

# APEM

## IR Series

Sealed momentary pushbutton switches

- Sealed to IP67
- Illuminated and non-illuminated
- Wide choice of terminals



APEM

Ø16 mm  
bushing

# IR series

## Sealed momentary pushbutton switches - bushing $\varnothing$ 16

*Distinctive features*

The IR series is a range of sealed momentary pushbutton switches with dia. 16 mm bushing. This series is divided into 2 families : standard models and microswitch technology models.

### Common features

- Sealed to IP67
- Illuminated or non-illuminated
- Tactile feedback
- Square or round actuator
- Wide choice of bezel and actuator colours
- Wide choice of illumination colours

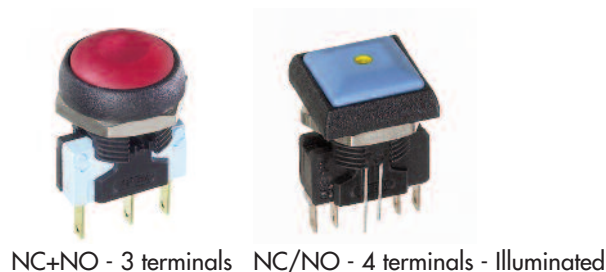
### Standard versions

- Numerous terminal options : solder, wire lead, straight PC, quick-connect, screw
- Screw versions withstanding up to 4A
- Electrical function : NO (2 terminals)



### Microswitch versions

- Withstanding up to 5A
- Two electrical functions :  
NC+NO (3 terminals)  
NC/NO combined (4 terminals)



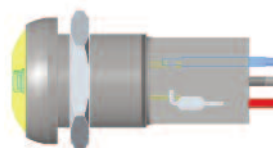
### Optional marking

Actuator marking is available on request for models with flat round actuator.



### Integrated resistor

On wire lead illuminated versions, the LED resistor can be integrated in the product by APEM. On request.



# IR series

## Sealed momentary pushbutton switches - bushing Ø 16 - standard version

*Distinctive features and specifications*



- Illuminated and non-illuminated
- Tactile feedback
- Flat round actuator for optional marking
- Sealed to IP67
- Screw version up to 4A

### ENVIRONMENTAL SPECIFICATIONS

- Degree of protection : IP67
- 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 switch) : IK06 according to EN 50102 (1 joule)
- Operating temperature : -40°C to +85°C

### GENERAL SPECIFICATIONS

- Panel thickness : 8 mm (.314) max.
- Total travel : 1,7 mm (.066)
- Operating force : 2N to 5N
- Mechanical life : 1.000.000 cycles
- Torque : 0,8 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

### ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
  - Gold plated silver contacts (code 4) : 200mA 48VDC - 200mA 250VAC
  - Silver contacts (code 2) - screw terminals : 2A 250VAC - 4A 48VDC
- Electrical life at full load : 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

#### 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 =  $\frac{\text{supply voltage} - \text{LED forward voltage}}{\text{LED forward current}}$

On wire lead versions, the LED resistor can be integrated by APEM on request.

### MATERIALS

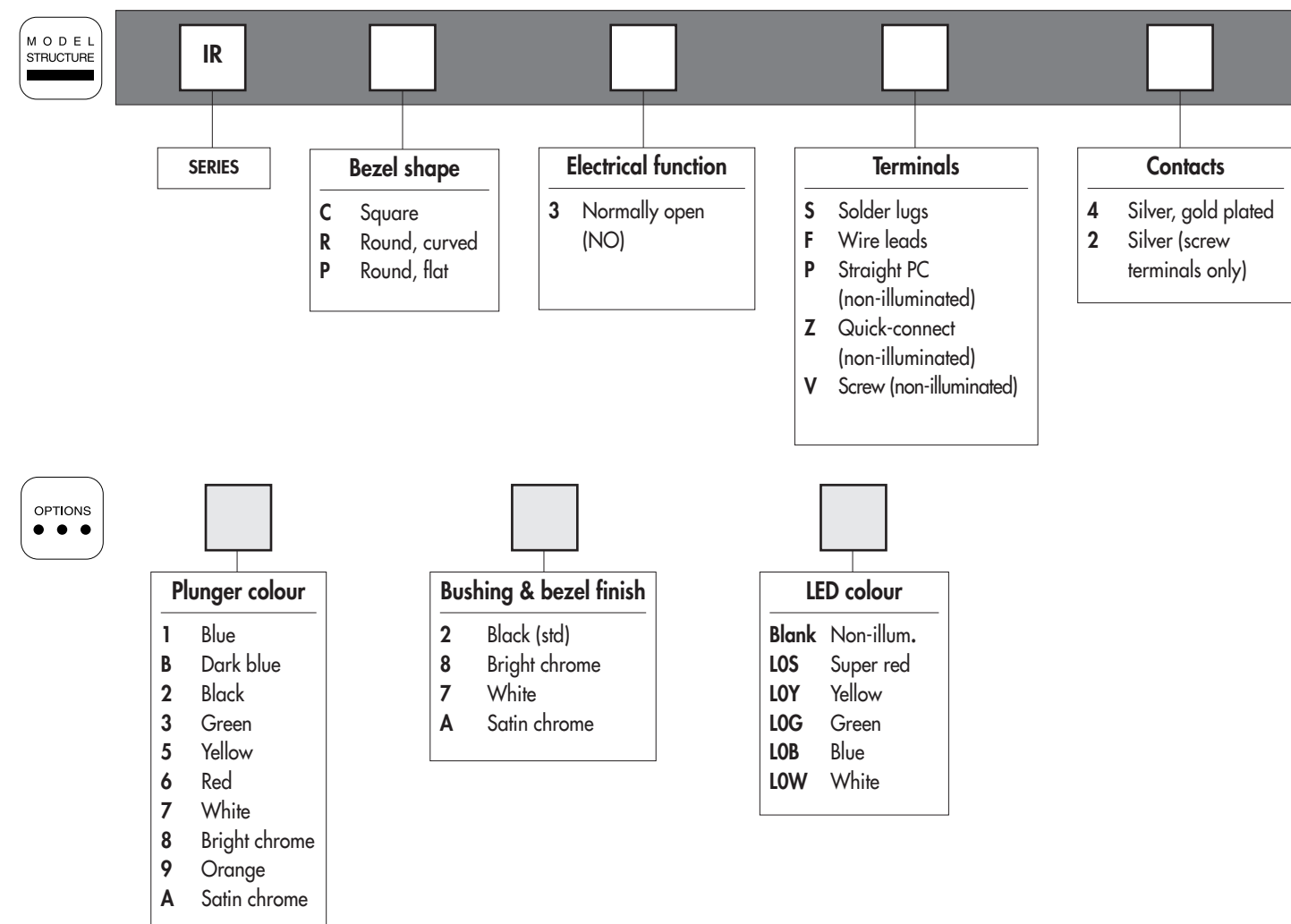
- Case : thermoplastic UL94-V0
- Plunger : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts :
  - 4 : silver, gold plated
  - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm<sup>2</sup>, UL approved
- LED wire : AWG26
- Lens : polycarbonate
- Terminal seal : epoxy

**Tolerance** : The general tolerance for dimensions in this brochure is ± 0,3 (.012). Overall dimension tolerance is ± 0,5 (.020).

# IR series

## Sealed momentary pushbutton switches - bushing Ø 16 - standard version

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.



**Mounting accessories** : Standard hardware supplied : 1 hex nut 19 mm (.748) across flats and 1 flat seal  
Hex nut P/N U4116.

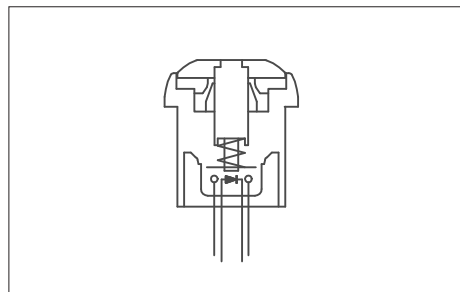


**Packaging unit** : 25 pieces for wire lead models - 40 pieces for other models

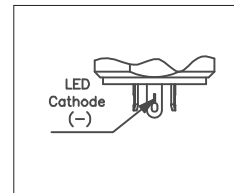
# IR series

## Sealed momentary pushbutton switches - bushing $\varnothing 16$ - standard version

Round - illuminated



- Five LED colours
- Tin plated LED terminals
- Gold plated contacts



### MODEL STRUCTURE



Plunger marking available on IRP models (symbol 12 mm max.). On request.

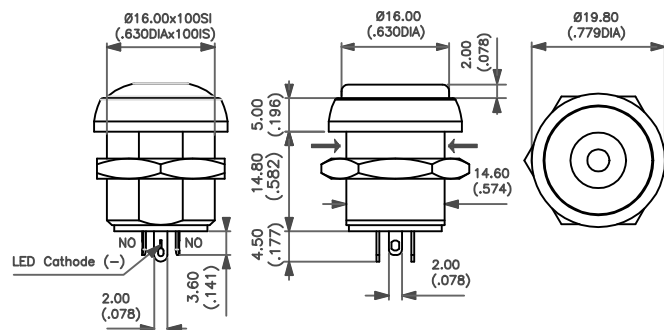
### Solder lug terminals

→ Flat



Curved actuator  
**IRR3S4** Normally Open

Flat actuator  
**IRP3S4** Normally Open



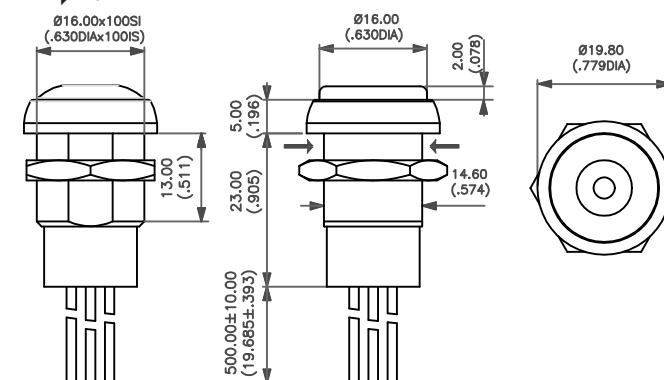
### Sealed wire lead terminals

→ Flat



Curved actuator  
**IRR3F4** Normally Open

Flat actuator  
**IRP3F4** Normally Open



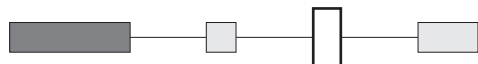
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

### PLUNGER COLOUR



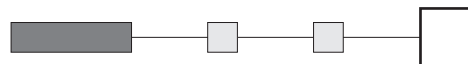
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange  
A : satin chrome

### BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white - 8 : bright chrome  
A : satin chrome

### LED COLOUR

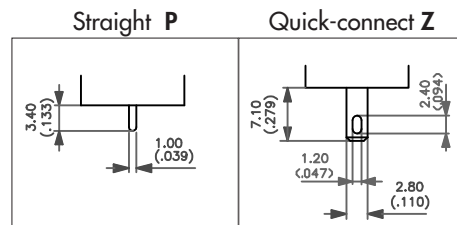
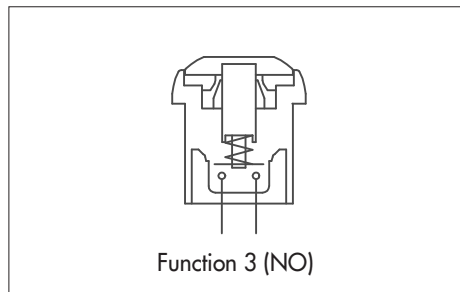


LOS : super red - LOY : yellow - LOG : green - LOB : blue  
LOW : white

# IR series

## Sealed momentary pushbutton switches - bushing $\varnothing 16$ - standard version

Round - non-illuminated



### MODEL STRUCTURE



Plunger marking available on IRP models (symbol 12 mm max.). On request.

### Solder lug terminals - gold plated contacts



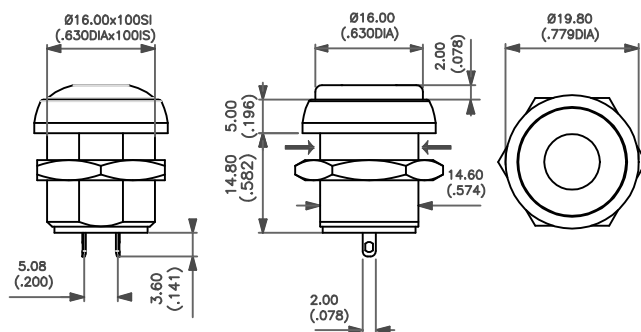
Curved actuator, NO  
**IRR3S4**



Flat actuator, NO  
**IRP3S4**



→ Flat



Also available with straight PC terminals : **IR•3P4** and quick-connect terminals : **IR•3Z4**.

### Sealed wire lead terminals - gold plated contacts



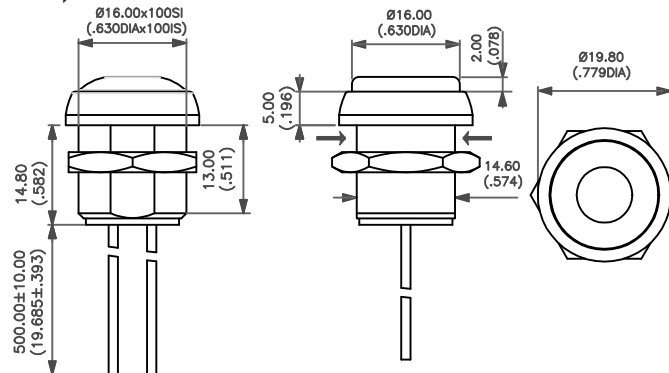
Curved actuator, NO  
**IRR3F4**



Flat actuator, NO  
**IRP3F4**



→ Flat



### Screw terminals - silver contacts



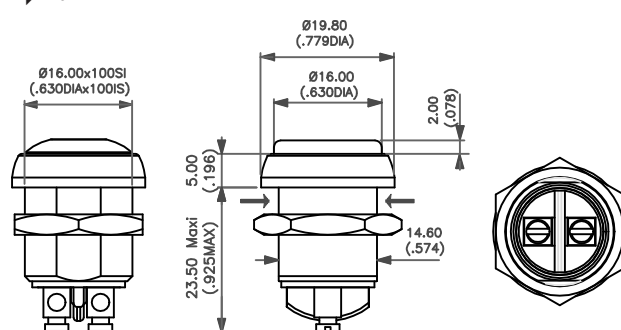
Curved actuator, NO  
**IRR3V2**



Flat actuator, NO  
**IRP3V2**



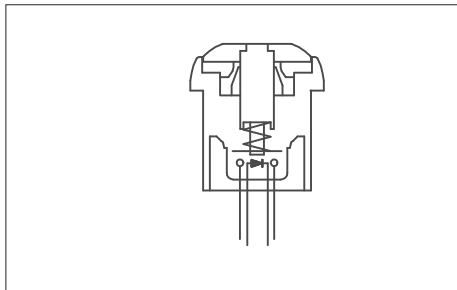
→ Flat



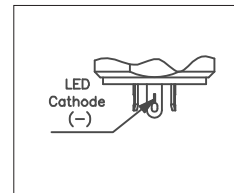
# IR series

## Sealed momentary pushbutton switches - bushing $\varnothing 16$ - standard version

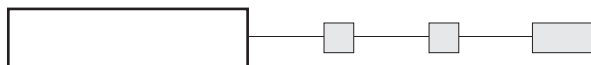
Square - illuminated



- Five LED colours
- Tin plated LED terminals
- Gold plated contacts



MODEL  
STRUCTURE



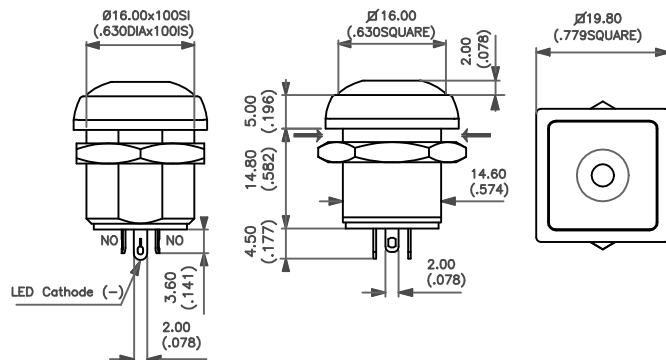
### Solder lug terminals



IRC3S4



→ Flat



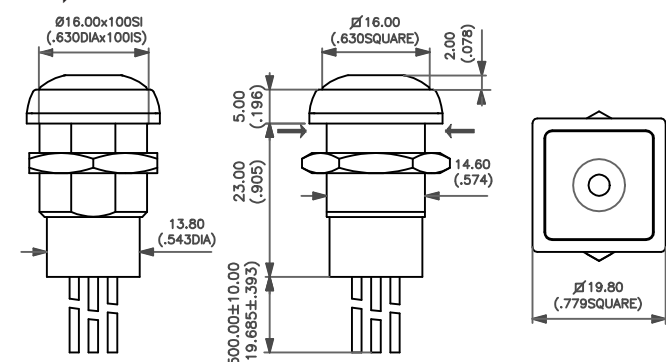
### Sealed wire lead terminals



IRC3F4



→ Flat



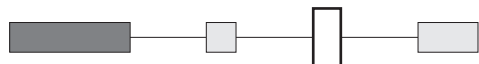
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

### PLUNGER COLOUR



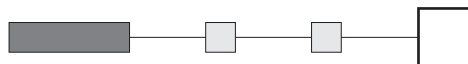
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange  
A : satin chrome

### BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white - 8 : bright chrome  
A : satin chrome

### LED COLOUR

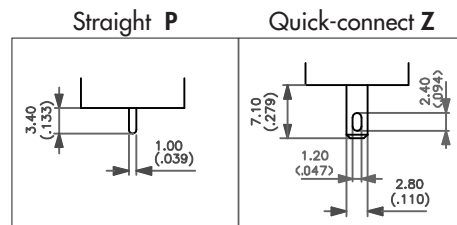
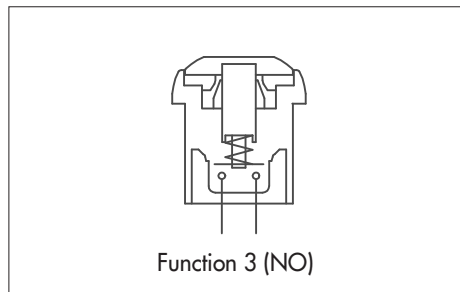


LOS : super red - LOY : yellow - LOG : green - LOB : blue  
LOW : white

# IR series

## Sealed momentary pushbutton switches - bushing $\varnothing 16$ - standard version

Square - non-illuminated



MODEL  
STRUCTURE



### Solder lug terminals - gold plated contacts

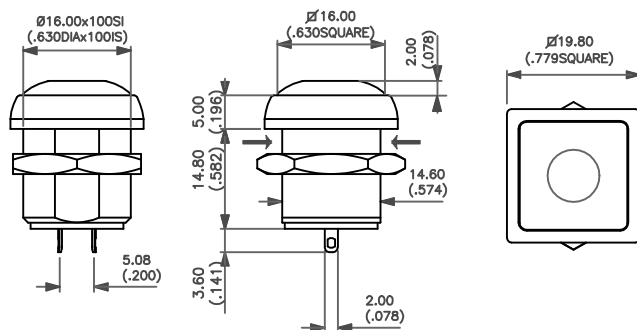
→ Flat



IRC3S4



Normally Open



Also available with straight PC terminals : IRC3P4 or quick-connect terminals : IRC3Z4.

### Sealed wire lead terminals - gold plated contacts

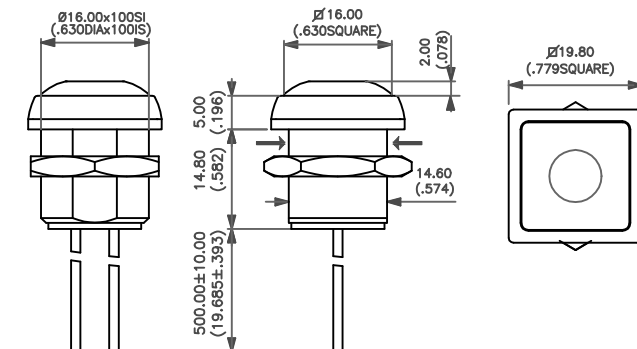
→ Flat



IRC3F4

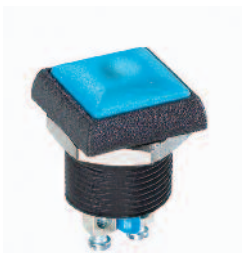


Normally Open



### Screw terminals - silver contacts

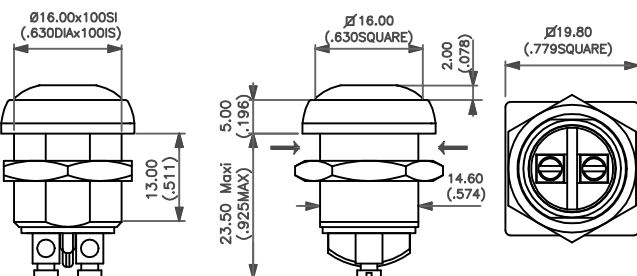
→ Flat



IRC3V2



Normally Open





# IR series

## Sealed momentary pushbutton switches - bushing Ø 16 - microswitch version

*Distinctive features and specifications*



- Microswitch technology up to 5A
- Illuminated and non-illuminated
- Tactile feedback
- Flat round actuator for optional marking
- Sealed to IP67

### ENVIRONMENTAL SPECIFICATIONS

- Degree of protection : IP67
- 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 switch) : IK06 according to EN 50102 (1 joule)
- Operating temperature : -20°C to +85°C

### GENERAL SPECIFICATIONS

- Panel thickness : 3 mm (.118) max.
- Total travel : 1,7 mm (.066)
- Operating force : 2N to 5N
- Mechanical life : 1.000.000 cycles
- Torque : 0,8 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

### ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :  
5A 250VAC, 50.000 cycles (function 7)  
5A 250VAC, 25.000 cycles (function 8)
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 750 Vrms between terminals  
2.000 Vrms between terminals and frame
- Contact bounce : 10 ms

#### LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	2V	2,5V
Yellow (LOY)	20mA	2V	2,5V
Green (LOG)	10mA	2V	2,5V
Blue (LOB)	10mA	3,3V	3,8V

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

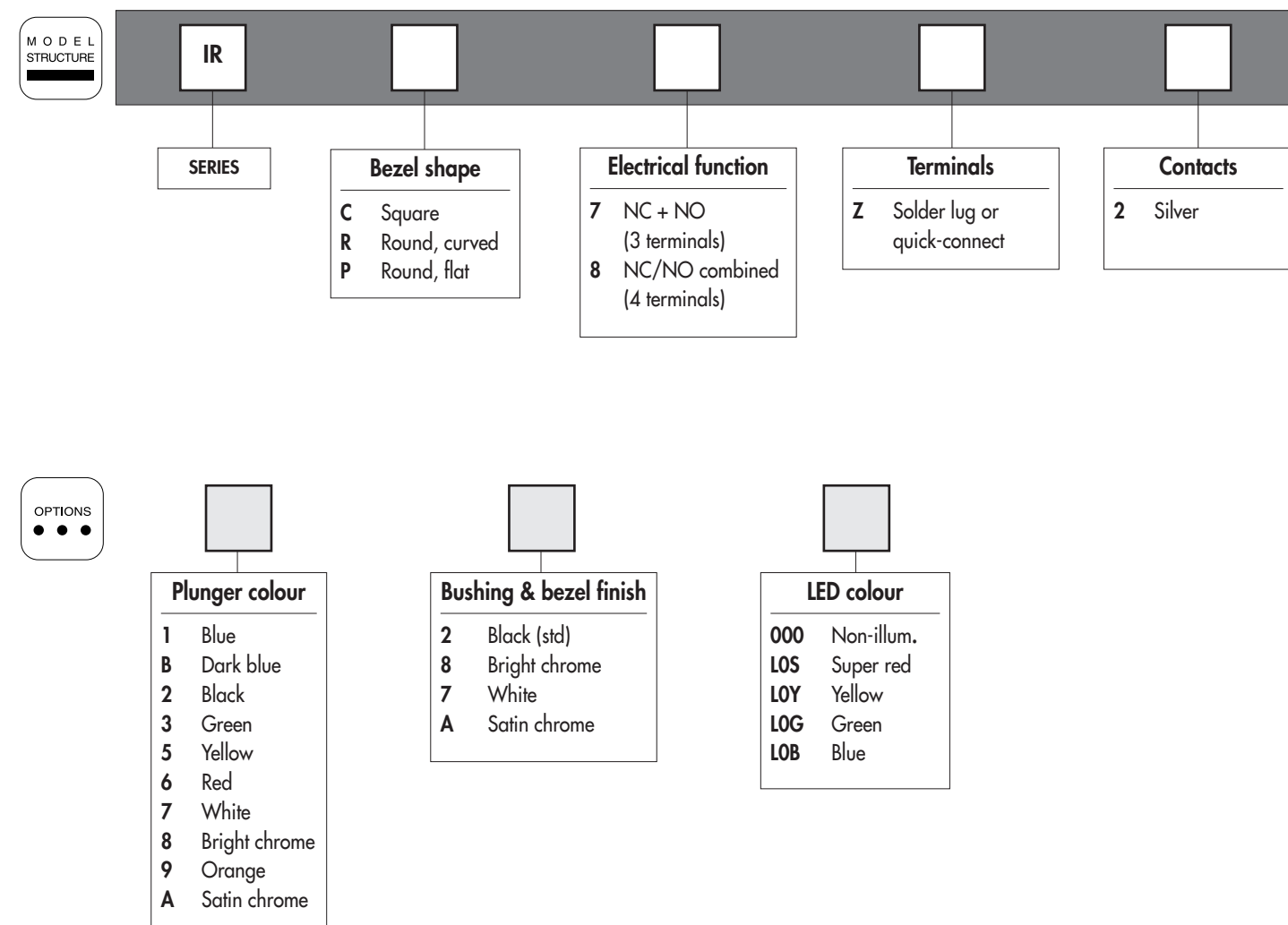
### MATERIALS

- Case : thermoplastic UL94-V0
- Plunger : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts : silver
- Lens : polycarbonate

# IR series

## Sealed momentary pushbutton switches - bushing Ø 16 - microswitch version

Overview



The IR series for high currents is based on a microswitch. Please note that this microswitch is supplied separately.

### 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.



**Mounting accessories** : Standard hardware supplied : 1 hex nut 19 mm (.748) across flats and 1 flat seal.  
Hex nut P/N : U4116

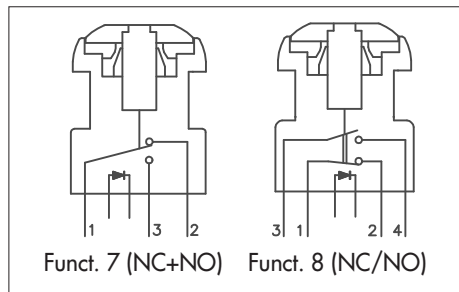


**Packaging unit** : 25 pieces for wire lead models - 40 pieces for other models

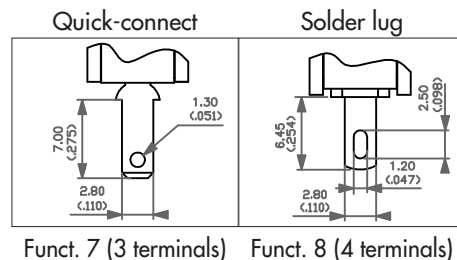
# IR series

## Sealed momentary pushbutton switches - bushing Ø 16 - microswitch version

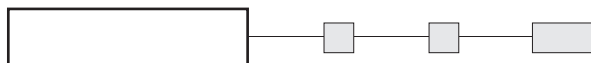
Round - illuminated



- Four LED colours
- Tin plated LED terminals
- Silver contacts



### MODEL STRUCTURE



Plunger marking available on IRP models (symbol 12 mm max.). On request.

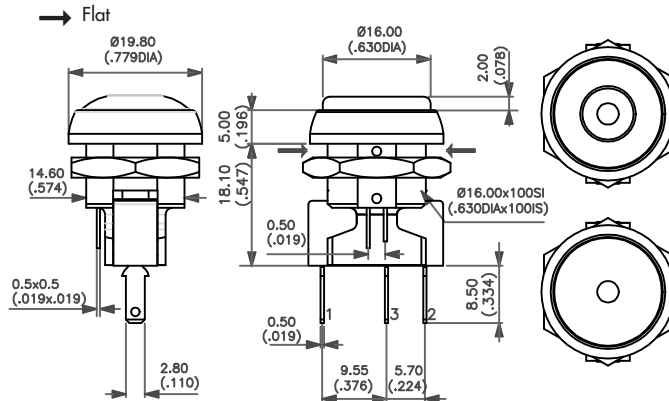
### Quick-connect terminals - NC+NO - 3 terminals



Curved actuator  
**IRR7Z2**



Flat actuator  
**IRP7Z2**



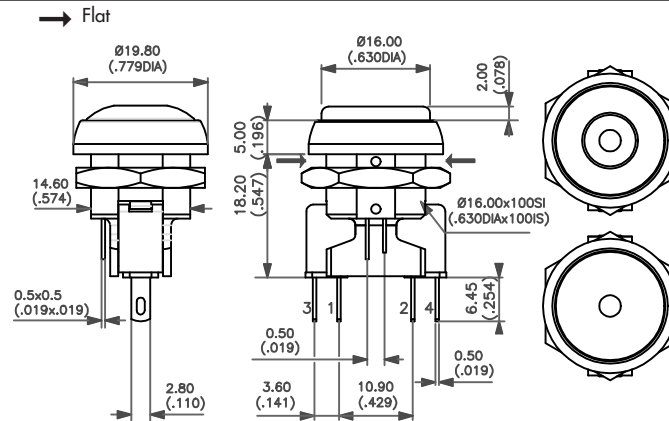
### Solder lug terminals - NC/NO - 4 terminals



Curved actuator  
**IRR8Z2**



Flat actuator  
**IRP8Z2**



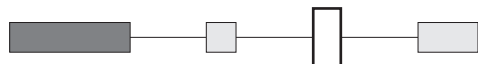
Terminals should be used as solder lugs only.

### PLUNGER COLOUR



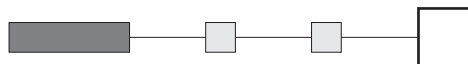
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange  
A : satin chrome

### BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white - 8 : bright chrome  
A : satin chrome

### LED COLOUR

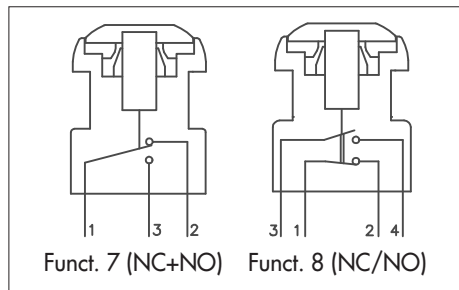


000 : non-illuminated  
LOS : super red - LOY : yellow - LOG : green - LOB : blue

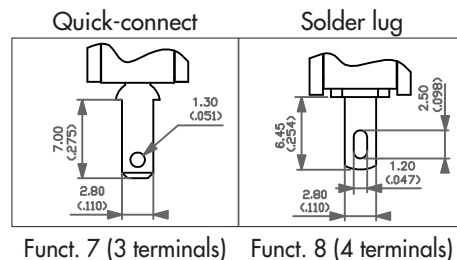
# IR series

## Sealed momentary pushbutton switches - bushing Ø 16 - microswitch version

Round - non-illuminated



• Silver contacts



MODEL  
STRUCTURE



Plunger marking available on IRP models (symbol 12 mm max.). On request.

### Quick-connect terminals - NC+NO - 3 terminals



Curved actuator  
**IRR7Z2**

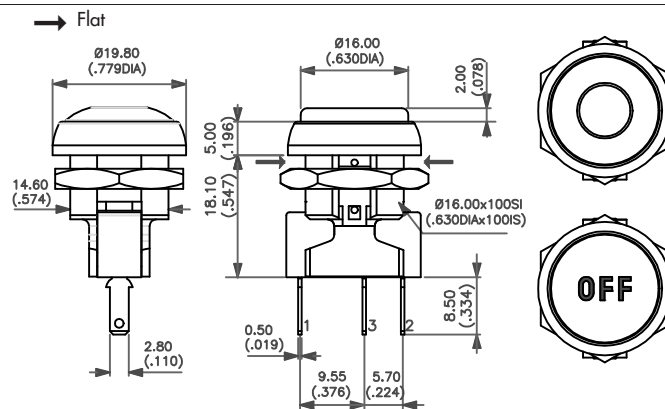


NC+NO

Flat actuator  
**IRP7Z2**



NC+NO



### Solder lug terminals - NC/NO - 4 terminals



Curved actuator  
**IRR8Z2**

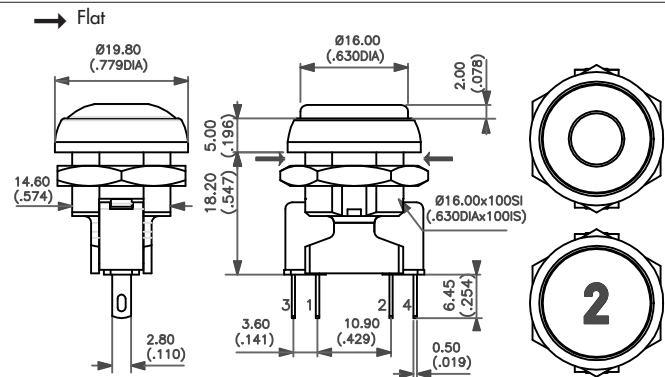


NC/NO combined

Flat actuator  
**IRP8Z2**



NC/NO combined



Terminals should be used as solder lugs only.

### PLUNGER COLOUR



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

### BUSHING AND BEZEL FINISH

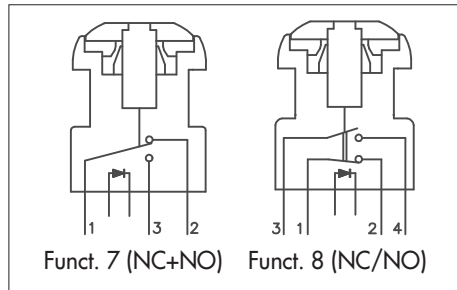


2 : black (standard) - 7 : white - 8 : bright chrome - A : satin chrome

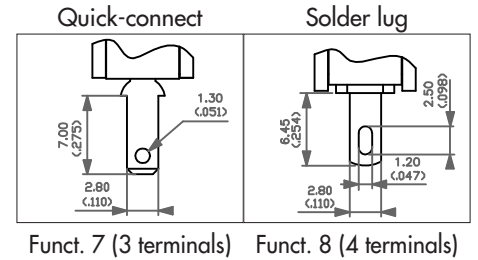
# IR series

## Sealed momentary pushbutton switches - bushing Ø 16 - microswitch version

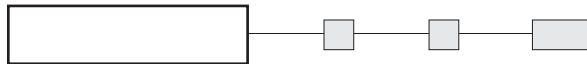
Square - illuminated



- Four LED colours
- Tin plated LED terminals
- Silver contacts



MODEL  
STRUCTURE



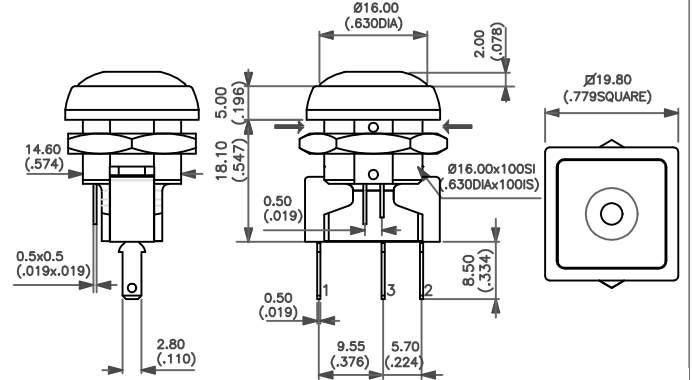
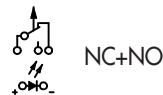
Funct. 7 (3 terminals)    Funct. 8 (4 terminals)

### Quick-connect terminals - NC+NO - 3 terminals

→ Flat



IRC7Z2

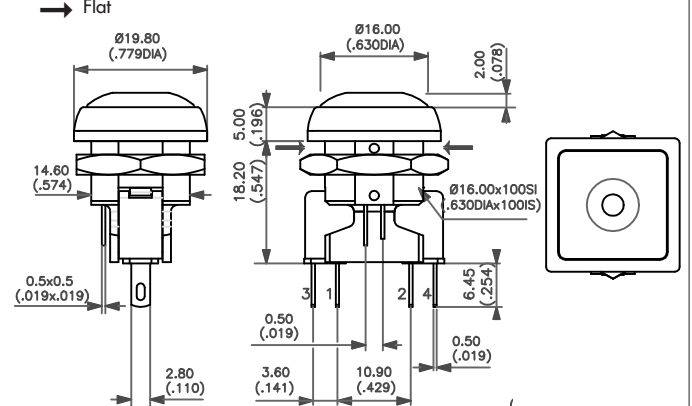


### Solder lug terminals - NC/NO - 4 terminals

→ Flat



IRC8Z2



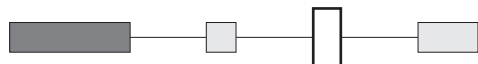
Terminals should be used as solder lugs only.

### PLUNGER COLOUR



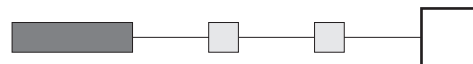
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange  
A : satin chrome

### BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white - 8 : bright chrome  
A : satin chrome

### LED COLOUR

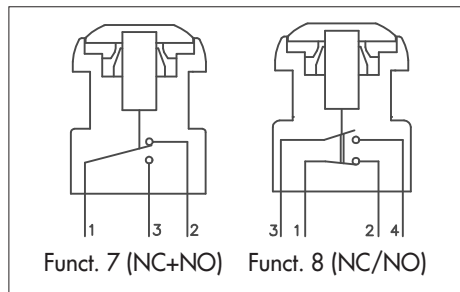


000 : non-illuminated  
LOS : super red - LOY : yellow - LOG : green - LOB : blue

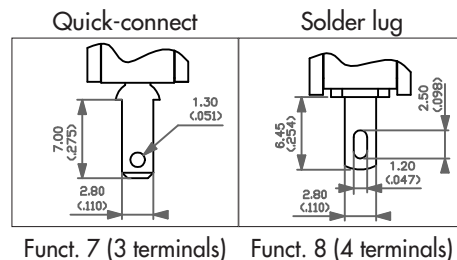
# IR series

## Sealed momentary pushbutton switches - bushing $\varnothing 16$ - microswitch version

Square - non-illuminated



• Silver contacts



Funct. 7 (3 terminals)    Funct. 8 (4 terminals)

MODEL  
STRUCTURE



### Quick-connect terminals - NC+NO - 3 terminals

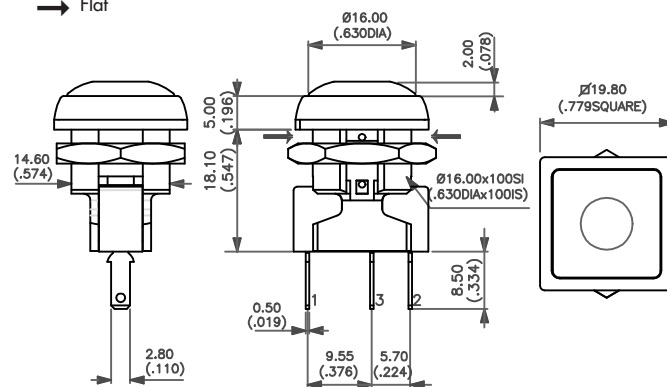
→ Flat



IRC7Z2



NC+NO



### Solder lug terminals - NC/NO - 4 terminals

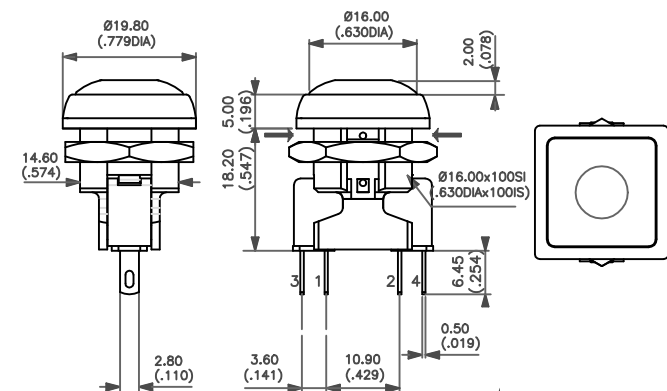
→ Flat



IRC8Z2



NC/NO combined



Terminals should be used as solder lugs only.

### PLUNGER COLOUR



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

### BUSHING AND BEZEL FINISH



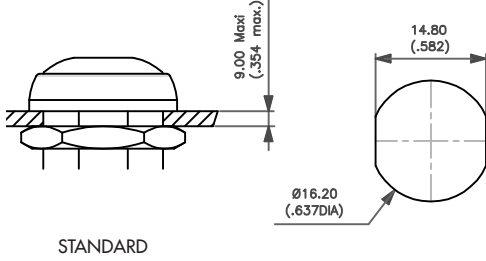
2 : black (standard) - 7 : white - 8 : bright chrome - A : satin chrome

# IR series

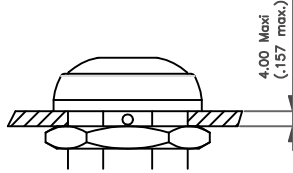
## Sealed momentary pushbutton switches - bushing $\varnothing 16$

### MOUNTING

#### Panel cut-out

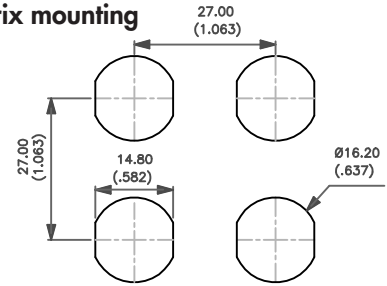


STANDARD

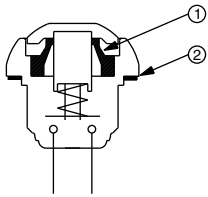


MICROSWITCH

#### Matrix mounting



### CROSS SECTION



- ① Elastomeric membrane
- ② Flat seal

### SEALING

#### IP67 for the whole series

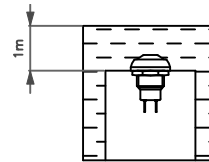
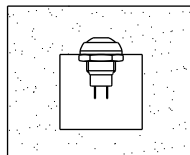
Degree of protection provided by the enclosures of electric appliances according to IEC 529, DIN 40050 and NFC 20-010.

**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



The above illustrations show non-illuminated models.