

PBA series

Piezo switches

Specifications

UG1410-A-R3



- 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 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
- 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 200mA 24VAC/DC - option 1A 24VAC/DC
 - Function B : standard 100mA 24VAC/DC
- Switch resistance ON : 10Ω max.
- Switch resistance OFF : 5MΩ min.
- 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

GENERAL SPECIFICATIONS

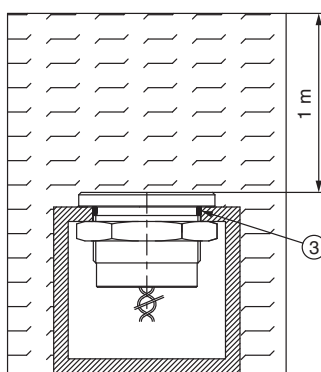
- Operating force : 2 to 6N
- Torque : 2,5Nm min. - 3Nm max.

MATERIALS

- Case : aluminium, 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

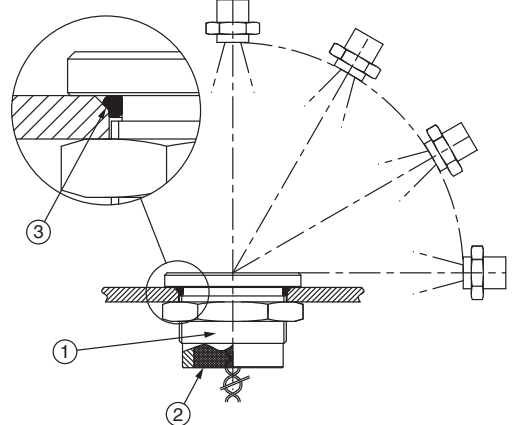
Note : to maintain the ESD performance, always add a ground washer when the panel is made of non-conductive material (PVC, polycarbonate).
For part numbers, see «Mounting accessories» on the following pages.

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

The company reserves the right to change specifications without notice.

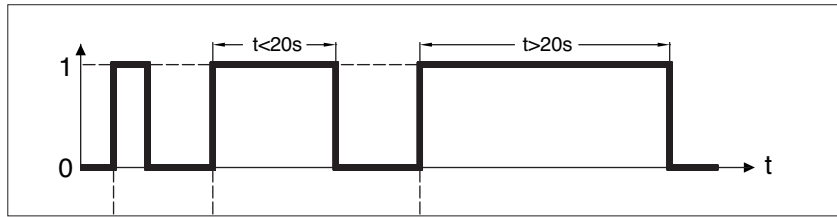
PBA series

Piezo switches

Electrical functions

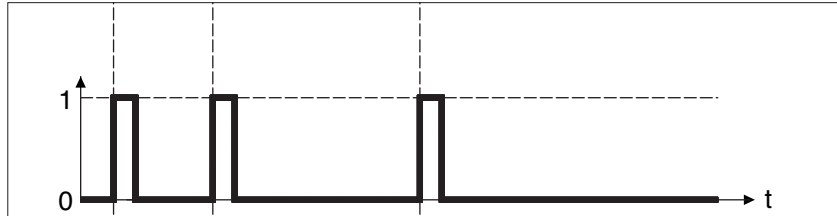
FINGER PRESSURE applied to switch

1 = pressure
0 = no pressure

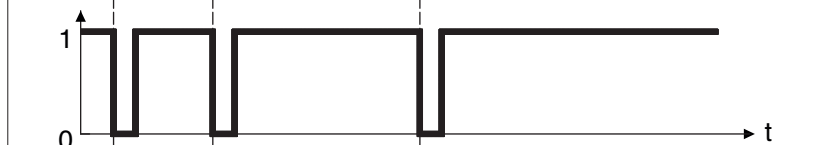


OUTPUT

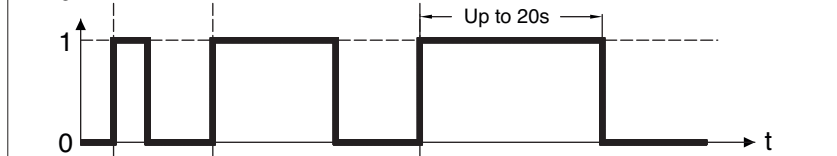
- Momentary NO (pulse)
No external power supply required



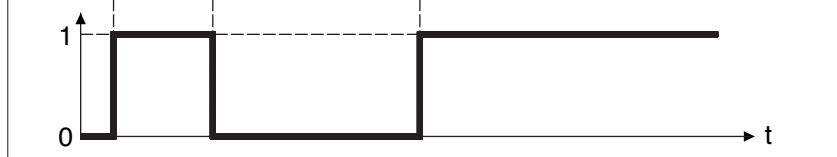
- Momentary NC (pulse)
No external power supply required



- Momentary NO prolonged pulse - *On request*
No external power supply required



- Latching (ON - OFF)
Requires external power supply



1 = closed output 0 = open output

Wiring diagrams

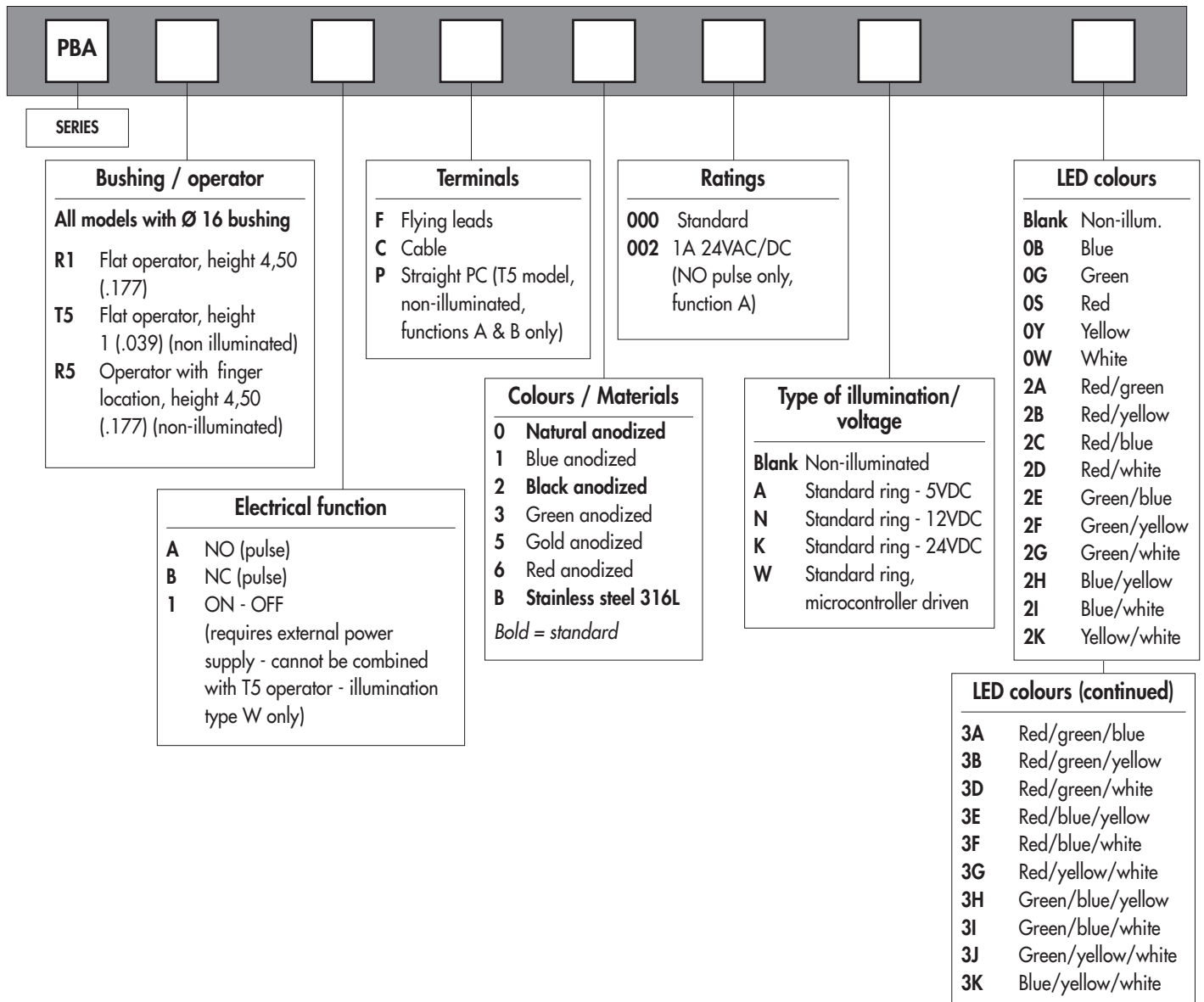
| | Non-illuminated | 1 LED * | 2 LEDs | 3 LEDs |
|------------------------------|-----------------|---------|--------|--------|
| Momentary NO | | | | |
| Momentary NC | | | | |
| Momentary NO prolonged pulse | | | | |
| Latching (ON - OFF) | | | | |

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)

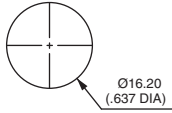
PBA series

Piezo switches \varnothing 16 (.630)

Illuminated or non-illuminated

- Operator \varnothing 18 mm (.708)

Shown with flying lead terminals.



MODEL
STRUCTURE



B2

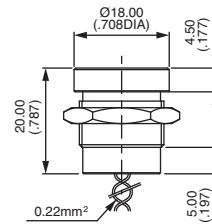
Non-illuminated, operator height 4,50 mm (.177)



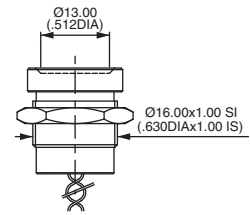
PBAR1AF2000

Flat
PBAR1

With finger location
PBAR5



R1



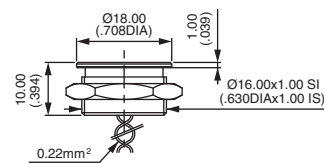
R5

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

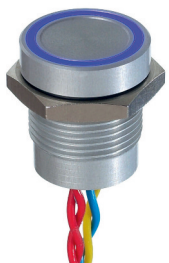


PBAT5AF0000

Flat
PBAT5

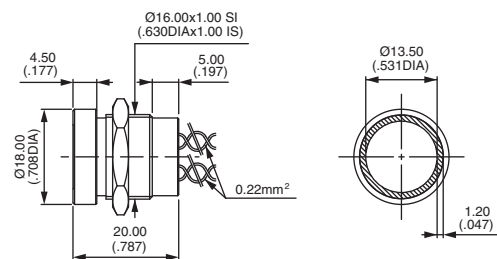


With standard illuminated ring



PBAR1AF0000A0B

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



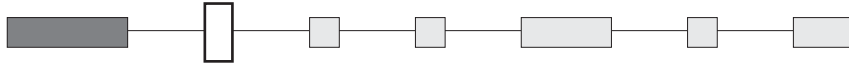
Wire colours : see "Electrical functions"

PBA series

Piezo switches Ø 16 (.630)

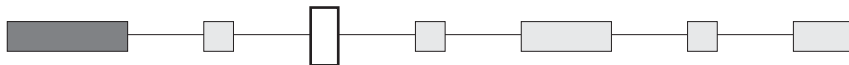
Options

ELECTRICAL FUNCTION

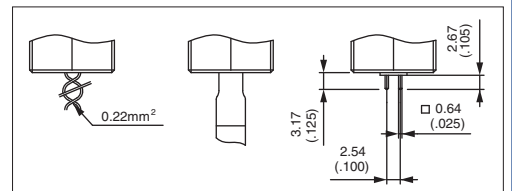


- A NO pulse
- B NC pulse
- 1 ON - OFF - Requires external power supply - Cannot be combined with T5 operator.
Illumination type W only.

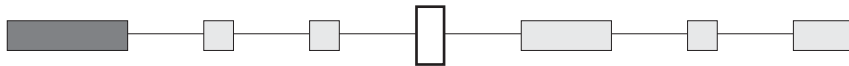
TERMINALS



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



CASE COLOURS / MATERIALS

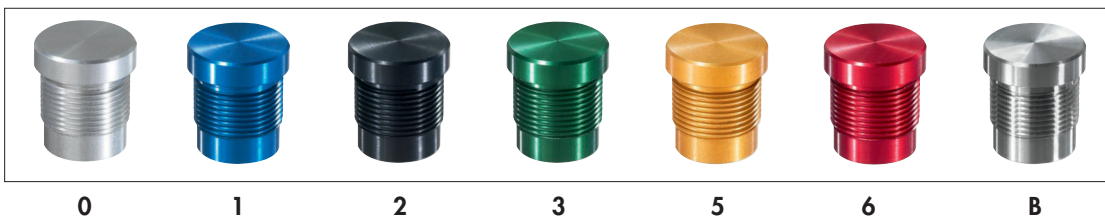


| Code | Colour |
|----------|-----------------------------------|
| 0 | Natural anodized aluminium |
| 1 | Blue anodized aluminium |
| 2 | Black anodised aluminium |

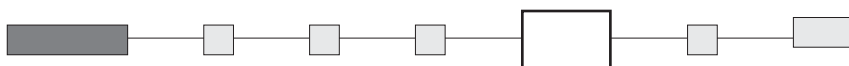
| Code | Colour |
|------|--------------------------|
| 3 | Green anodized aluminium |
| 5 | Gold anodized aluminium |
| 6 | Red anodised aluminium |

| Code | Colour |
|----------|-----------------------------|
| B | Stainless steel 316L |

Bold = standard



RATINGS



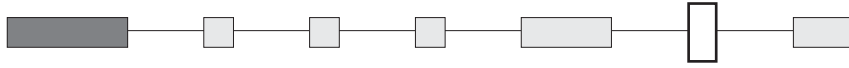
- 000 Standard
- 002 1A 24VAC or DC (NO pulse only, function A)

PBA series

Piezo switches Ø 16 (.630)

Options

TYPE OF ILLUMINATION / VOLTAGE

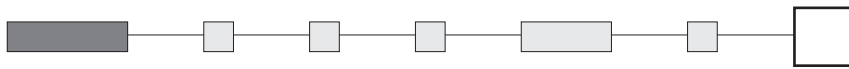


Blank : non-illuminated

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

B2

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

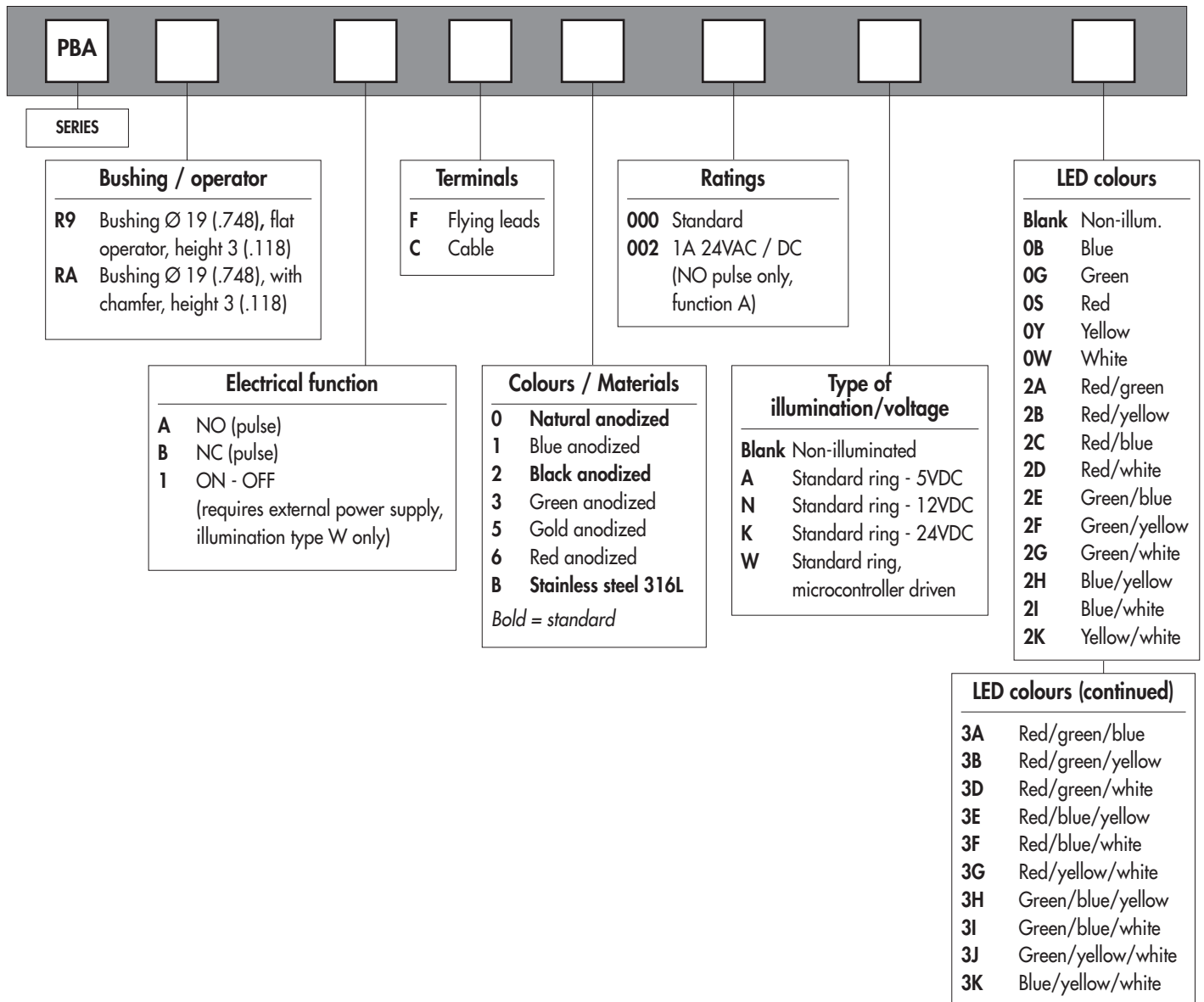
3A : red/green/blue - 3B : red/green/yellow - 3D : red/green/white - 3E : red/blue/yellow - 3F : red/blue/white
3G : red/yellow/white - 3H : green/blue/yellow - 3I : green/blue/white - 3J : green/yellow/white - 3K : blue/yellow/white

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

PBA series

Piezo switches Ø 19 (.748)

Overview



B2

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).

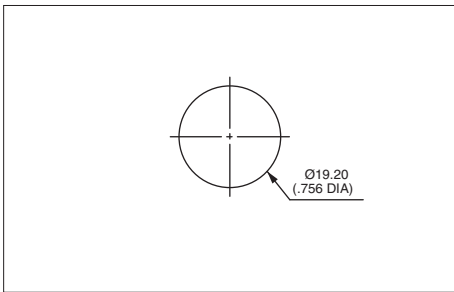


Packaging unit : 20 pieces (flying lead terminals) or 25 pieces (cable terminals)

PBA series

Piezo switches \varnothing 19 (.748)

Illuminated or non-illuminated

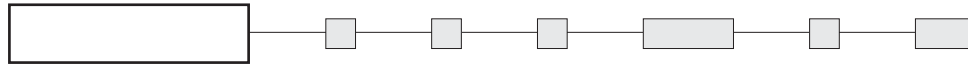


- Operator \varnothing 22 mm (.866)

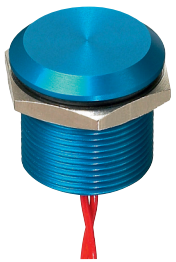
Shown with flying lead terminals.

B2

MODEL STRUCTURE



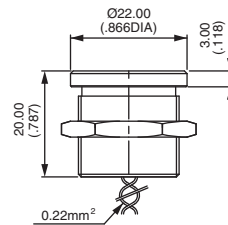
Non-illuminated - operator height 3 mm (.118)



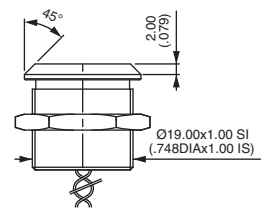
PBARAAF1000

Flat
PBAR9

With chamfer
PBARA

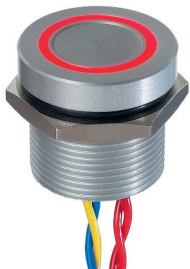


R9



RA

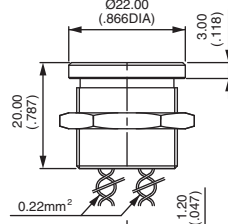
With standard illuminated ring - operator height 3 mm



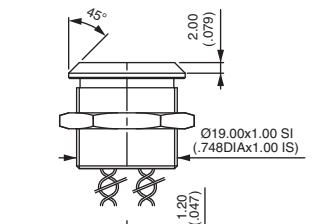
PBAR9AF0000A0S

Flat
PBAR9

With chamfer
PBARA



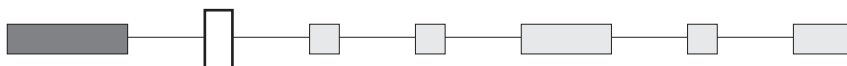
R9



RA

Wire colours : see "Electrical functions".

ELECTRICAL FUNCTIONS



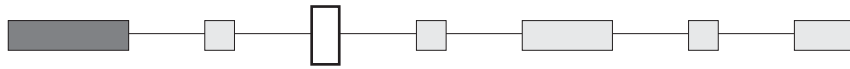
- A NO pulse
- B NC pulse
- 1 ON - OFF - Requires external power supply - Illumination type W only.

PBA series

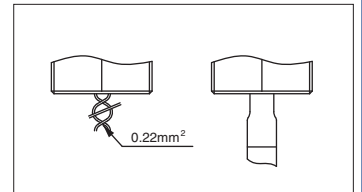
Piezo switches Ø 19 (.748)

Options

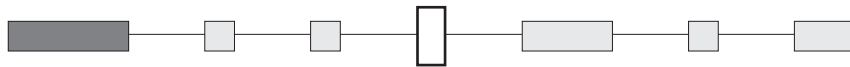
TERMINALS



F Flying leads
C Cable



CASE COLOURS / MATERIALS

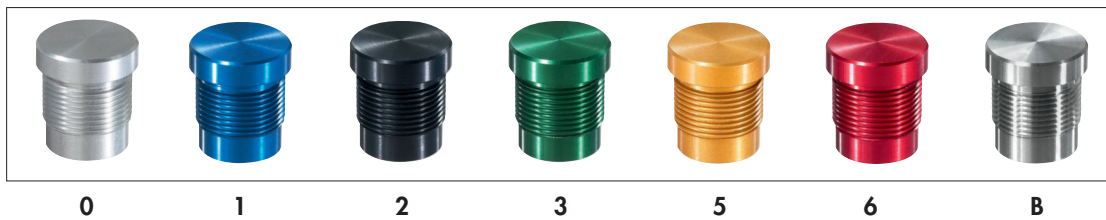


| Code | Colour |
|----------|-----------------------------------|
| 0 | Natural anodized aluminium |
| 1 | Blue anodized aluminium |
| 2 | Black anodised aluminium |

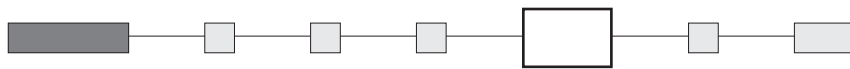
| Code | Colour |
|----------|--------------------------|
| 3 | Green anodized aluminium |
| 5 | Gold anodized aluminium |
| 6 | Red anodised aluminium |

| Code | Colour |
|----------|-----------------------------|
| B | Stainless steel 316L |

Bold = standard

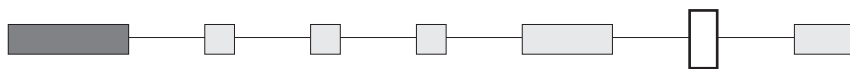


RATINGS



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

TYPE OF ILLUMINATION / VOLTAGE



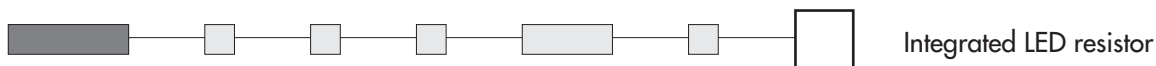
| | 5VDC | 12VDC | 24VDC | Microcontroller driven |
|---|----------|----------|----------|------------------------|
| ○ | A | N | K | W |

PBA series

Piezo switches Ø 19 (.748)

Options

LED COLOURS



Blank : non-illuminated



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

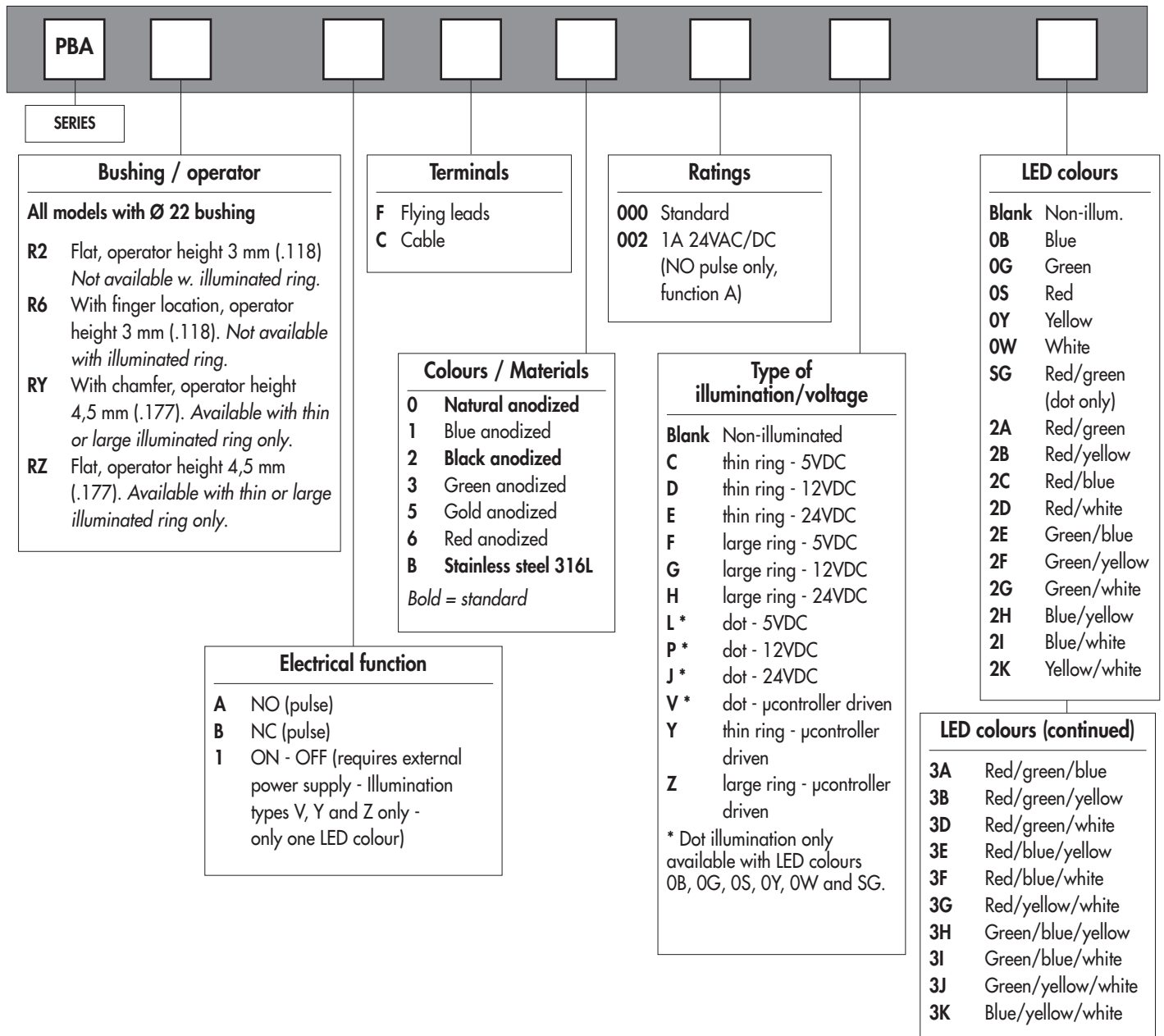
3A : red/green/blue - 3B : red/green/yellow - 3D : red/green/white - 3E : red/blue/yellow - 3F : red/blue/white
3G : red/yellow/white - 3H : green/blue/yellow - 3I : green/blue/white - 3J : green/yellow/white - 3K : blue/yellow/white

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

PBA series

Piezo switches Ø 22 (.866)

Overview



B2

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).



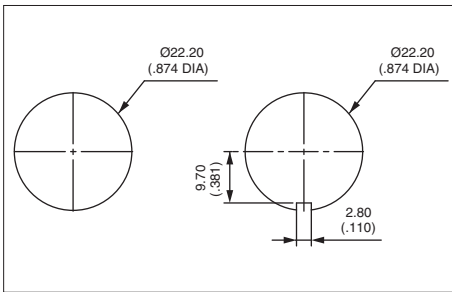
Packaging unit : 20 pieces (flying lead terminals) or 25 pieces (cable terminals)

PBA series

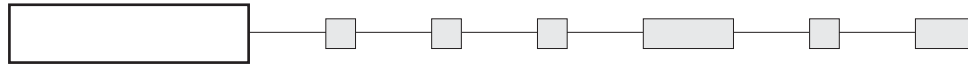
Piezo switches \varnothing 22 (.866)

Illuminated or non-illuminated

- Operator \varnothing 28 mm (1.102)



MODEL STRUCTURE



Wire colours : see "Electrical functions".

B2

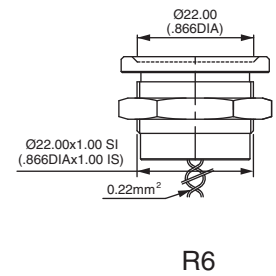
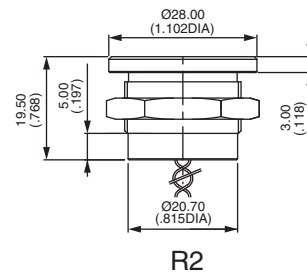
Non-illuminated - operator height 3 mm (.118)



Flat
PBAR2

With finger location
PBAR6

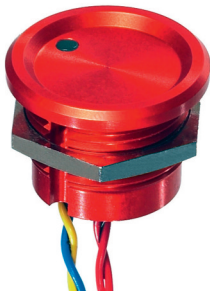
PBAR2AF6000



R2

R6

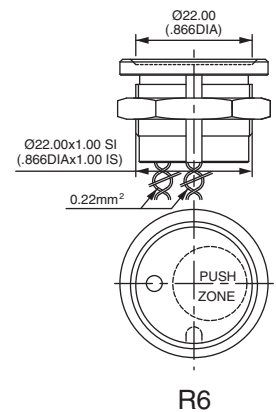
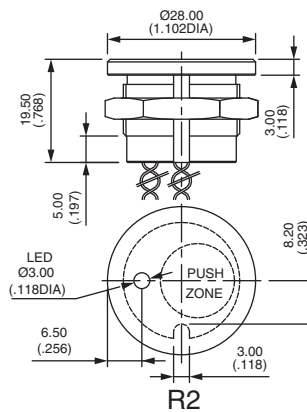
With illuminated dot - operator height 3 mm (.118)



Flat
PBAR2

With finger location
PBAR6

PBAR6AF6000LOG



R2

R6

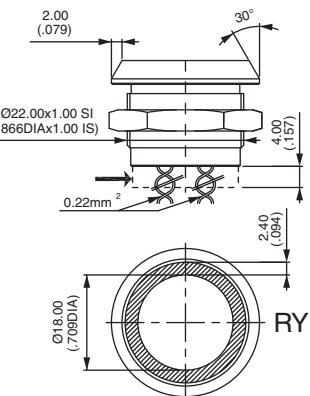
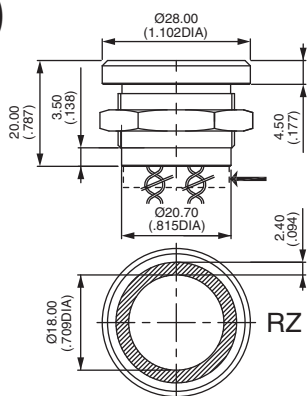
With thin illuminated ring - operator height 4,50 (.177)



Flat
PBARZ

With chamfer
PBARY

PBARYAF0000COB



RZ

RY

→ Dimension of ON-OFF models

PBA series

Piezo switches $\varnothing 22$ (.866)

Illuminated or non-illuminated

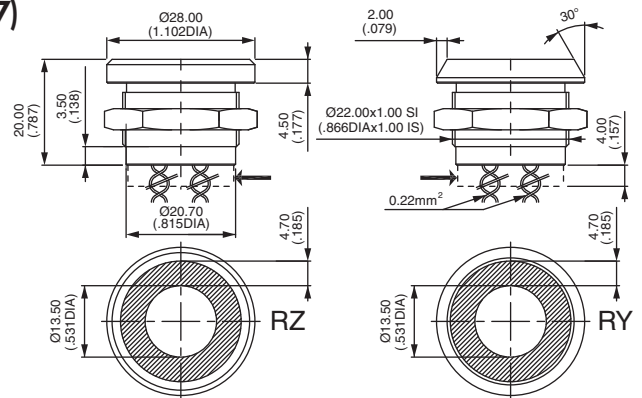
With large illuminated ring - operator height 4,50 (.177)



PBARYAF0000FOB

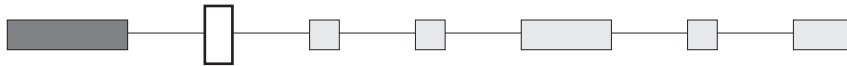
Flat
PBARZ

With chamfer
PBARY



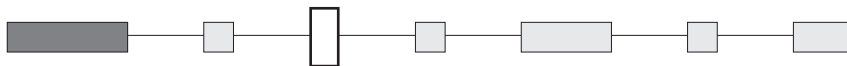
→ Dimension of ON-OFF models

ELECTRICAL FUNCTIONS

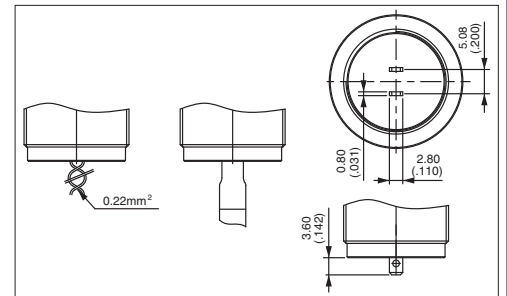


- A NO pulse
- B NC pulse
- 1 ON - OFF - Requires external power supply - Illumination types V, Y and Z only - one LED colour only.

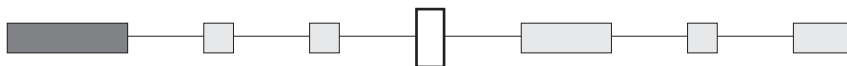
TERMINALS



- 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

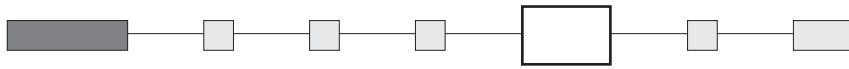
B

PBA series

Piezo switches Ø 22 (.866)

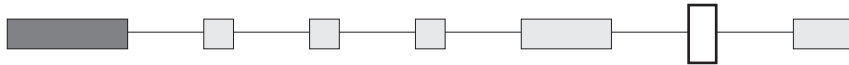
Options

RATINGS



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

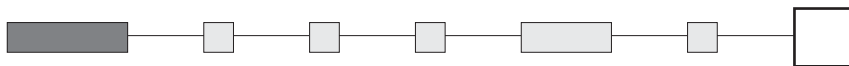
TYPE OF ILLUMINATION / VOLTAGE



| | 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.

B2



PBA series

ATEX approved piezo switches

Distinctive features - Specifications - Overview

- Approved according to the ATEX 2014/34/EU 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 mm², 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.

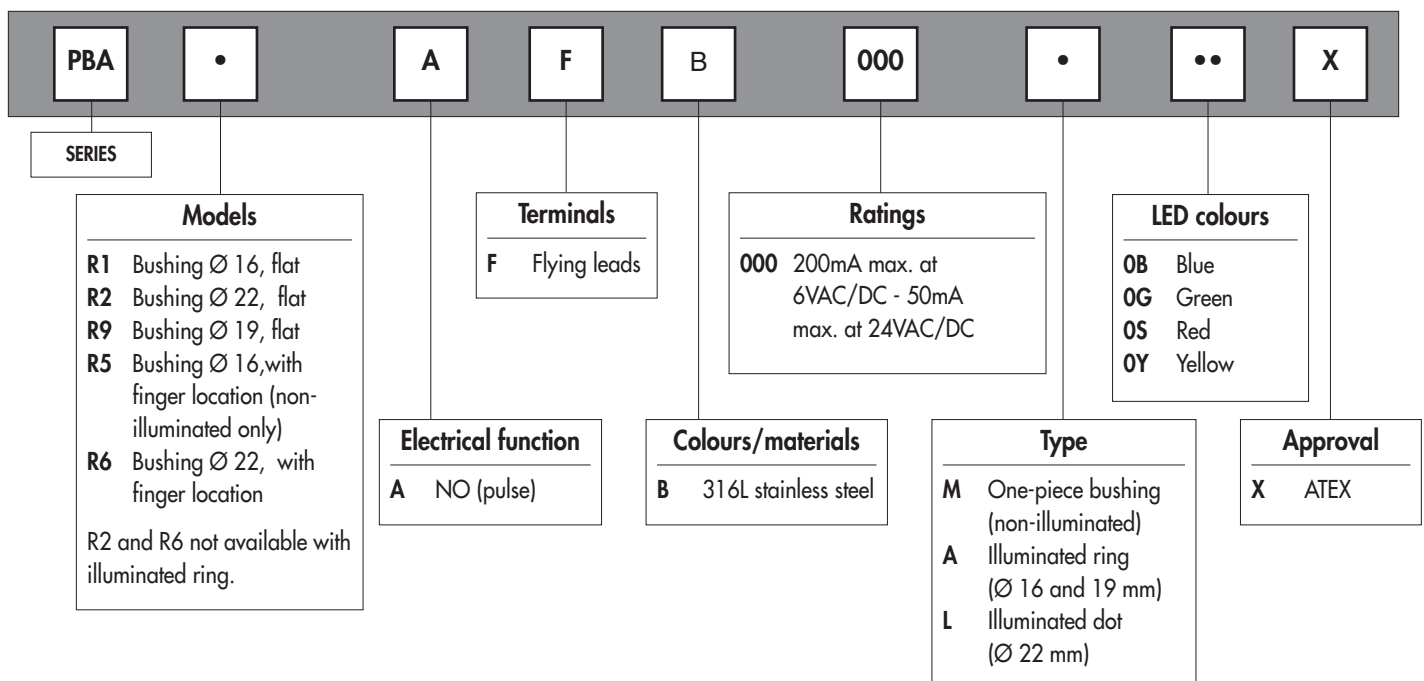
Packaging units : 20 pieces

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 60079-0:2009*, EN 60079-26:2007, EN 60079-11:2012, EN 50303:2000
- Sealing : IP66 per IEC 60529 (switches mounted on panel)

* Changes to the latest standards EN 60079-0:2012 do not affect compliance with the essential requirements.



PBA series

ATEX approved piezo switches

Illuminated or non-illuminated



- Highest classifications
- Universal



II 1 G D ; I M 1

Ex ia IIC T4 Ga ; Ex ia I Ma
Ex ia IIIC T135°C Da IP66

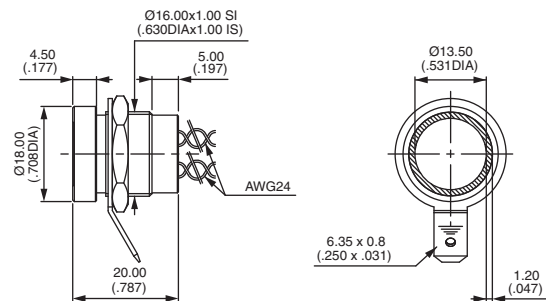
Usage : mines full of fire damp and potentially explosive atmospheres of groups IIC, IIB et IIA in T4 temperature class and/or in the presence of combustible dust (T135°C).

B2

Dia. 16 (.630) bushing - illuminated ring



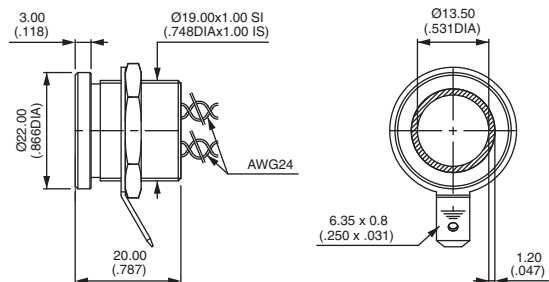
Stainless steel 316L, blue LED
PBAR1AFB000A0BX



Dia. 19 (.748) bushing - illuminated ring



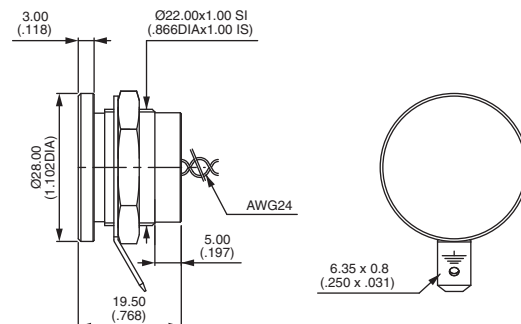
Stainless steel 316L, blue LED
PBAR9AFB000A0BX



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



Stainless steel 316L
PBAR2AFB000MX



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