

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.

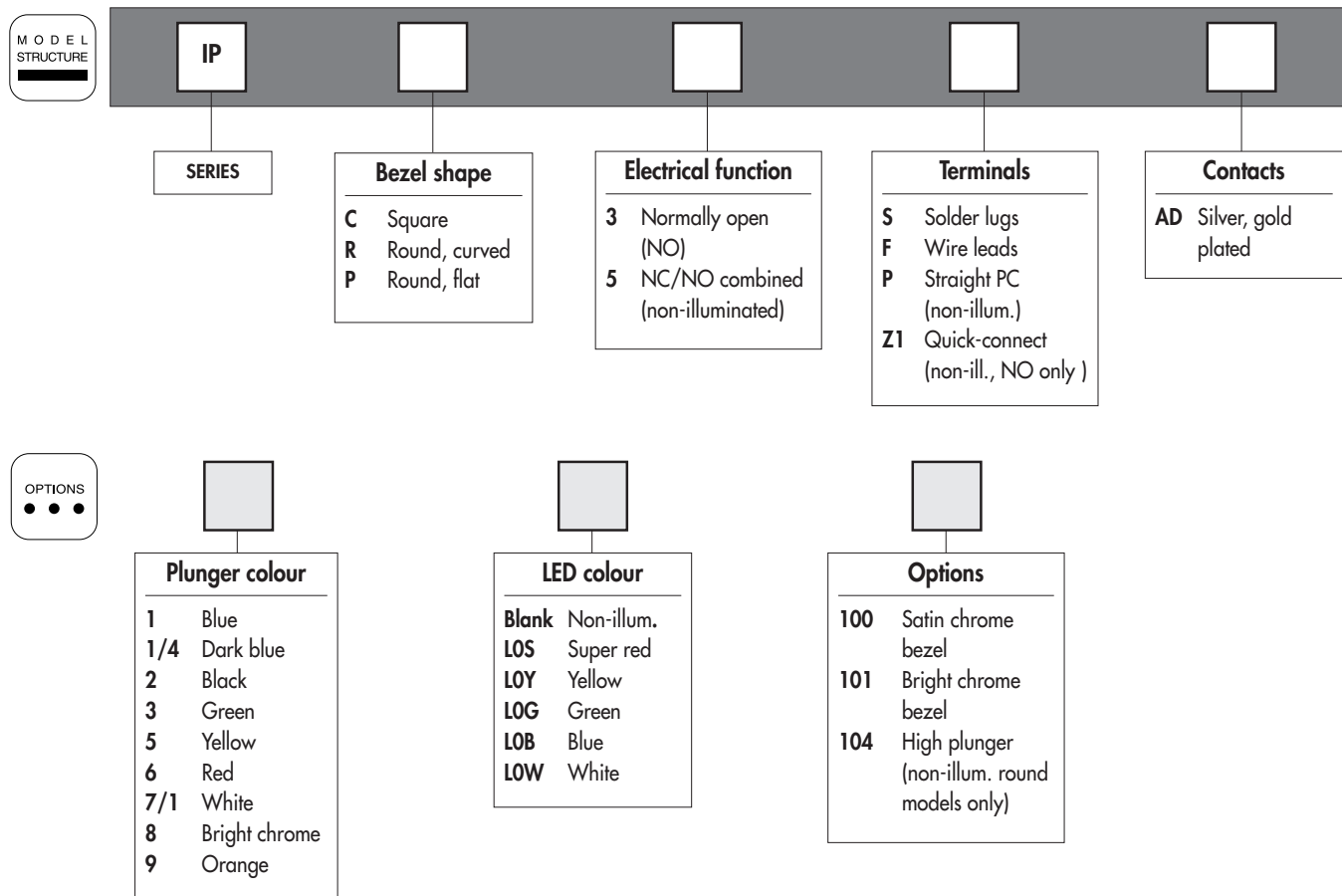
MATERIALS

- 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 mm², UL approved
- LED wire : AWG26
- Lens : polycarbonate
- Terminal seal : epoxy

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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).

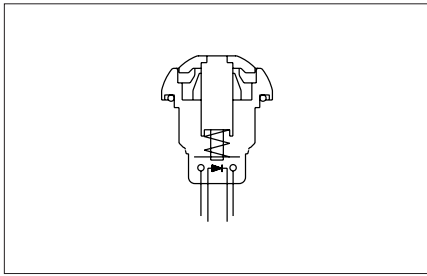


Packaging unit : 25 pieces

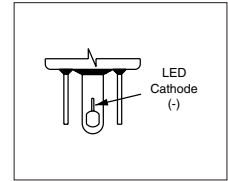
IP series

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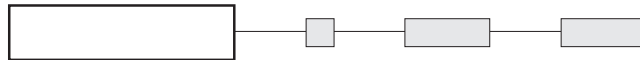
Square - illuminated



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



MODEL STRUCTURE



B

Solder lug terminals

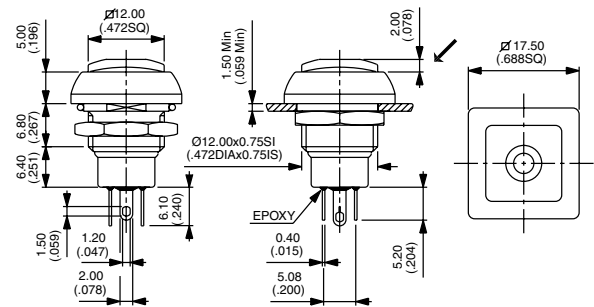


IPC3SAD



Normally Open

→ Flat



Sealed wire lead terminals

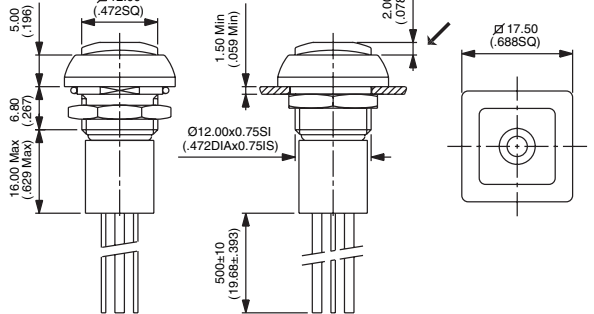


IPC3FAD



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

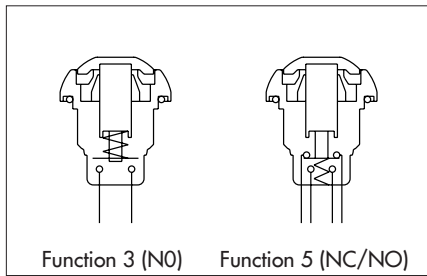


100 : Satin chrome bezel
101 : Bright chrome bezel

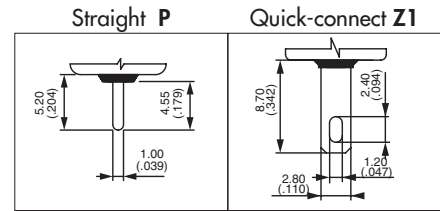
IP series

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



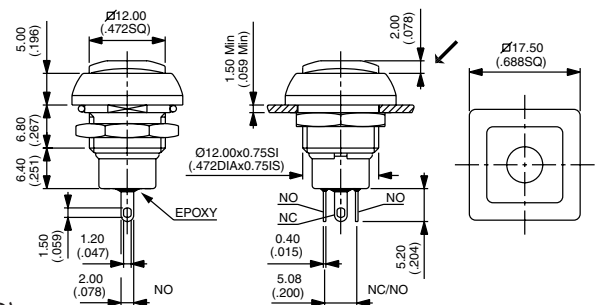
Normally Open

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



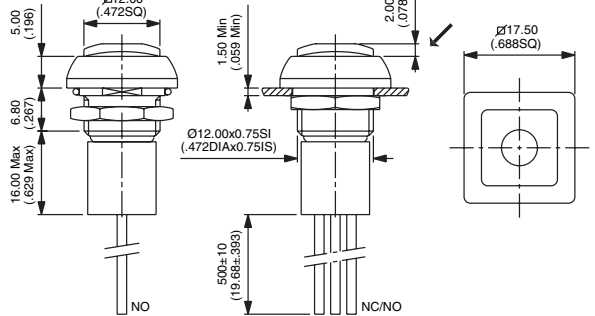
Normally Open

IPC5FAD



NC/NO combined

→ Flat



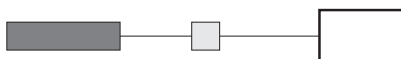
Wire colours (NC/NO) : black : NO, blue : NC

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

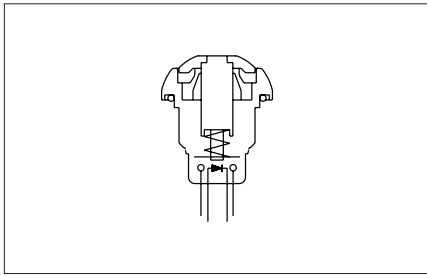


100 : Satin chrome bezel
101 : Bright chrome bezel

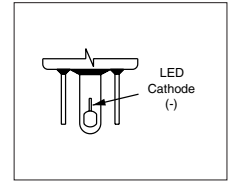
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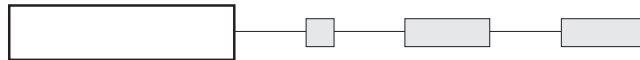
Round - illuminated



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



MODEL STRUCTURE



B

Solder lug terminals

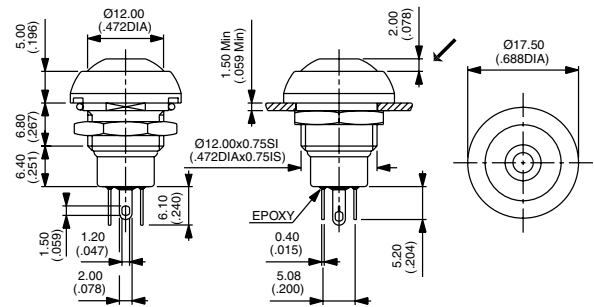


IPR3SAD



Normally Open

→ Flat



Sealed wire lead terminals

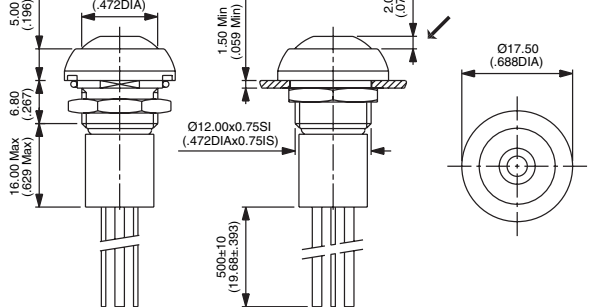


IPR3FAD



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

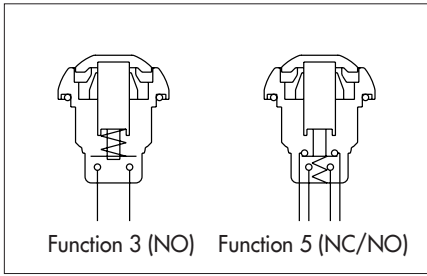


100 : Satin chrome bezel
101 : Bright chrome bezel

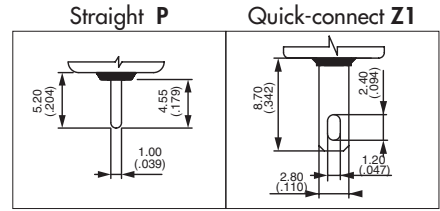
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Round - non-illuminated



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



MODEL STRUCTURE

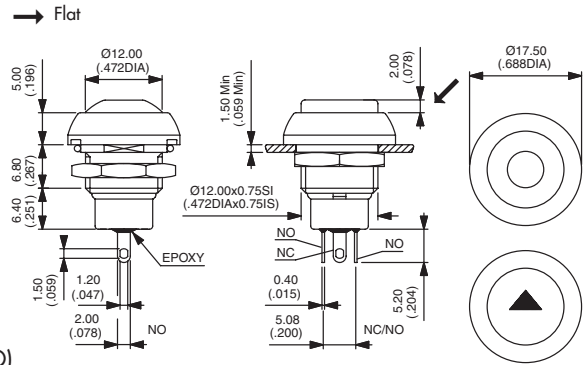


B

Solder lug terminals



- Curved actuator, NO
IPR3SAD
- Curved actuator, NC/NO
IPR5SAD
- Flat actuator, NO
IPP3SAD
- Flat actuator, NC/NO
IPP5SAD

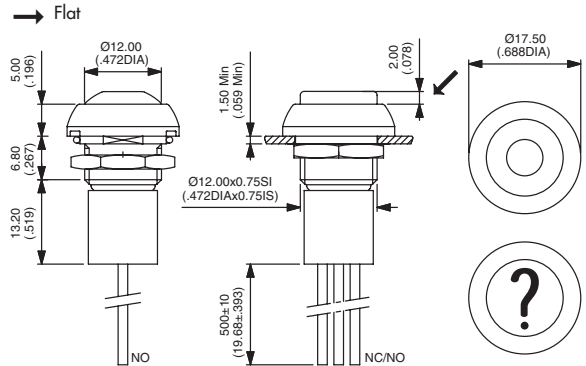


Also available with straight PC terminals : **IP•3PAD** (NO) or **IP•5PAD** (NC/NO) and quick-connect terminals : **IP•3Z1AD** (NO only)

Sealed wire lead terminals



- Curved actuator, NO
IPR3FAD
- Curved actuator, NC/NO
IPR5FAD
- Flat actuator, NO
IPP3FAD
- Flat actuator, NC/NO
IPP5FAD

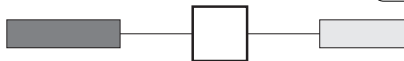


Wire colours (NC/NO) : black : NO, blue : NC

PLUNGER COLOUR

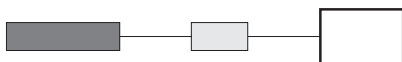


Plunger marking available on IPP models (symbol 10 mm max.). On request.

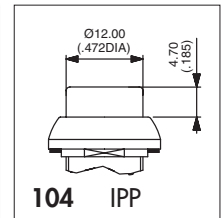
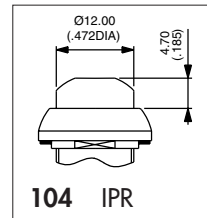


1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

OPTIONS



- 100 : Satin chrome bezel
- 101 : Bright chrome bezel
- 104 : High plunger

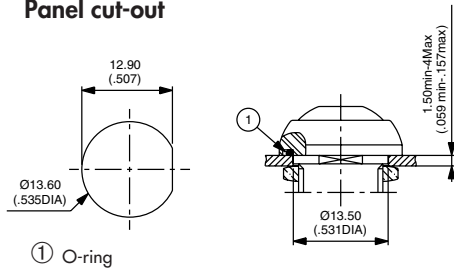


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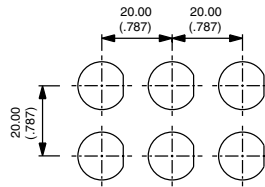
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MOUNTING

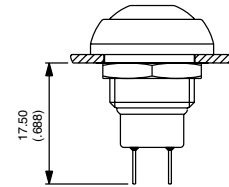
Panel cut-out



Matrix mounting



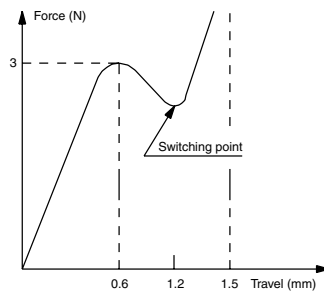
Back of panel space requirement



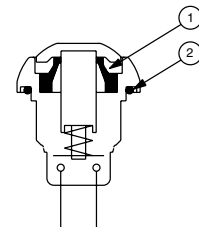
B

TACTILE FEEDBACK

Operating forces/ travels diagram (indicative nominal curve)



Cross section



① Elastomeric membrane ② O-ring

SEALING

IP 67 for the whole series

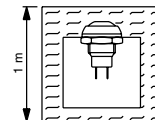
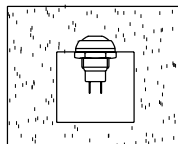
Degree of protection provided by the enclosures of electric appliances according to IEC 529, DIN 40050 and NFC 20-010.

IP
(ingress protection)

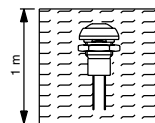
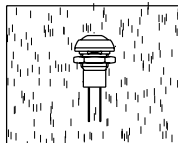
6
Totally protected
against dust

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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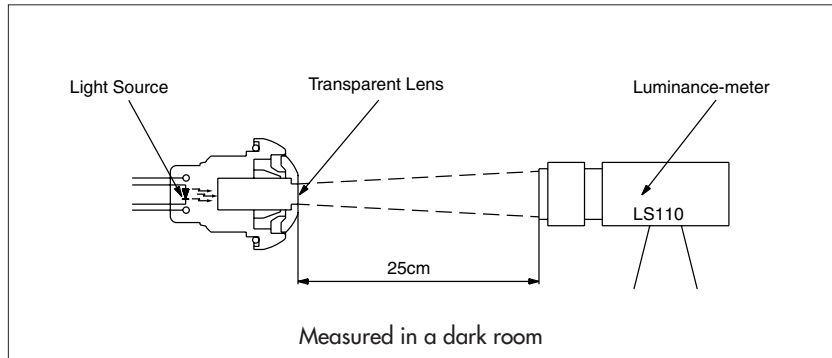
LUMINANCE MEASUREMENT MODE

Test conditions

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

