

IP series

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



DISTINCTIVE FEATURES

Illuminated or non-illuminated

Tactile feedback

Wide variety of configurations

Flat round actuator for optional marking

Sealed to IP67 and IP69K



ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing: IP67 according to IEC 60529
IP69K according to DIN 40050-9 (non-illuminated) with cap U5125
- 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 (gold plated silver contacts):
5 A 28 VDC, 70,000 cycles (only function 3)
0.2 A 48 VDC, 500,000 cycles
0.5 A 48 VAC, 500,000 cycles
- Initial contact resistance: 100 mΩ max.
- Insulation resistance: 1 GΩ min. at 500 VDC
- Dielectric strength: 1,500 Vrms
- Contact bounce: 10 ms

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



LED COMPONENT SPECIFICATIONS

LED color	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20 mA	2.1 V	2.3 V
Yellow (LOY)	20 mA	2.1 V	2.3 V
Green (LOG)	20 mA	2.1 V	2.3 V
Blue (LOB)	20 mA	3.2 V	3.8 V
White (LOW)	20 mA	3.35 V	4.25 V
Red/green (LSG)	20 mA	Red: 1.95 V / green: 2.1 V	2.5 V
Yellow/green (LYG)	20 mA	Yellow: 2 V / green: 2.1 V	2.5 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.

IP series

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

GENERAL SPECIFICATIONS

- Panel thickness: 1.5 mm (.059) min.
4 mm (.157 max.)
- Total travel:
Function 3: 1.7 mm (.067) ± 0.3 mm (0.012)
Function 5: 1.3 mm (.051) ± 0.3 mm (0.012)
- Typical operating force: 6 N ± 2 N
- Low level/mech. life: 1,000,000 cycles
- Torque: 1.5 Nm max. applied to nut
- Soldering: 320 °C (608 °F) max. for 3 sec.

MATERIALS

- Case: thermoplastic UL94-V0
- Actuator: polyamide 6/6
- Bushing/bezel: zinc die-cast (zamak), black painted
- Contacts: - silver, gold plated (std)
- brass, gold plated (for option 104)
- 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.

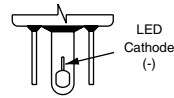
AGENCY APPROVAL



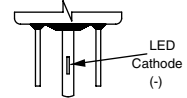
2 A 125 VAC/250 VAC
File E83438
See following pages.

TERMINALS

ILLUMINATED MODELS

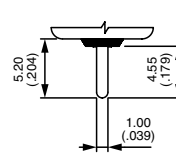


Solder lug S

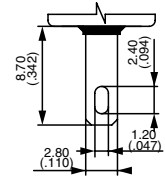


Straight P

NON-ILLUMINATED MODELS



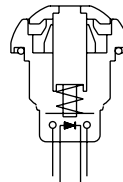
Straight P



Quick-connect Z1

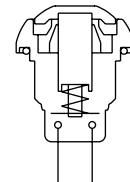
ELECTRICAL FUNCTIONS

ILLUMINATED MODELS

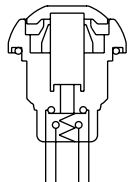


Function 3 (NO)

NON-ILLUMINATED MODELS



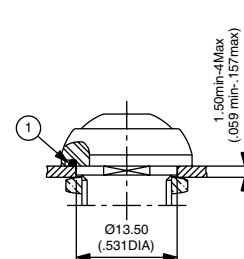
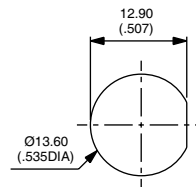
Function 3 (NO)



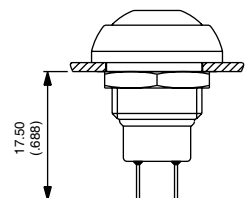
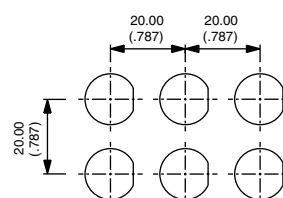
Function 5 (NC/NO)

MOUNTING

PANEL CUT-OUT



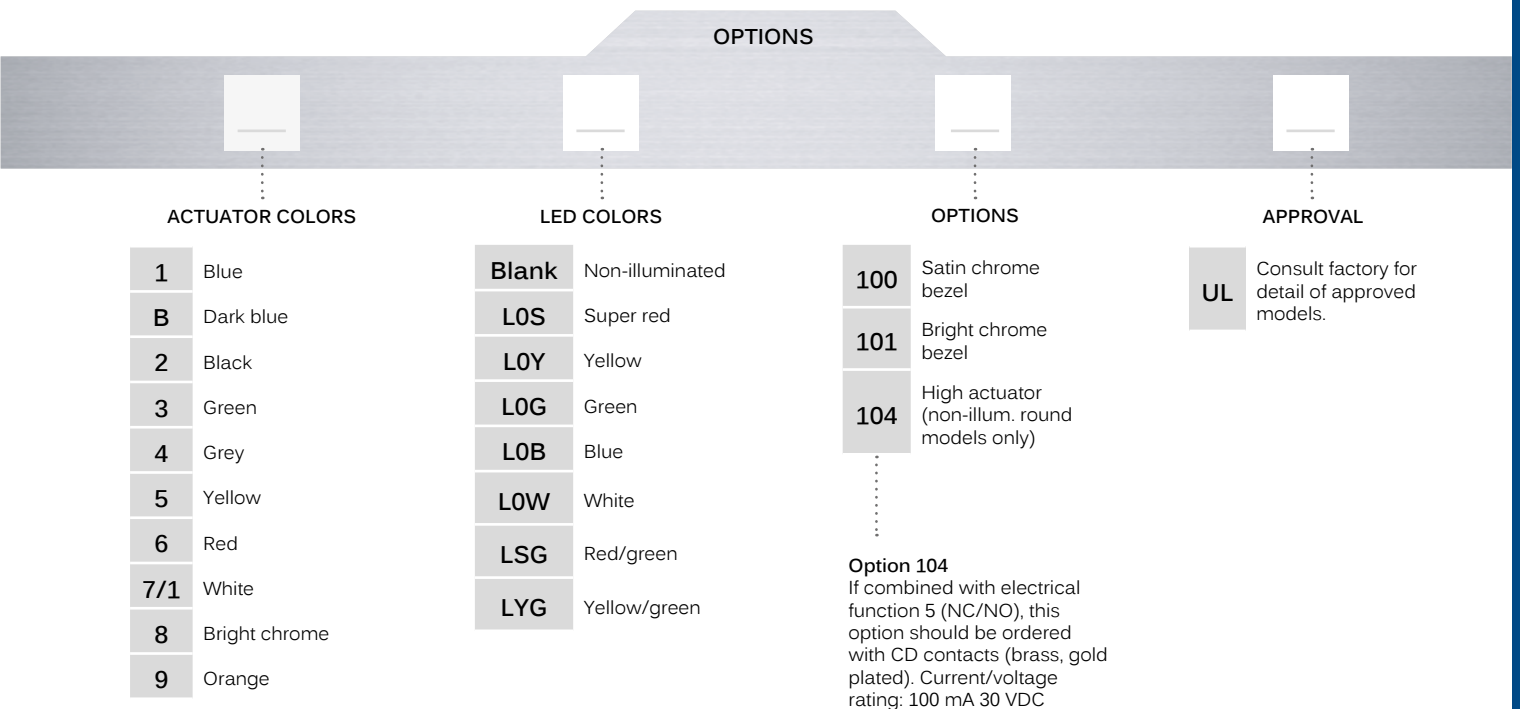
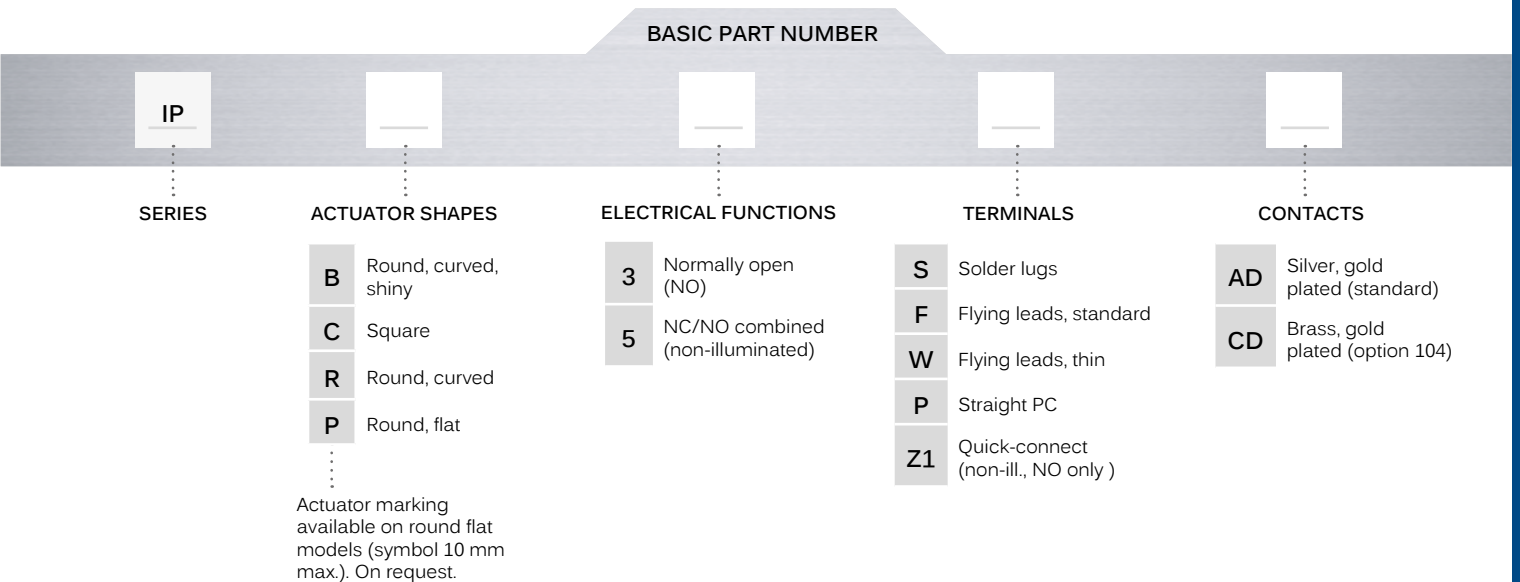
MATRIX MOUNTING - BACK OF PANEL SPACE REQUIREMENT



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



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. See "Sealing Boots" section of website.
- Mounting accessories:** Standard hardware supplied: 1 hex nut 14 mm (.551) across flats and 1 O-ring. Hex nut part number U166.

IP series

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

SQUARE - ILLUMINATED SOLDER LUG TERMINALS



IPC3SAD



Normally Open

Also available with straight PC terminals: **IPC3PAD**
LED color is indicated by the bottom of the switch.

SQUARE - ILLUMINATED FLYING LEAD TERMINALS



IPC3FAD



Normally Open

For THIN flying leads, replace F with W.
Wire colors: black: NO contact, red: LED anode(+), blue: LED cathode(-)
Shown with standard flying lead terminals.

SQUARE - NON ILLUMINATED SOLDER LUG TERMINALS



IPC3SAD



Normally Open

IPC5SAD



Normally Open

Also available with straight PC terminals: **IPC3PAD** (NO) or **IPC5PAD** (NC/NO)
and quick-connect terminals: **IPC3Z1AD** (NO only)

SQUARE - NON ILLUMINATED FLYING LEAD TERMINALS



IPC3FAD



Normally Open

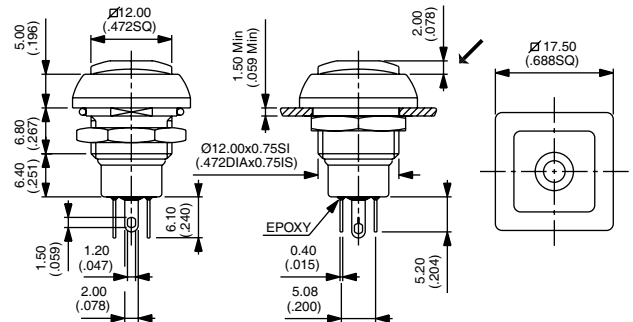
IPC5FAD



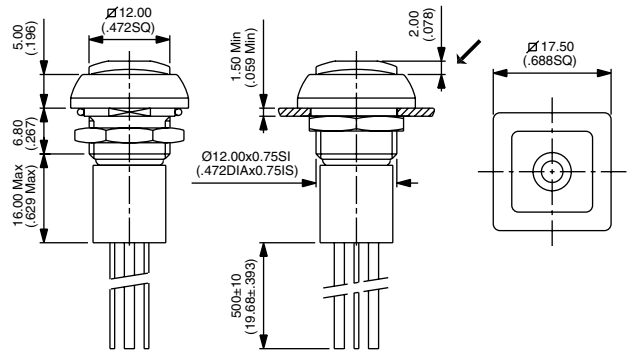
NC/NO combined

For THIN flying leads, replace F with W.
Wire colors (NC/NO): black: NO, blue: NC.
Shown with standard flying lead terminals.

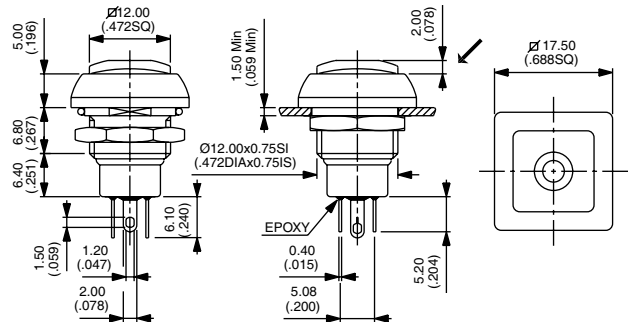
→ FLAT



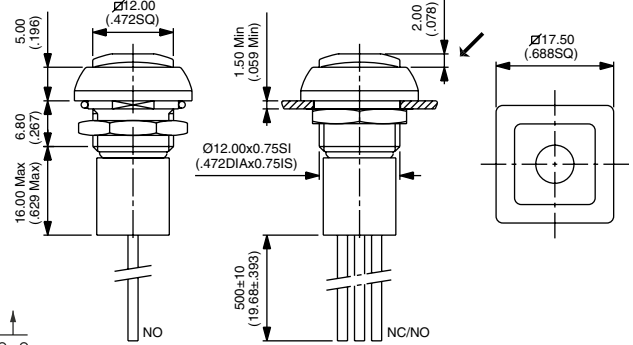
→ FLAT



→ FLAT



→ FLAT



NO

NC/NO

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

ROUND - ILLUMINATED SOLDER LUG TERMINALS



IPR3SAD



Normally Open

Also available with straight PC terminals: **IPR3PAD**
LED colour is indicated by the bottom of the switch.

ROUND - ILLUMINATED FLYING LEAD TERMINALS



IPR3FAD



Normally Open

For THIN flying leads, replace F with W.
Wire colors: black: NO contact, red: LED anode(+), blue: LED cathode(-)
Shown with standard flying lead terminals.

ROUND - NON ILLUMINATED SOLDER LUG TERMINALS



Curved actuator, NO

IPR3SAD



Curved actuator, NC/NO

IPR5SAD



Flat actuator, NO

IPP3SAD



Flat actuator, NC/NO

IPP5SAD



Also available with straight PC terminals: **IPC3PAD** (NO) or **IPC5PAD** (NC/NO)
and quick-connect terminals: **IPC3Z1AD** (NO only)

ROUND - NON ILLUMINATED FLYING LEAD TERMINALS



Curved actuator, NO

IPR3FAD



Curved actuator, NC/NO

IPR5FAD



Flat actuator, NO

IPP3FAD



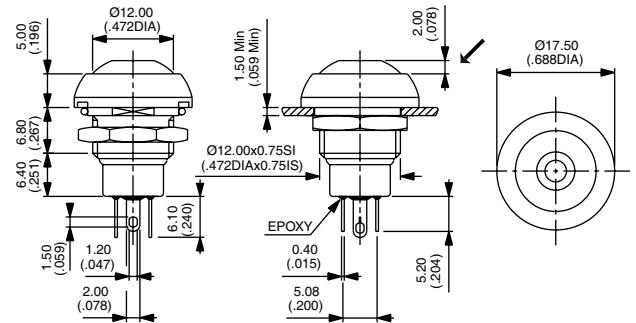
Flat actuator, NC/NO

IPP5FAD

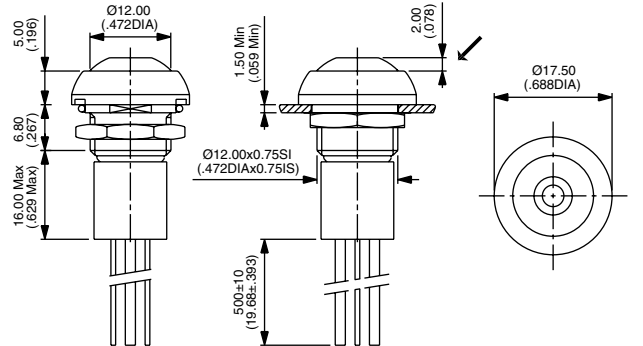


For THIN flying leads, replace F with W.
Wire colors (NC/NO): black: NO, blue: NC
Shown with standard flying lead terminals.

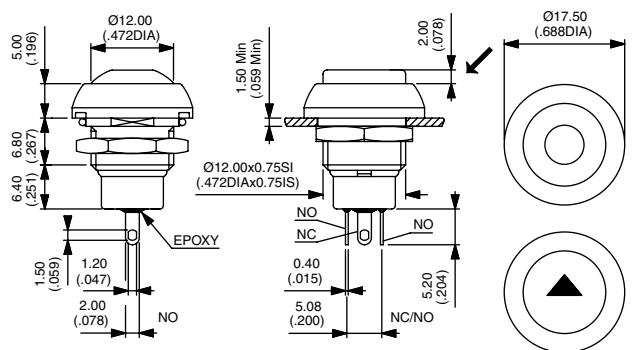
→ FLAT



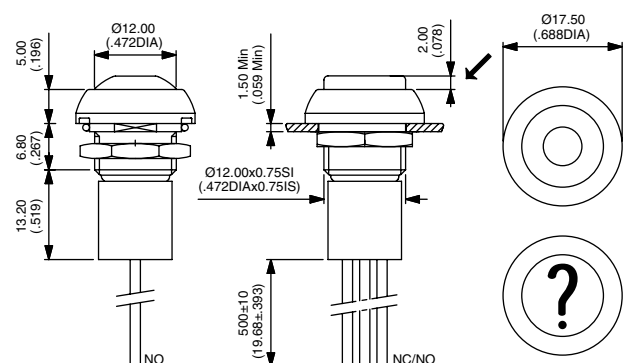
→ FLAT



→ FLAT



→ FLAT



IP series

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

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

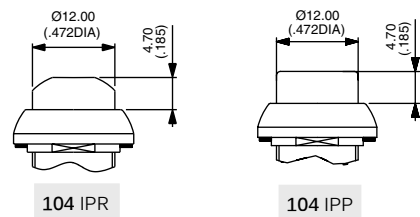


- | | |
|-------|-----------------|
| Blank | Non-illuminated |
| L0S | Super red |
| L0Y | Yellow |
| L0G | Green |
| L0B | Blue |
| L0W | White |
| LSG | Red/green |
| LYG | Yellow/green |

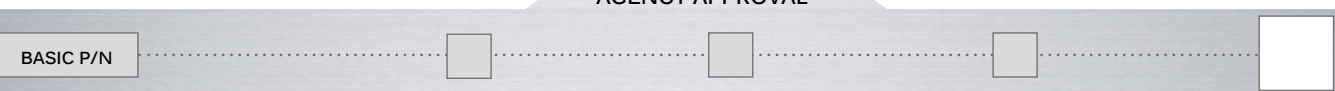
OPTIONS



- | | |
|-----|------------------------------------------------------------------------------------------------------------------------------------------|
| 100 | Satin chrome bezel |
| 101 | Bright chrome bezel |
| 104 | High actuator - For round, non-illuminated only
If combined with function 5 (NC/NO), order with CD contacts (instead of AD contacts). |



AGENCY APPROVAL



UL

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