

# IP series

## Momentary pushbutton switches for harsh environments

*Distinctive features and specifications*



**New!**

- Illuminated and non-illuminated
- Tactile feedback
- Wide variety of configurations
- Flat round actuator for optional marking
- Sealed to IP 67

**B**

### 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 : 100 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.

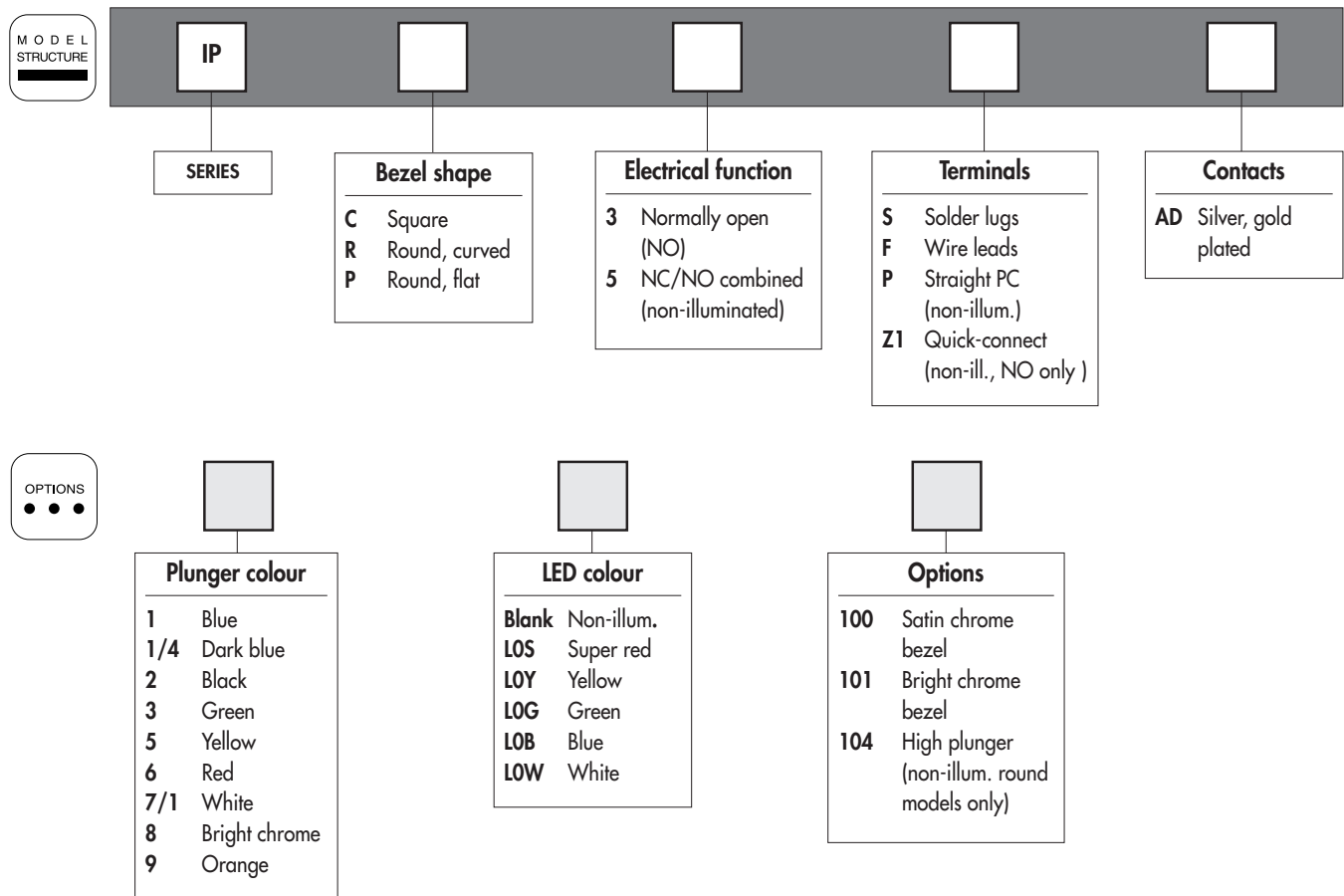
### MATERIALS

- 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

# IP series

## Momentary pushbutton switches for harsh environments

Overview



B

### 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).

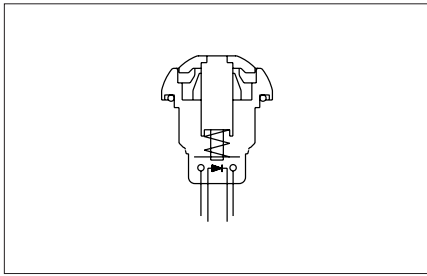


**Packaging unit** : 25 pieces

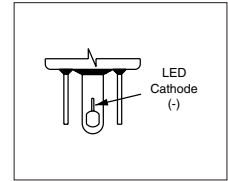
# IP series

## Momentary pushbutton switches for harsh environments

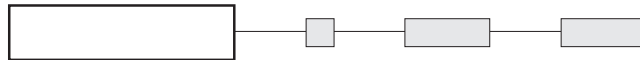
Square - illuminated



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



### MODEL STRUCTURE



B

### Solder lug terminals

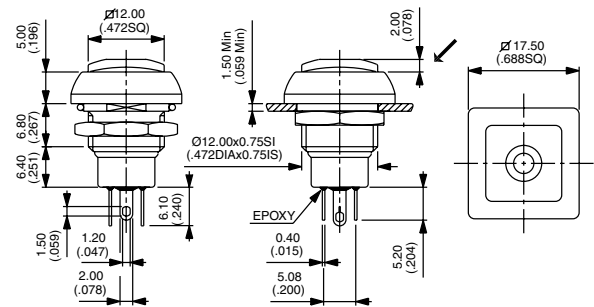


IPC3SAD



Normally Open

→ Flat



### Sealed wire lead terminals

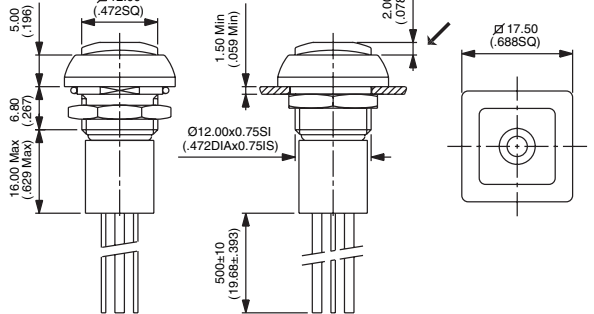


IPC3FAD



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 : bright chrome - 9 : orange

### LED COLOUR



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

### OPTIONS

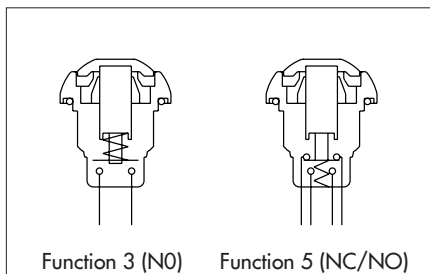


100 : Satin chrome bezel  
101 : Bright chrome bezel

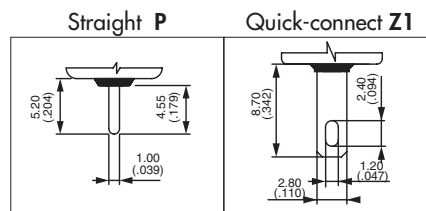
# IP series

## Momentary pushbutton switches for harsh environments

Square - non-illuminated



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



### MODEL STRUCTURE



B

### Solder lug terminals



IPC3SAD



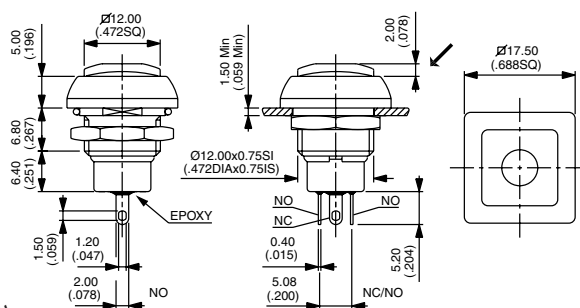
Normally Open

IPC5SAD



NC/NO combined

→ Flat



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

### Sealed wire lead terminals



IPC3FAD



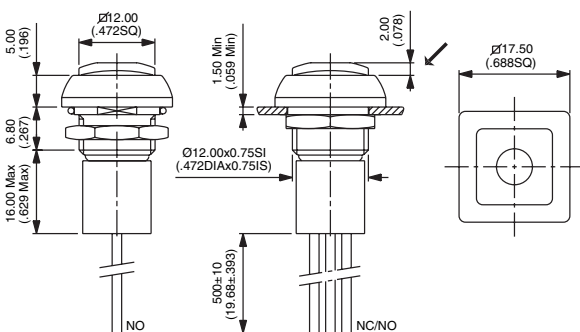
Normally Open

IPC5FAD



NC/NO combined

→ Flat



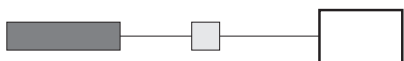
Wire colours (NC/NO) : black : NO, blue : NC

### PLUNGER COLOUR



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

### OPTIONS

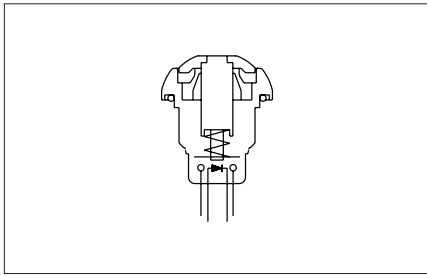


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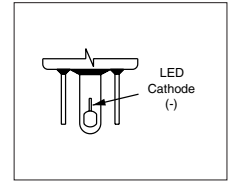
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## Momentary pushbutton switches for harsh environments

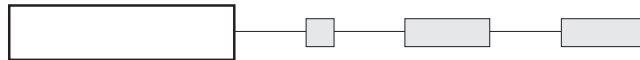
Round - illuminated



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



### MODEL STRUCTURE



B

### Solder lug terminals

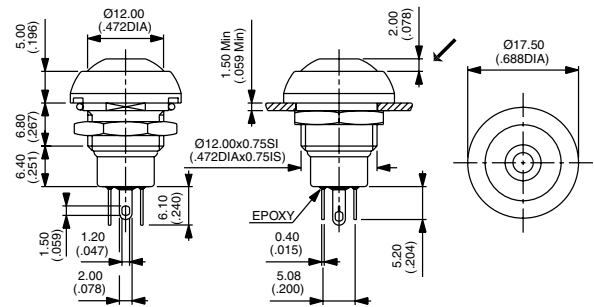


IPR3SAD



Normally Open

→ Flat



### Sealed wire lead terminals

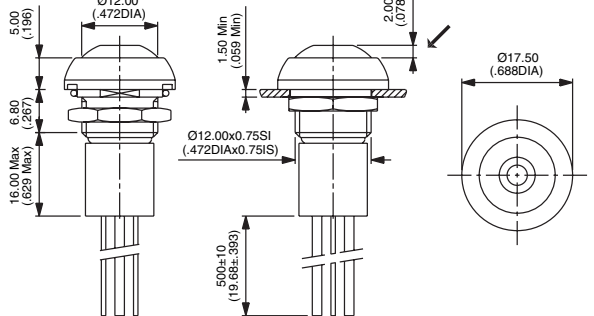


IPR3FAD



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 : bright chrome - 9 : orange

### LED COLOUR



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

### OPTIONS



100 : Satin chrome bezel  
101 : Bright chrome bezel

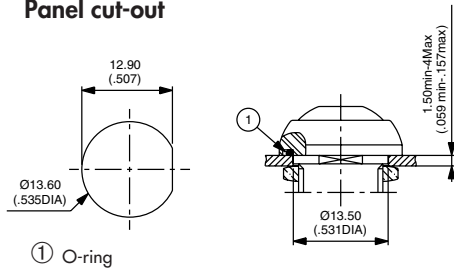


# IP series

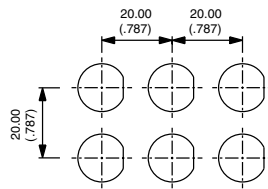
Momentary pushbutton switches for harsh environments

## MOUNTING

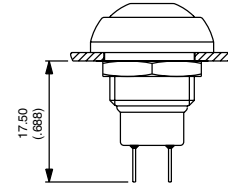
### Panel cut-out



### Matrix mounting



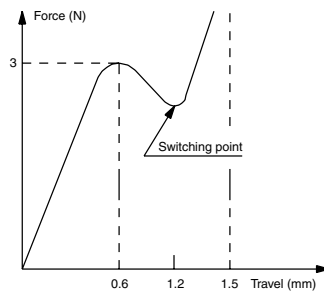
### Back of panel space requirement



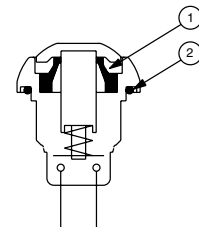
B

## TACTILE FEEDBACK

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



### Cross section



① Elastomeric membrane ② O-ring

## SEALING

### IP 67 for the whole series

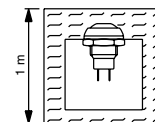
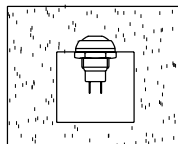
Degree of protection provided by the enclosures of electric appliances according to IEC 529, DIN 40050 and NFC 20-010.

**IP**  
(ingress protection)

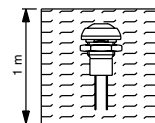
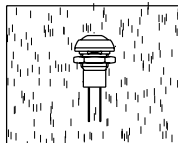
**6**  
Totally protected  
against dust

**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.

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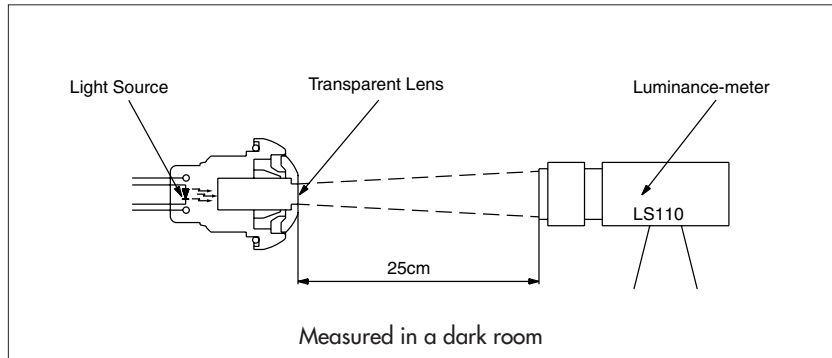
### LUMINANCE MEASUREMENT MODE

#### 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.



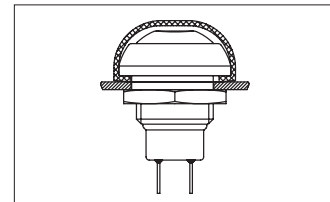
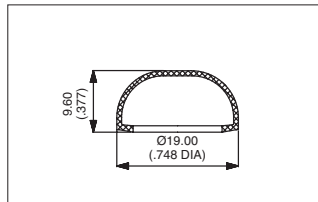
### ADDITIONAL SEALING

For ROUND plungers only, illuminated or non-illuminated.

By silicone boot for protection against frost and abrasion by sand. Order separately.

- transparent : **U5125**
- blue : **U5125-1**
- black : **U5125-2**
- red : **U5125-6**

Operating temperature : -40°C to +125°C  
Life expectancy : 500.000 cycles



B