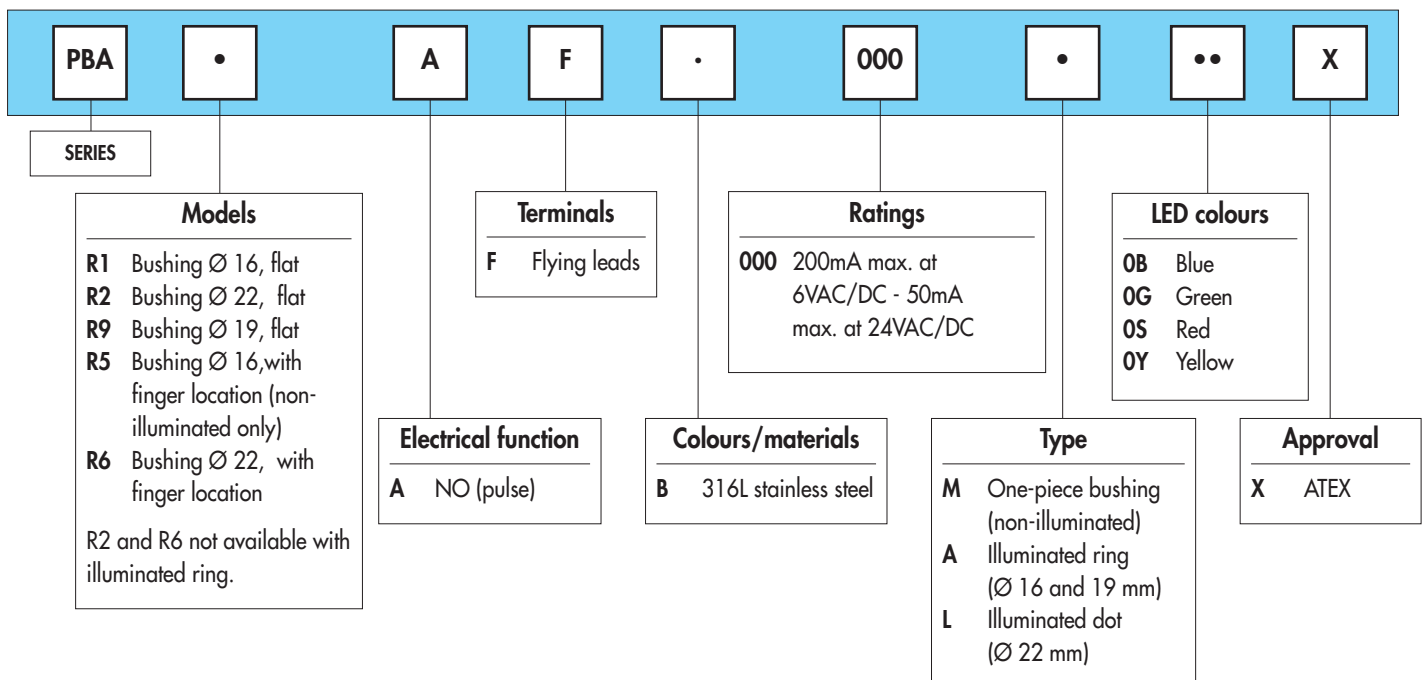
**Standard hardware supplied:** 1 hex nut 10-621 (19 mm ac. flats), 10-855-0 (22 mm ac. flats) or 10-856-0 (25 mm ac. flats), 1 O-Ring and 1 ground connector U5735, U5736 or U5737.

**Packaging units :** 20 pieces

**Instructions for use :**  
see instruction notice NTPBA007.

### 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)



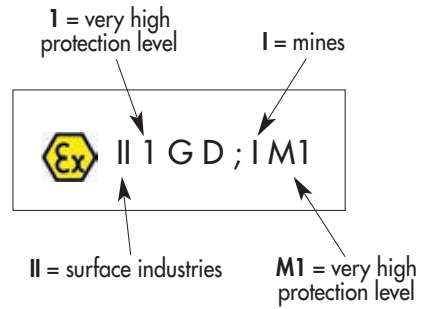
# PBA series

ATEX approved piezo switches

Illuminated or non-illuminated



- Highest classifications
- Universal



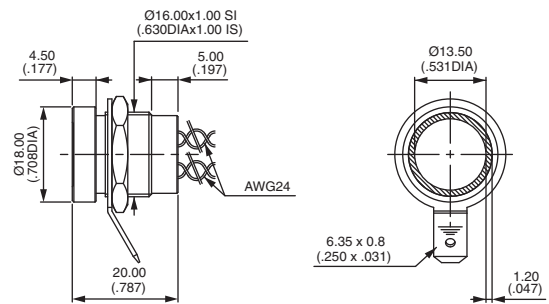
Usage : mines full of fire damp and potentially explosive atmospheres of groups IIC, IIB et IIA in T4 temperature class and/or in the presence of combustible dust (T1 35°C).

B2

## Dia. 16 (.630) bushing - illuminated ring



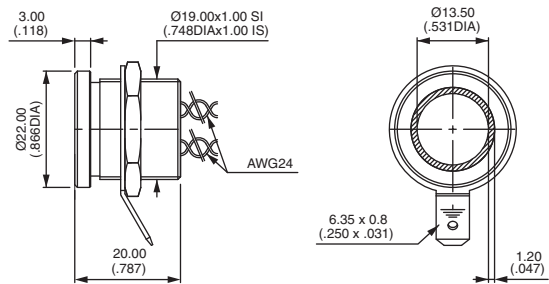
Stainless steel 316L, blue LED  
PBAR1AFB000A0BX



## Dia. 19 (.748) bushing - illuminated ring



Stainless steel 316L, blue LED  
PBAR9AFB000A0BX



## Dia. 22 (.866) bushing - non-illuminated



Stainless steel 316L  
PBAR2AFB000MX

