

# IP series

## Momentary pushbutton switches for harsh environments

*Distinctive features and specifications*



- Illuminated and non-illuminated
- Tactile feedback
- Wide variety of configurations
- Sealed to IP 67

### ENVIRONMENTAL SPECIFICATIONS

- Degree of protection : IP 67
- 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 sw.) : IK06 according to EN 50102 (1 joule)
- Operating temperature : -40°C to +125°C

### ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 500mA 48VAC - 200mA 50VDC - 200mA 250VAC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 VAC rms
- Electrical life at full load : 500.000 cycles
- Contact bounce : 10 ms

#### LED COMPONENT SPECIFICATIONS

| LED colour      | Forward current | Forward Voltage | Max. lumin. intensity |
|-----------------|-----------------|-----------------|-----------------------|
| Super red (LOS) | 20mA            | 2V              | 125 mcd               |
| Yellow (LOY)    | 20mA            | 2V              | 125 mcd               |
| Green (LOG)     | 10mA            | 2V              | 20 mcd                |
| Blue (LOB)      | 10mA            | 3,5V            | 20 mcd                |
| White (LOW)     | 20mA            | 3,5V            | 280 mcd               |

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

### GENERAL SPECIFICATIONS

- Panel thickness : 1,5 mm (.059) min. 4 mm (.157 max.)
- Total travel : 1,5 mm (.059)
- Operating force : 2N to 5N
- Mechanical life : 1.000.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

### MATERIALS

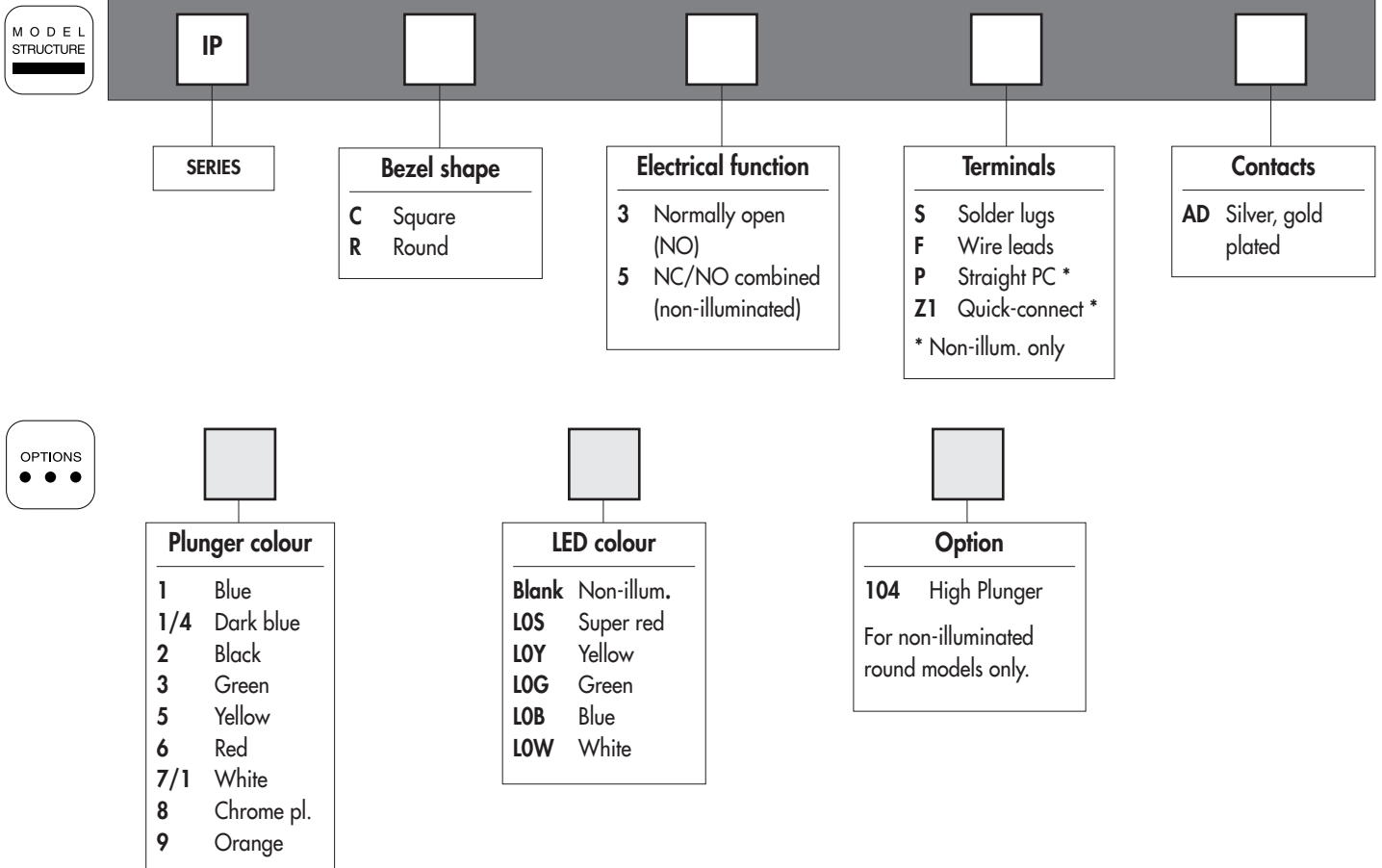
- Case : thermoplastic UL94-V0
- Plunger : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamac), black painted
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm<sup>2</sup>, UL approved
- LED wire : AWG26
- Lens : polycarbonate
- Terminal seal : epoxy

B

# IP series

## Momentary pushbutton switches for harsh environments

Overview



### ABOUT THIS SERIES

On the following pages, you will find successively :  
model structure of switches and options in the same order as in above chart

**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.



**A sealing boot** is available to protect the switches against frost and sand. It is presented at the end of the series and in section H.



**Mounting accessories** : Standard hardware supplied : 1 hex nut 14 mm (.551) across flats and 1 O-ring. The hex nut is presented in section I (part number U166).

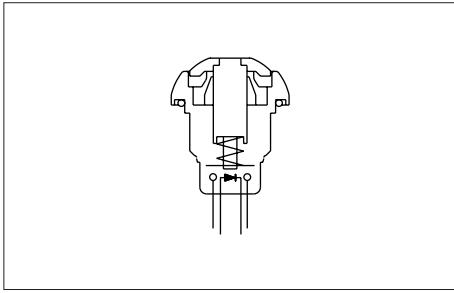


**Packaging unit** : 25 pieces

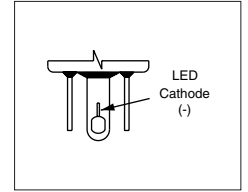
# IP series

## Momentary pushbutton switches for harsh environments

Square - illuminated



- High brightness illumination
- Five LED colours
- Tin plated LED terminals



MODEL  
STRUCTURE



B

### Solder lug terminals

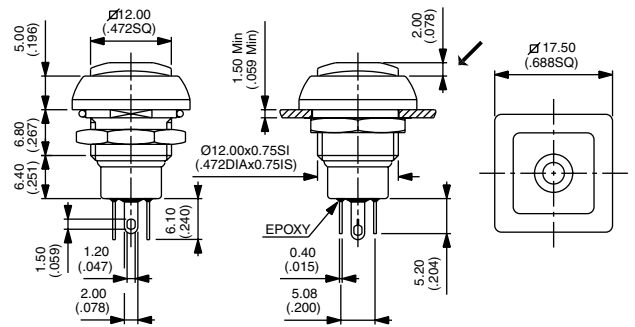


IPC3SAD



Normally Open

→ Flat



### Sealed wire lead terminals

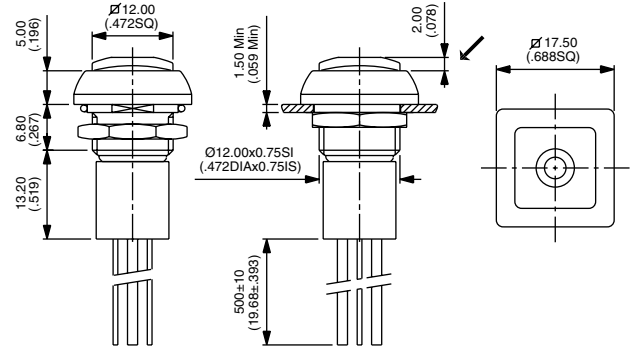


IPC3FAD



Normally Open

→ Flat



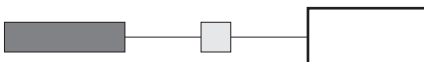
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

### PLUNGER COLOUR



1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : chrome plated - 9 : orange

### LED COLOUR

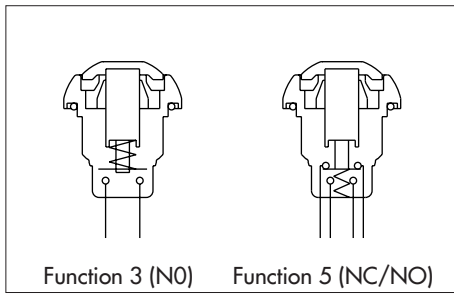


LOS : super red - LOY : yellow - LOG : green - LOB : blue - LOW : white

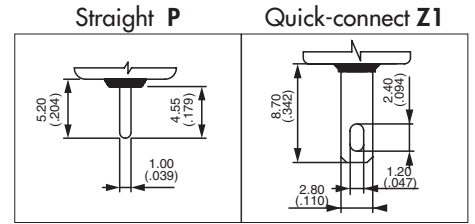
# IP series

## Momentary pushbutton switches for harsh environments

Square - non-illuminated



- Double function (NC/NO combined) with a short behind-panel depth



### MODEL STRUCTURE



### Solder lug terminals



IPC3SAD



Normally Open

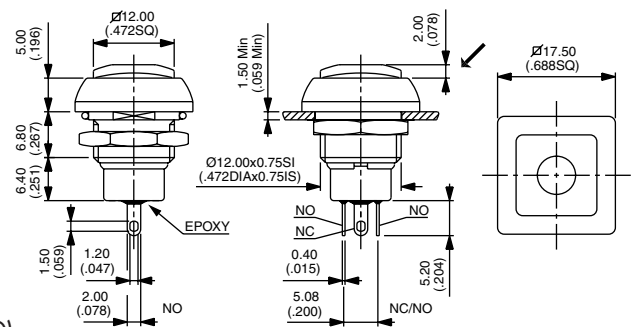
IPC5SAD



NC/NO combined

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

→ Flat



### Sealed wire lead terminals



IPC3FAD



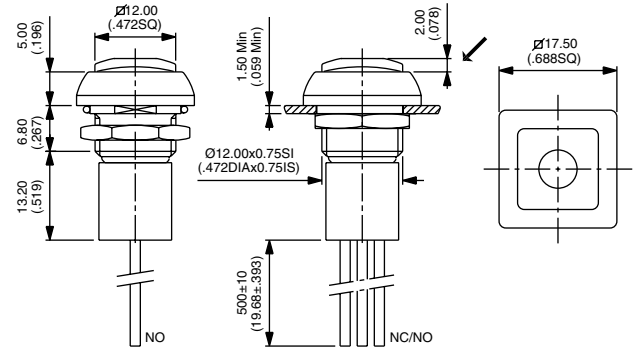
Normally Open

IPC5FAD



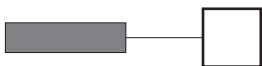
NC/NO combined

→ Flat



Wire colours (NC/NO) : black : NO, blue : NC

### PLUNGER COLOUR

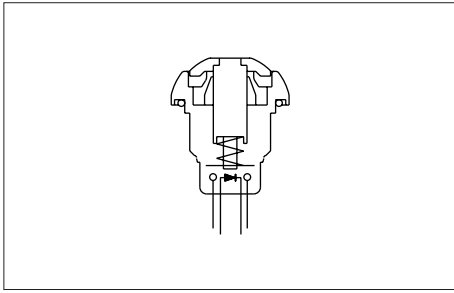


1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : chrome plated - 9 : orange

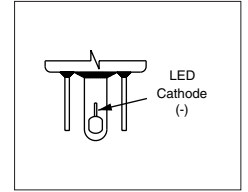
# IP series

## Momentary pushbutton switches for harsh environments

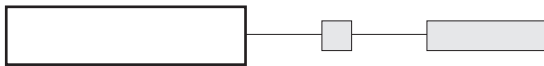
Round - illuminated



- High brightness illumination
- Five LED colours
- Tin plated LED terminals



MODEL  
STRUCTURE



B

### Solder lug terminals

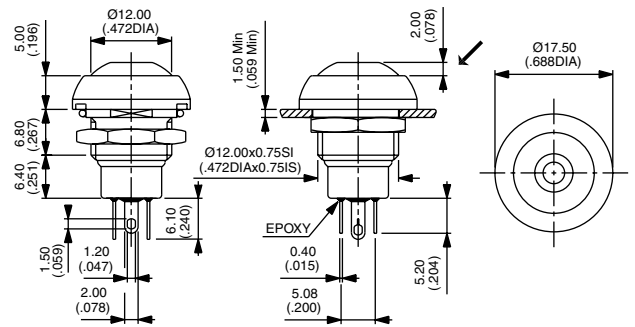


IPR3SAD



Normally Open

→ Flat



### Sealed wire lead terminals

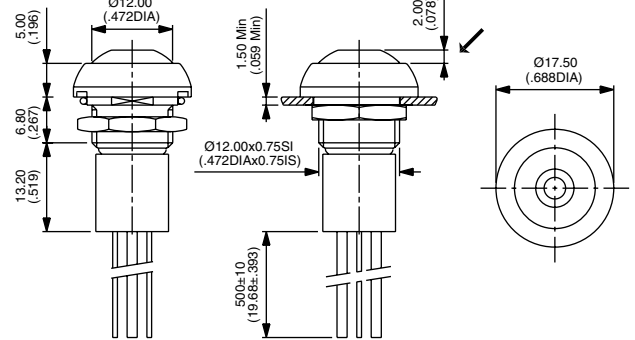


IPR3FAD



Normally Open

→ Flat



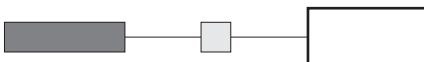
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

### PLUNGER COLOUR



1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : chrome plated - 9 : orange

### LED COLOUR

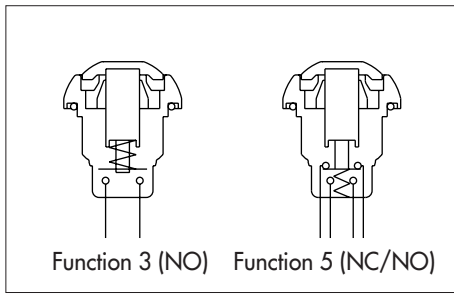


LOS : super red - LOY : yellow - LOG : green - LOB : blue - LOW : white

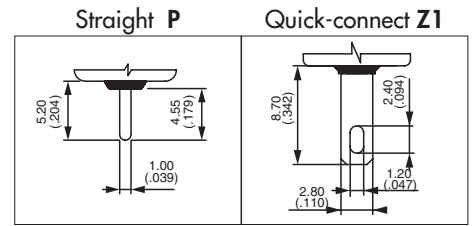
# IP series

## Momentary pushbutton switches for harsh environments

Round - non-illuminated



- Double function (NC/NO combined) with a short behind-panel depth



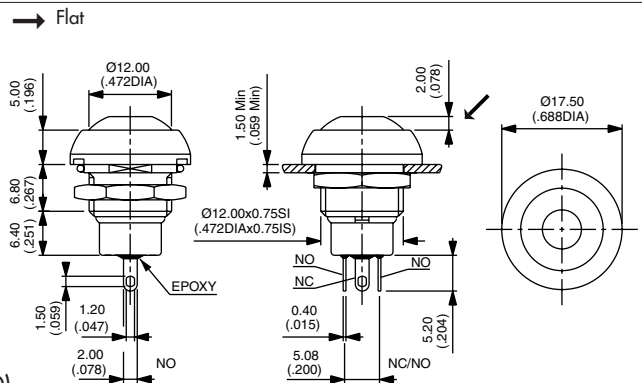
### MODEL STRUCTURE



### Solder lug terminals



|                |  |                |
|----------------|--|----------------|
| <b>IPR3SAD</b> |  | Normally Open  |
| <b>IPR5SAD</b> |  | NC/NO combined |

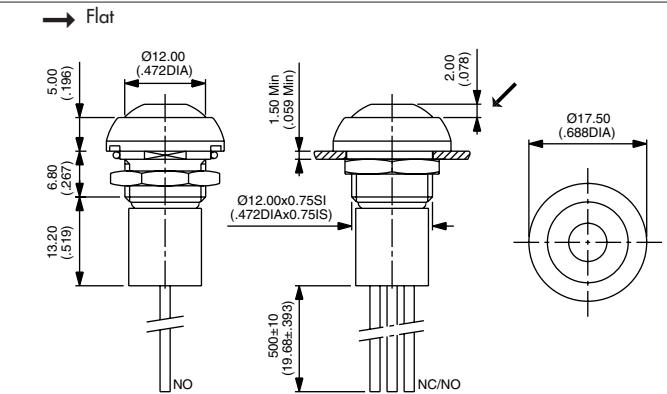


Also available with straight PC terminals : **IPR3PAD** (NO) or **IPR5PAD** (NC/NO) and quick-connect terminals : **IPR3Z1AD** (NO only)

### Sealed wire lead terminals

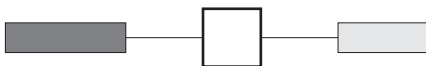


|                |  |                |
|----------------|--|----------------|
| <b>IPR3FAD</b> |  | Normally Open  |
| <b>IPR5FAD</b> |  | NC/NO combined |



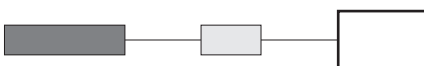
Wire colours (NC/NO) : black : NO, blue : NC

### PLUNGER COLOUR

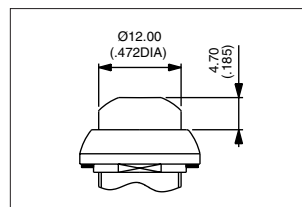


1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : chrome plated - 9 : orange

### PLUNGER OPTION



104 : High plunger

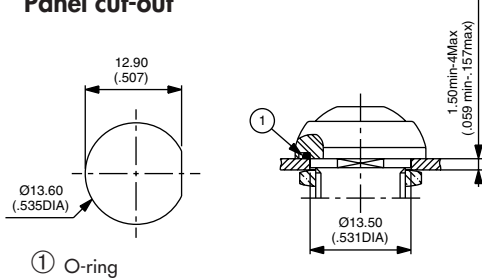


# IP series

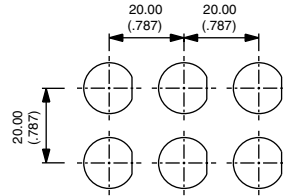
Momentary pushbutton switches for harsh environments

## MOUNTING

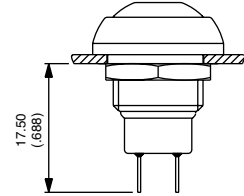
### Panel cut-out



### Matrix mounting



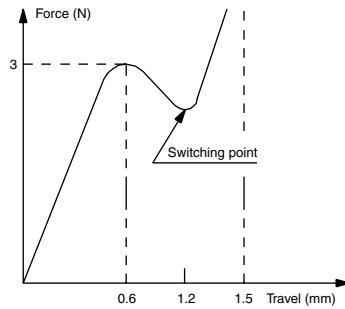
### Back of panel space requirement



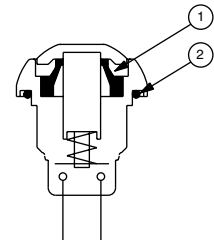
B

## TACTILE FEEDBACK

### Operating forces/ travels diagram (indicative nominal curve)



### Cross section



① Elastomeric membrane ② O-ring

## SEALING

### IP 67 for the whole series

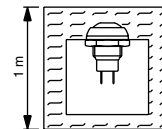
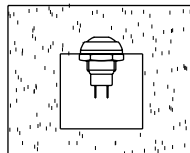
Degree of protection provided by the enclosures of electric appliances according to IEC 529, DIN 40050 and NFC 20-010.

**IP**  
(ingress protection)

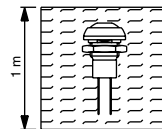
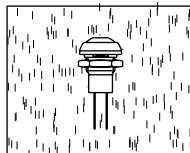
**6**  
Totally protected  
against dust

**7**  
Protected against the effects of  
immersion up to 1 m water (30 mn)

**SOLDER LUG  
VERSION**



**WIRE LEAD  
VERSION**



The above illustrations show non-illuminated models.

# IP series

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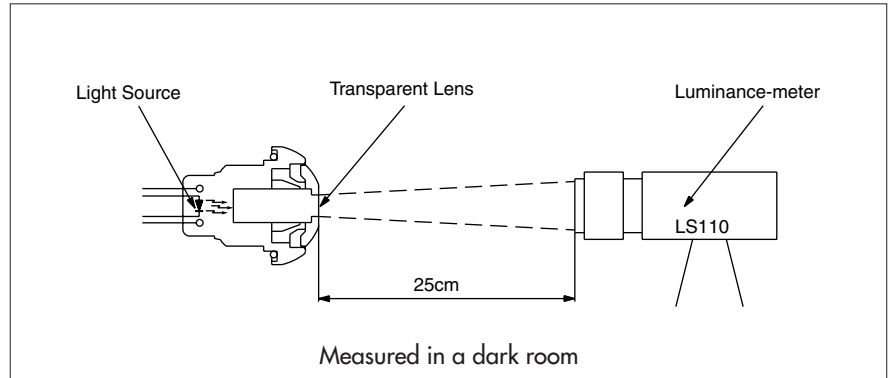
### LUMINANCE MEASUREMENT MODE

#### Test conditions

| TEST RESULTS *         |                        |                 |
|------------------------|------------------------|-----------------|
| Led types              | Luminance              | Forward current |
| <b>LOS (super red)</b> | 4000 Cd/m <sup>2</sup> | 20mA            |
| <b>LOY (yellow)</b>    | 3500 Cd/m <sup>2</sup> | 20mA            |
| <b>LOG (green)</b>     | 400 Cd/m <sup>2</sup>  | 10mA            |

\* in our lab conditions

For blue and white Led, consult factory.



### ADDITIONAL SEALING

For ROUND plungers only, illuminated or non-illuminated.

By transparent silicone overboot U5125 for protection against frost and abrasion by sand. Order separately.

Operating temperature : -40°C to +125°C.

