

# IP series

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

*Distinctive features and specifications*

UG1212-A-R1



- Illuminated or non-illuminated
- Tactile feedback
- Wide variety of configurations
- Flat round actuator for optional marking
- Sealed to IP67

## 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 50102 (1 joule)
- Operating temperature : -40°C to +85°C

## ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load (gold plated silver contacts):  
5A 28VDC, 70.000 cycles  
0,2A 48VDC, 500.000 cycles  
0,5A 48VAC, 500.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms
- Contact bounce : 10 ms

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

## LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	2,1V	2,3V
Yellow (LOY)	20mA	2,1V	2,3V
Green (LOG)	20mA	2,1V	2,3V
Blue (LOB)	20mA	3,2V	3,8V
White (LOW)	20mA	3,35V	4,25V

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 :  
Funct. 3 : 1,7 mm (.067) +/- 0,3 mm  
Funct. 5 : 1,3 mm (.051) +/- 0,3 mm
- Typical operating force : 6N +/- 2N
- Low level/mech. 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
- Actuator : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamac), black painted
- Contacts : silver, gold plated (std)  
brass, gold plated (for option 104)
- Output wires (flying lead terminals) :  
F version : AWG20, section 0,6 mm<sup>2</sup>  
W version : AWG24, section 0,23 mm<sup>2</sup>
- LED wires :  
F version : AWG26, section 0,12 mm<sup>2</sup>  
W version : AWG24, section 0,23 mm<sup>2</sup>
- Lens : polycarbonate
- Terminal seal : epoxy

## AGENCY APPROVAL

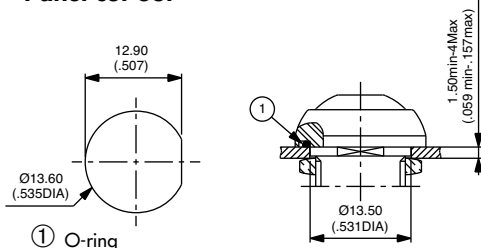


2A 125VAC/250VAC  
File E83438

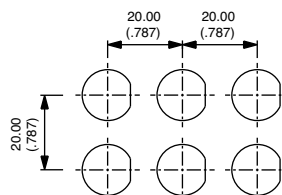
See following pages.

## MOUNTING

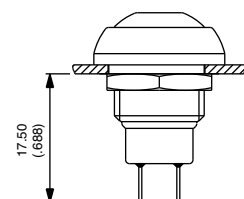
### Panel cut-out



### Matrix mounting



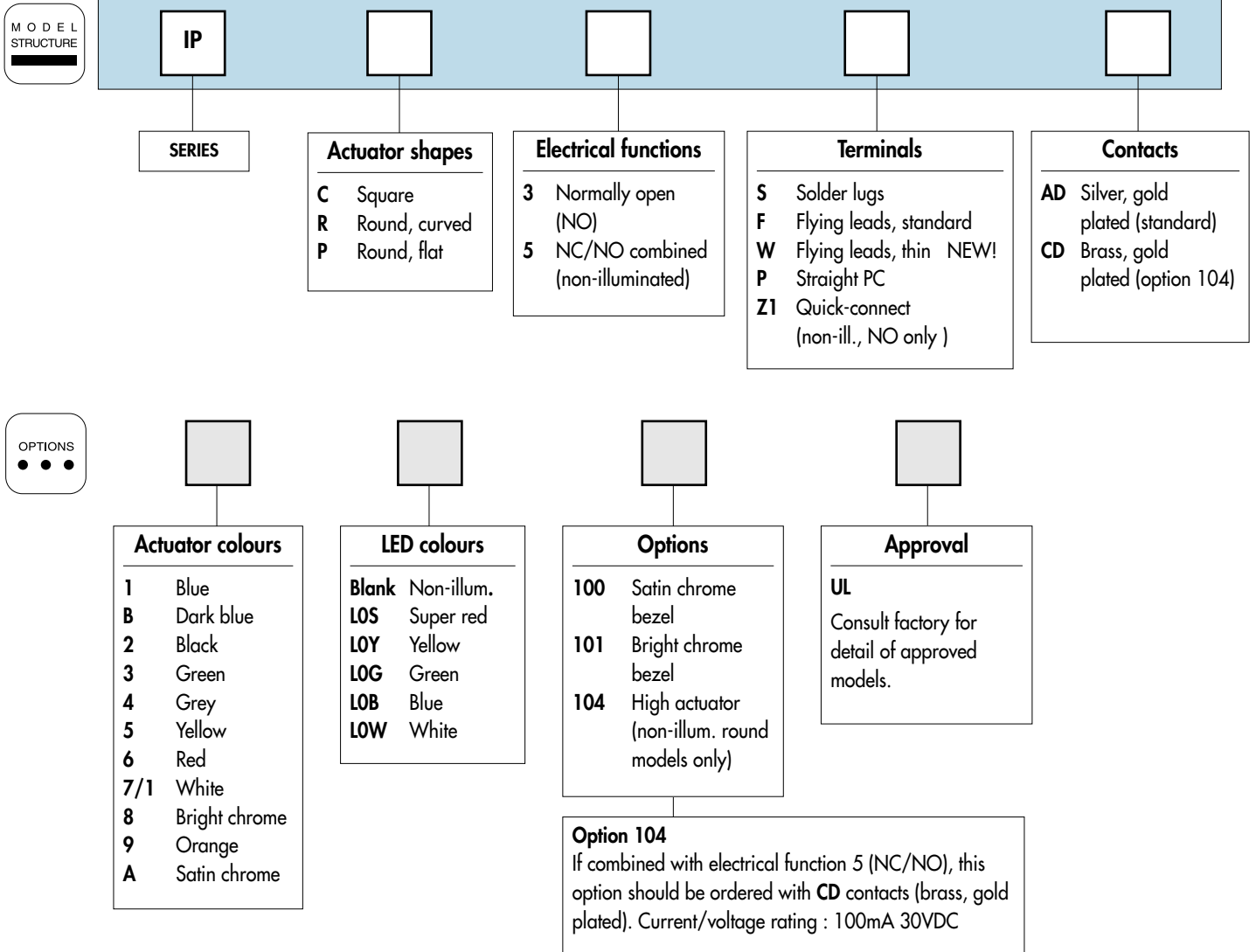
### Back of panel space requirement



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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 bracketed 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 after the IA series and in section H.



**Mounting accessories** : Standard hardware supplied : 1 hex nut 14 mm (.551) across flats and 1 O-ring. Hex nut part number U166.

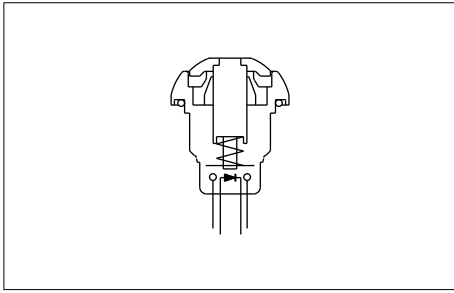


**Packaging unit** : 25 pieces

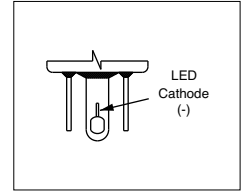
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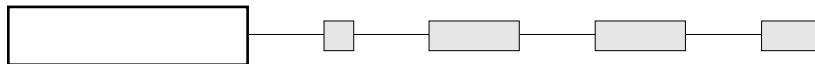
Square - illuminated



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



### MODEL STRUCTURE



Shown with standard flying lead terminals.

### Solder lug terminals

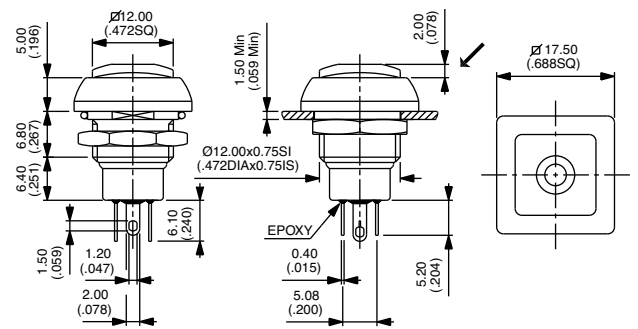


IPC3SAD



Normally Open

→ Flat



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

### Sealed flying lead terminals



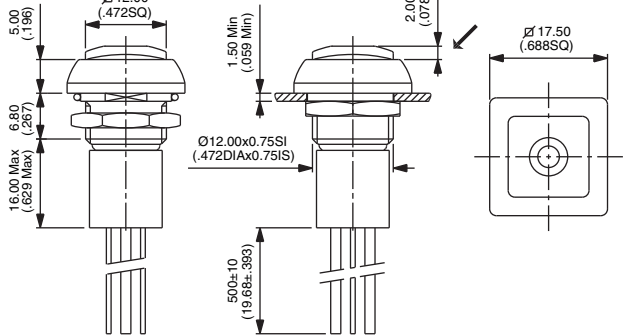
IPC3FAD



Normally Open

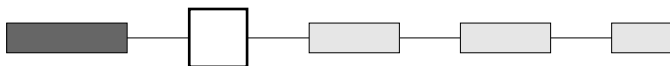
For THIN flying leads, replace F with W.

→ Flat



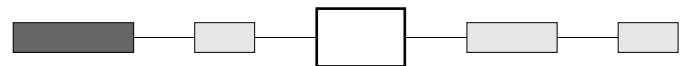
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

### ACTUATOR COLOURS



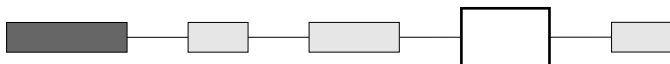
1 : blue - B : dark blue - 2 : black - 3 : green - 4 : grey  
5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome  
9 : orange - A : satin chrome

### LED COLOURS



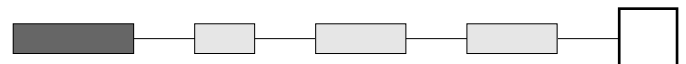
LOS : super red - LOY : yellow - LOG : green - LOB : blue  
LOW : white

### OPTIONS



100 : Satin chrome bezel  
101 : Bright chrome bezel

### APPROVAL

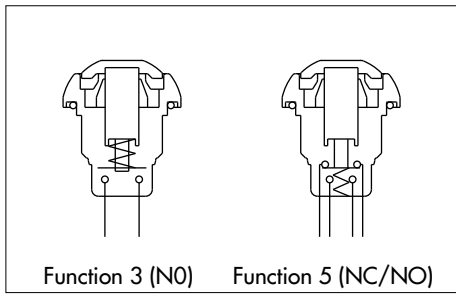


UL  
Consult factory for details of approved models. To order switches marked UL, complete above box with "UL".

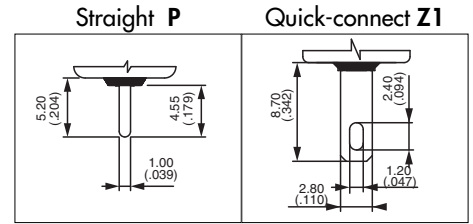
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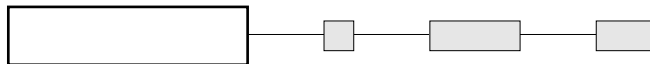
Square - non-illuminated



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



## MODEL STRUCTURE



Shown with standard flying lead terminals.

## Solder lug terminals



IPC3SAD



Normally Open

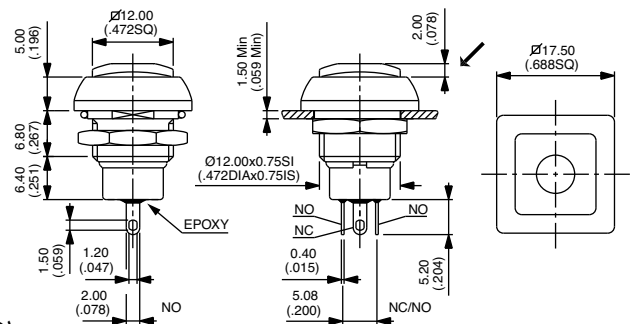
IPC5SAD



NC/NO combined

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

→ Flat



## Sealed flying lead terminals



IPC3FAD



Normally Open

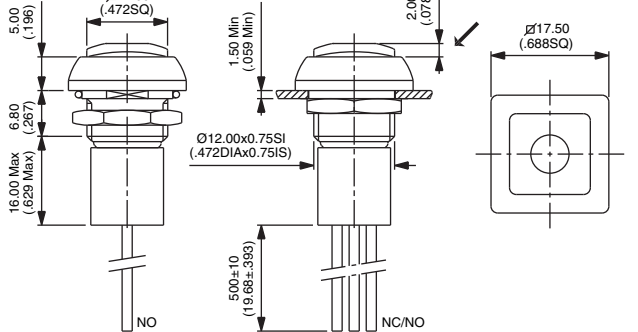
IPC5FAD



NC/NO combined

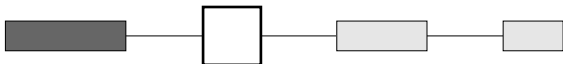
For THIN flying leads, replace F with W.

→ Flat



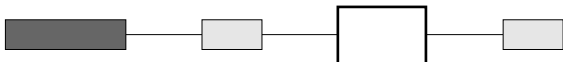
Wire colours (NC/NO) : black : NO, blue : NC

## ACTUATOR COLOURS



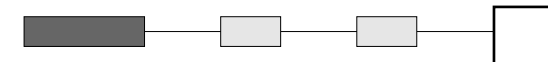
1 : blue - B : dark blue - 2 : black - 3 : green - 4 : grey - 5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome  
9 : orange - A : satin chrome

## OPTIONS



100 : Satin chrome bezel  
101 : Bright chrome bezel

## APPROVAL

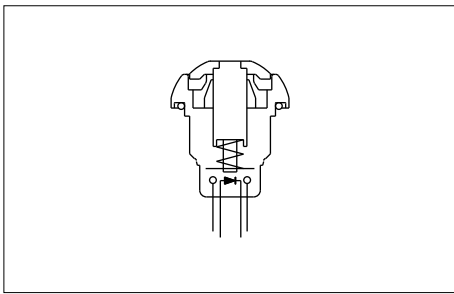


**UL**  
Consult factory for details of approved models. To order switches marked UL, complete above box with "UL".

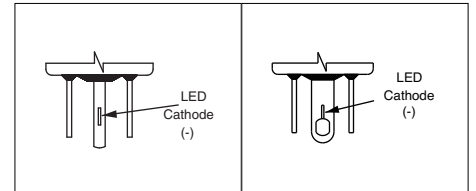
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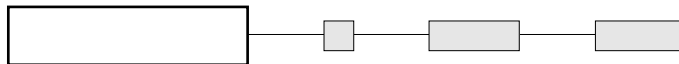
Round - illuminated



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



### MODEL STRUCTURE



Shown with standard flying lead terminals.

### Solder lug terminals

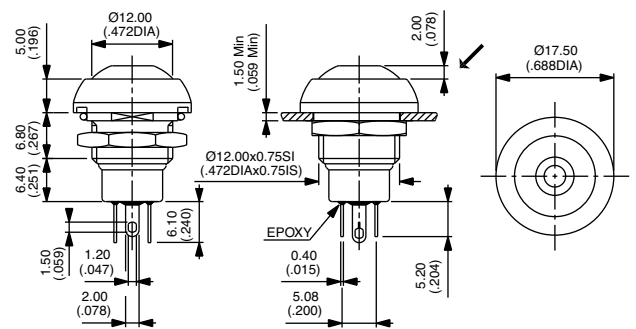


IPR3SAD



Normally Open

→ Flat



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

### Sealed flying lead terminals



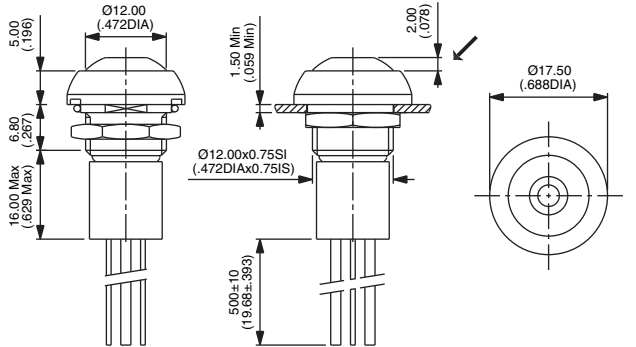
IPR3FAD



Normally Open

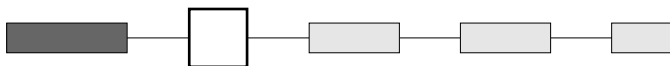
For THIN flying leads, replace F with W.

→ Flat



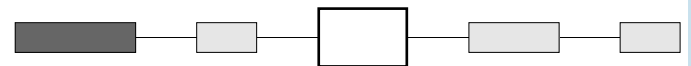
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

### ACTUATOR COLOURS



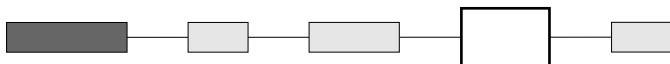
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9 : orange - A : satin chrome

### LED COLOURS



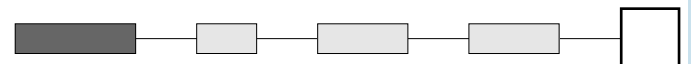
LOS : super red - LOY : yellow - LOG : green - LOB : blue  
LOW : white

### OPTIONS



100 : Satin chrome bezel  
101 : Bright chrome bezel

### APPROVAL

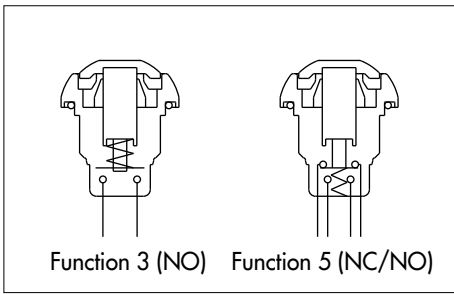


UL  
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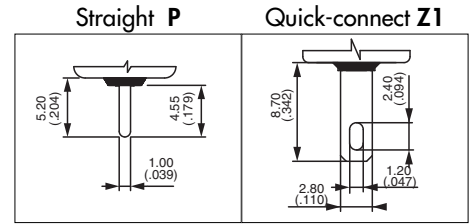
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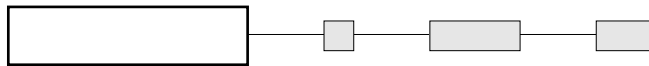
Round - non-illuminated



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



## MODEL STRUCTURE



Shown with standard flying lead terminals.

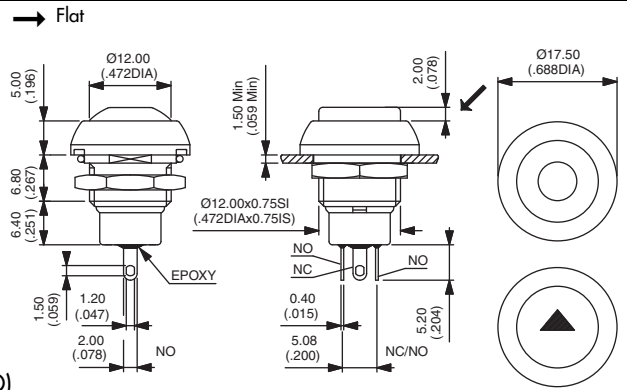
Actuator marking available on IPP models (symbol 10 mm max.). On request.

B1

## Solder lug terminals



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

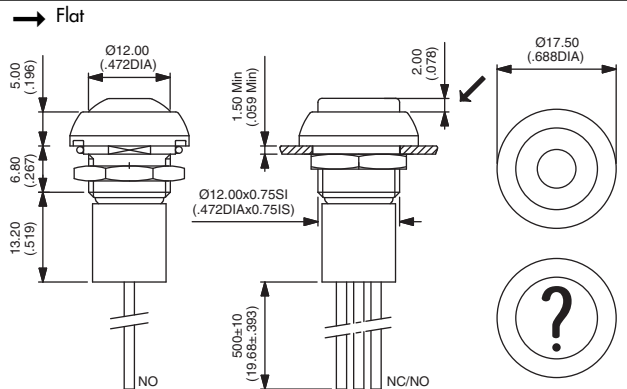


Also available with straight PC terminals : **IP•3PAD** (NO) or **IP•5PAD** (NC/NO) and quick-connect terminals : **IP•3Z1AD** (NO only)

## Sealed flying lead terminals

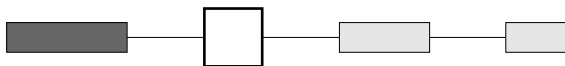


- Curved actuator, NO  
**IPR3FAD**
  - Curved actuator, NC/NO  
**IPR5FAD**
  - Flat actuator, NO  
**IPP3FAD**
  - Flat actuator, NC/NO  
**IPP5FAD**
- For THIN flying leads, replace F with W.



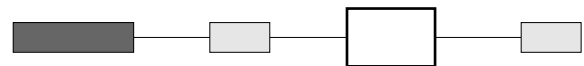
Wire colours (NC/NO) : black : NO, blue : NC

## ACTUATOR COLOURS



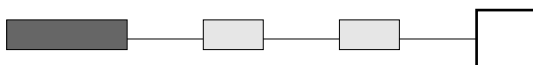
- 1 : blue - B : dark blue - 2 : black - 3 : green - 4 : grey
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- 9 : orange - A : satin chrome

## OPTIONS

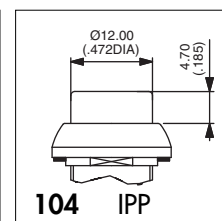
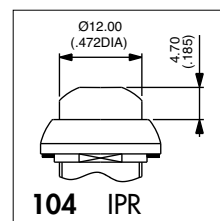


- 100 : Satin chrome bezel
- 101 : Bright chrome bezel
- 104 : High actuator - If combined with function 5 (NC/NO), order with CD contacts (instead of AD contacts).

## APPROVAL



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



# Mouser Electronics

Authorized Distributor

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## [Apem:](#)

[IPC1FAD2](#) [IPC1FAD2L0G](#) [IPC1FAD2L0Y](#) [IPC1FAD6](#) [IPC1SAD1L0G](#) [IPC1SAD1L0Y](#) [IPC1SAD2](#) [IPC1SAD3L0G](#)  
[IPC1SAD6](#) [IPC1SAD6L0S](#) [IPR1FAD2](#) [IPR1FAD2L0G](#) [IPR1FAD2L0Y](#) [IPR1FAD3L0G](#) [IPR1FAD6](#) [IPR1FAD6L0S](#)  
[IPR1SAD1L0Y](#) [IPR1SAD2L0G](#) [IPR1SAD2L0S](#) [IPR1SAD2L0Y](#) [IPR1SAD3](#) [IPR1SAD3L0G](#) [IPR1SAD5](#)  
[IPR1SAD5104](#) [IPR1SAD5L0S](#) [IPR1SAD6](#) [IPR1SAD6104](#) [IPR1SAD6L0S](#) [IPR1SAD2](#) [IPC1SAD2L0S](#) [IPR1FAD2L0S](#)  
[IPR1SAD7/1L0S](#) [IPC1FAD2L0B](#) [IPC1Z1AD2L0B](#) [IPR1Z1AD1L0Y](#) [IPR1SAD5-LOS](#) [IPR1SAD2L0B](#) [IPR1SAD9LOS](#)