IP series

Pushbutton switches for harsh environments • bushing Ø 12 mm • latching



DISTINCTIVE FEATURES

Latching action
Illuminated or non-illuminated
Compact
Flat round actuator for optional marking
Sealed to IP67



ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Robustness (non-illuminated) : IK06 according to EN 62262 (1 joule)
- Operating temperature : -40 °C to +85 °C (-40 °F to +185 °F)

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load:
  4 A 12 VDC, 200,000 cycles
  1 A 48 VDC, 200,000 cycles
  2 A 48 VDC, 100,000 cycles
  3 A 48 VDC, 75,000 cycles
  1 A 72 VDC, 15,000 cycles

For W terminals, current has to be limited to 400 mA.

- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500 VDC
- Dielectric strength : 1,500 Vrms between terminals
  1,000 Vrms between terminals and frame

LED COMPONENT SPECIFICATIONS

LED color	Forward current	Typ. forward voltage	Max. forward voltage
Super red (L0S)	20 mA	1.95 V	1.95 V
Yellow (L0Y)	20 mA	2 V	2.05 V
Green (L0G)	20 mA	2.1 V	2.5 V
Blue (L0B)	20 mA	3.2 V	4 V

A resistor must be series-connected by the user.

$$\text{Resistor value} = \frac{\text{supply voltage - LED forward voltage}}{\text{LED forward current}}$$

The company reserves the right to change specifications without notice.

IP series

Pushbutton switches for harsh environments • bushing Ø 12 mm • latching

GENERAL SPECIFICATIONS

- Panel thickness : 1.5 mm (.059) min. 5.5 mm (.217) max.
- Total travel : 2.5 mm (.098) ± 0.3 mm
- Typical operating force : 10 N
- Low level/mech. life : 200.000 cycles
- Torque : 1.5 Nm max. applied to nut
- Soldering : 320 °C (608 °F) max. for 3 sec.

MATERIALS

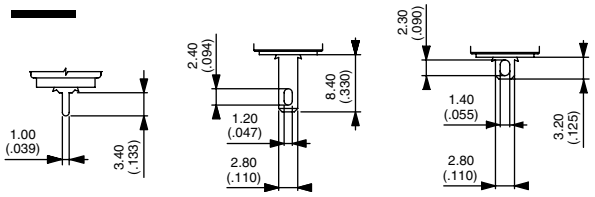
- Case : thermoplastic, UL 94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamak), black painted
- Contacts : silver, gold plated
- Output wires (flying lead terminals) :
  F version : AWG20, section 0.6 mm²
  W version : AWG24, section 0.23 mm²
- LED wires :
  F version : AWG26, section 0.12 mm²
  W version : AWG24, section 0.23 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.

AGENCY APPROVAL

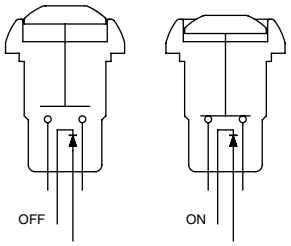
2 A 125 VAC/250 VAC
File E83438
See following pages.

TERMINALS



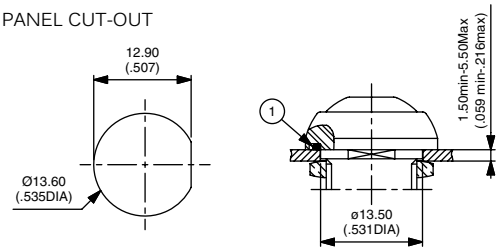
Straight **P** | Quick-connect **Z1** | Solder lug **S**

ELECTRICAL FUNCTION



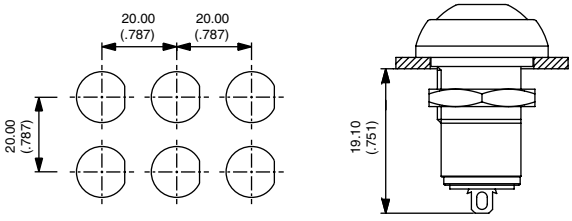
MOUNTING

PANEL CUT-OUT



① - Flat seal

MATRIX MOUNTING - BACK OF PANEL SPACE REQUIREMENT



IP series

Pushbutton switches for harsh environments • bushing Ø 12 mm • latching

BUILD YOUR PART NUMBER

BASIC PART NUMBER

IP _ _ _ _ _

SERIES

IP

ACTUATOR SHAPES

C	Square
R	Round, curved
P	Round, flat

Actuator marking available on round flat models (symbol 10 mm max.). On request.

ELECTRICAL FUNCTION

1	OFF - ON

TERMINALS

S	Solder lugs
F	Flying leads, standard
W	Flying leads, thin
Z1	Quick-connect
P	Straight PC

CONTACTS

AD	Silver, gold plated

OPTIONS

_ _ _ _

ACTUATOR COLORS

1	Blue
B	Dark blue
2	Black
3	Green
4	Grey
5	Yellow
6	Red
7/1	White
8	Bright chrome
9	Orange
A	Satin chrome

LED COLORS

Blank	Non-illuminated.
L0S	Super red
L0Y	Yellow
L0G	Green
L0B	Blue

OPTIONS

100	Satin chrome bezel
101	Bright chrome bezel (round only)
104	High actuator (non-illum. round models only)

APPROVAL

UL	Consult factory for detail of approved models.

ABOUT THIS SERIES

On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart.

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

A sealing boot is available to protect the switches against frost and sand (P/N U5125). See "Sealing Boots" section of website.

Mounting accessories : Standard hardware supplied : 1 hex nut 14 mm (.551) across flats and 1 O-Ring.

IP series

Pushbutton switches for harsh environments • bushing Ø 12 mm • latching

ILLUMINATED - SQUARE MODELS



Solder lug terminals

IPC1SAD OFF - ON

Flying lead terminals

IPC1FAD OFF - ON

For THIN flying leads, replace F with W.
Also available with straight PC : **IPC1PAD** or quick-connect terminals : **IPC1Z1AD**.
Wire colors : black : contact, red : LED anode(+), blue : LED cathode(-)

ILLUMINATED - ROUND MODELS



Solder lug terminals

IPR1SAD OFF - ON

Flying lead terminals

IPR1FAD OFF - ON

For THIN flying leads, replace F with W.
Also available with straight PC : **IPR1PAD** or quick-connect terminals : **IPR1Z1AD**.
Wire colors : black : contact, red : LED anode(+), blue : LED cathode(-)

NON-ILLLUMINATED - SQUARE MODELS



Solder lug terminals

IPC1SAD OFF - ON

Flying lead terminals

IPC1FAD OFF - ON

For THIN flying leads, replace F with W.
Also available with straight PC : **IPR1PAD** or quick-connect terminals : **IPC1Z1AD**.

NON-ILLUMINATED - ROUND MODELS



CURVED ACTUATOR

Solder lug terminals **IPR1SAD** OFF - ON

Flying lead terminals **IPR1FAD** OFF - ON

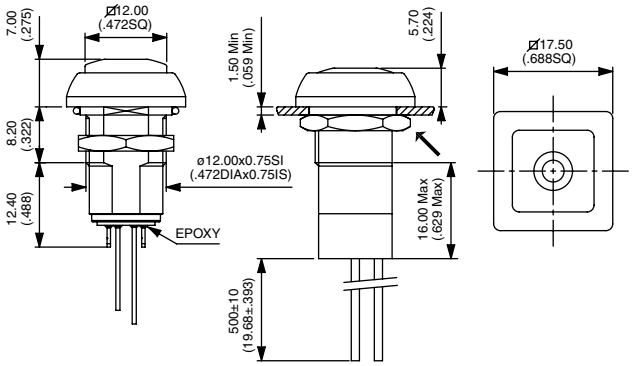
FLAT ACTUATOR

Solder lug terminals **IPP1SAD** OFF - ON

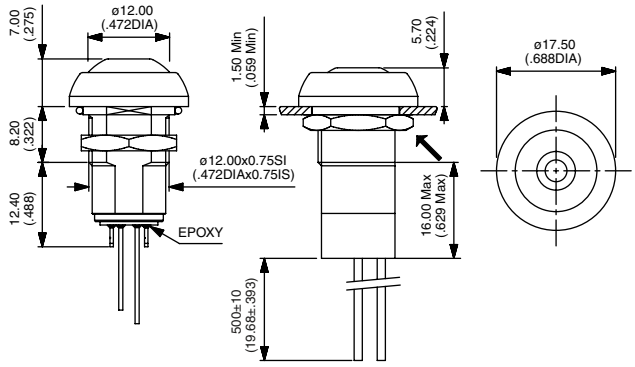
Flying lead terminals **IPP1FAD** OFF - ON

For THIN flying leads, replace F with W.
Also available with straight PC: **IP•1PAD** or quick-connect terminals: **IP•1Z1AD**

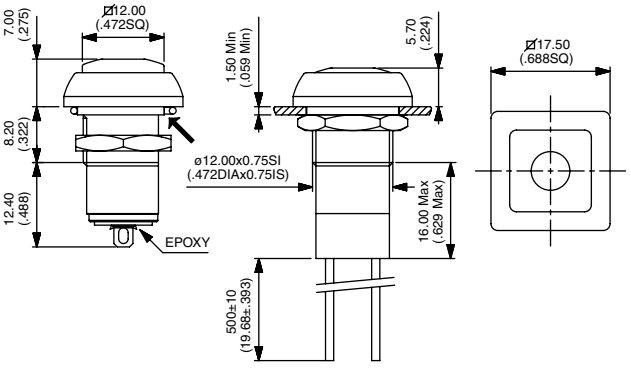
→ FLAT All drawings with standard flying lead terminals.



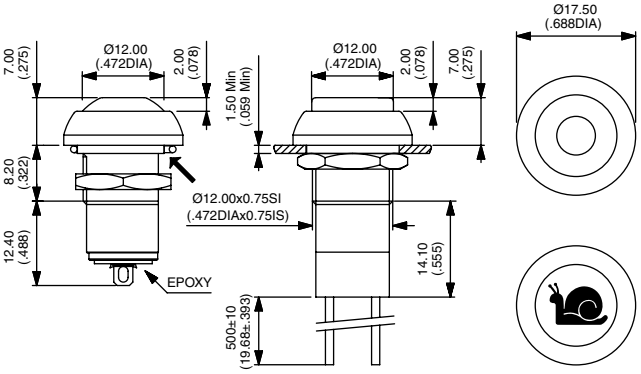
→ FLAT



→ FLAT



→ FLAT



IP series

Pushbutton switches for harsh environments • bushing Ø 12 mm • latching

ACTUATOR COLORS

BASIC P/N

1	Blue	**6**	Red
B	Dark blue	**7/1**	White
2	Black	**8**	Bright chrome
3	Green	**9**	Orange
4	Grey	**A**	Satin chrome
5	Yellow		

LED COLORS

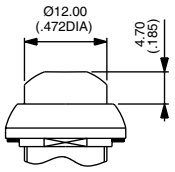
BASIC P/N

Blank	Non-illuminated
L0S	Super red
L0Y	Yellow
L0G	Green
L0B	Blue

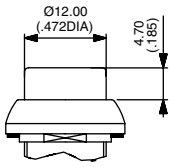
OPTIONS

BASIC P/N

100	Satin chrome bezel
101	Bright chrome bezel (round only)
104	High actuator - For round, non-illuminated only



104 IPR



104 IPP

AGENCY APPROVAL

BASIC P/N

UL

Consult factory for details of approved models.

To order switches marked UL, complete above box with "UL".