

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 (LOS) | 20 mA | 1.95 V | 1.95 V |
| Yellow (LOY) | 20 mA | 2 V | 2.05 V |
| Green (LOG) | 20 mA | 2.1 V | 2.5 V |
| Blue (LOB) | 20 mA | 3.2 V | 4 V |

A resistor must be series-connected by the user.
Resistor value = $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

The company reserves the right to change specifications without notice.

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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

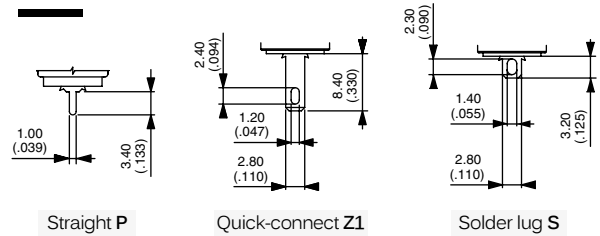
APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.

AGENCY APPROVAL

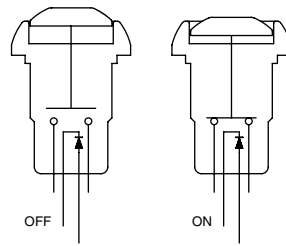


2 A 125 VAC/250 VAC
File E83438
See following pages.

TERMINALS

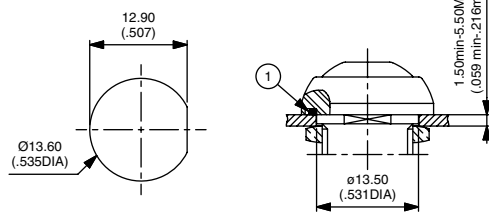


ELECTRICAL FUNCTION



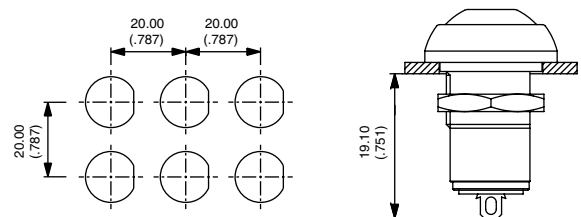
MOUNTING

PANEL CUT-OUT



① - Flat seal

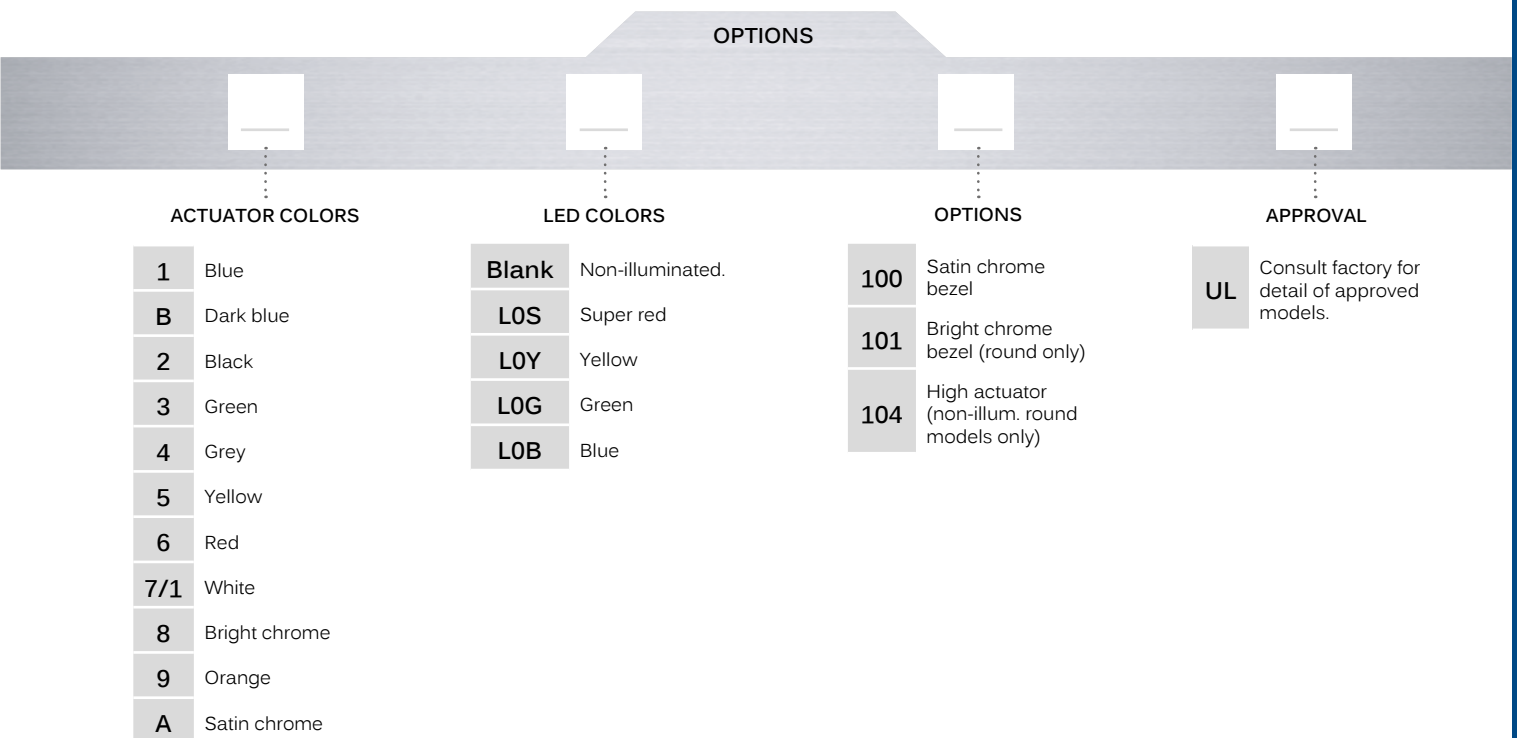
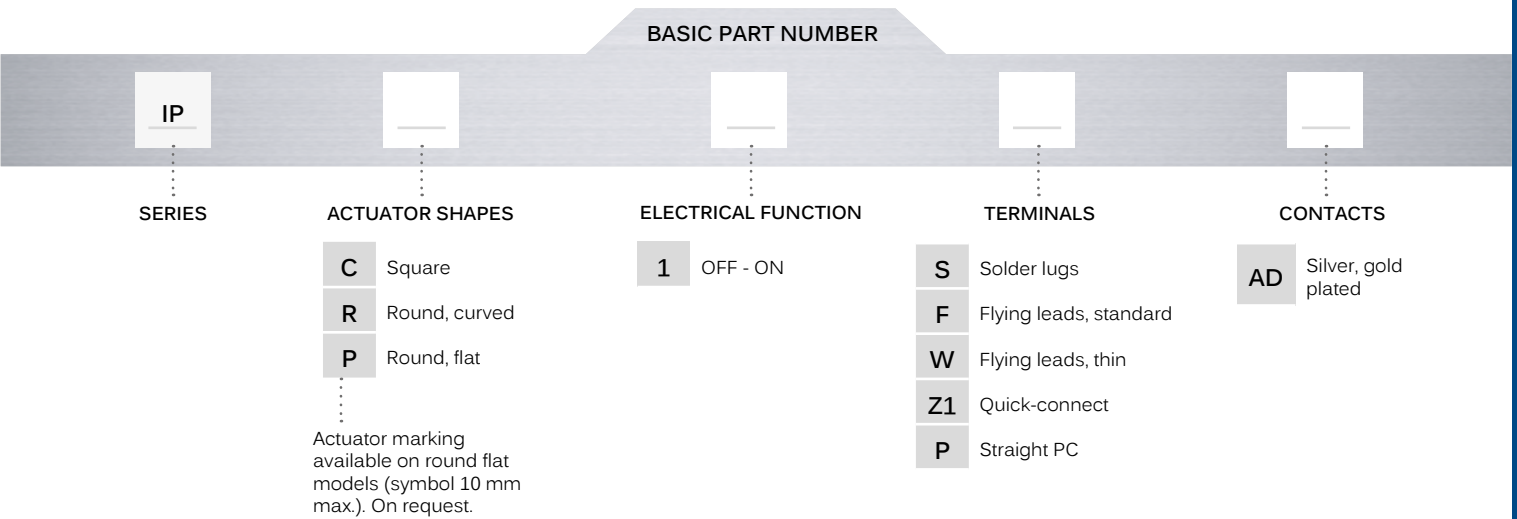
MATRIX MOUNTING - BACK OF PANEL SPACE REQUIREMENT



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BUILD YOUR PART NUMBER



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.

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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-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 : **IPR1PAD** or quick-connect terminals : **IPC1Z1AD**.

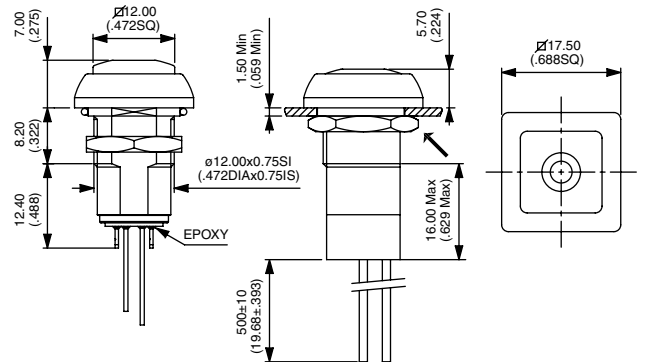
NON-ILLUMINATED - ROUND MODELS



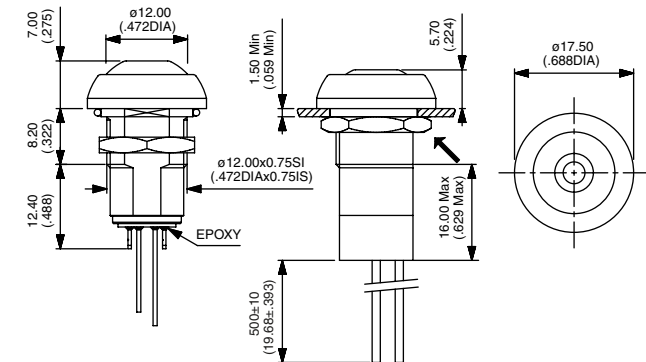
- CURVED ACTUATOR
- Solder lug terminals **IPR1SAD** OFF - ON
- Flying lead terminals **IPR1FAD** OFF - ON
- FLAT ACTUATOR
- Solder lug terminals **IPP1SAD** OFF - ON
- Flying lead terminals **IPP1FAD** OFF - ON

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

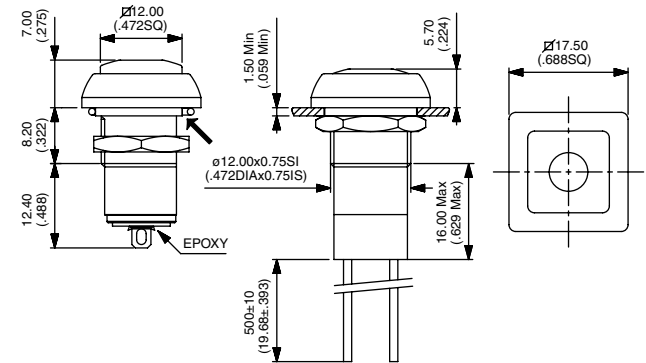
→ FLAT All drawings with standard flying lead terminals.



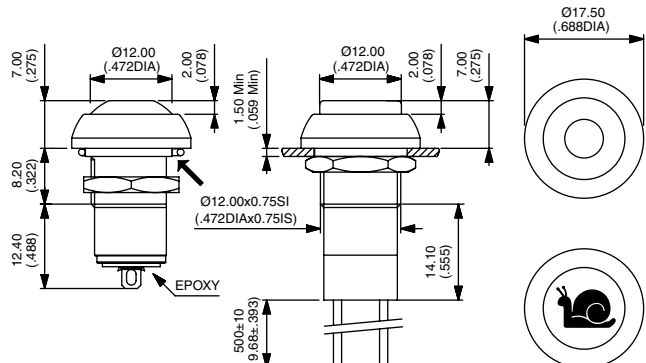
→ FLAT



→ FLAT



→ FLAT



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ACTUATOR COLORS



- | | | | |
|---|-----------|-----|---------------|
| 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

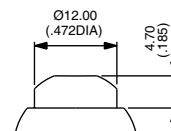


- | | |
|-------|-----------------|
| Blank | Non-illuminated |
| L0S | Super red |
| L0Y | Yellow |
| L0G | Green |
| L0B | Blue |

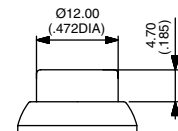
OPTIONS



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



104 IPR



104 IPP

AGENCY APPROVAL



- UL**
Consult factory for details of approved models.
To order switches marked UL, complete above box with "UL".