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

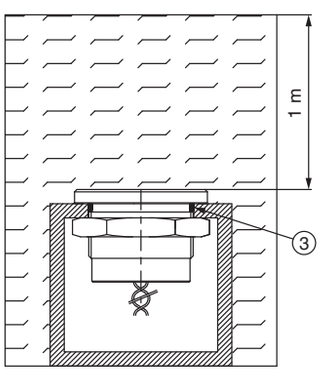
- Operating force : 2 to 6N
- Torque : 2,5Nm min. - 3Nm max.

MATERIALS

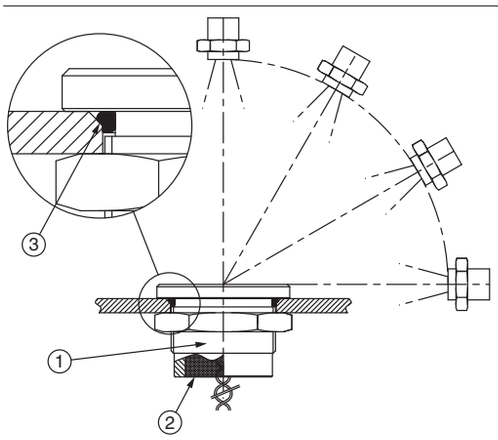
- Case : aluminium, anodized or stainless steel 316L
- Multi-wire leads section 0,22 mm^2 length 300 mm, twisted by pair
- Cable, length 300 mm, section depending on switch model
- PC terminals : bronze, tin plated

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



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

The company reserves the right to change specifications without notice.

PBA series

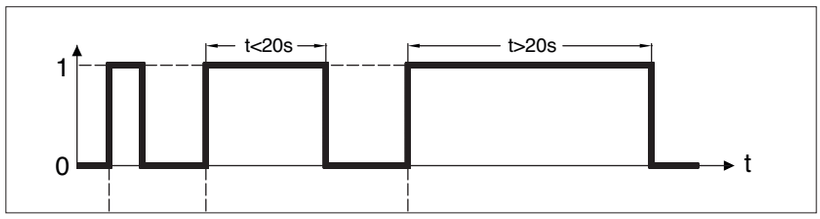
Piezo switches

Electrical functions

B2

FINGER PRESSURE applied to switch

1 = pressure
0 = no pressure



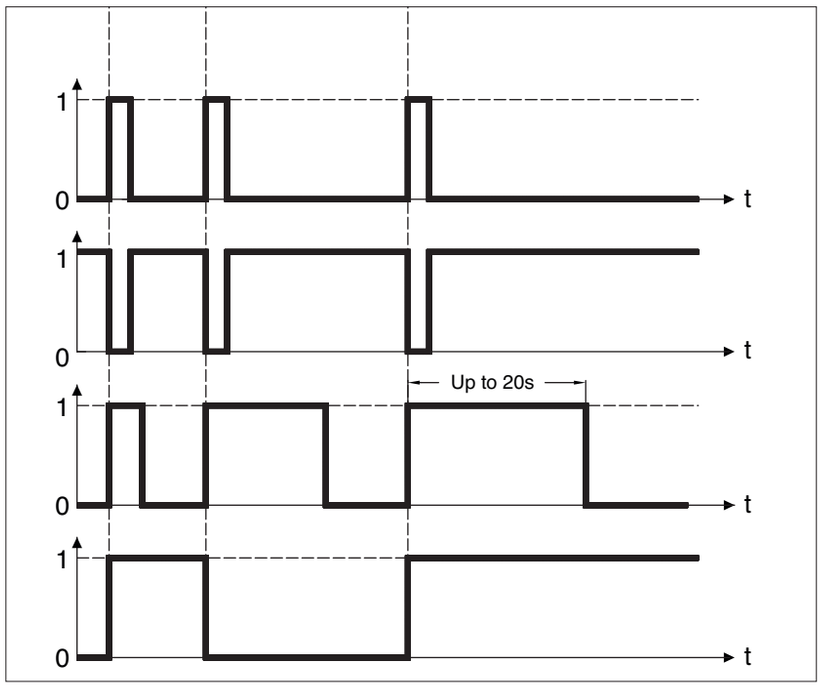
OUTPUT

- Momentary NO (pulse)
No external power supply required

- Momentary NC (pulse)
No external power supply required

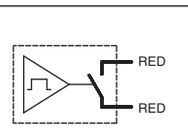
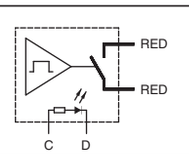
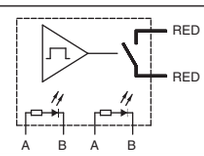
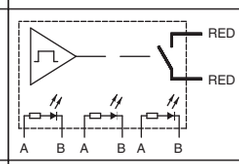
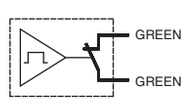
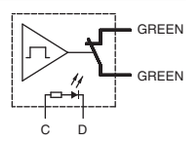
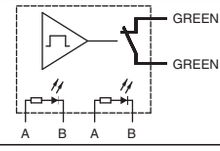
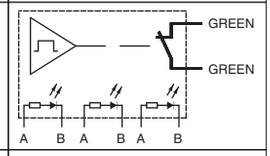
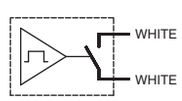
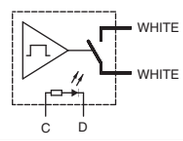
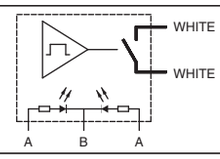
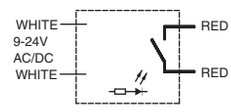
- Momentary NO prolongated pulse - *On request*
No external power supply required

- 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 prolongated 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

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)

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 & B only)

Colours / Materials

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

Bold = standard

Ratings

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

Type of illumination/ voltage

- **Blank** Non-illuminated
- **A** Standard ring - 5VDC
- **N** Standard ring - 12VDC
- **K** Standard ring - 24VDC
- **W** Standard ring, microcontroller driven

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 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.

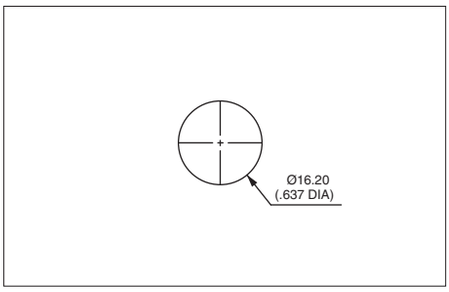
Mounting accessories : standard hardware supplied :1 hex nut 10-621 (19 mm ac. flats) and 1 O-ring.
Always add a ground washer U5735 when the panel is non-conductive (PVC, polycarbonate).

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

PBA series

Piezo switches Ø 16 (.630)

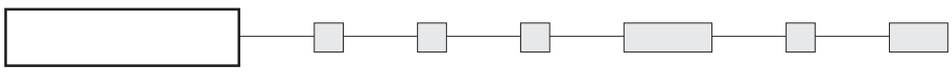
Illuminated or non-illuminated



- Operator Ø 18 mm (.708)

Shown with flying lead terminals.

MODEL STRUCTURE



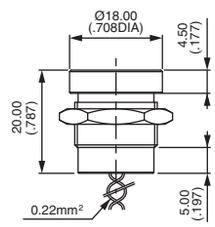
B2

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

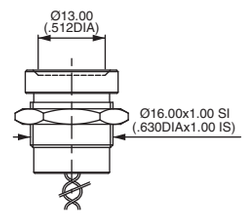
PBAR1AF2000

Flat
PBAR1

With finger location
PBAR5



R1

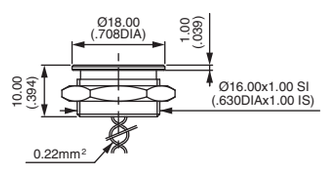


R5

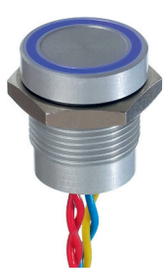
Non-illuminated, operator height 1 mm (.039)

PBAT5AF0000

Flat
PBAT5

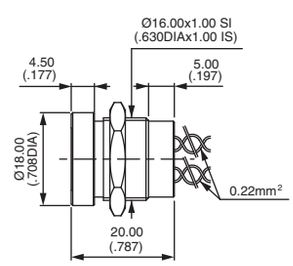


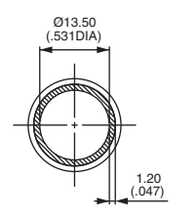
With standard illuminated ring



PBAR1AF0000A0B

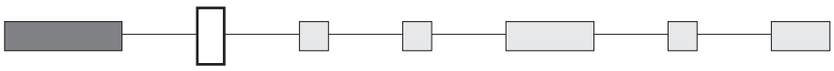
Flat operator, height 4,50 (.177)
PBAR1





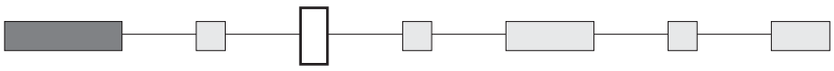
Wire colours : see "Electrical functions"

ELECTRICAL FUNCTION

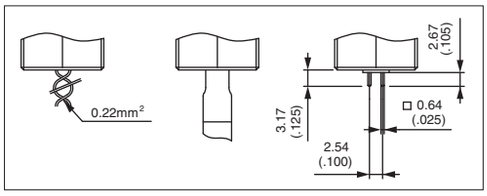


A NO pulse
B NC pulse
1 ON - OFF - Requires external power supply - Cannot be combined with T5 operator. Illumination type W only.

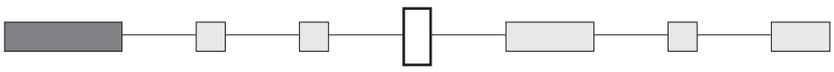
TERMINALS



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**

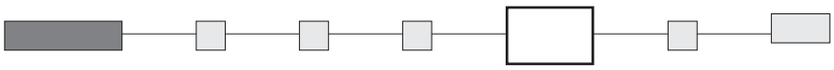
Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	**Stainless steel 316L**

Bold = standard

0 **1** **2** **3** **5** **6** **B**

RATINGS



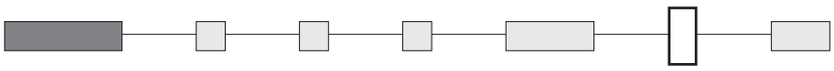
000 Standard
002 1A 24VAC or DC (NO pulse only, function A)

PBA series

Piezo switches Ø 16 (.630)

Options

TYPE OF ILLUMINATION / VOLTAGE

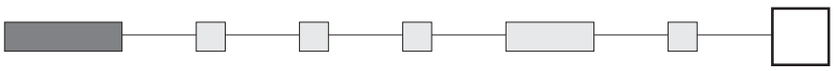


Blank : non-illuminated

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

B2

LED COLOURS



Integrated LED resistor

Blank : non-illuminated

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

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

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)
1	ON - OFF (requires external power supply, illumination type W only)

Colours / Materials

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

Bold = standard

Type of illumination/voltage

Blank	Non-illuminated
A	Standard ring - 5VDC
N	Standard ring - 12VDC
K	Standard ring - 24VDC
W	Standard ring, microcontroller driven

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 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.

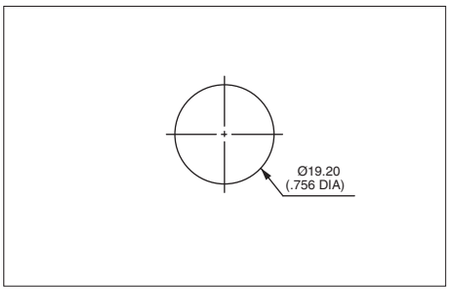
Mounting accessories : standard hardware supplied :1 hex nut 10-855-0 (22 mm ac. flats) and 1 O-ring
Always add a ground washer U5736 when the panel is non-conductive (PVC, polycarbonate).

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

PBA series

Piezo switches Ø 19 (.748)

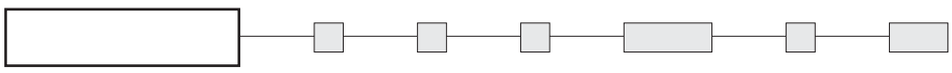
Illuminated or non-illuminated



- Operator Ø 22 mm (.866)

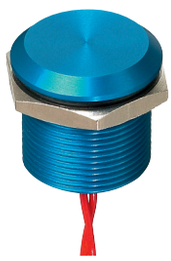
Shown with flying lead terminals.

MODEL STRUCTURE



B2

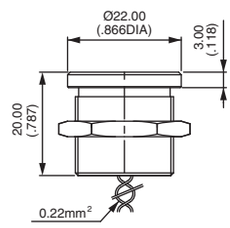
Non-illuminated - operator height 3 mm (.118)



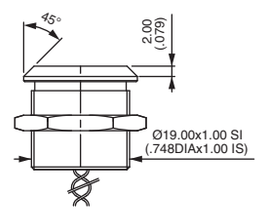
PBARAAF1000

Flat
PBAR9

With chamfer
PBARA

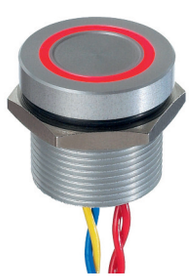


R9



RA

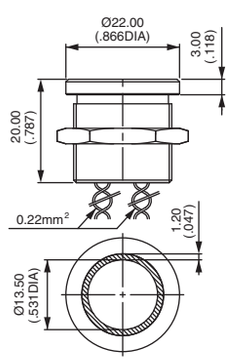
With standard illuminated ring - operator height 3 mm



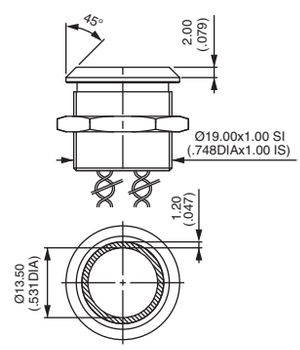
PBAR9AF0000A0S

Flat
PBAR9

With chamfer
PBARA



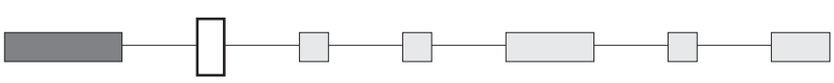
R9



RA

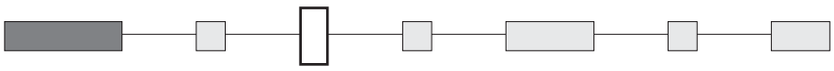
Wire colours : see "Electrical functions".

ELECTRICAL FUNCTIONS

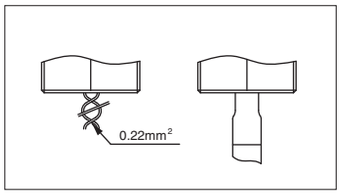


A	NO pulse
B	NC pulse
1	ON - OFF - Requires external power supply - Illumination type W only.

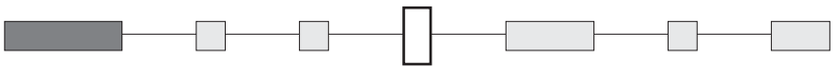
TERMINALS



F Flying leads
C Cable



CASE COLOURS / MATERIALS



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

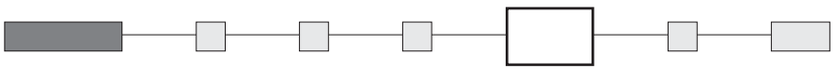
Code	Colour
3	Green anodized aluminium
5	Gold anodized aluminium
6	Red anodised aluminium

Code	Colour
B	**Stainless steel 316L**

Bold = standard

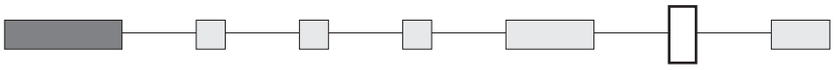
0 **1** **2** **3** **5** **6** **B**

RATINGS



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

TYPE OF ILLUMINATION / VOLTAGE



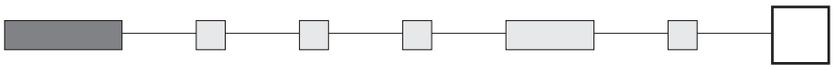
	5VDC	12VDC	24VDC	Microcontroller driven
○	A	N	K	W

PBA series

Piezo switches Ø 19 (.748)

Options

LED COLOURS



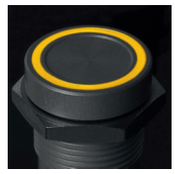
Integrated LED resistor

Blank : non-illuminated

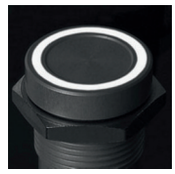
0B

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

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

Ratings

000 Standard

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

Colours / Materials

0 **Natural anodized**

1 Blue anodized

2 **Black anodized**

3 Green anodized

5 Gold anodized

6 Red anodized

B **Stainless steel 316L**

Bold = standard

Electrical function

A NO (pulse)

B NC (pulse)

1 ON - OFF (requires external power supply - Illumination types V, Y and Z only - only one LED colour)

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

V * dot - µcontroller driven

Y thin ring - µcontroller driven

Z large ring - µcontroller driven

* Dot illumination only available with LED colours 0B, 0G, 0S, 0Y, 0W and SG.

LED colours

Blank Non-illum.

0B Blue

0G Green

0S Red

0Y Yellow

0W White

SG Red/green (dot only)

2A Red/green

2B Red/yellow

2C Red/blue

2D Red/white

2E Green/blue

2F Green/yellow

2G Green/white

2H Blue/yellow

2I Blue/white

2K Yellow/white

LED 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 contact APEM.

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

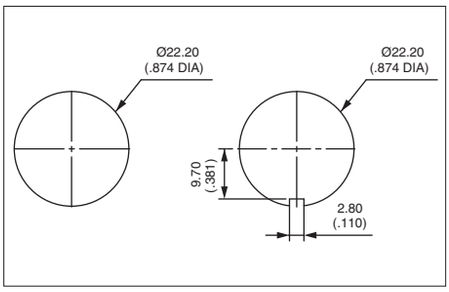
Mounting accessories : standard hardware supplied :1 hex nut 10-856-0 (25 mm ac. flats) and 1 O-ring
Always add a ground washer U5737 when the panel is non-conductive (PVC, polycarbonate).

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

PBA series

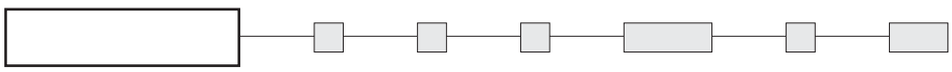
Piezo switches Ø 22 (.866)

Illuminated or non-illuminated



• Operator Ø 28 mm (1.102)

MODEL STRUCTURE



Wire colours : see "Electrical functions".

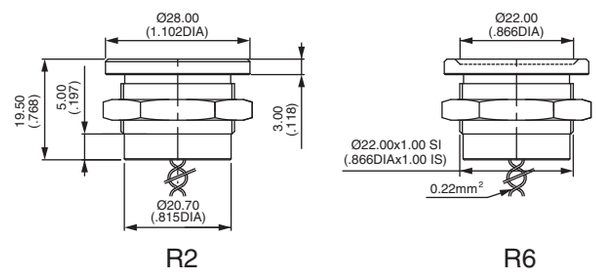
B2

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

PBAR2AF6000

Flat
PBAR2

With finger location
PBAR6

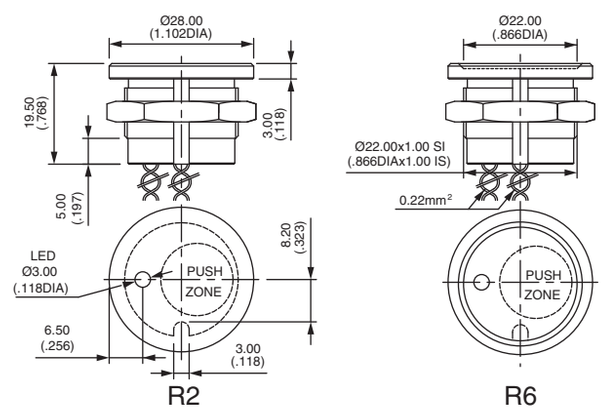


With illuminated dot - operator height 3 mm (.118)

PBAR6AF6000L0G

Flat
PBAR2

With finger location
PBAR6

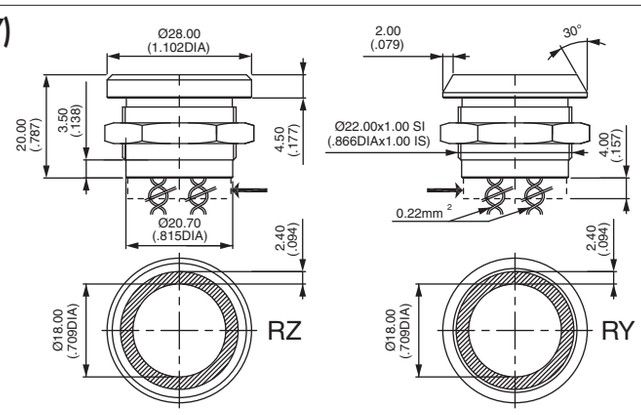


With thin illuminated ring - operator height 4,50 (.177)

PBARYAF0000C0B

Flat
PBARZ

With chamfer
PBARY



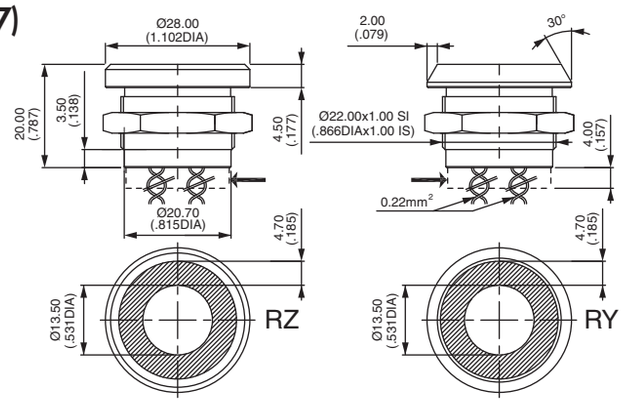
→ Dimension of ON-OFF models

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

PBARYAF0000F0B

Flat
PBARZ

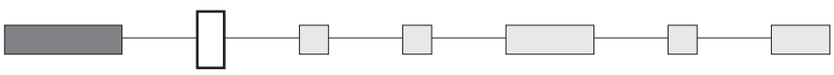
With chamfer
PBARY



→ Dimension of ON-OFF models

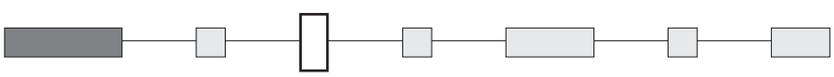
B2

ELECTRICAL FUNCTIONS

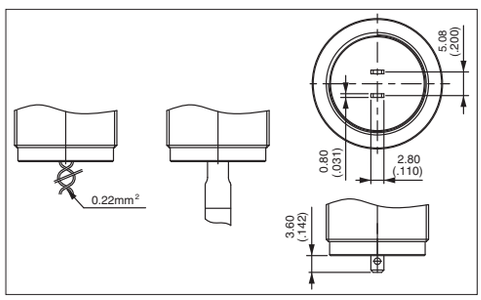


A NO pulse
B NC pulse
1 ON - OFF - Requires external power supply - Illumination types V, Y and Z only - one LED colour only.

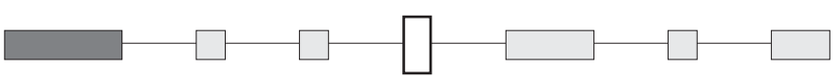
TERMINALS



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**

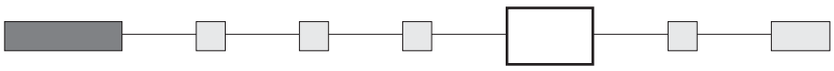
0 **1** **2** **3** **5** **6** **B**

PBA series

Piezo switches Ø 22 (.866)

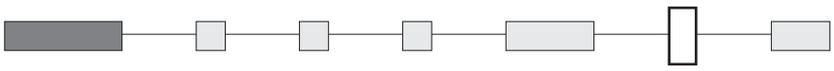
Options

RATINGS



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

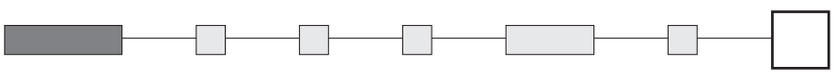
TYPE OF ILLUMINATION / VOLTAGE



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

⚠ Dot illumination only available with LED colours 0B, 0G, 0S, 0Y, 0W and SG.

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
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 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

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.

MATERIALS

- Case : 316L stainless steel
- Terminals : multi-wire leads
  0,22 mm^2, 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.

PBA	•	A	F	B	000	•	••	X
SERIES								

Models

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

R2 and R6 not available with illuminated ring.

Terminals

F	Flying leads

Ratings

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

LED colours

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

Electrical function

A	NO (pulse)

Colours/materials

B	316L stainless steel

Type

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

Approval

X	ATEX

PBA series

ATEX approved piezo switches

Illuminated or non-illuminated

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

II 1 G D ; I M1

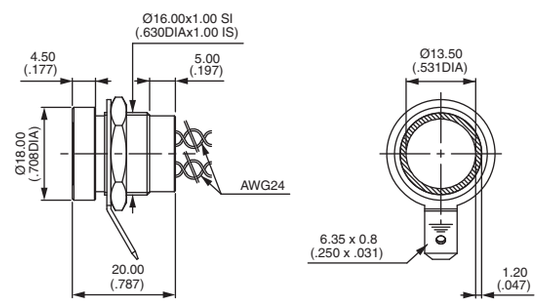
Ex ia IIC T4 Ga ; Ex ia I Ma
Ex ia IIIC T135°C Da IP66

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

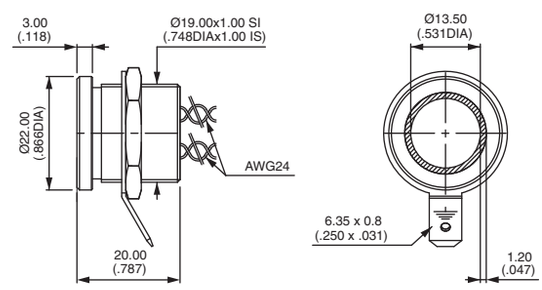
Dia. 16 (.630) bushing - illuminated ring

Stainless steel 316L, blue LED
PBAR1AFB000A0BX



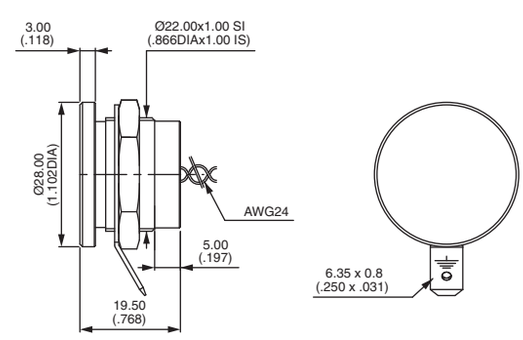
Dia. 19 (.748) bushing - illuminated ring

Stainless steel 316L, blue LED
PBAR9AFB000A0BX



Dia. 22 (866) bushing - non-illuminated

Stainless steel 316L
PBAR2AFB000MX



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Apem:

PBAR1AF0000 PBAR1AF0000A0G PBAR1AF0020 PBAR1AF1000 PBAR1AF2000 PBAR1AF2000A0B PBAR1AF2000A0G PBAR1AF2000A0S PBAR1AF2000A0Y PBAR1AF3000 PBAR1AF6000 PBAR1AF6000A0G PBAR1AF6000A0S PBAR1AF6000A0Y PBAR1AF9000 PBAR2AF0000 PBAR2AF0000L0G PBAR2AF0000L0S PBAR2AF1000 PBAR2AF2000 PBAR2AF2000L0G PBAR2AF2000L0S PBAR2AF6000 PBAR2AF9000 PBAR5AF0000 PBAR5AF6000 PBAR6AF0000 PBAR6AF0000L0G PBAR6AF0000L0S PBAR6AF0000L0Y PBAR6AF1000 PBAR6AF3000 PBAR6AF5000 PBAR6AF6000 PBAR6AF6000L0S PBAR6AF9000 PBAR1AF6000A0B PBAR2AF2000L0B PBAR2AF6000L0Y PBAR6BF0000 PBAR11F0000WOW PBAR1ACB002K3B