

APEM

"I" range Sealed pushbutton switches

- Sealed to IP67
- Dia. 12 mm or 16 mm bushing
- Momentary or latching
- Illuminated or non-illuminated
- Custom options



Comprehensive range



Distribución de componentes
eléctricos y electrónicos

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The "I" range at a glance

Bushing dia. 12 mm (.472)



IP series

- For harsh environments
- Momentary or latching
- Square or round actuator
- Illuminated or non-illuminated

Page 5



IB and IS series

- Snap-in or with threaded bushing
- Compact, light in weight
- Momentary
- Round actuator

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Hole plug U6640 available on request.

Bushing dia. 16 mm (.630)



IZ series

- Rear panel mounting
- Metal or plastic bushing
- Momentary or latching
- Round actuator
- Illuminated or non-illuminated

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IR series

- Up to 5A
- Screw version
- Momentary or latching
- Square or round actuator
- Illuminated or non illuminated

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IA series

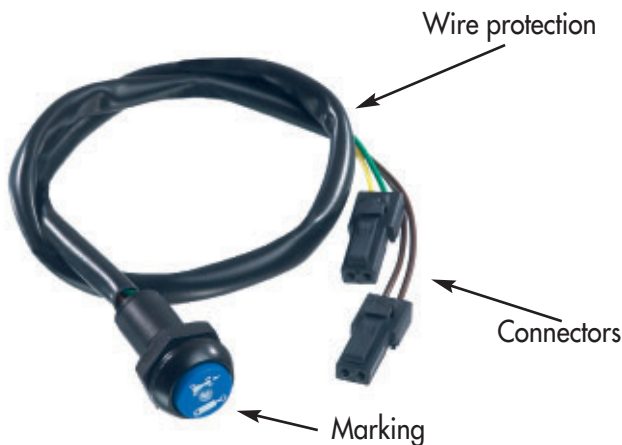
- For harsh environments
- Resistant to frost, sand and hydrocarbons
- Low profile
- Momentary
- Round actuator

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Sealing features Page 58

APEM's vertical integration and engineering expertise have led to the development of custom switches. Example 1 shows a catalogue product adapted to meet a specific need. Examples 2 & 3 show products entirely developed to customer's specifications and produced with specific tooling.

❑ Example 1 - Customized product based on an IP pushbutton



❑ Example 2 - IL pushbutton, customized product based on an IS pushbutton

Compared to a standard IS switch, this pushbutton has a longer threaded bushing allowing mounting onto a thicker panel.

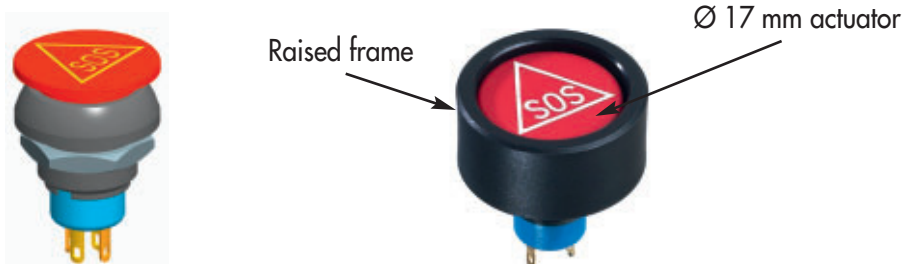
This illuminated pushbutton also features a thinner bezel for compact matrix mounting.



❑ Example 3 - 100 % custom product based on an IP pushbutton : dia. 17 mm actuator

A firm specialized in satellite locating systems asked APEM for a large pushbutton with a **dia. 17 mm actuator**. This emergency pushbutton was intended to be used in trucks and to be the interface of an embedded electronic box. The APEM solution was a normally closed IP-based custom product. Two new parts were created :

- a plunger with a 17 mm diameter
- a raised frame preventing inadvertent actuation or may have the function of a finger-guide.



Custom configurations can be produced using the following options, combined or not with standard elements, to meet your requirements.

☐ Marking

Pad printing, hot stamping, laser etching



☐ Colours

- “Desert tan” colour for camouflage in desert areas
- Glossy actuator finish
- “Soft feel” painted bushing and actuator



Desert tan



Glossy actuator

☐ Terminals

Colours, length and section

Materials : PVC, teflon, neoprene, external LED resistor

Wire preparation : pre-stripped, tinned, with connector, straight cut



Lead colours



Cable



Flying leads and connector

☐ Sealing

Overmolding (back end total sealing)

Tube + epoxy

Heat shrink sleeves (electrical insulation)

■ APEM extends the I Series:

New Sealed PushButtons

- same superior tactile feedback
- engineered for demanding requirements

IL



Long Threaded Bushing for thick panels

MOM
Excellent tactile feedback
Illuminated or not
Flat round actuator for optional marking
Sealed to IP67
For panels from 4 mm to 10mm

IQ



16mm Snap-In for easy installation

MOM or latching
Excellent tactile feedback
Illuminated or not
Square or round actuator
Wide choice of actuator and illumination colors
Sealed to IP67
Extremely visible, accessible pushbutton

IC



Short case for reduced behind-panel depth

MOM
Excellent tactile feedback
Metal bushing
Flat round actuator for optional marking
Sealed to IP67
For tight space requirements



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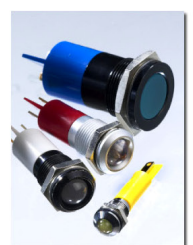
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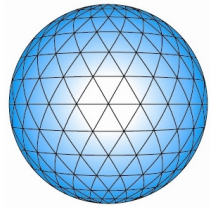
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APEM PRODUCTS

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APEM

IH Series HALL EFFECT SWITCHES

Benefits

- switch and linear versions
- 5 million cycles
- low behind-panel depth
- IP67 sealing



Contents

IHS Hall effect Switches	... 3
IHL Hall effect Linear	... 6

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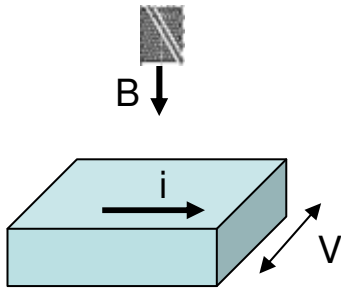
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HALL EFFECT



i : current in conductor

→ needs supply

B : field generated by magnet

V : voltage « result »

Hall effect = contactless => long life

APPLICATIONS

IH Switch:

This rugged switch is designed to be subjected to a repetitive jogging in harsh environments. The IHS is recommended for applications where the switch is often activated. For example, in applications where positioning the load is critical: material handling, loaders, lifts trucks, buckets and shovels ...

IH Linear:

This rugged switch is intended for applications where a simple On /Off control is not sufficient and where a linear output is preferable. Typical use of IHL: applications where operators need to control motion and speed. This switch is ideal for control valves or variable speed drives and can be used in various applications including industrial controls, heavy duty equipment and handling.

A few applications



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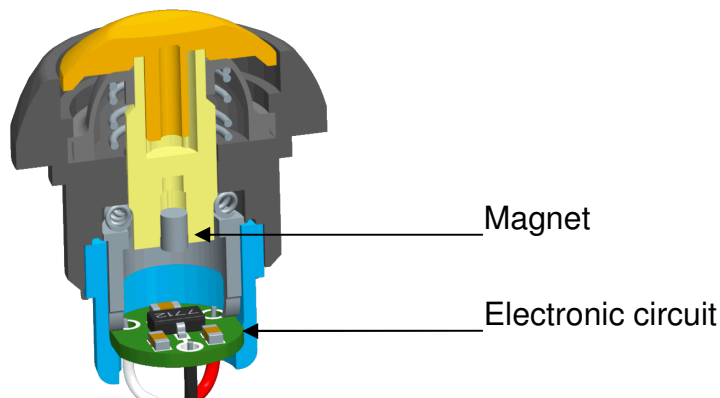
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Product description

Apem has created a momentary switch, the IHS, using the hall effect to have a long life contactless switching of 5 million operations. This switch is sealed to IP67. The dome shaped actuator is available in eight colours.



Features:

- 5 million cycles
- Hall Effect sensor technology for long life
- Eight actuator colors
- IP67 sealing
- Operating force: 6 N \pm 2N
- Low behind-panel depth
- Compact: \varnothing 12mm (.472) case



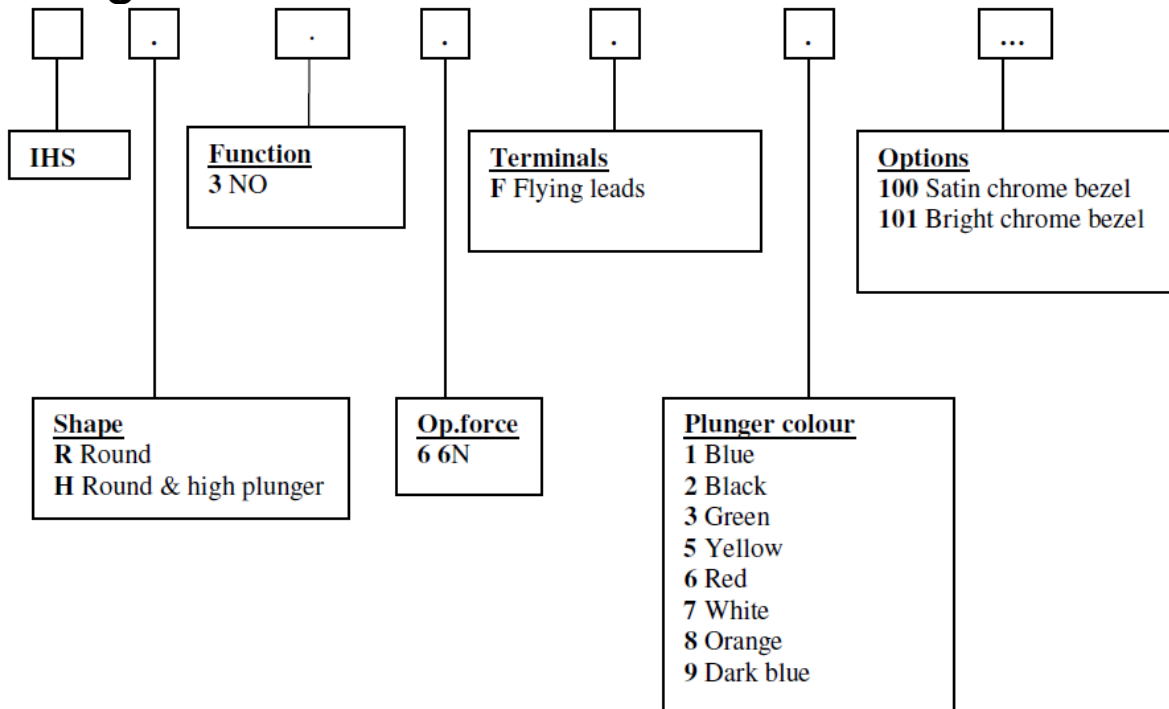
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Order guide



Standard bezel: zamak, black

MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS

- Sealing : IP67 according to IEC 529
- Temperature range: -40°C to +85°C
- Total travel: 1,70mm (.070)

ELECTRICAL AND GENERAL SPECIFICATIONS

- Electrical function: Normally open (NO) momentary
- Supply voltage: 3.5VDC to 24VDC
- Supply current: Vcc=12V: 2.5mA Typ. to 5mA max (current consumption in off position)
- Max.output current: 50mA
- Max.output voltage: 28VDC
- Mechanical life: 5.000.000 cycles

MATERIALS

- Case: PBT, UL94-V0
- Plunger: polyamide 6/6
- Bushing: black painted Zamak
- Multi-wire lead: AWG26 (150mm)

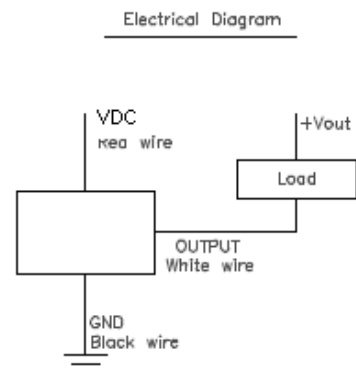
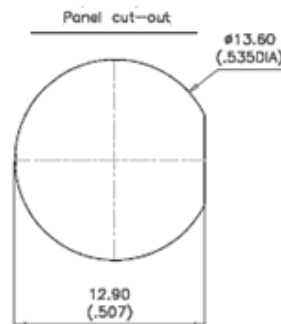
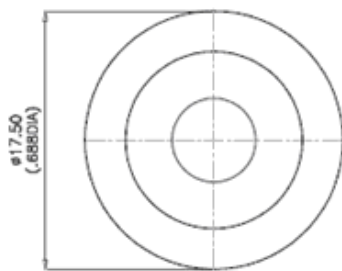
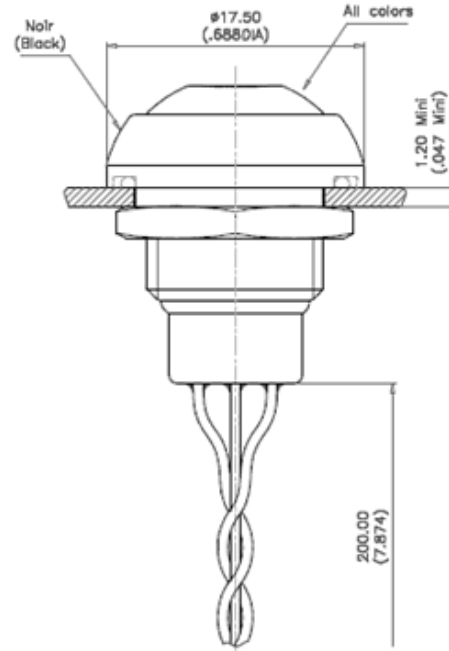
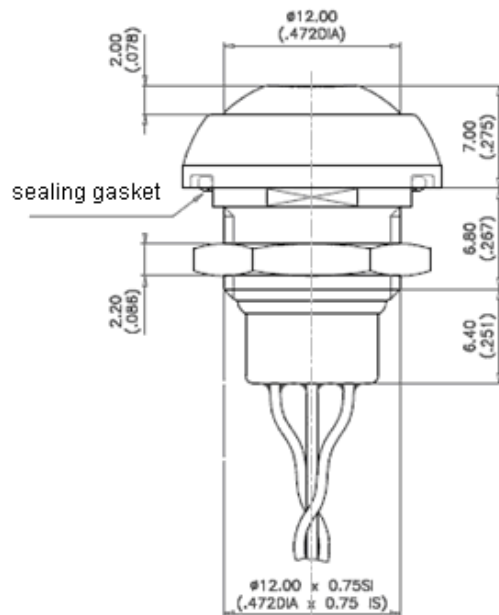


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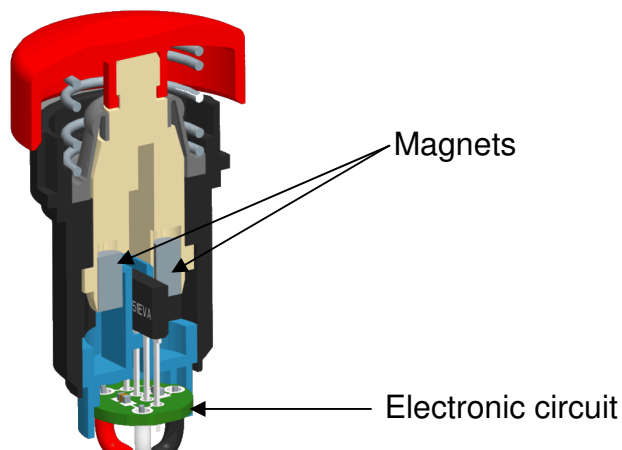
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Product description

APEM has created a revolutionary switch, the IHL, using the Hall Effect technology to provide an output proportional to the actuator travel. The IHL uses the hall effect to have a long life contactless switching of 5 million operations. It is sealed to IP67.



Features:

- 0.5 to 4.5 volt outputs
- 5 million cycles
- Hall Effect for reliable contactless switching
- IP67 sealing
- Operating force: Modular
- Low behind-panel depth
- Compact: Ø12mm (.472) case

Specific request :
Programmable output

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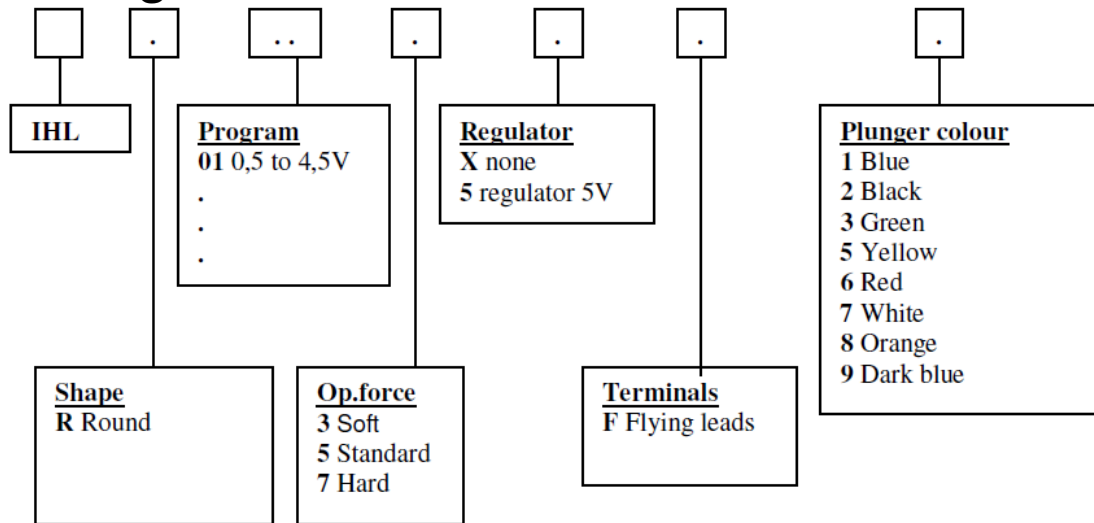
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Order guide



Bezel : plastic, black, round

MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS

- Sealing : IP67 according to IEC 529
- Temperature range: -40°C to +85°C
- Total travel: 4 mm (.160)
- EMC testing: 10V per meter extend to radiated fields in freq range of 80 Mhz to 1000Mhz. 1Khz 80% sine wave modulation, IEC/EN61000-4-3

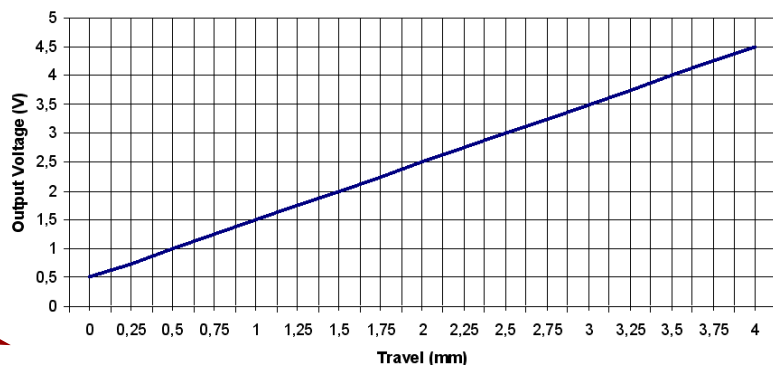
ELECTRICAL AND GENERAL SPECIFICATIONS

- Electrical function: proportional linear output
- Supply voltage: 4.5 VDC to 5.5 VDC
- Supply current: 9mA max.
- Max.output current: 1.25mA max
- Max.output voltage: see graph
- Mechanical life: 10.000.000 cycles

MATERIALS

- Case: PBT, UL94-V0
- Plunger: ABS
- Bushing: Polyamide 6/6
- Multi-wire lead: AWG26 (150mm)

Linear Output Graph (Vcc=5V@20°C)

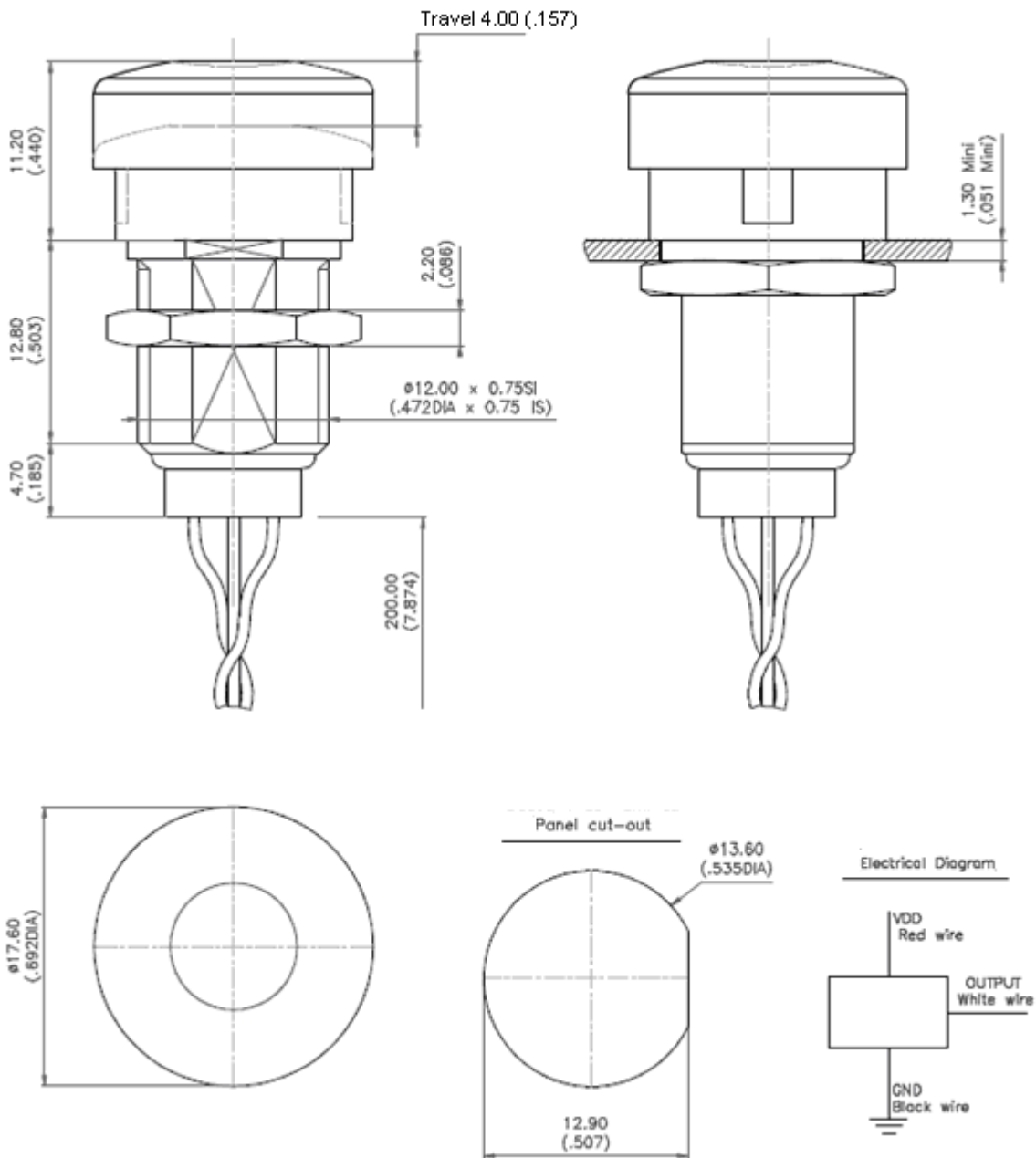


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Pushbutton switches for harsh environments - short case - bushing Ø 12 mm - momentary

Distinctive features and specifications



- Momentary with short case, reduced behind-panel depth
- Tactile feedback
- Flat round actuator for optional marking
- Glossy actuator option (round curved only)
- Sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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 : IK06 according to EN 50102 (1 joule)
- Operating temperature : -40°C to +85°C

GENERAL SPECIFICATIONS

- Panel thickness : 1,5 mm (.059) min. 4 mm (.157 max.)
- Total travel : 1,7 mm (.067)+/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

ELECTRICAL SPECIFICATIONS

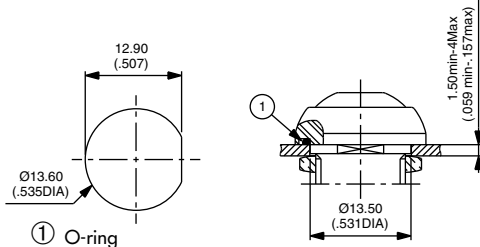
- Max. current/voltage rating with resistive load :
0,2A 48VDC, 500.000 cycles
0,5A 48VAC, 500.000 cycles
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms 50 HZ between terminals

MATERIALS

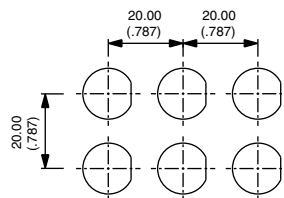
- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamac), black painted
- Contacts : brass, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- Terminal seal : epoxy

MOUNTING

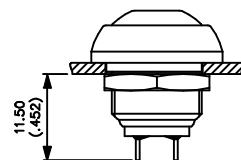
Panel cut-out



Matrix mounting



Back of panel space requirement



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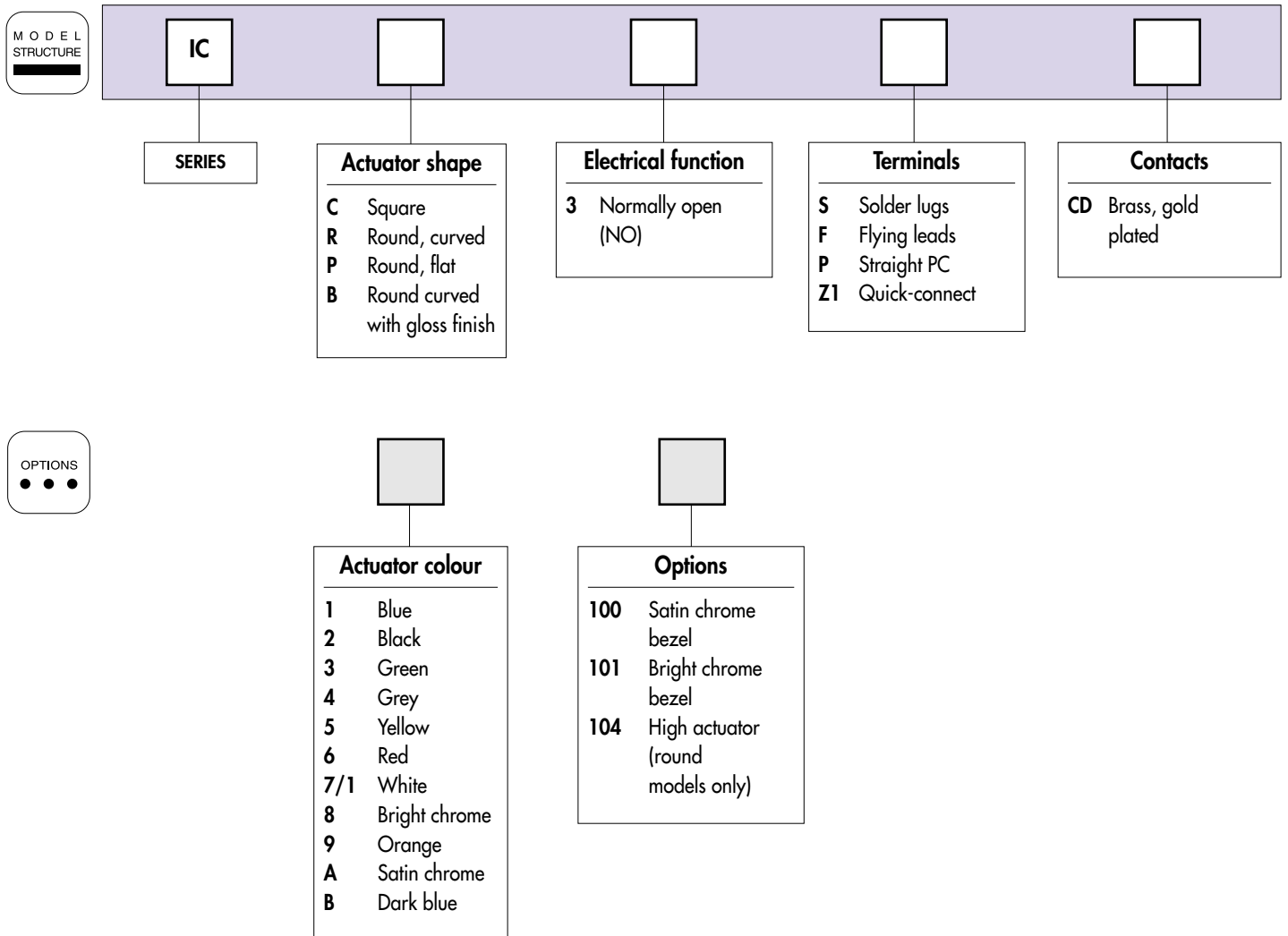
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IC series

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

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 at the end of this catalogue.



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

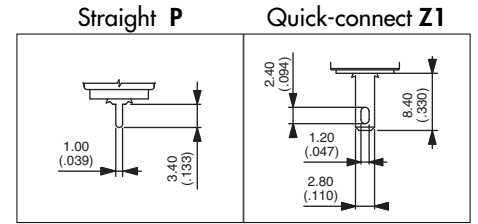
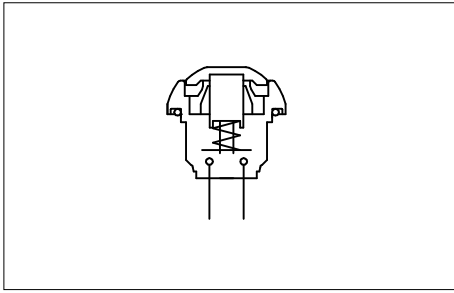


Packaging unit : 25 pieces

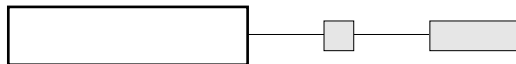
IC series

Pushbutton switches for harsh environments - short case - bushing \varnothing 12 mm - momentary

Square



MODEL
STRUCTURE



Solder lug terminals

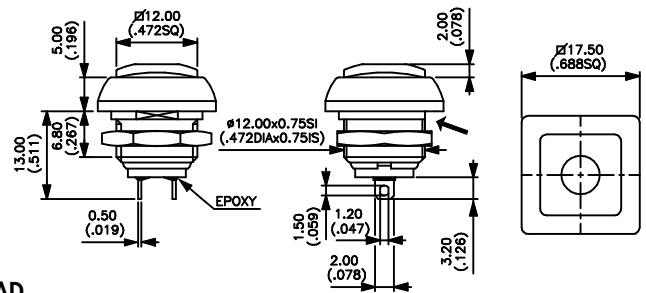
→ Flat



ICC3SCD



Normally Open



Also available with straight PC terminals : **ICC3PAD**
and quick-connect terminals : **ICC3Z1AD**

Sealed flying lead terminals

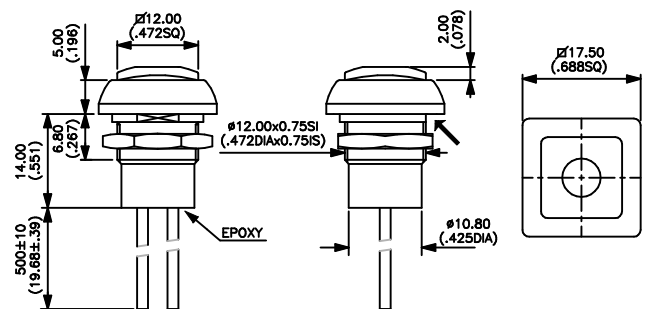
→ Flat



ICC3FCD

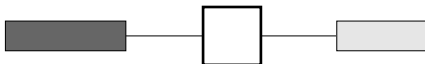


Normally Open



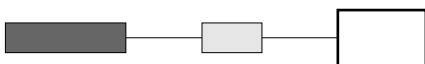
Wire colours (NC/NO) : black : NO, blue : NC

ACTUATOR COLOUR



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

OPTIONS

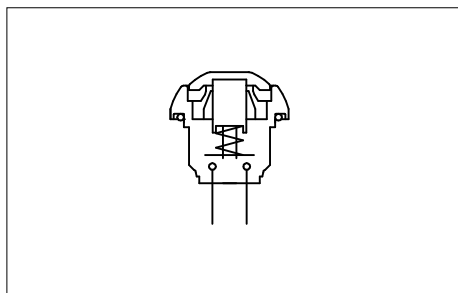


100 : Satin chrome bezel
101 : Bright chrome bezel

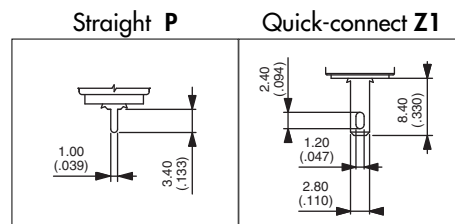
IC series

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

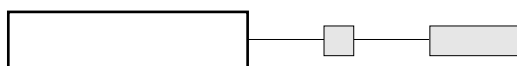
Round



• **Gloss actuator finish**
Curved actuator also available with gloss finish - replace ICR by ICB in the part numbers below.



MODEL STRUCTURE



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

Solder lug terminals

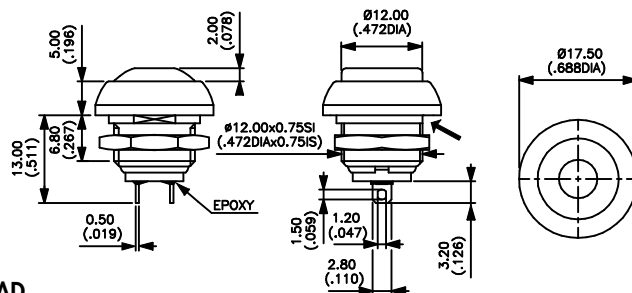
→ Flat



Curved actuator
ICR3SCD



Flat actuator
ICP3SCD



Also available with straight PC terminals : **IC•3PAD**
and quick-connect terminals : **IC•3Z1AD**

Sealed flying lead terminals

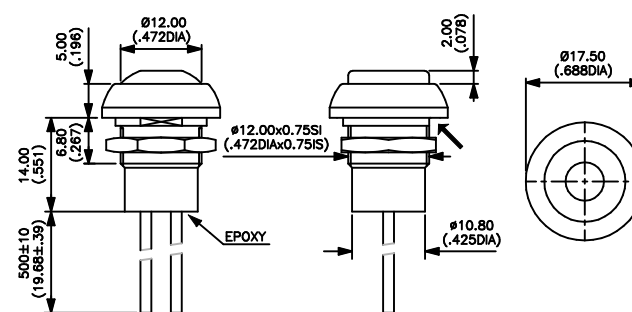
→ Flat



Curved actuator
ICR3FCD

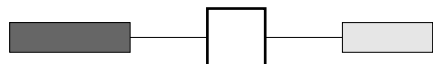


Flat actuator
ICP3FCD



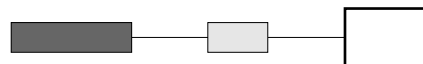
Wire colours (NC/NO) : black : NO, blue : NC

ACTUATOR COLOUR

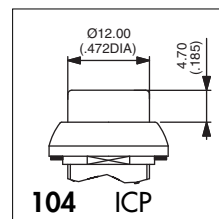
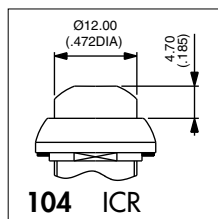


1 : blue - 2 : black - 3 : green - 4 : grey - 5 : yellow
6 : red - 7/1 : white - 8 : bright chrome - 9 : orange
A : satin chrome - B : dark blue -

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel
104 : High actuator



IC1201-A-prelim.

IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting

Distinctive features

Like the IR series, the IQ series is a range of sealed pushbutton switches with dia. 16 mm bushing. But IQ pushbuttons feature snap-in mounting for easier and faster installation. Momentary and latching versions are available.

Main features

- Snap-in mounting for easy installation
- Tactile feedback
- Sealed to IP67
- Illuminated or non-illuminated
- Square or round actuator
- Wide choice of actuator and illumination colours
- Flat round actuator for optional marking

Momentary versions

- Electrical function : NO
- Five terminal options, including screw terminals
- Silver contacts for screw terminal types
- Gold plated contacts for other types



Solder lug terminals



Flying lead terminals



Screw terminals

Latching versions

- Electrical function : OFF-ON
- Four terminal options
- Gold plated contacts



Solder lug terminals



Flying lead terminals



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IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - momentary

Distinctive features and specifications



- Snap-in mounting for easy installation
- Momentary models
- Illuminated or non-illuminated
- Flat round actuator for optional marking
- Sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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
- Operating temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - Gold plated silver contacts (code 4) : 200mA 48VDC
 - Silver contacts (code 2) - screw terminals : 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

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

GENERAL SPECIFICATIONS

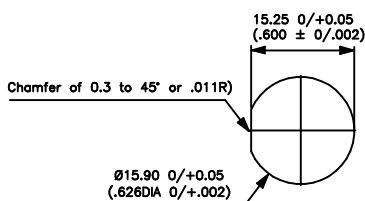
- Panel thickness :
 - with flat seal : 2,20 mm (.088) max.
 - without flat seal : 3 mm (.118) max.
- Total travel : 1,6 mm (.062) +/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Soldering : 320°C max. for 3 sec.

MATERIALS

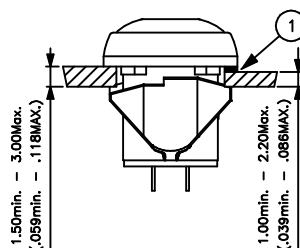
- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts :
 - 4 : silver, gold plated
 - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

MOUNTING

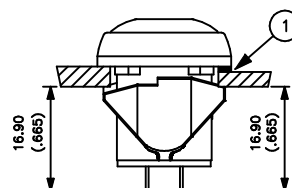
Panel cut-out



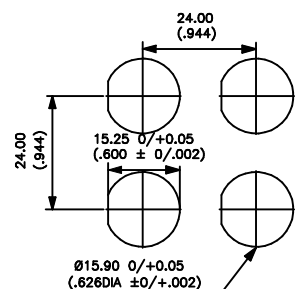
① Flat seal



Back of panel space requirement



Matrix mounting



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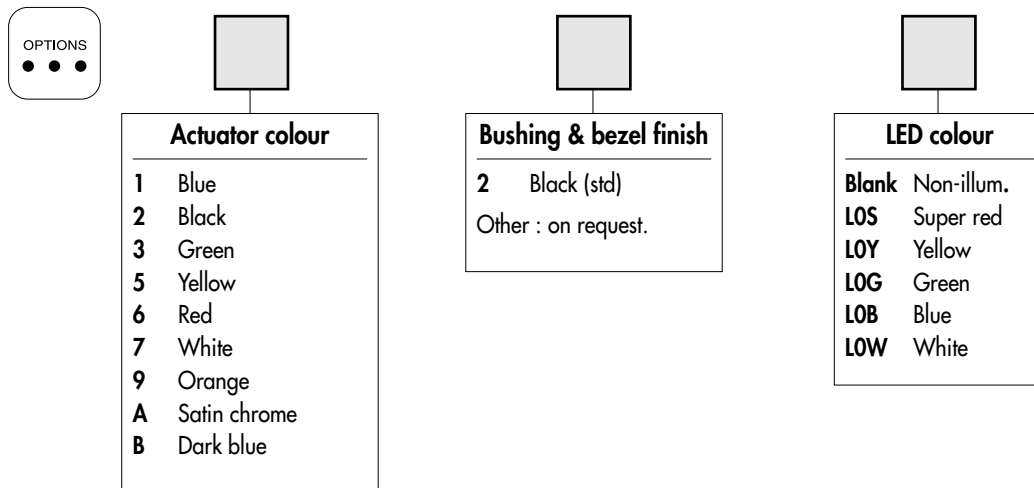
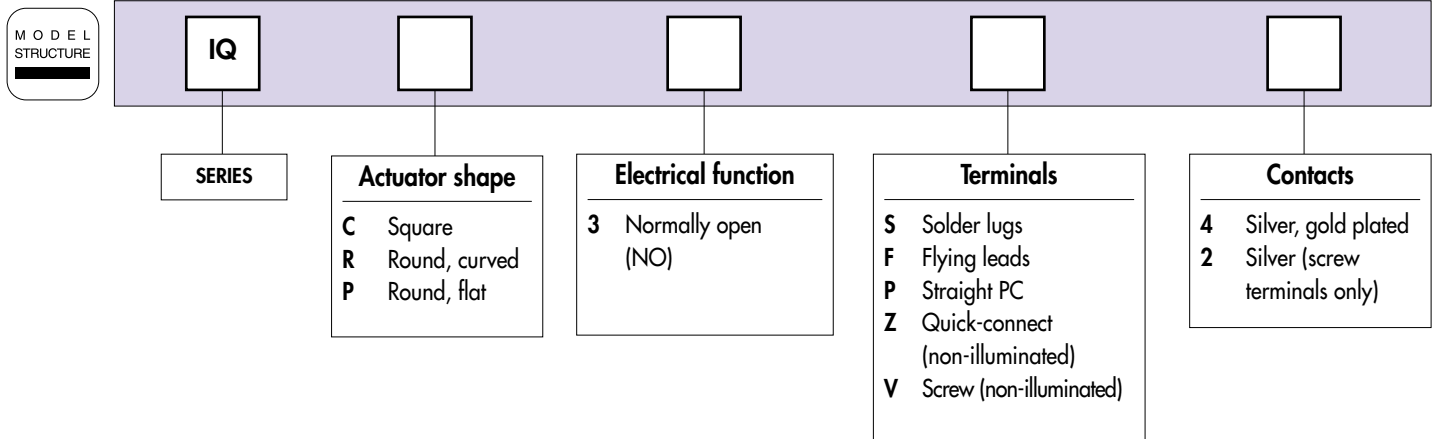
ERMEC, S.L. MADRID
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IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - momentary

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.



Mounting accessories : Standard hardware supplied : 1 flat seal



Packaging unit : 25 pieces for flying lead models - 40 pieces for other models



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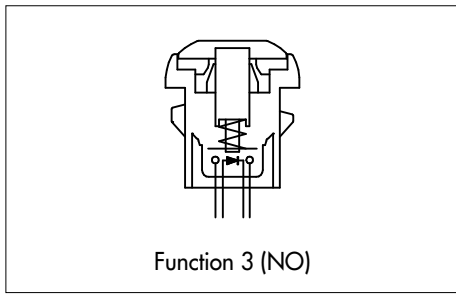
ERMEC, S.L. MADRID
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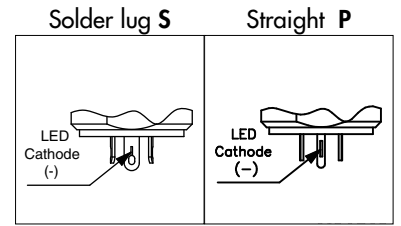
IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - momentary

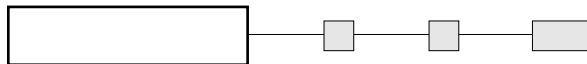
Round - illuminated



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



MODEL STRUCTURE



Actuator marking available on IQP models (symbol 12 mm max.). On request.

Solder lug terminals

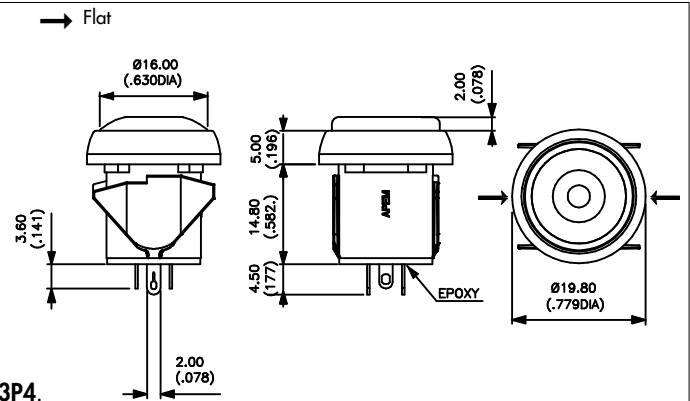


Curved actuator
IQR3S4

Normally Open

Flat actuator
IQP3S4

Normally Open



Also available with straight PC terminals : **IQ•3P4**.
LED colour is indicated by the bottom of the switch.

Sealed flying lead terminals



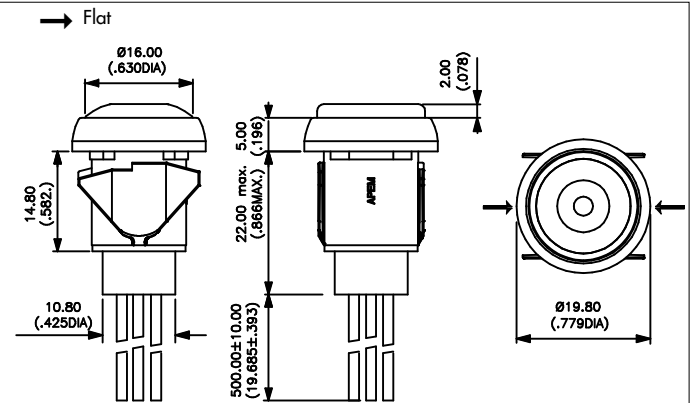
Curved actuator
IQR3F4

Normally Open

Flat actuator
IQP3F4

Normally Open

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

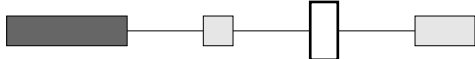


ACTUATOR COLOUR



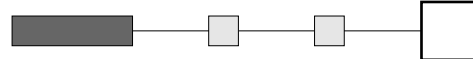
1 : blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange - A : satin chrome - B : dark blue

BUSHING AND BEZEL FINISH



2 : black (standard)

LED COLOUR



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



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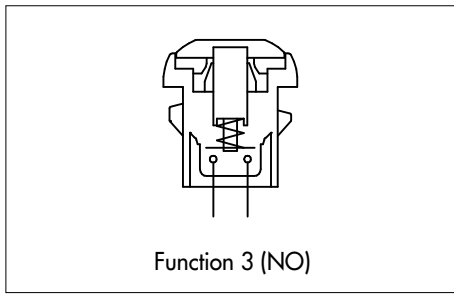
PORTUGAL
portugal@ermec.com
BILBAO
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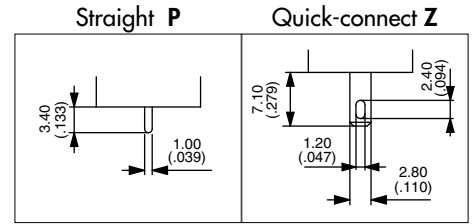
IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - momentary

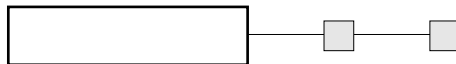
Round - non-illuminated



- Gold plated or silver contacts depending on terminal type



MODEL STRUCTURE



Actuator marking available on IQP models (symbol 12 mm max.). On request.

Solder lug terminals - gold plated contacts



Curved actuator
IQR3S4

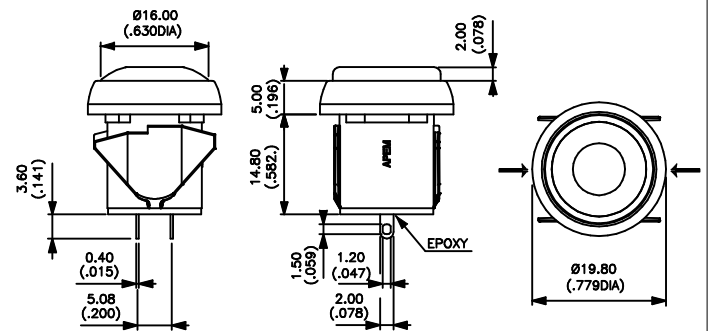


Flat actuator
IQP3S4



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

→ Flat



Sealed flying lead terminals - gold plated contacts



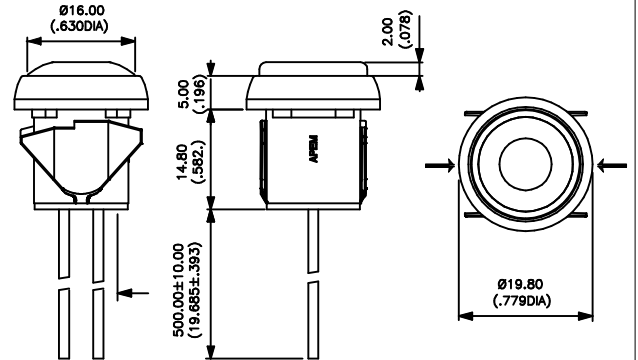
Curved actuator
IQR3F4



Flat actuator
IQP3F4



→ Flat



Screw terminals - silver contacts



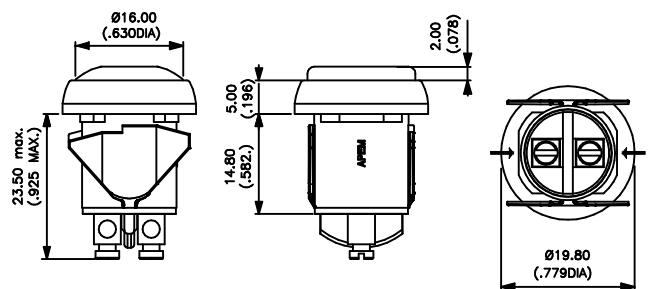
Curved actuator
IQR3V2



Flat actuator
IQP3V2



→ Flat

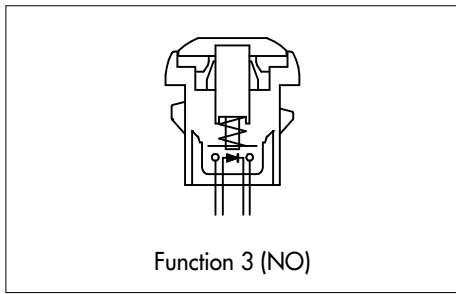


Actuator colour and bushing/bezel finish : select the desired codes on previous page.

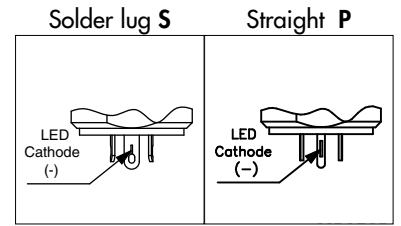
IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - momentary

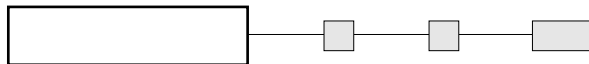
Square - illuminated



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



MODEL
STRUCTURE



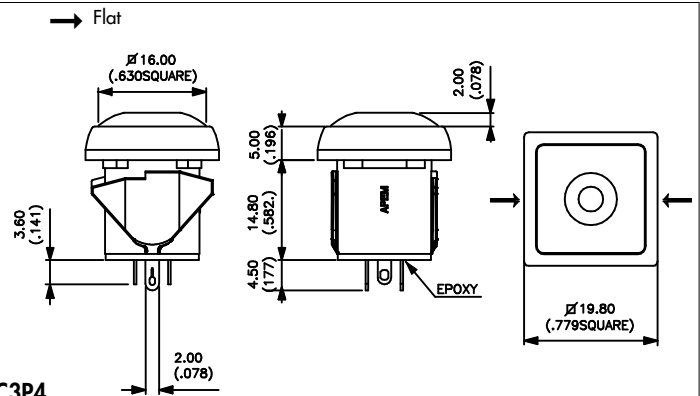
Solder lug terminals



IQC3S4



Normally Open



Also available with straight PC terminals : **IQC3P4**.
LED colour is indicated by the bottom of the switch.

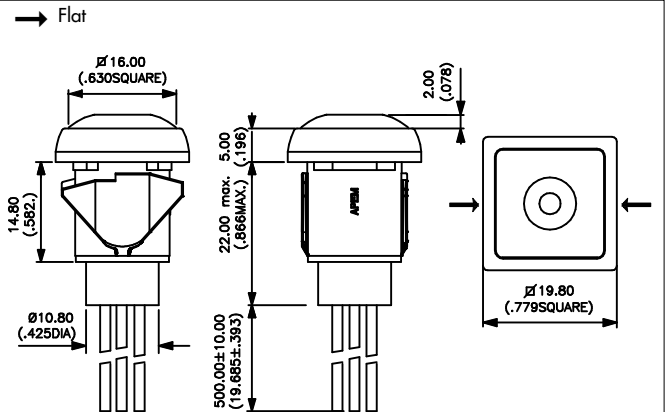
Sealed flying lead terminals



IQC3F4



Normally Open



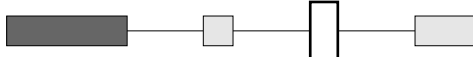
Wire colours : black : NO contact,
red : LED anode (+), blue : LED cathode (-)

ACTUATOR COLOUR



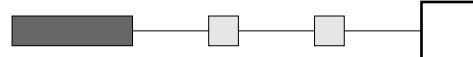
1 : blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange - A : satin chrome - B : dark blue

BUSHING AND BEZEL FINISH



2 : black (standard)

LED COLOUR

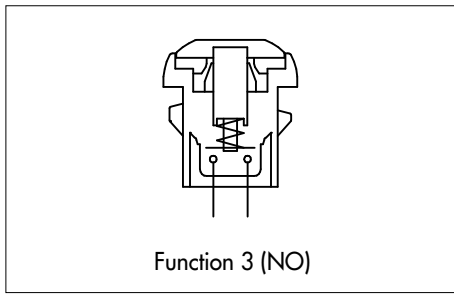


LOS : super red - LOY : yellow - LOG : green - LOB : blue
LOW : white

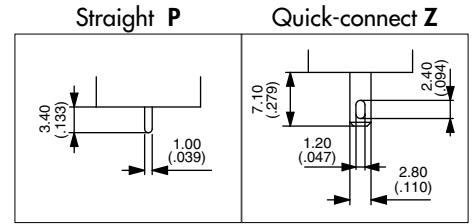
IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - momentary

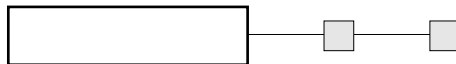
Square - non-illuminated



- Gold plated or silver contacts depending on terminal type



MODEL STRUCTURE



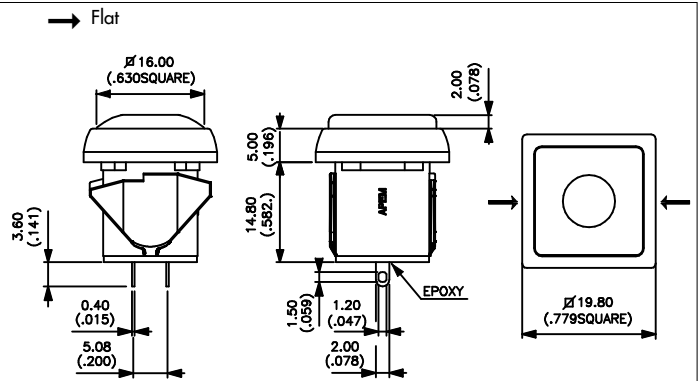
Solder lug terminals - gold plated contacts



IQC3S4



Normally Open



Also available with straight PC terminals : IQC3P4 or quick-connect terminals : IQC3Z4.

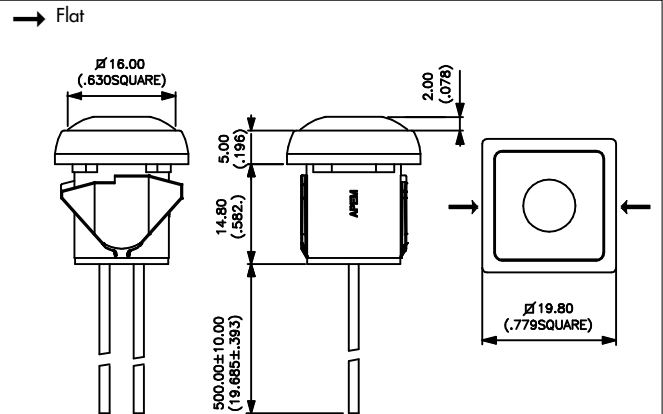
Sealed flying lead terminals - gold plated contacts



IQC3F4



Normally Open



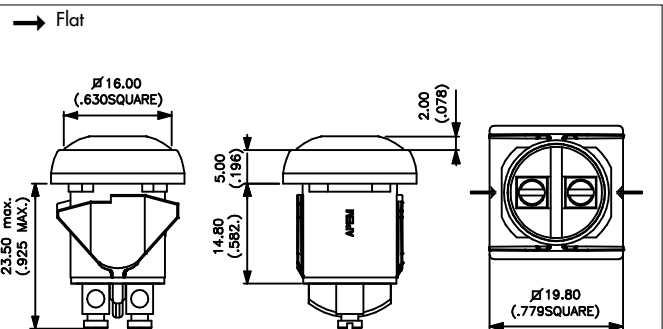
Screw terminals - silver contacts



IQC3V2



Normally Open



Actuator colour and bushing/bezel finish : select the desired codes on previous page.

IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - latching

Distinctive features and specifications



- Snap-in mounting for easy installation
- Latching action models
- Illuminated or non-illuminated
- Flat round actuator for optional marking
- Sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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
- Operating temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 100mA 24VDC - 200.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

A resistor must be series-connected by the user.

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

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

GENERAL SPECIFICATIONS

- Panel thickness : with flat seal : 2,20 mm (.088) max. without flat seal : 3 mm (.118) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 cycles
- Soldering : 320°C max. for 3 sec.

MATERIALS

- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

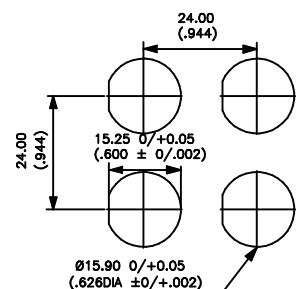
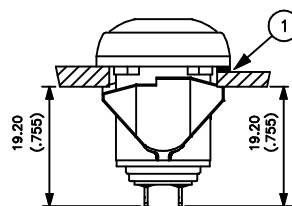
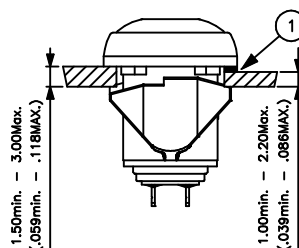
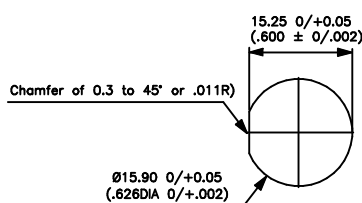
MOUNTING

Panel cut-out

① Flat seal

Back of panel space requirement

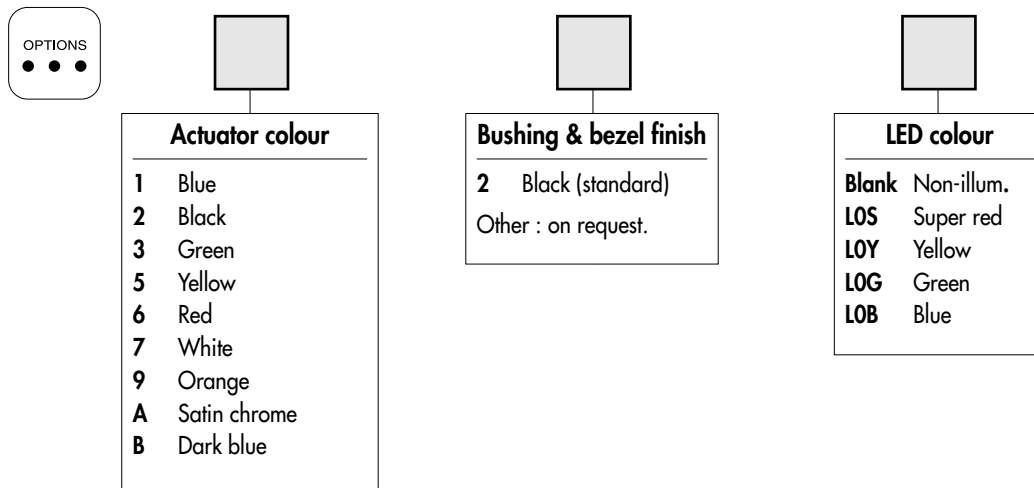
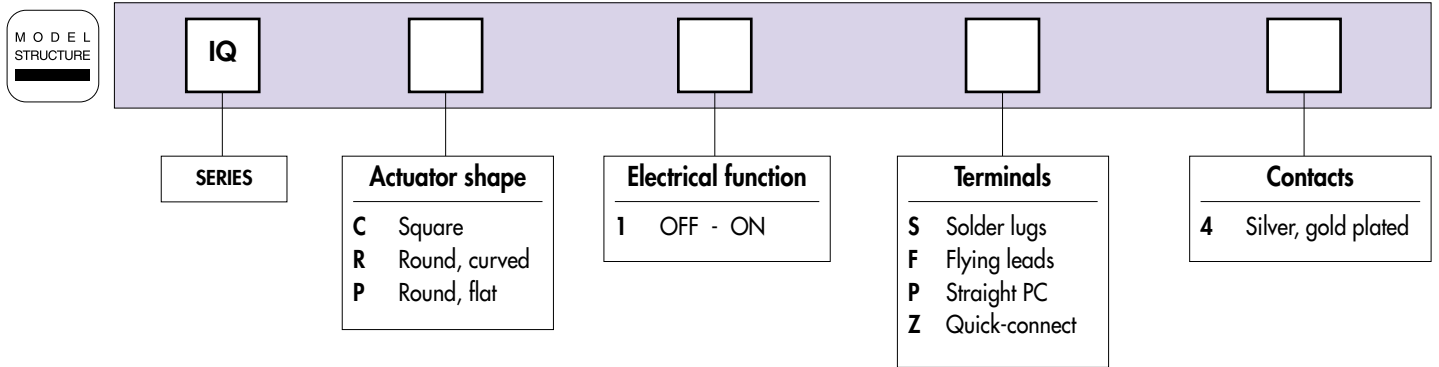
Matrix mounting



IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - latching

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.



Mounting accessories : Standard hardware supplied : 1 flat seal



Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

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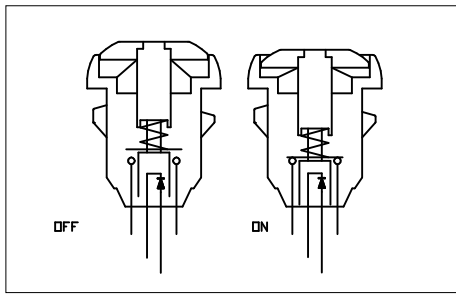
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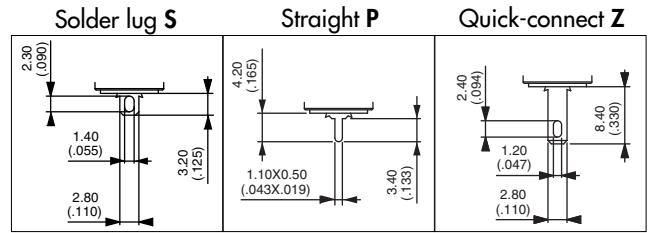
IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - latching

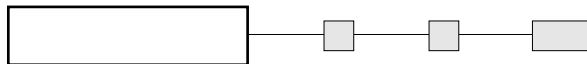
Round - illuminated



- Four 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



Curved actuator
IQR1S4

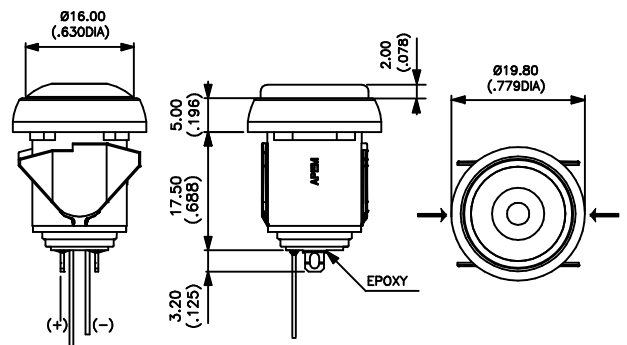
OFF - ON

Flat actuator
IQP1S4

OFF - ON

Also available with straight PC terminals : **IQ•1P4**
& quick-connect terminals : **IQ•1Z4**.

→ Flat



Sealed flying lead terminals



Curved actuator
IQR1F4

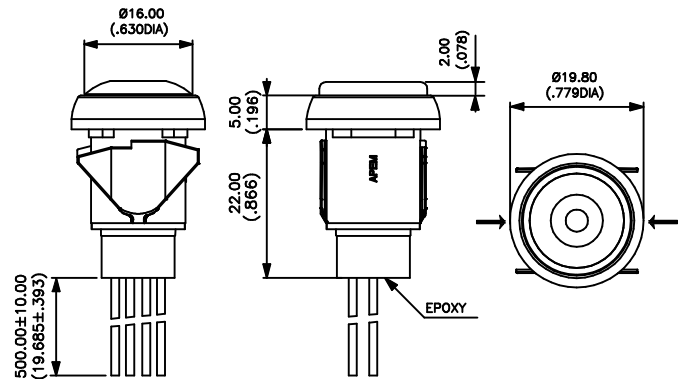
OFF - ON

Flat actuator
IQP1F4

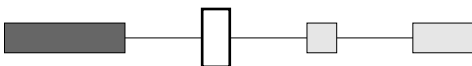
OFF - ON

Wire colours : black : contact,
red : LED anode (+), blue : LED cathode (-)

→ Flat

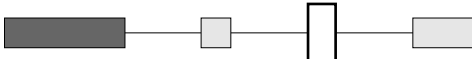


ACTUATOR COLOUR



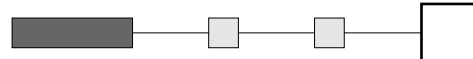
1 : blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange - A : satin chrome - B : dark blue

BUSHING AND BEZEL FINISH



2 : black (standard)

LED COLOUR

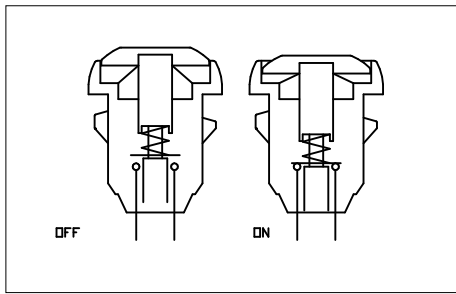


LOS : super red - LOY : yellow - LOG : green - LOB : blue

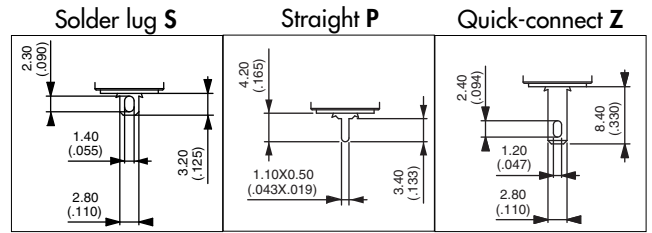
IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - latching

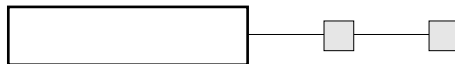
Round - non-illuminated



- Gold plated contacts



MODEL STRUCTURE



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

Solder lug terminals



Curved actuator
IQR1S4

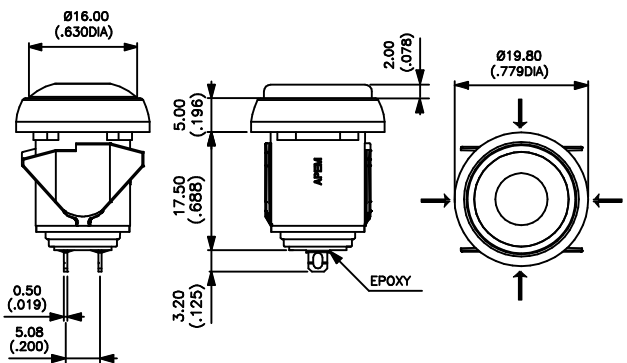
OFF - ON

Flat actuator
IQP1S4

OFF - ON

Also available with straight PC terminals : **IQ•1P4**
& quick-connect terminals : **IQ•1Z4**.

→ Flat



Sealed flying lead terminals



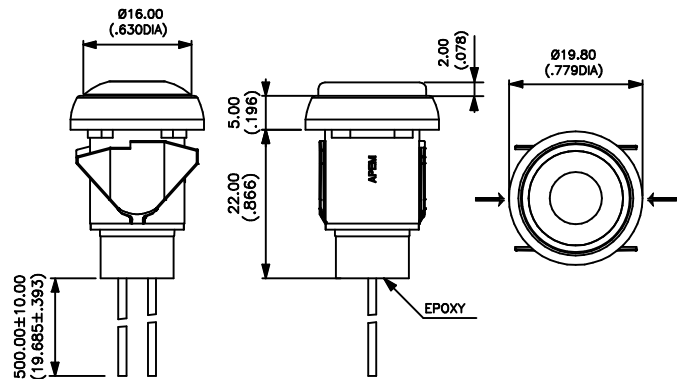
Curved actuator
IQR1F4

OFF - ON

Flat actuator
IQP1F4

OFF - ON

→ Flat



ACTUATOR COLOUR



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

BUSHING AND BEZEL FINISH

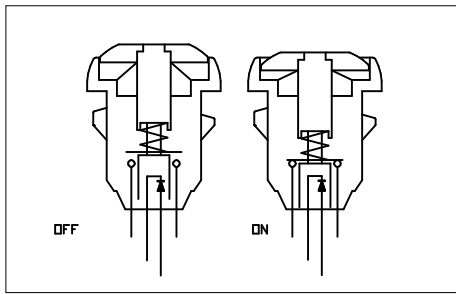


2 : black (standard)

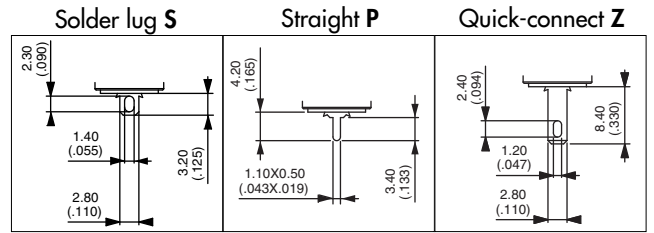
IQ series

Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - latching

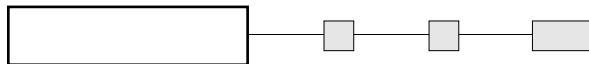
Square - illuminated



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



MODEL STRUCTURE



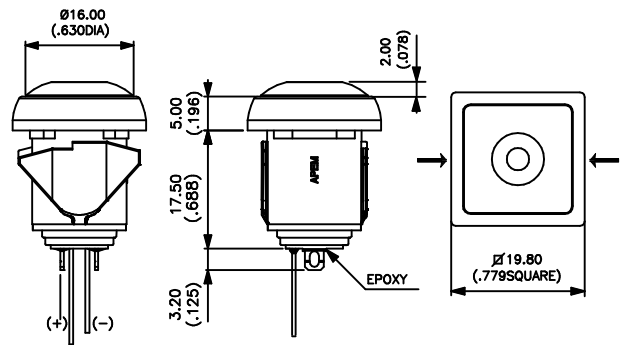
Solder lug terminals



Curved actuator
IQC1S4

OFF - ON

→ Flat



Also available with straight PC terminals : IQC1P4
& quick-connect terminals : IQC1Z4.

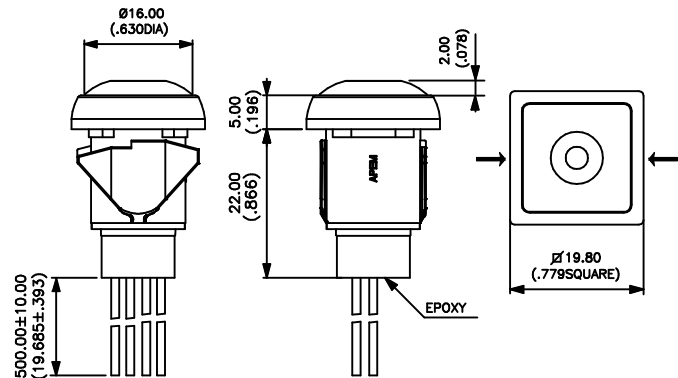
Sealed flying lead terminals



Curved actuator
IQC1F4

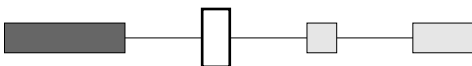
OFF - ON

→ Flat



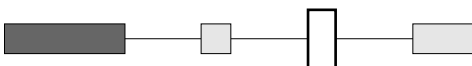
Wire colours : black : contact,
red : LED anode(+), blue : LED cathode (-)

ACTUATOR COLOUR



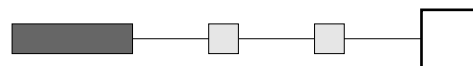
1 : blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange - A : satin chrome - B : dark blue

BUSHING AND BEZEL FINISH



2 : black (standard)

LED COLOUR

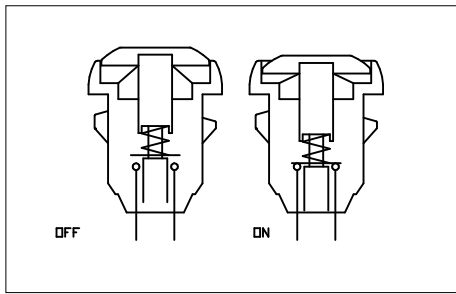


LOS : super red - LOY : yellow - LOG : green - LOB : blue

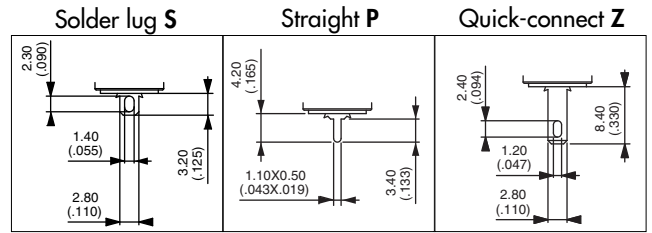
IQ series

Sealed pushbutton switches - bushing \varnothing 16 mm - snap-in mounting - latching

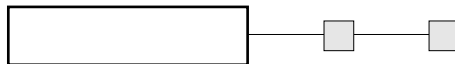
Square - non-illuminated



- Gold plated contacts



MODEL STRUCTURE



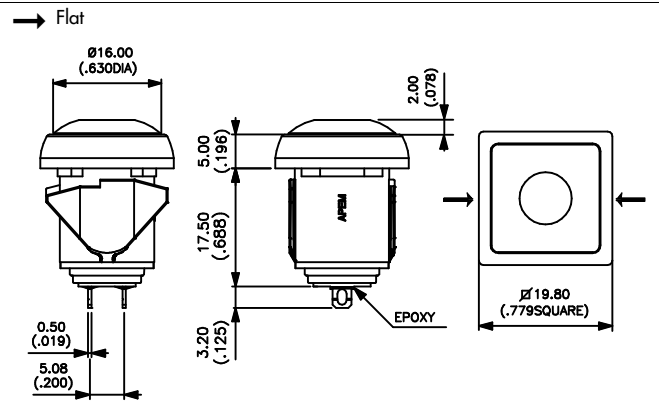
Solder lug terminals



Curved actuator
IQC1S4

OFF - ON

Also available with straight PC terminals : **IQC1P4**
& quick-connect terminals : **IQC1Z4**.

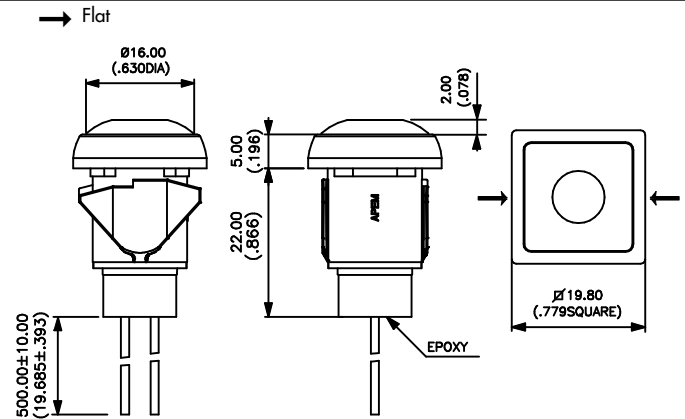


Sealed flying lead terminals



Curved actuator
IQC1F4

OFF - ON

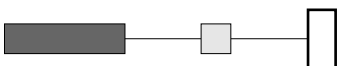


ACTUATOR COLOUR



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

BUSHING AND BEZEL FINISH



2 : black (standard)

Sealed pushbutton switches for thick panels - long bushing Ø 12 mm - momentary

Distinctive features and specifications



- Momentary pushbuttons for thick panels
- Illuminated or non-illuminated
- Tactile feedback
- Flat round actuator for optional marking
- Sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500 Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

MATERIALS

- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts : brass, gold plated
- Terminal seal : epoxy

ELECTRICAL SPECIFICATIONS

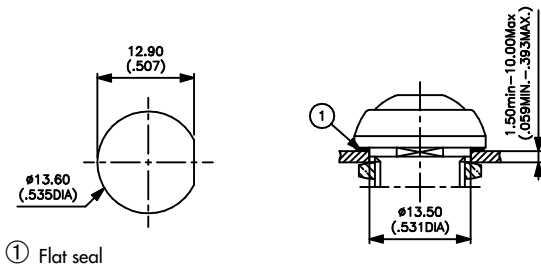
- Max. current/voltage rating with resistive load : 50mA 12VDC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.000 Vrms
- Electrical life at full load : 500.000 cycles

GENERAL SPECIFICATIONS

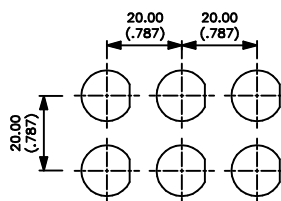
- Panel thickness : 1,50 mm (.059) min. - 10 mm (.393) max.
- Total travel : 1,7 mm (.067) +/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 1 Nm max. applied to nut
- Soldering : 300°C max. for 3 seconds

MOUNTING

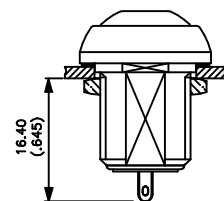
Panel cut-out



Matrix mounting



Back of panel space requirement



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E-08918 Badalona
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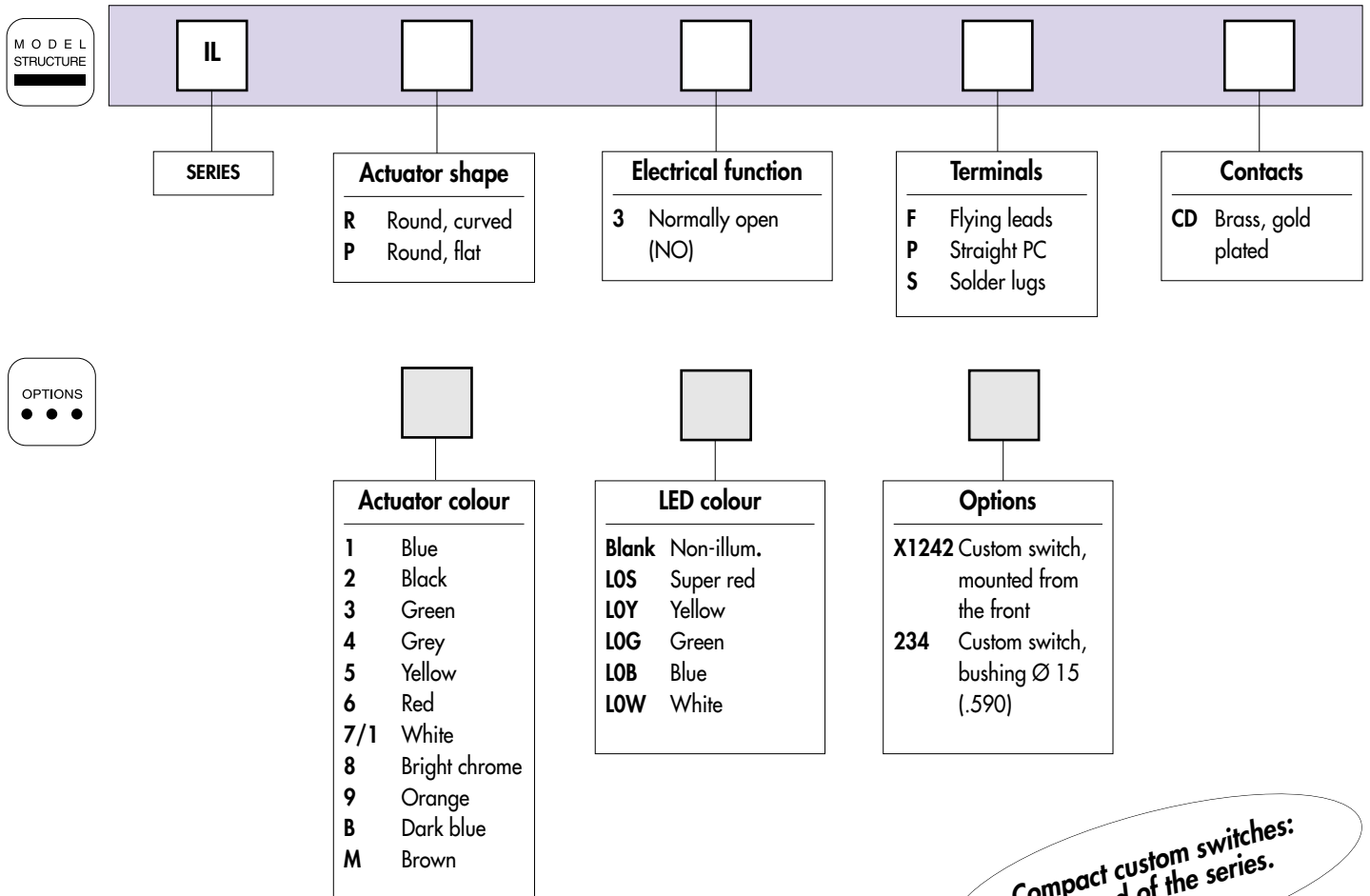
ERMEC, S.L. MADRID
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IL series

Sealed pushbutton switches for thick panels - long bushing Ø 12 mm - momentary

Overview



Compact custom switches: see end of the series.

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.



Mounting accessories : Standard hardware supplied : 1 flat seal and 1 hex nut 14 mm (.551) across flats. Hex nut part number U166.



Packaging unit : 25 pieces

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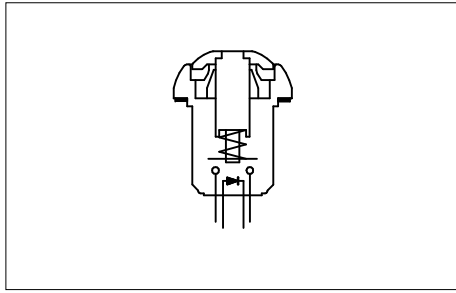
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 (Spain)

PORTUGAL
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 BILBAO
bilbao@ermec.com

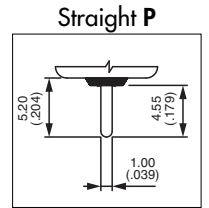
IL series

Sealed pushbutton switches for thick panels - long bushing Ø 12 mm - momentary

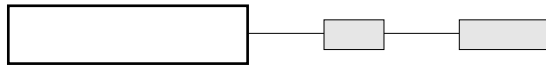
Illuminated



- Curved or flat actuator
- Antirotation bushing



MODEL STRUCTURE

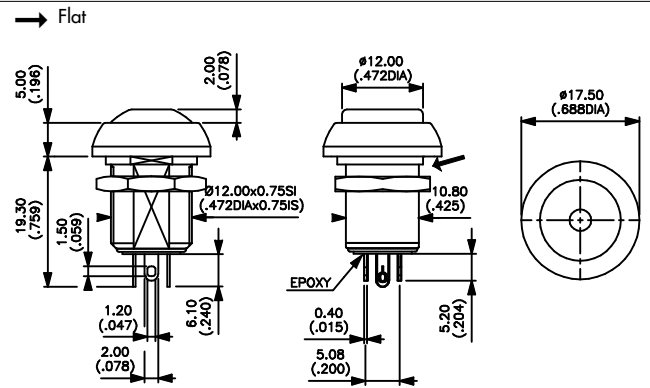


Actuator marking available on ILP models (symbol 10 mm max.). On request.

Solder lug terminals



- Curved actuator
ILR3SCD Normally open
- Flat actuator
ILP3SCD Normally open

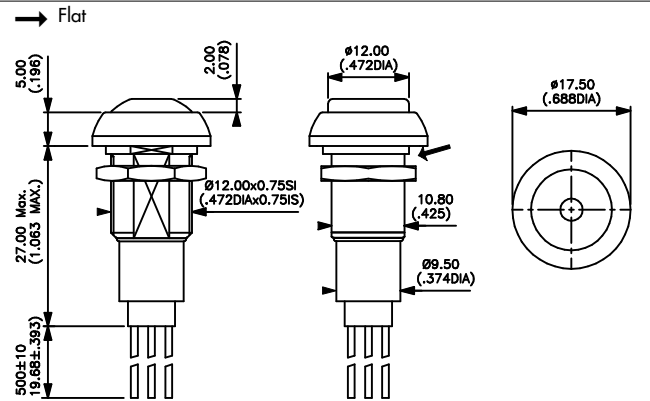


Also available with straight PC terminals : **IL•3PAD**

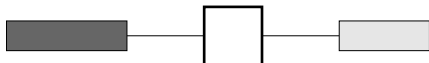
Flying lead terminals



- Curved actuator
ILR3FCD Normally open
- Flat actuator
ILP3FCD Normally open

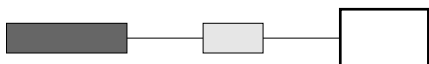


ACTUATOR COLOUR



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

LED COLOUR

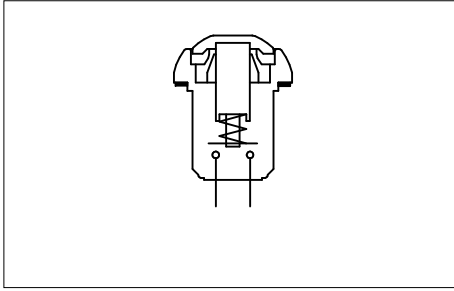


LOS : red - LOY : yellow - LOG : green - LOB : blue - LOW : white

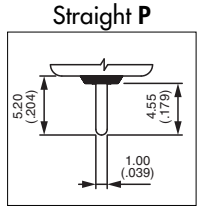
IL series

Sealed pushbutton switches for thick panels - long bushing Ø 12 mm - momentary

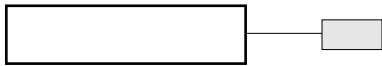
Non-illuminated



- Curved or flat actuator
- Antirotation bushing



MODEL STRUCTURE

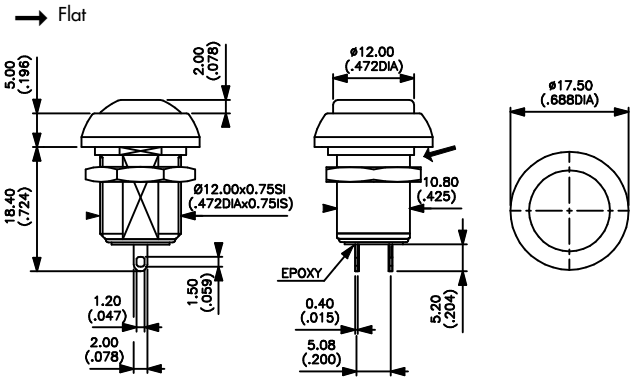


Actuator marking available on ILP models (symbol 10 mm max.). On request.

Solder lug terminals



- Curved actuator
ILR3SCD Normally open
- Flat actuator
ILP3SCD Normally open

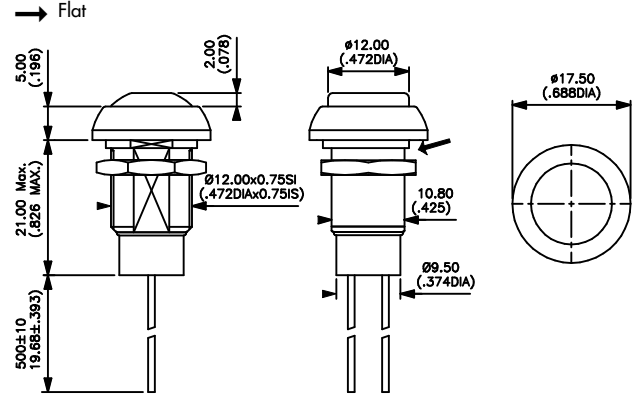


Also available with straight PC terminals : **IL•3PAD**

Flying lead terminals



- Curved actuator
ILR3FCD Normally open
- Flat actuator
ILP3FCD Normally open



ACTUATOR COLOUR



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

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Custom switch for compact matrix mounting



ILP3FCD...X1242

- Mounting from the front into a threaded panel cut-out
- Matrix mounting : 16 x 16 mm (.630x.630)
- Illuminated or non-illuminated
- Same terminal options and colours as standard models
- Part numbers on request.

Custom switch for compact matrix mounting



ILP3SCD...234

- Standard panel mounting
- Bushing Ø 15 mm (.590)
- Matrix mounting : 18 x 18 mm (.708x.708)
- Illuminated or non-illuminated
- Same terminal options and colours as standard models
- Part numbers on request.

Sealed snap-action pushbutton switches - bushing Ø 12 mm - momentary

Distinctive features and specifications



- Snap-action : tactile feedback with audible click
- High current/voltage rating
- Sealed to IP67
- Flat round actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 50 g - 11 ms according to IEC 68-2-27
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C
- Storage temperature : -40°C to +85°C

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 3A 28VDC
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 500 Vrms between terminals
- Electrical life at full load : 25.000 cycles

GENERAL SPECIFICATIONS

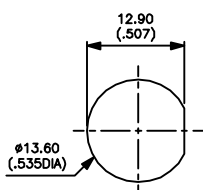
- Panel thickness : 1,5 mm (.059) to 10 mm (.394)
- Total travel : 1,7 mm (.067) +/- 0,3 mm
- Pre-travel : 1,25 mm (.049)
- Over-travel : 0,45 mm (.018)
- Low level or mechanical life : 1.000.000 cycles
- Torque : 1,5 Nm max. applied to nut

MATERIALS

- Case : polyamide 4/6
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts : silver, gold plated
- Terminal seal : epoxy

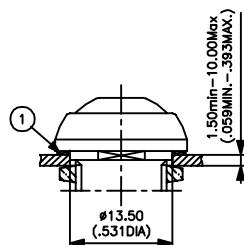
MOUNTING - STANDARD BEZEL

Panel cut-out

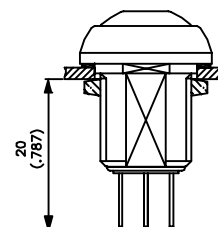


① Flat seal

Matrix mounting

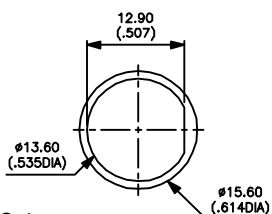


Back of panel space requirement



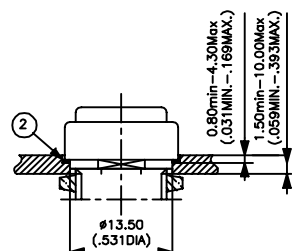
MOUNTING - REDUCED MODEL

Panel cut-out

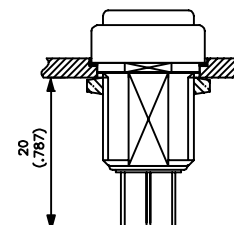


② O-ring

Matrix mounting



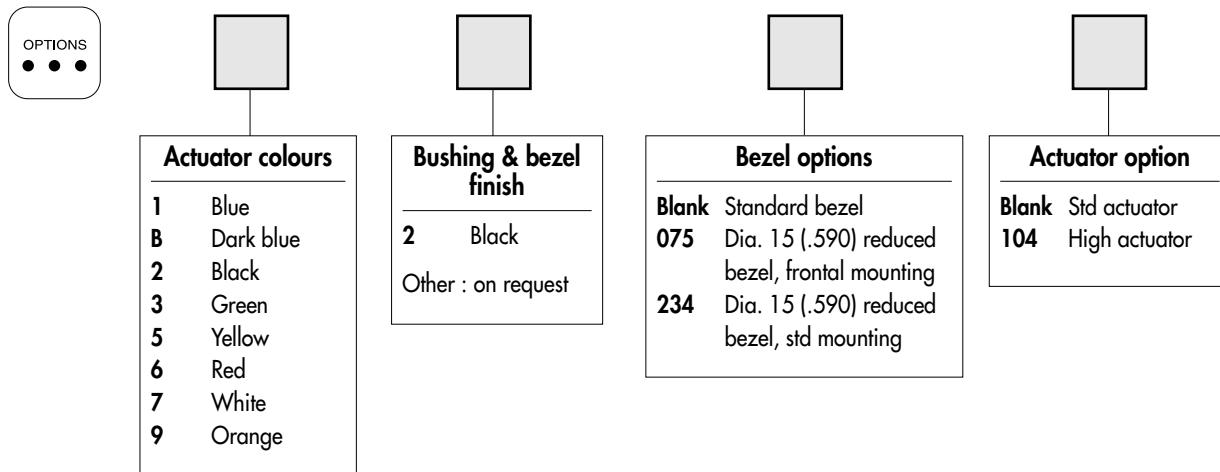
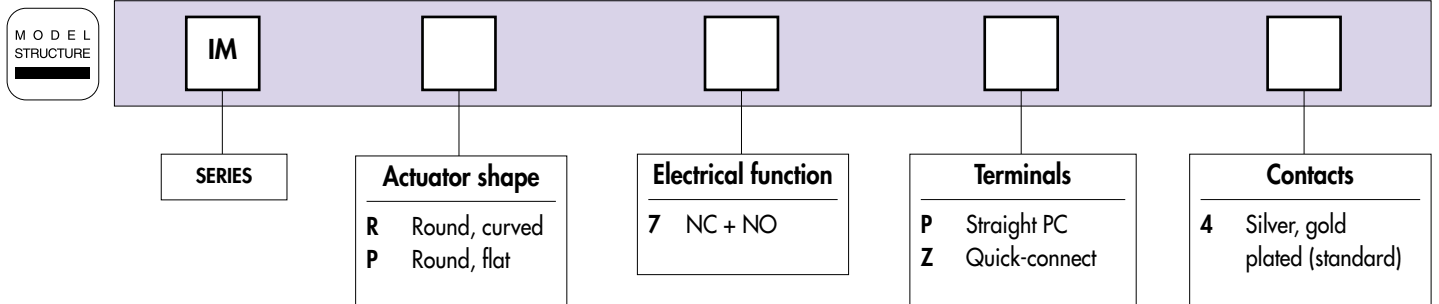
Back of panel space requirement



IM series

Sealed snap-action pushbutton switches - bushing Ø 12 mm - momentary

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.



Mounting accessories : Standard hardware supplied : 1 flat seal (standard bezel) or 1 O-ring (reduced bezel) and 1 hex nut 1.4 mm (.551) across flats. Hex nut part number U166.

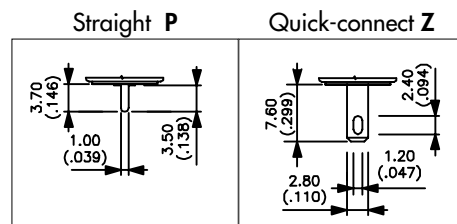
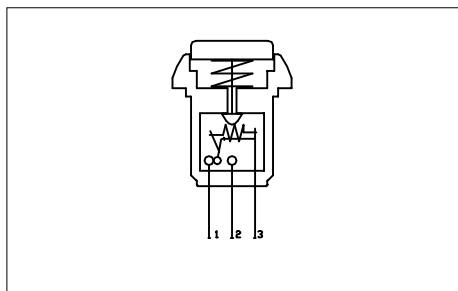


Packaging unit : 50 pieces

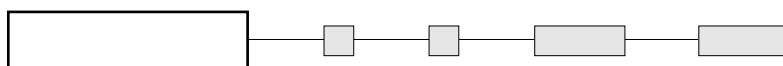
IM series

Sealed snap-action pushbutton switches - bushing Ø 12 mm - momentary

Round - non-illuminated



MODEL
STRUCTURE



Common terminal identified by a horizontal dash

Standard bezel - straight PC terminals



Curved actuator
IMR7P4

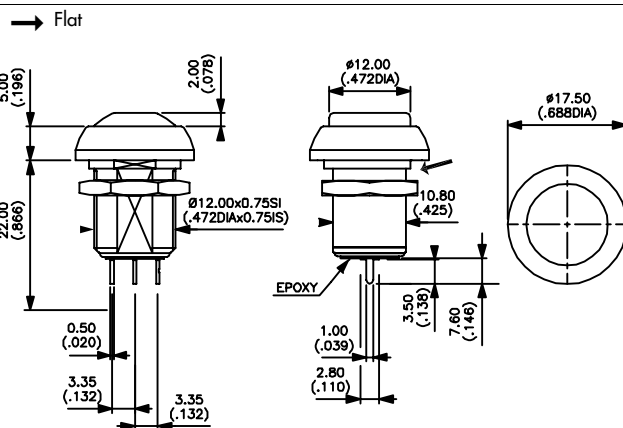


NC+NO

Flat actuator
IMP7P4



NC+NO



Standard bezel - quick-connect terminals



Curved actuator
IMR7Z4

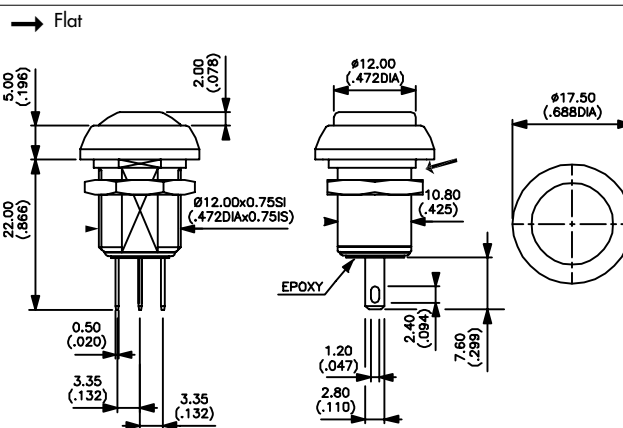


NC+NO

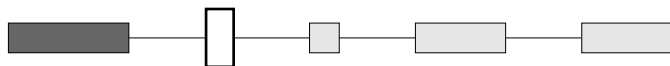
Flat actuator
IMP7Z4



NC+NO



ACTUATOR COLOURS



1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL COLOURS



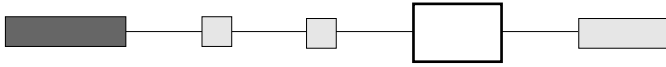
2 : black (standard)
Other : on request

IM series

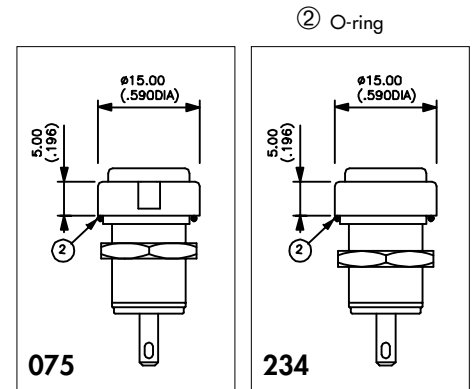
Sealed snap-action pushbutton switches - bushing \varnothing 12 mm - momentary

Options

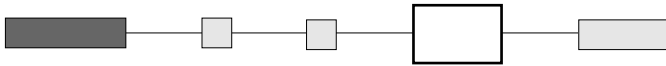
BEZEL OPTIONS



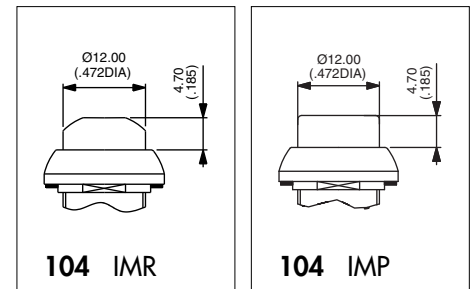
- Blank** Standard bezel
- 075** Dia. 15 (.590) reduced bezel, mounting of the switch from the front of the panel
- 234** Dia. 15 (.590) reduced bezel, standard mounting



ACTUATOR OPTION



- Blank** Standard actuator
- 104** High actuator



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- 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

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
- 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
- Actuator : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamac), black painted
- Contacts : silver, gold plated (std) brass, gold plated (for option 104)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

AGENCY APPROVAL



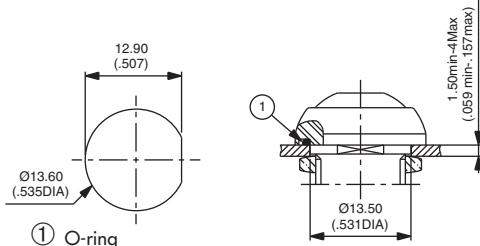
2A 125VAC/250VAC
File E83438

Availability : consult factory for details of approved models.

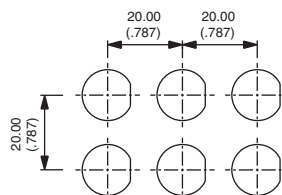
Marking : to order switches marked UL, complete ordering format.

MOUNTING

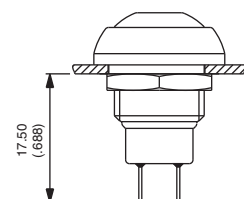
Panel cut-out



Matrix mounting



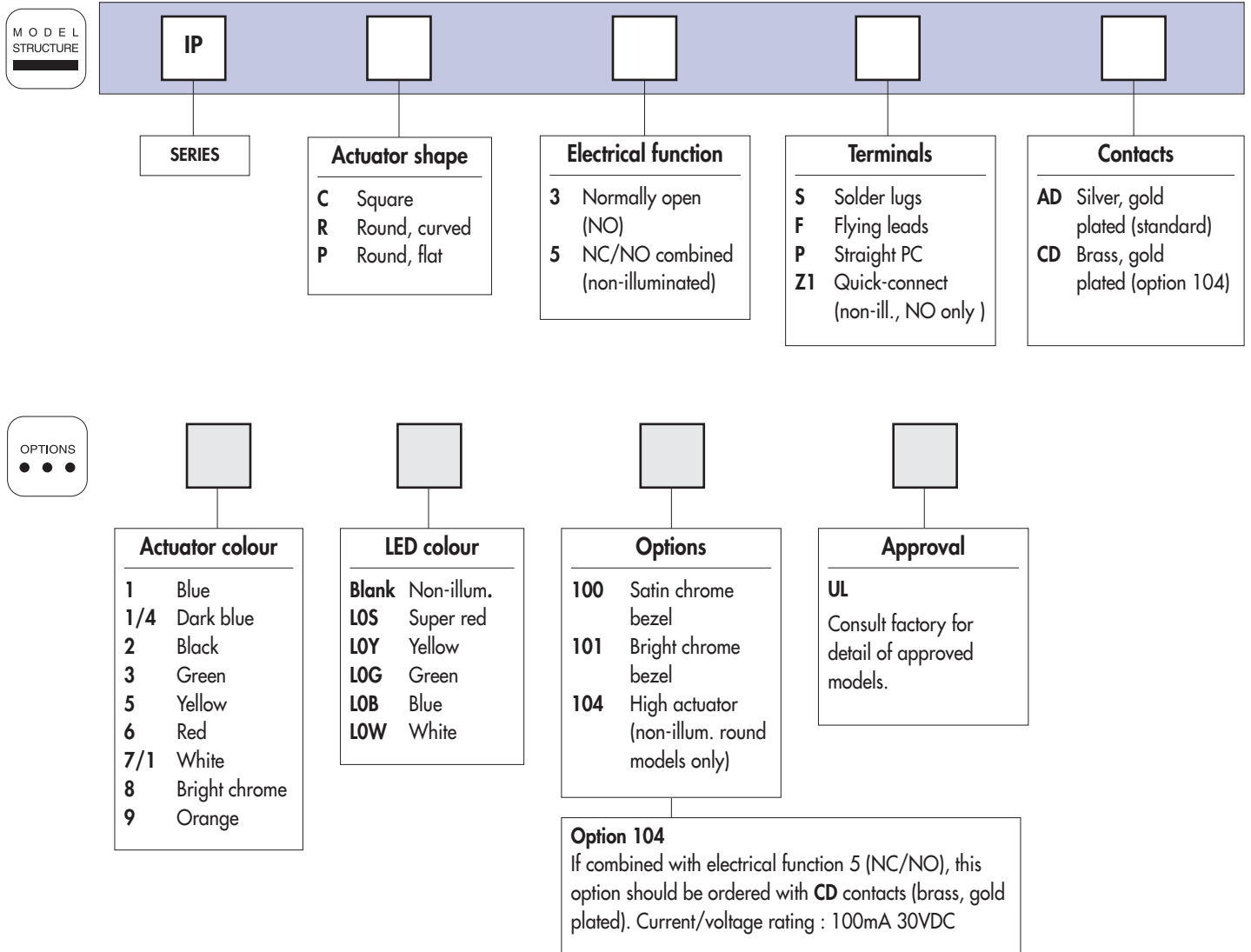
Back of panel space requirement



IP series

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

Overview



Distribución de componentes eléctricos y electrónicos

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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 this catalogue.



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

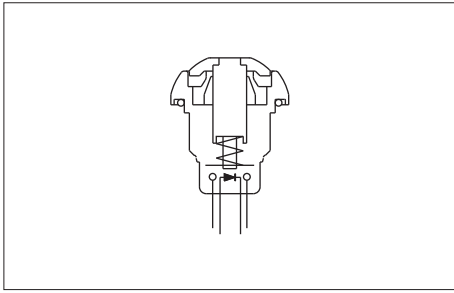


Packaging unit : 25 pieces

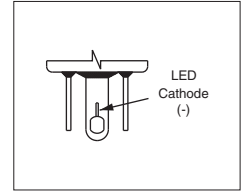
IP series

Pushbutton switches for harsh environments - bushing \varnothing 12 mm - momentary

Square - illuminated



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



MODEL STRUCTURE



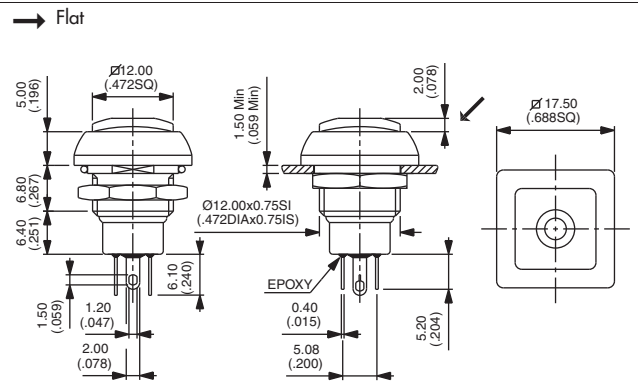
Solder lug terminals



IPC3SAD



Normally Open



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

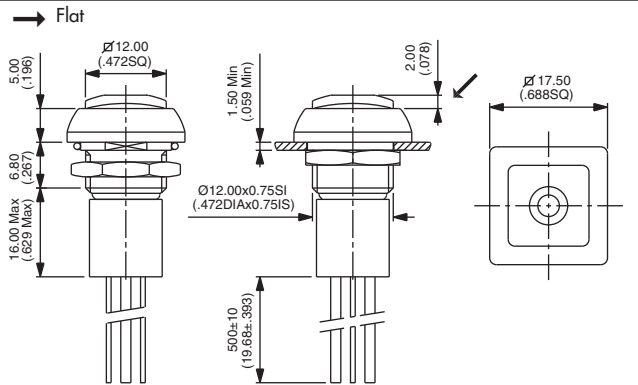
Sealed flying lead terminals



IPC3FAD

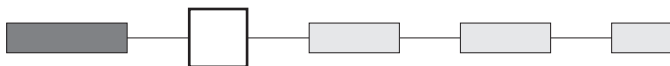


Normally Open



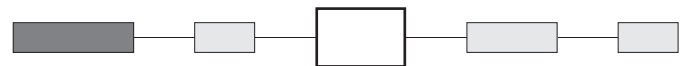
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

ACTUATOR COLOUR



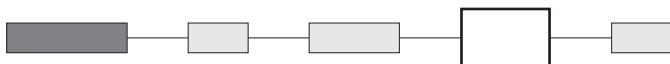
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow
6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

LED COLOUR



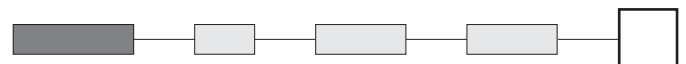
LOS : red - LOY : yellow - LOG : green - LOB : blue
LOW : white

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel

APPROVAL



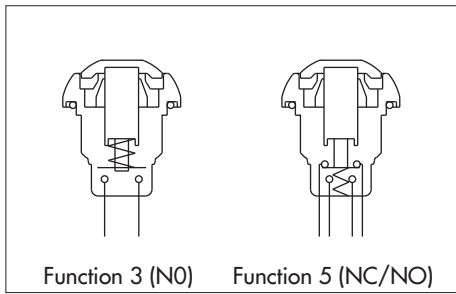
UL

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

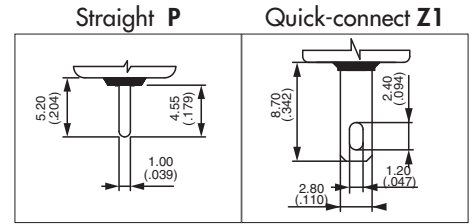
IP series

Pushbutton switches for harsh environments - bushing \varnothing 12 mm - momentary

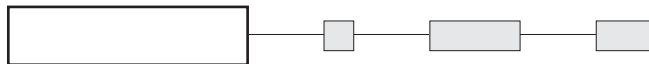
Square - non-illuminated



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



MODEL STRUCTURE



Solder lug terminals



IPC3SAD



Normally Open

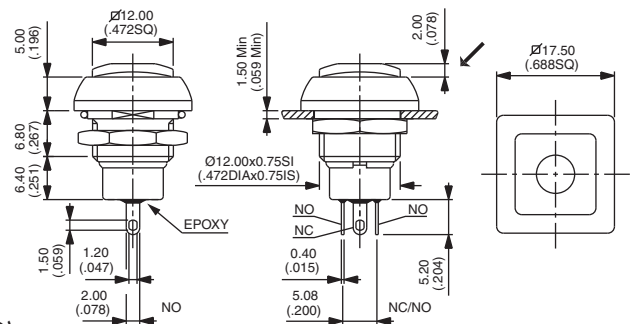
IPC5SAD



NC/NO combined

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

→ Flat



Sealed flying lead terminals



IPC3FAD



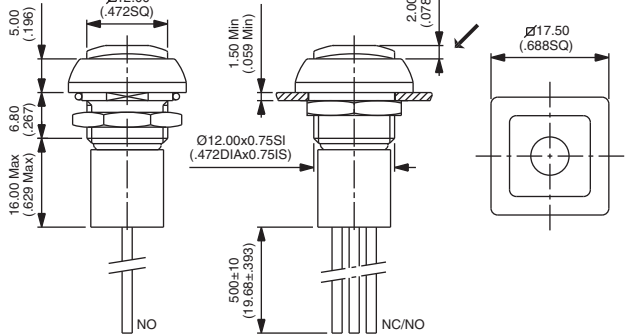
Normally Open

IPC5FAD



NC/NO combined

→ Flat



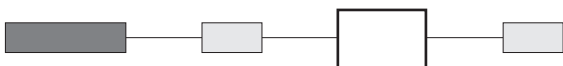
Wire colours (NC/NO) : black : NO, blue : NC

ACTUATOR COLOUR



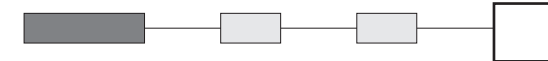
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel

APPROVAL



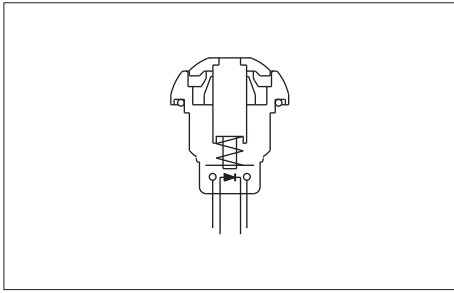
UL

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

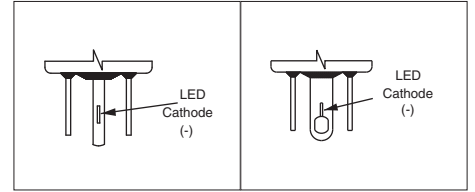
IP series

Pushbutton switches for harsh environments - bushing \varnothing 12 mm - momentary

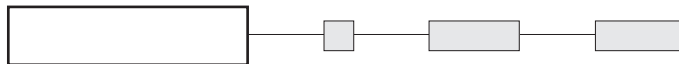
Round - illuminated



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



MODEL
STRUCTURE



Solder lug terminals



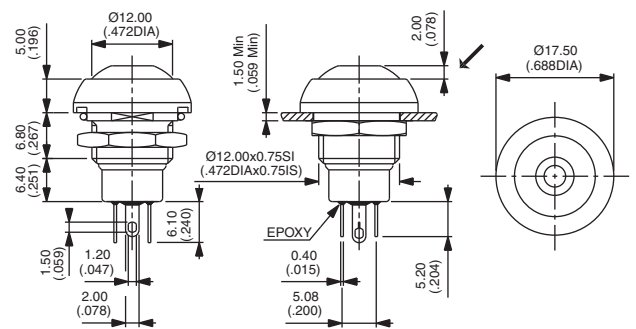
IPR3SAD



Normally Open

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

→ Flat



Sealed flying lead terminals

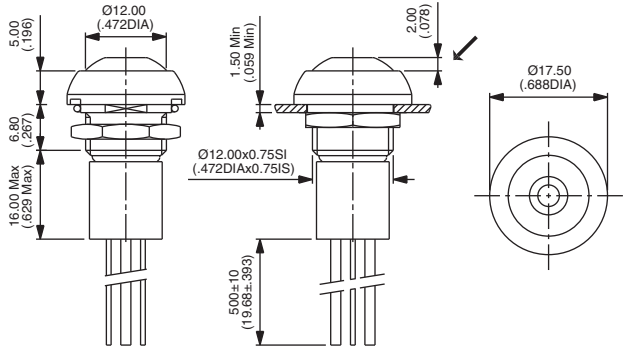


IPR3FAD



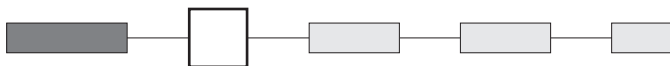
Normally Open

→ Flat



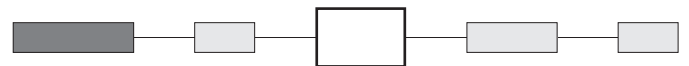
Wire colours : black : NO contact, red : LED anode(+), blue : LED cathode(-)

ACTUATOR COLOUR



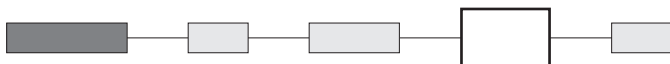
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow
6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

LED COLOUR



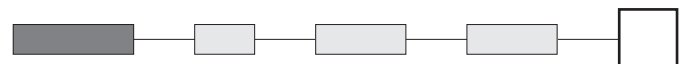
LOS : red - LOY : yellow - LOG : green - LOB : blue
LOW : white

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel

APPROVAL



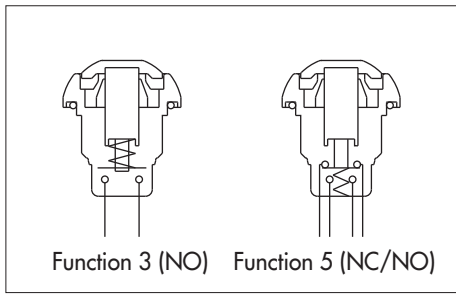
UL

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

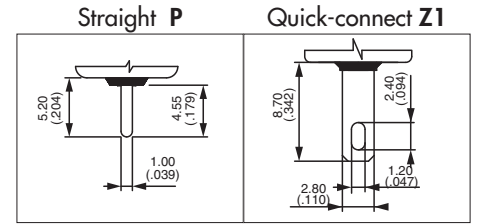
IP series

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

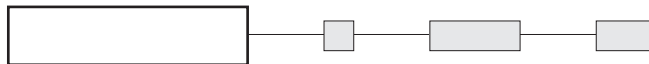
Round - non-illuminated



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



MODEL STRUCTURE

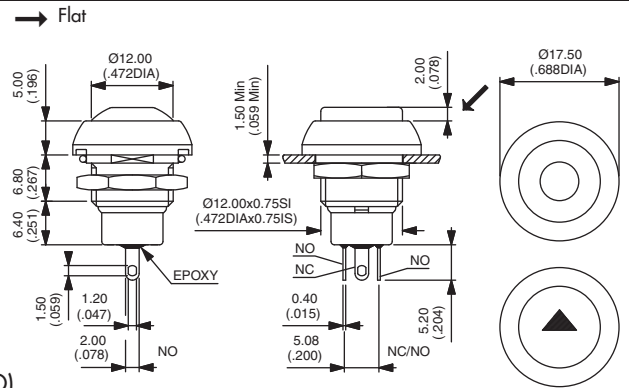


Solder lug terminals



- 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)

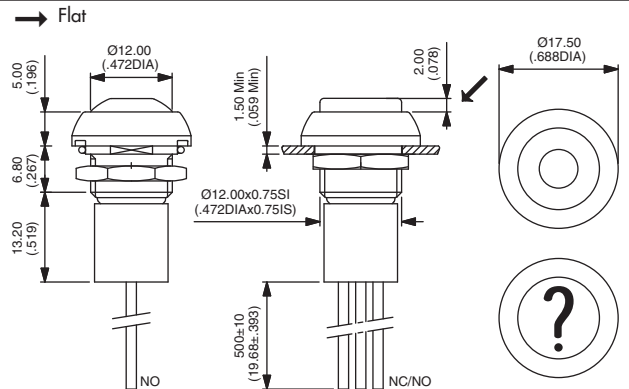


Sealed flying lead terminals



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

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



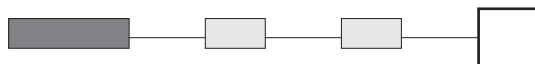
ACTUATOR COLOUR



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

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

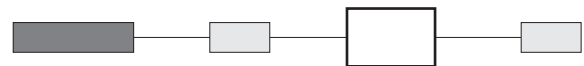
APPROVAL



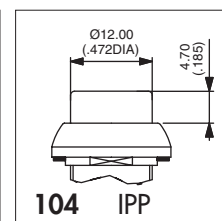
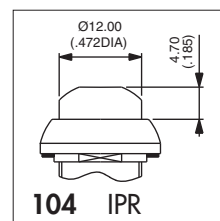
UL

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

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).





- Latching action**
Actuator remains in the low position when "ON".
- Illuminated or non-illuminated**
- Compact**
Behind-panel depth less than 20 mm (.787)
- Flat round actuator for optional marking**
- Sealed to IP67**

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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

GENERAL SPECIFICATIONS

- Panel thickness : 1,5 mm (.059) min. 5,5 mm (.217) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5 N +/- 2N
- Mechanical life : 200.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
4A 12VDC, 200.000 cycles
1A 48VDC, 200.000 cycles
2A 48VDC, 100.000 cycles
3A 48VDC, 75.000 cycles
1A 72VDC, 15.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals
1.000 VAC rms between terminals and frame

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

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, UL 94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : zinc die-cast (zamak), black painted
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

AGENCY APPROVAL



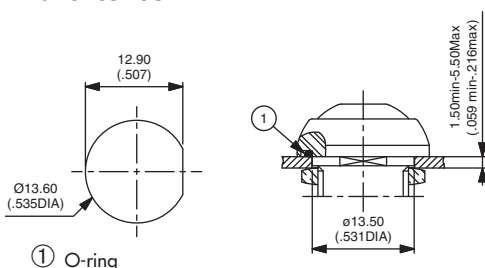
2A 125VAC/250VAC
File E83438

Availability : consult factory for details of approved models.

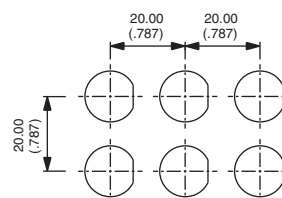
Marking : to order switches marked UL, complete appropriate box of ordering format.

MOUNTING

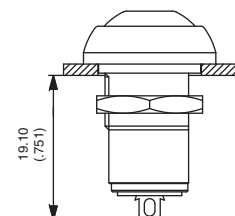
Panel cut-out



Matrix mounting



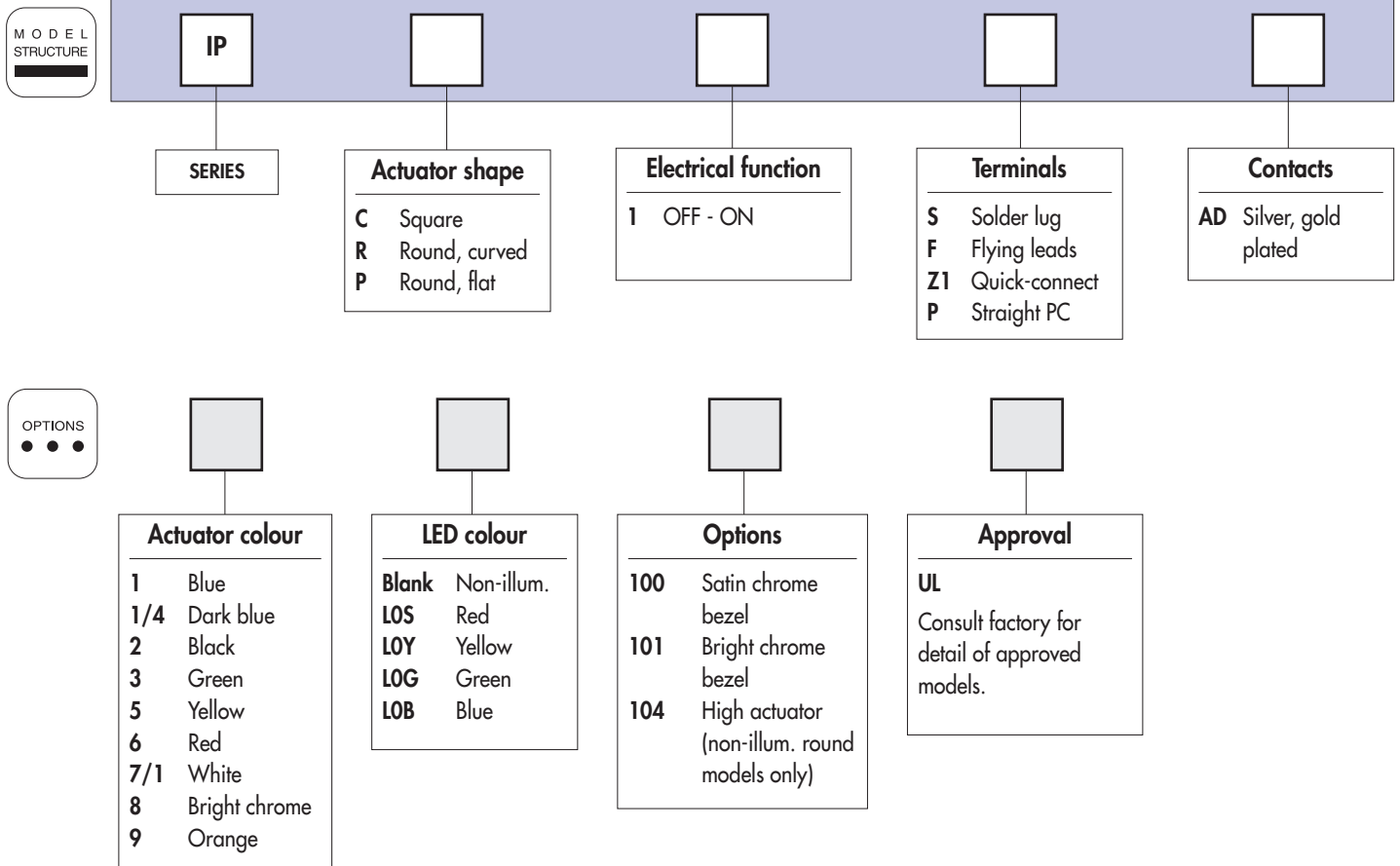
Back of panel space requirement



IP series

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

Overview



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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 (P/N U5125).
It is presented at the end of this catalogue..



Mounting accessories : Standard hardware supplied : 1 hex nut 14 mm (.551) across flats and 1 O-Ring.

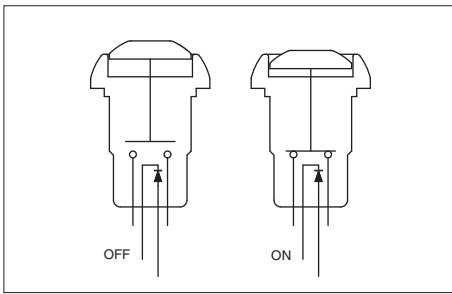


Packaging unit : 25 pieces

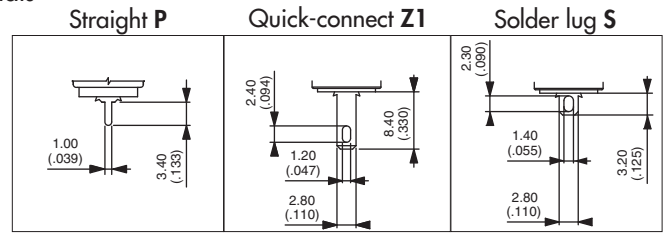
IP series

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

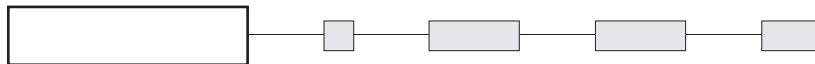
Square or round - illuminated



- Four LED colours
- Tin plated LED terminals



MODEL STRUCTURE



Square models

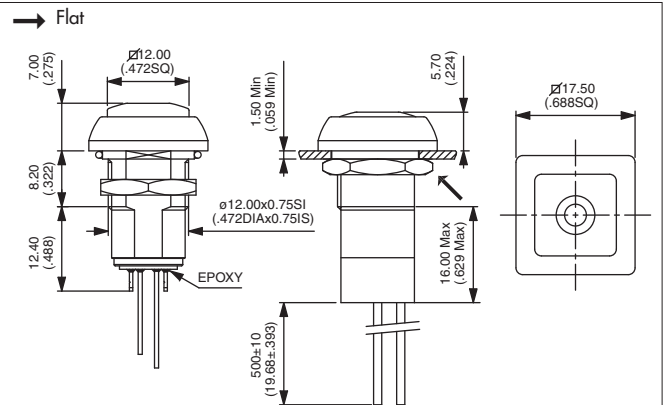


Solder lug terminals
IPC1SAD

OFF - ON

Flying lead terminals
IPC1FAD

OFF - ON



Also available with straight PC : **IPC1PAD** or quick-connect terminals : **IPC1Z1AD**

Round models

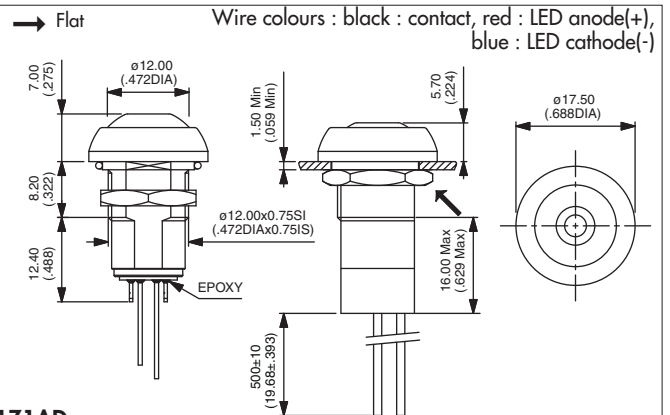


Solder lug terminals
IPR1SAD

OFF - ON

Flying lead terminals
IPR1FAD

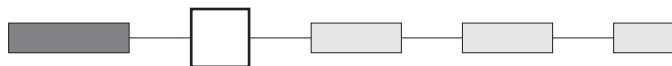
OFF - ON



Wire colours : black : contact, red : LED anode(+), blue : LED cathode(-)

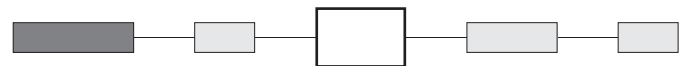
Also available with straight PC : **IPR1PAD** or quick-connect terminals : **IPR1Z1AD**

ACTUATOR COLOUR



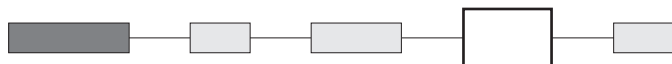
1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow
6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

LED COLOUR



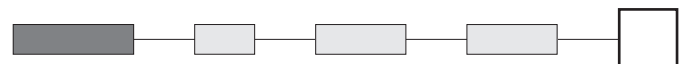
LOS : red - LOY : yellow - LOG : green - LOB : blue

OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel

APPROVAL



UL

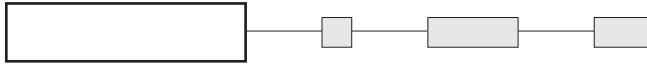
Consult factory for details of approved models. To order switches marked UL, complete above box with "UL".

IP series

Pushbutton switches for harsh environments - bushing \varnothing 12 mm - latching

Square or round - non-illuminated

MODEL STRUCTURE



Square models



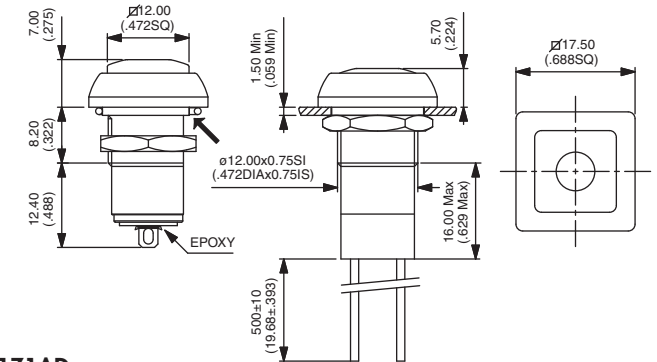
Solder lug terminals
IPC1SAD

OFF - ON

Flying lead terminals
IPC1FAD

OFF - ON

→ Flat



Also available with straight PC : **IPC1PAD** or quick-connect terminals : **IPC1Z1AD**

Round models



CURVED ACTUATOR

Solder lug terminals
IPR1SAD

OFF - ON

Flying lead terminals
IPR1FAD

OFF - ON

FLAT ACTUATOR

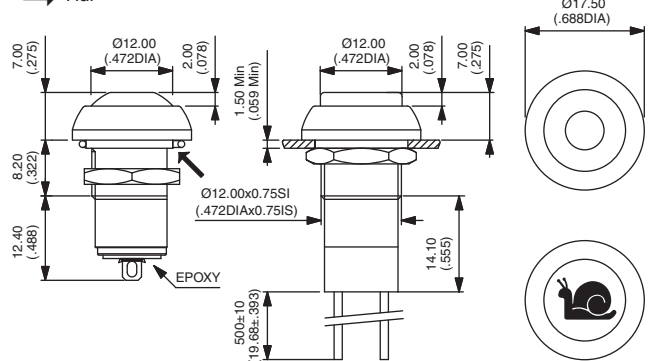
Solder lug terminals
IPP1SAD

OFF - ON

Flying lead terminals
IPP1FAD

OFF - ON

→ Flat



Also available with straight PC : **IP•1PAD** or quick-connect terminals : **IP•1Z1AD**

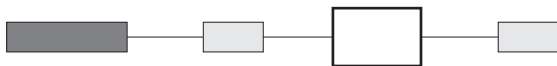
ACTUATOR COLOUR

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

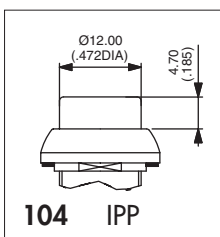
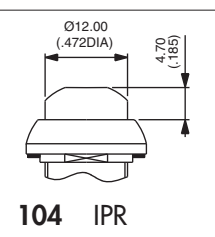


1 : blue - 1/4 : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 8 : bright chrome - 9 : orange

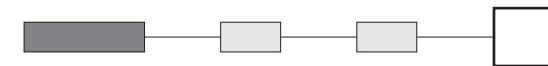
OPTIONS



100 : Satin chrome bezel
101 : Bright chrome bezel
104 : High actuator (for round model only)



APPROVAL



UL

Availability : consult factory for details of approved models.

Marking : to order switches marked UL, complete above box with "UL".

ERMEC

www.ermec.com

Distribución de componentes eléctricos y electrónicos

Tel.: (+34) 902 450 160

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www.ermec.com

IB and IS series

Sealed pushbutton switches - bushing Ø 12 mm - momentary

Distinctive features and specifications



- Snap-in and threaded bushing models
- Compact, light in weight
 - Behind-panel depth of 13 mm (.512) only
 - 50 % reduction in weight compared to metallic models
- Tactile feedback
- Sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Shock resistance : 100 g according to IEC 512-4, test 6c
- Vibration resistance : 10-500 Hz - 10 g according to IEC 512-4, test 6d
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -40°C to +85°C

MATERIALS

- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts : silver, gold plated
- Terminal seal : epoxy

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
400mA 32VAC - 100mA 50VDC - 125mA 125VAC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.000 Vrms
- Electrical life at full load : 500.000 cycles

AGENCY APPROVAL



2A 125VAC/250VAC
File E83438

Availability : consult factory for details of approved models.

Marking : to order switches marked UL, complete appropriate box of ordering format.

GENERAL SPECIFICATIONS

- Panel thickness :
 - IB series : 0,8 mm (.031) min. - 1,8 mm (.071) max.
 - IS series : 1,5 mm (.059) min. - 4 mm (.157) max.
- Total travel : 1,9 mm (.074) +/- 0,3 mm
- Typical operating force : 7N +/- 3N
- Mechanical life : 1.000.000 cycles
- Torque : 1,5 Nm max. applied to nut
- Soldering : 300°C max. for 3 seconds

*Example of custom switch:
see end of the series.*

Panel mounting : see next pages.



Distribución de componentes
eléctricos y electrónicos

Tel.: (+34) 902 450 160

Fax: (+34) 902 433 088

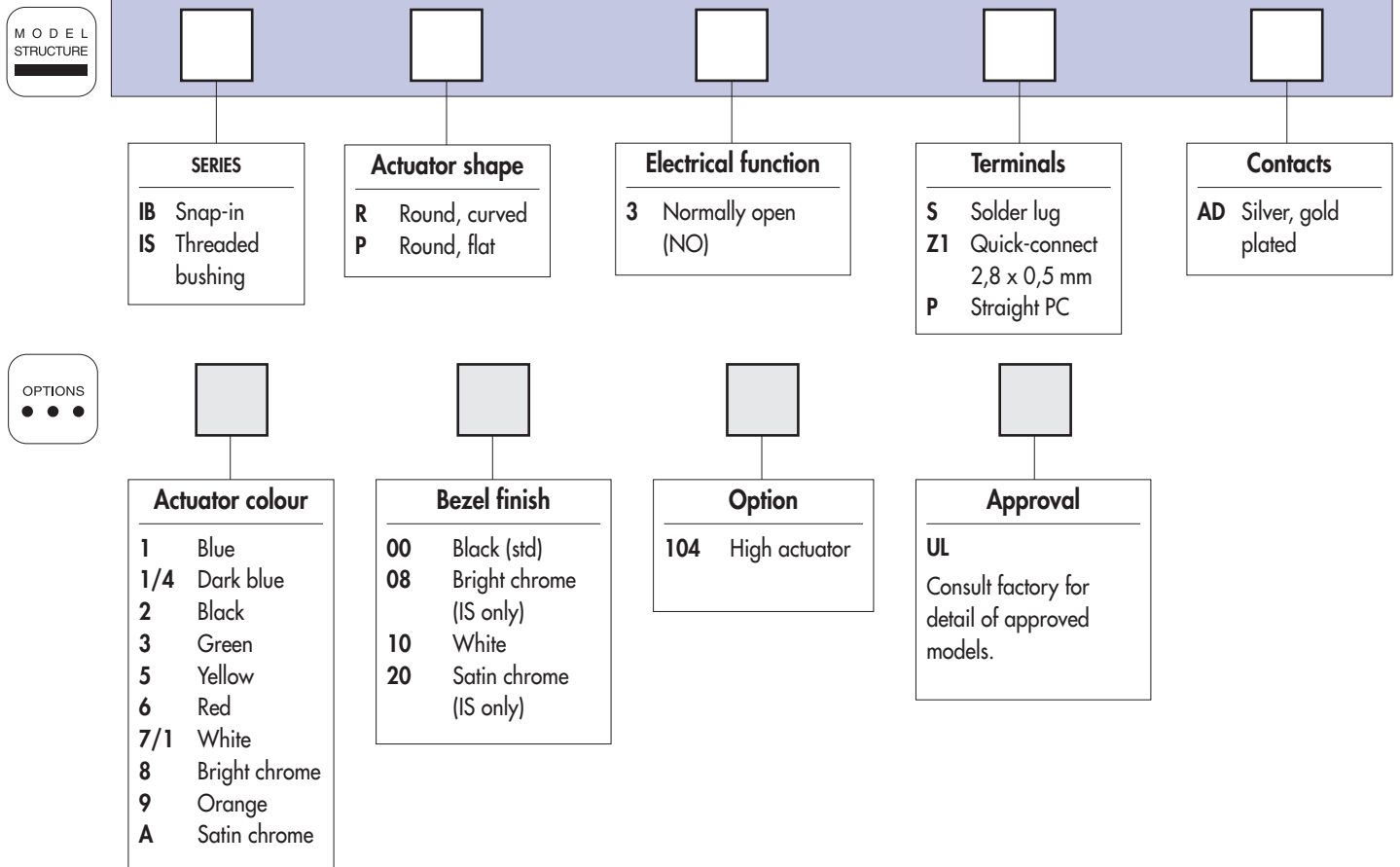
ermec@ermec.com

www.ermec.com

IB and IS series

Sealed pushbutton switches - bushing Ø 12 mm - momentary

Overview



Tel.: (+34) 902 450 160
 Fax: (+34) 902 433 088
ermec@ermec.com
www.ermec.com

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 this catalogue.



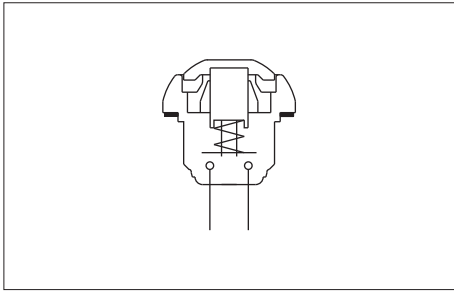
Mounting accessories : Standard hardware supplied : 1 flat seal (IB series)
 1 hex nut 14 mm (.551) across flats and 1 flat seal (IS series). Hex nut part number U166.



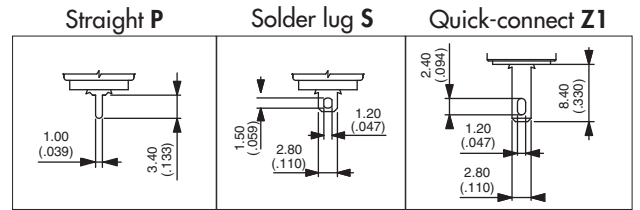
Packaging unit : 50 pieces

IB and IS series

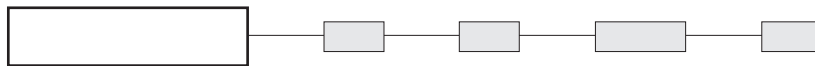
Sealed pushbutton switches - bushing Ø 12 mm - momentary



- Ten actuator colours
- Curved or flat actuator
- Antirotation bushing



MODEL STRUCTURE



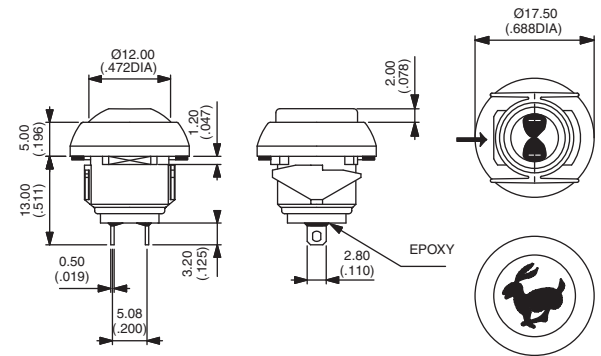
Snap-in mounting - solder lugs

→ Flat

Panel thickness : 0,8 mm to 1,8 mm



- Curved actuator
IBR3SAD Normally open
- Flat actuator
IBP3SAD Normally open



Also available with straight PC : **IBR•3PAD** or quick-connect terminals : **IB•3Z1AD**

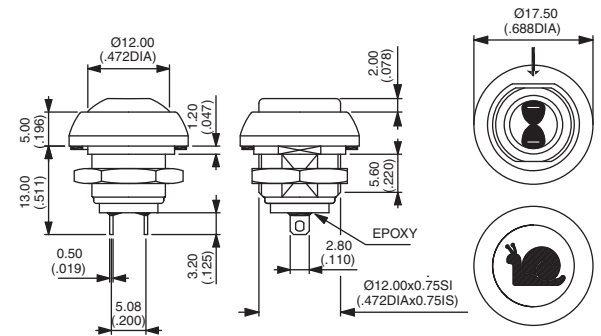
Mounting by threaded bushing - solder lugs

→ Flat

Panel thickness : 1,5 mm to 4 mm



- Curved actuator
ISR3SAD Normally open
- Flat actuator
ISP3SAD Normally open

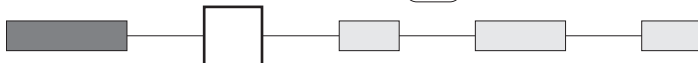


Also available with straight PC : **IS•3PAD** or quick-connect terminals : **IS•3Z1AD**

ACTUATOR COLOUR



Actuator marking available on IBP and ISP 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 - A : satin chrome

BUSHING AND BEZEL FINISH



00 : Black (standard)
08 : Bright chrome (IS series only)
10 : White
20 : Satin chrome (IS series only)



Distribución de componentes eléctricos y electrónicos

Tel.: (+34) 902 450 160

Fax: (+34) 902 433 088

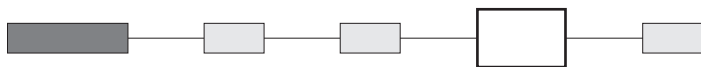
ermec@ermec.com

www.ermec.com

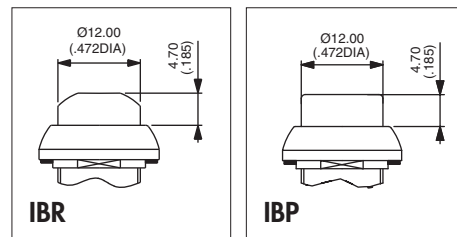
IB and IS series

Sealed pushbutton switches - bushing Ø 12 mm - momentary

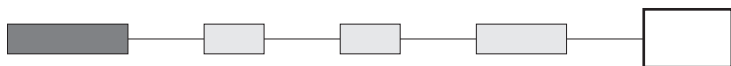
ACTUATOR OPTION



104 : High actuator



APPROVAL



UL

Availability : consult factory for details of approved models.

Marking : to order switches marked UL, complete above box with "UL".



Tel.: (+34) 902 450 160

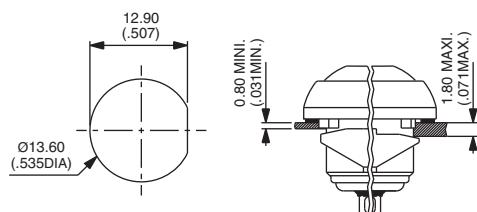
Fax: (+34) 902 433 088

ermec@ermec.com

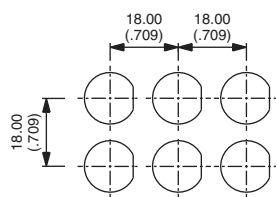
www.ermec.com

IB SERIES MOUNTING

Panel cut-out

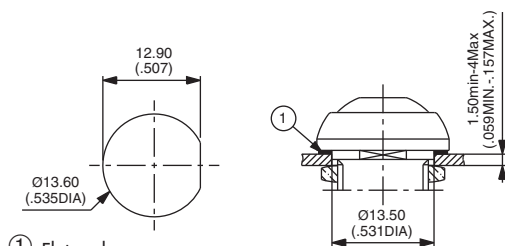


Matrix mounting

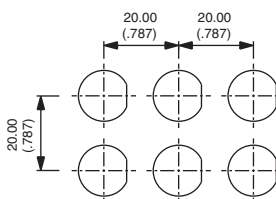


IS SERIES MOUNTING

Panel cut-out



Matrix mounting



Example of custom switch



ISR3FADB22X1248-01

- Painted bushing and actuator, soft feel
- Flying leads (55 mm) + connector
- Overmolded rear part



- Rear mounting for easier installation
- Momentary metal models
- Fixed or variable panel thickness
- Screw version available up to 4A
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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
- Operating temperature : -40°C to +85°C

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 : 1.000 Vrms 50 Hz

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

GENERAL SPECIFICATIONS

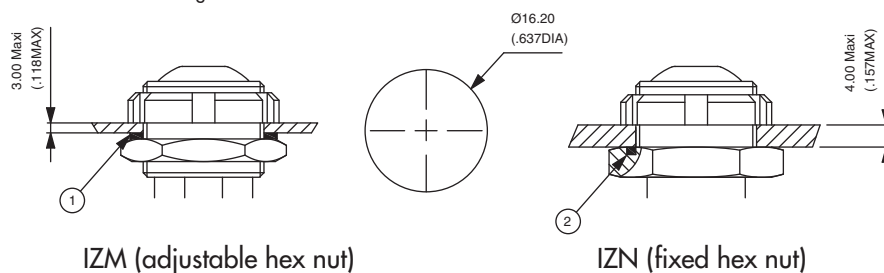
- Panel thickness :
 - IZM : 3 mm (.118) max.
 - IZN : 4 mm (.157) max.
- Total travel : 1,8 mm (.070) +/- 0,3 mm
- Typical operating force : 6N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : IZN : 1 Nm max.
IZM : 0,7 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

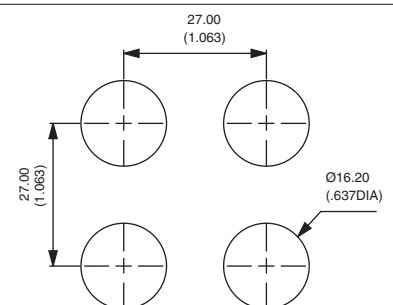
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : brass, nickel plated
- Contacts :
 - 4 : silver, gold plated
 - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

- ① Flat seal ② O-ring



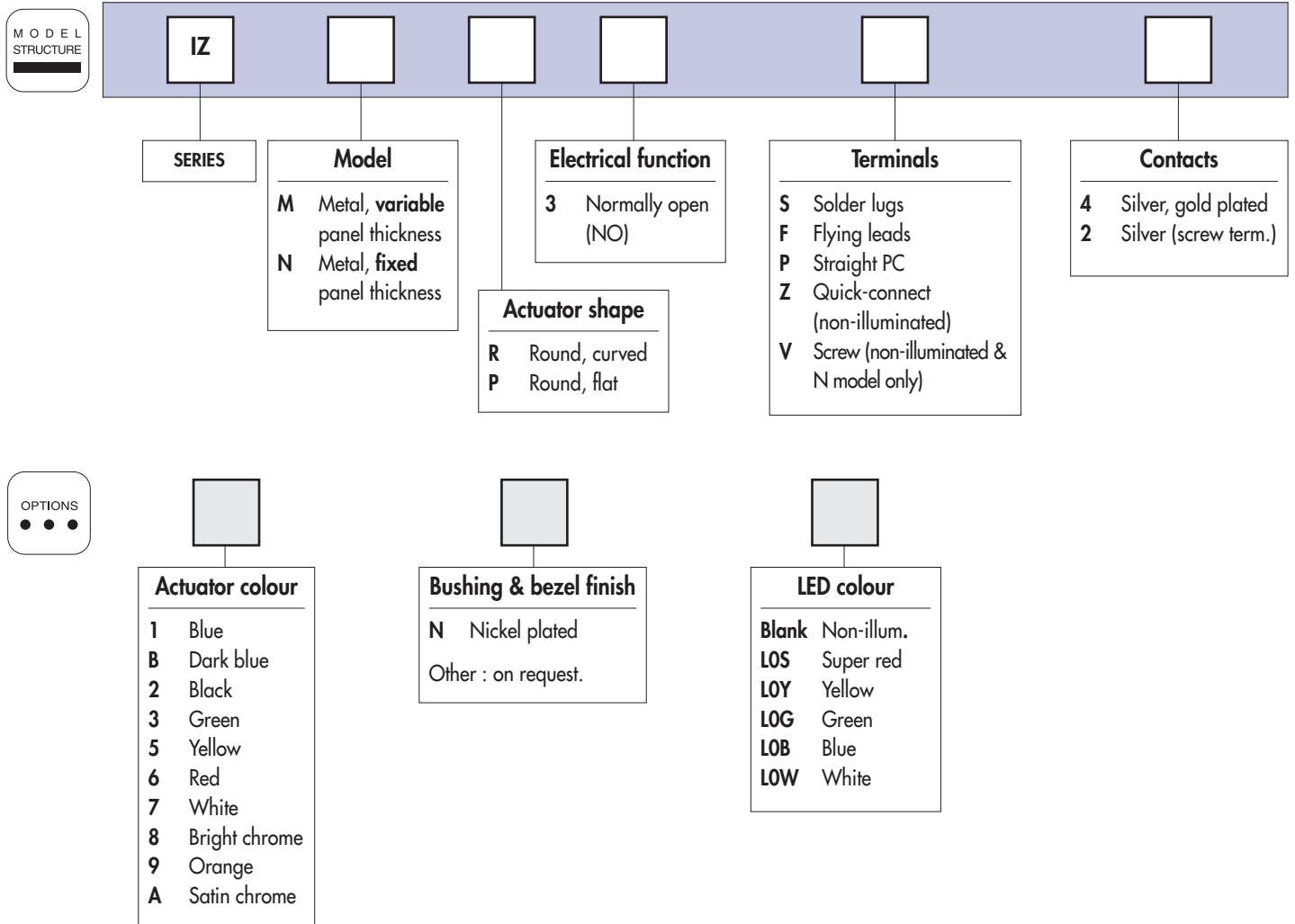
MATRIX MOUNTING



IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

Overview



Tel.: (+34) 902 450 160
 Fax: (+34) 902 433 088
ermec@ermec.com
www.ermec.com

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 :

- IZM : 1 castellated nickel plated brass nut U6915 + 1 silicone flat seal + 1 hex nut 19 mm (.748) across flats U4116.
- IZN : 1 castellated nickel plated brass nut U6915 + 1 O-ring

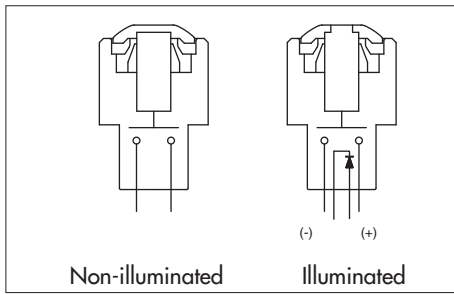


Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

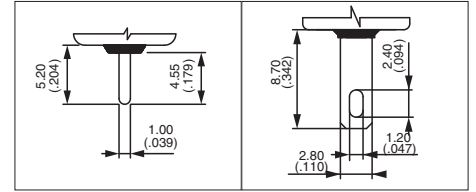
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

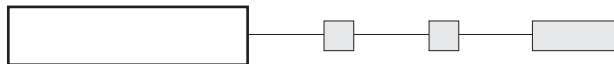
For variable panel thickness : IZM



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



MODEL STRUCTURE



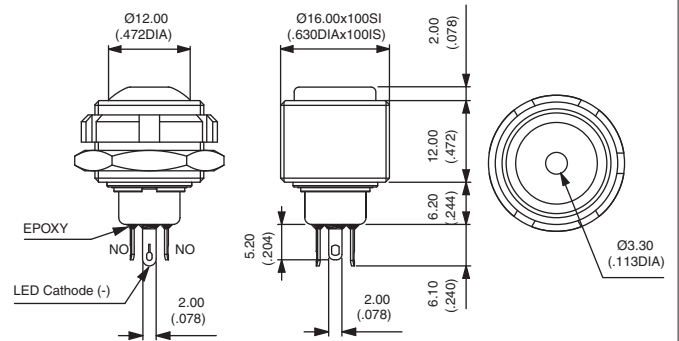
Plunger marking available on IZMP models (symbol 10 mm max.). On request.

Illuminated - solder lug terminals



Curved actuator
IZMR3S4 Normally Open

Flat actuator
IZMP3S4 Normally Open



Also available with straight PC terminals : **IZM•3P4**.
LED colour is indicated by the bottom of the switch.

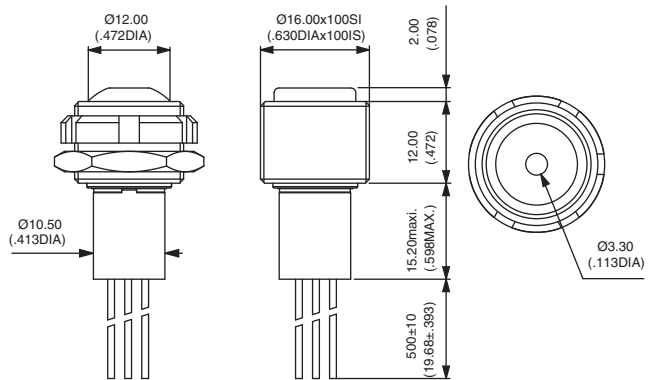
Illuminated - flying lead terminals



Curved actuator
IZMR3F4 Normally Open

Flat actuator
IZMP3F4 Normally Open

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

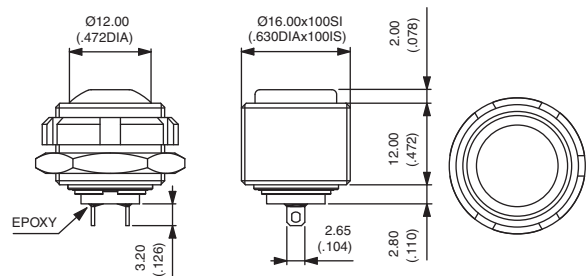


Non-illuminated - solder lug terminals



Curved actuator
IZMR3S4 Normally Open

Flat actuator
IZMP3S4 Normally Open



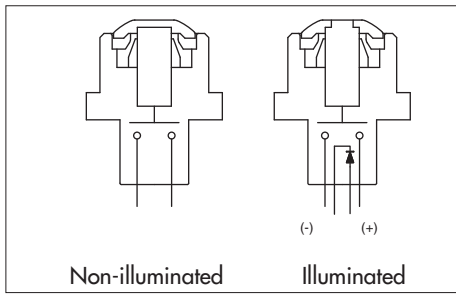
Also available with straight PC terminals :
IZM•3P4 and quick-connect terminals : **IZM•3Z4**.

For non-illuminated FLYING LEAD versions, refer to illuminated models above. Non-illuminated have 2 wires only.

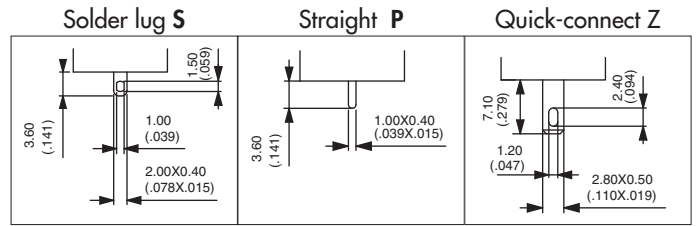
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

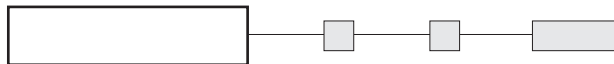
For fixed panel thickness : IZN



- Five LED colours
- Tin plated LED terminals



MODEL STRUCTURE



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

Illuminated - solder lug terminals

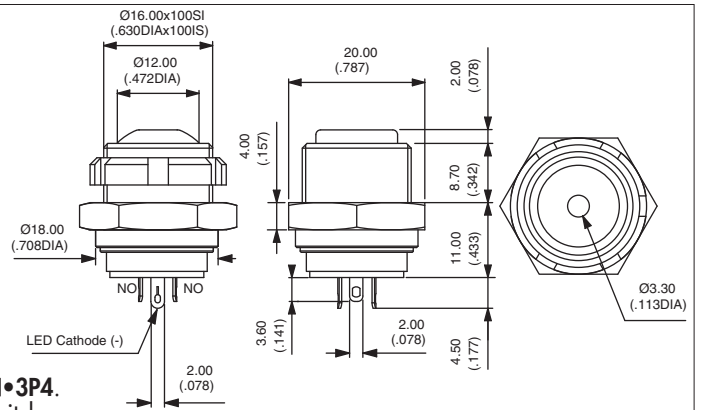


GOLD PLATED CONTACTS

Curved actuator
IZNR3S4 Normally Open

Flat actuator
IZNP3S4 Normally Open

Also available with straight PC terminals : **IZN•3P4**.
LED colour is indicated by the bottom of the switch.



Illuminated - sealed flying lead terminals

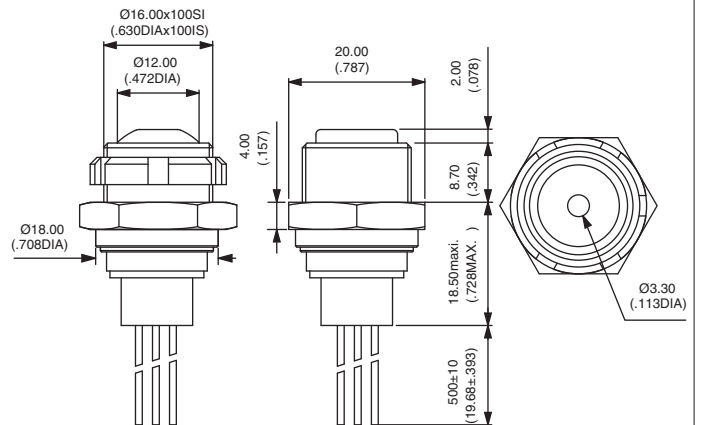


GOLD PLATED CONTACTS

Curved actuator
IZNR3F4 Normally Open

Flat actuator
IZNP3F4 Normally Open

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



Non-illuminated - solder lug terminals

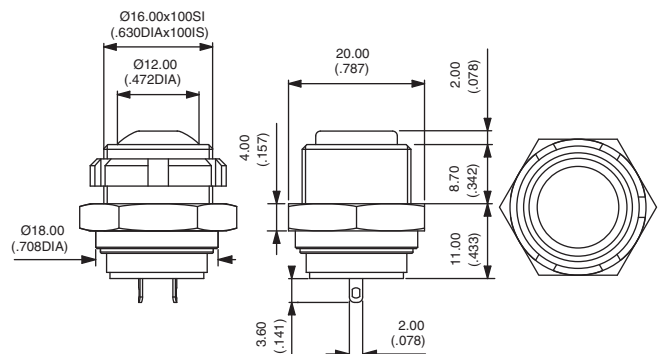


GOLD PLATED CONTACTS

Curved actuator
IZNR3S4 Normally Open

Flat actuator
IZNP3S4 Normally Open

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



For non-illuminated FLYING LEAD versions, refer to illuminated models above. Non-illuminated have 2 wires only.

IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - momentary

For fixed panel thickness : IZN - options

Non-illuminated - screw terminals



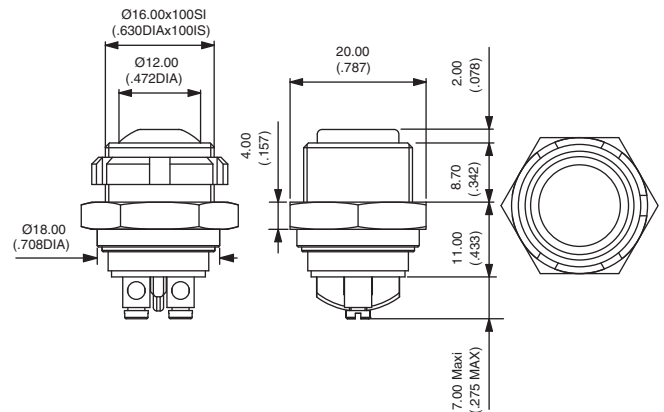
SILVER CONTACTS

Curved actuator
IZNR3V2

 Normally open

Flat actuator
IZNP3V2

 Normally open

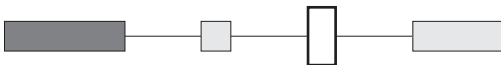


ACTUATOR COLOUR



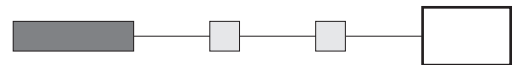
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



2 : black (standard)
Other : on request.

LED COLOUR



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

IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

Distinctive features and specifications



- Rear mounting for easier installation
- Latching action metal models
- Fixed or variable panel thickness
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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 : 100mA 24VDC - 200.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals
1.000 Vrms between terminals and frame

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

A resistor must be series-connected by the user.

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

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

GENERAL SPECIFICATIONS

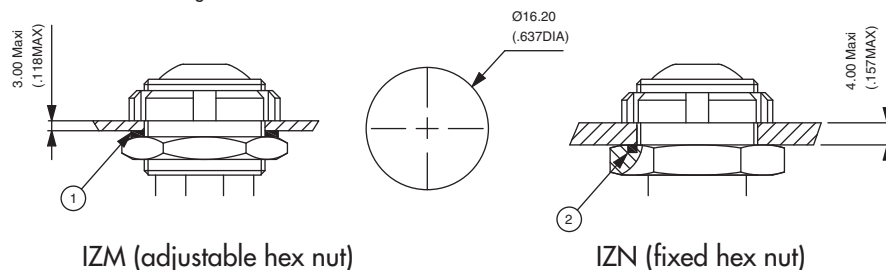
- Panel thickness :
 - IZM : 3 mm (.118) max.
 - IZN : 4 mm (.157) max.
- Total travel : 2,5 mm (.098) +/-0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 cycles
- Torque : IZN : 1 Nm max.
IZM : 0,7 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : brass, nickel plated
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

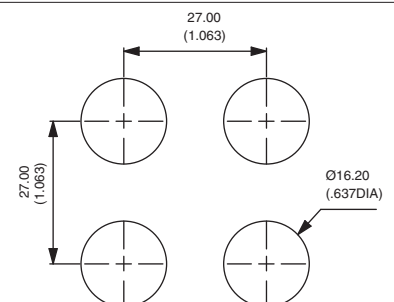
- ① Flat seal ② O-ring



IZM (adjustable hex nut)

IZN (fixed hex nut)

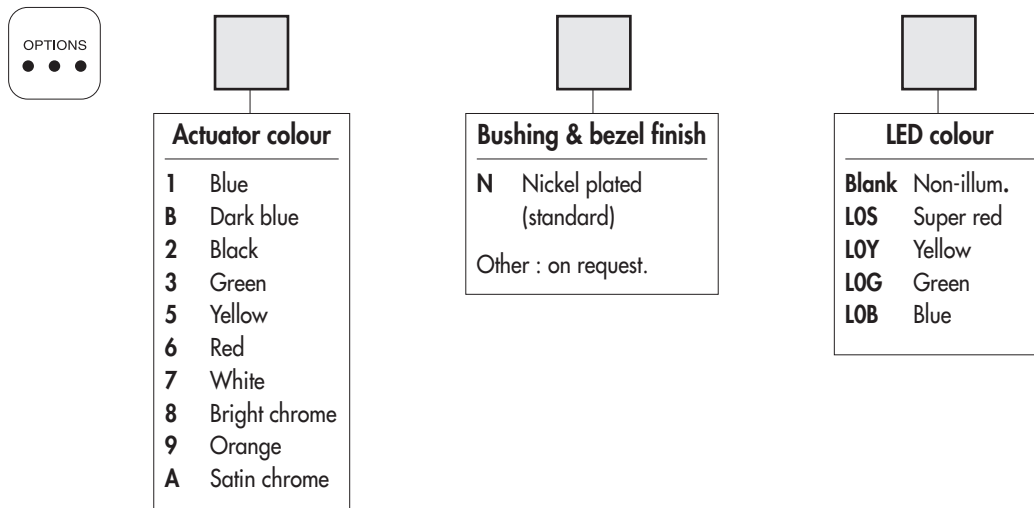
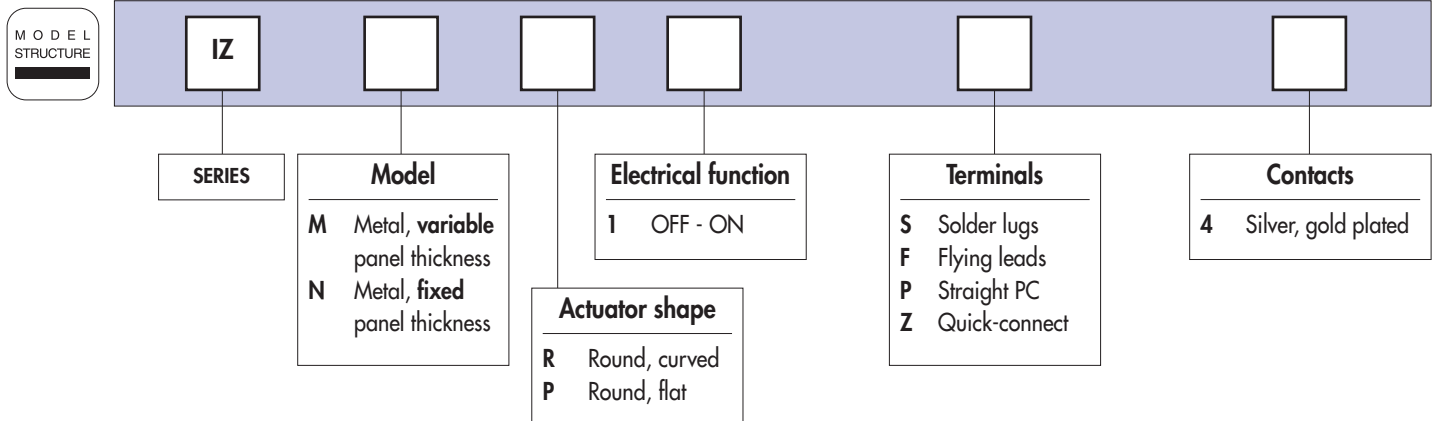
MATRIX MOUNTING



IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

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 :

- IZN : 1 castellated nickel plated brass nut U6915 + 1 O-ring

- IZM : 1 castellated nickel plated brass nut U6915 + 1 silicone flat seal + 1 hex nut 19 mm (.748) across flats U4116.

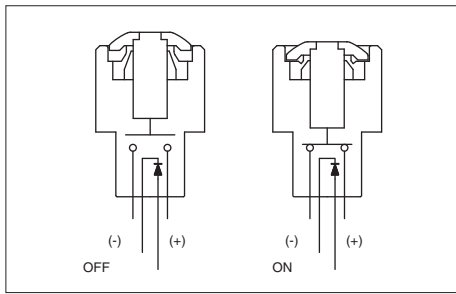


Packaging unit : 25 pieces for flying lead models - 40 pieces for other models

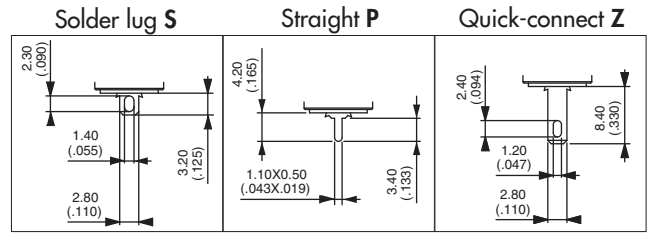
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

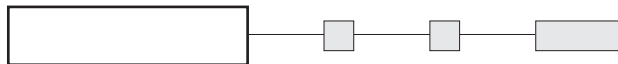
For variable panel thickness : IZM



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



MODEL STRUCTURE



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

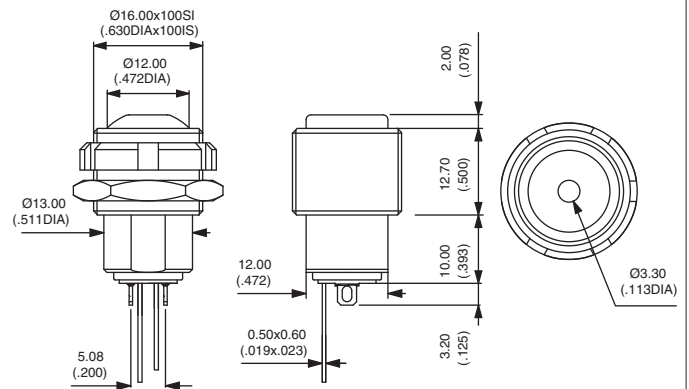
Illuminated - solder lug terminals



Curved actuator
IZMR1S4 OFF - ON

Flat actuator
IZMP1S4 OFF - ON

Also available with straight PC terminals :
IZM•1P4 & quick-connect terminals : **IZM•1Z4**.



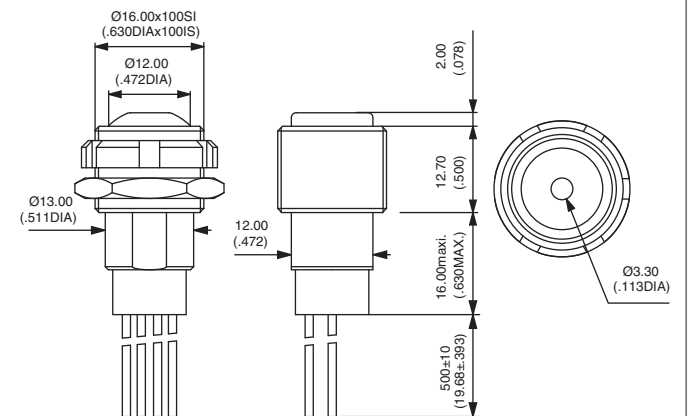
Illuminated - flying lead terminals



Curved actuator
IZMR1F4 OFF - ON

Flat actuator
IZMP1F4 OFF - ON

Wire colours : black : contact,
red : LED anode(+), blue : LED cathode (-)



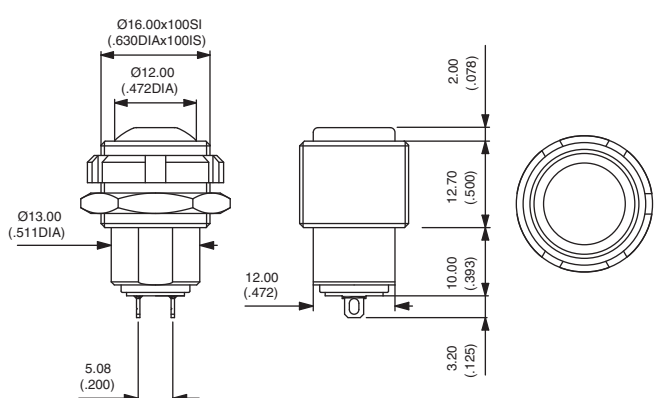
Non-illuminated - solder lug terminals



Curved actuator
IZMR1S4 OFF - ON

Flat actuator
IZMP1S4 OFF - ON

Also available with straight PC terminals :
IZM•1P4 & quick-connect terminals : **IZM•1Z4**.

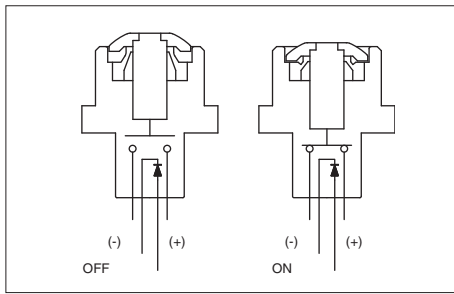


For FLYING LEAD versions, refer to illuminated models above. Non-illuminated have 2 wires only.

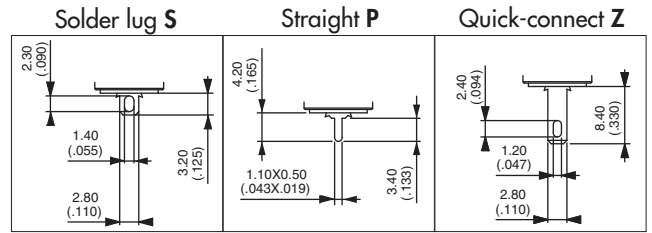
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

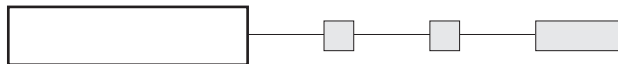
For fixed panel thickness : IZN



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



MODEL STRUCTURE



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

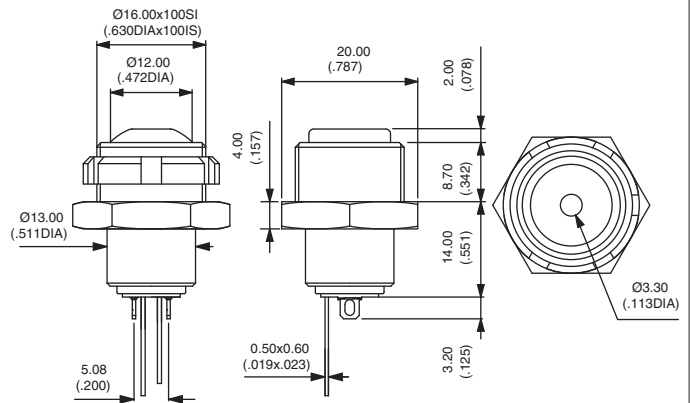
Illuminated - solder lug terminals



Curved actuator
IZNR1S4 OFF - ON

Flat actuator
IZNP1S4 OFF - ON

Also available with straight PC terminals :
IZN•1P4 & quick-connect terminals : **IZN•1Z4**.



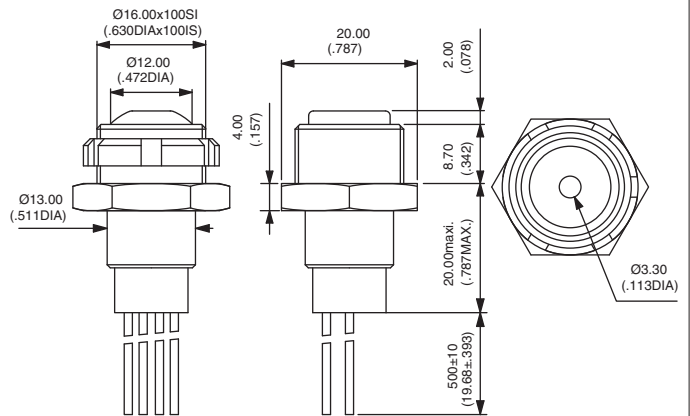
Illuminated - flying lead terminals



Curved actuator
IZNR1F4 OFF - ON

Flat actuator
IZNP1F4 OFF - ON

Wire colours : black : contact,
red : LED anode(+), blue : LED cathode (-)



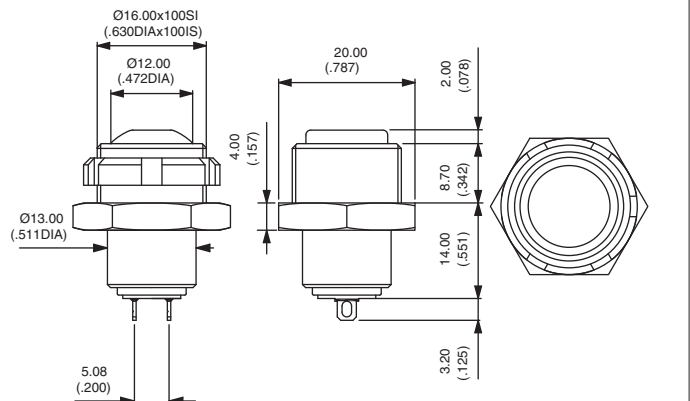
Non-illuminated - solder lug terminals



Curved actuator
IZNR1S4 OFF - ON

Flat actuator
IZNP1S4 OFF - ON

Also available with straight PC terminals :
IZN•1P4 & quick-connect terminals : **IZN•1Z4**.



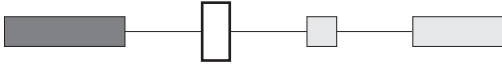
For FLYING LEAD versions, refer to illuminated models above. Non-illuminated have 2 wires only.

I^Z series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - metal - latching

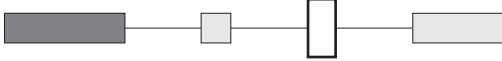
Options

ACTUATOR COLOUR



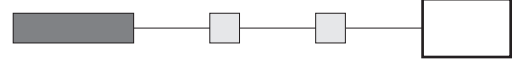
1 : blue - **B** : dark blue - **2** : black - **3** : green - **5** : yellow - **6** : red - **7** : white - **8** : bright chrome - **9** : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



N : nickel plated (standard)
Other : on request.

LED COLOUR



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



- Rear mounting for easier installation
- Momentary models
- Screw version available up to 4A
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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
- Operating temperature : -40°C to +85°C

GENERAL SPECIFICATIONS

- Panel thickness : 3 mm (.118) max.
- Total travel : 1,8 mm (.070) +/- 0,3 mm
- Typical operating force : 6N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 0,7 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 : 1.000 Vrms 50 Hz

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

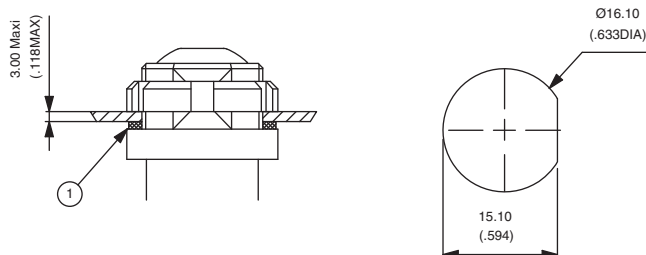
On flying lead versions, the LED resistor can be integrated by APEM on request.

MATERIALS

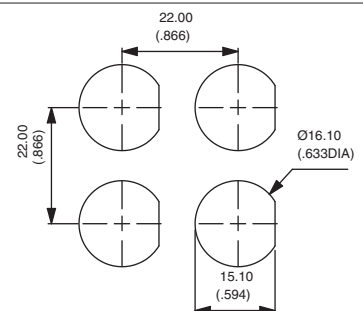
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts :
 - 4 : silver, gold plated
 - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

① Flat seal



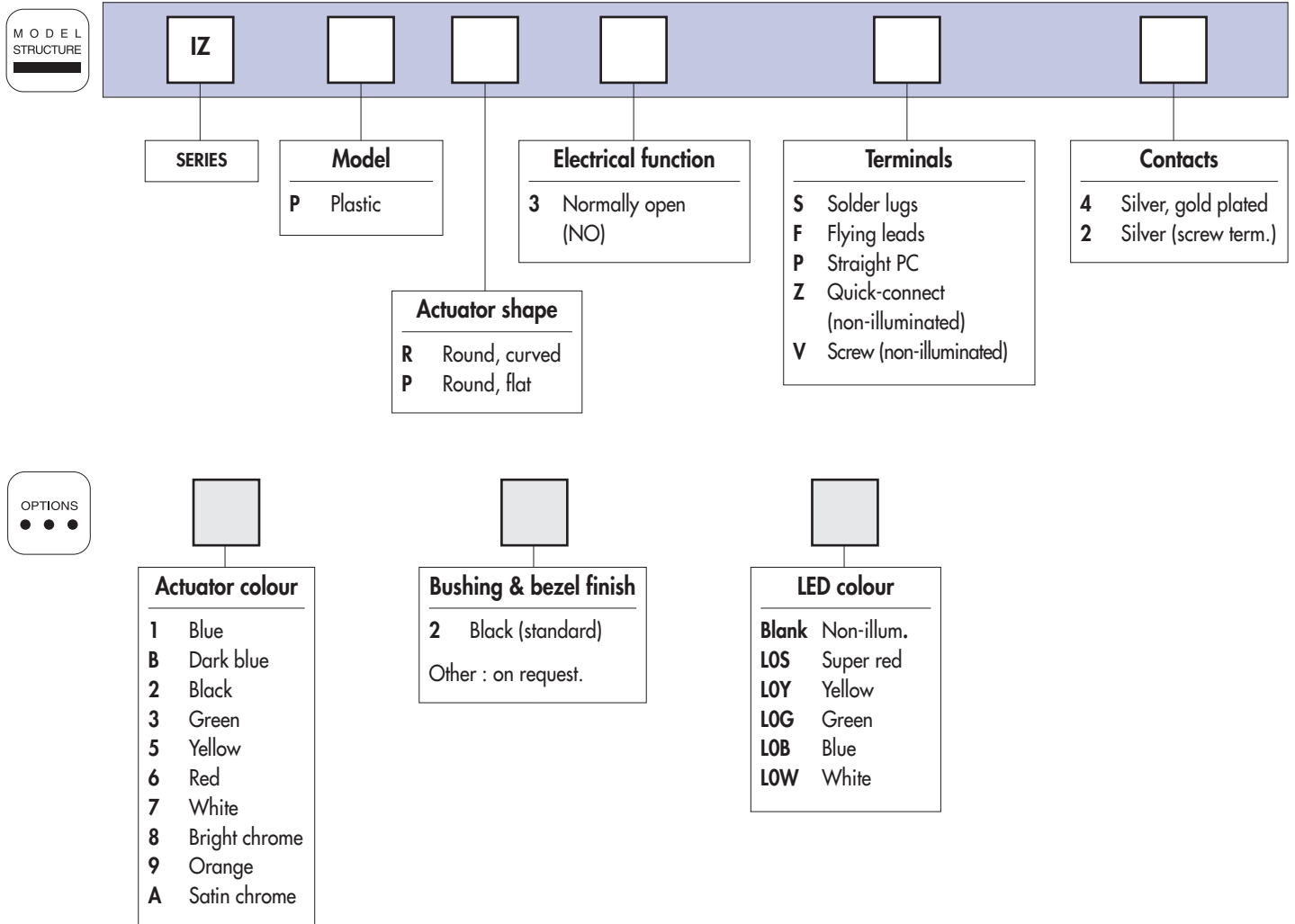
MATRIX MOUNTING



IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - momentary

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 castellated black plastic nut U4249 and 1 silicone flat seal.



Packaging unit : 25 pieces for flying lead models - 40 pieces for other models



Distribución de componentes
eléctricos y electrónicos

Tel.: (+34) 902 450 160

Fax: (+34) 902 433 088

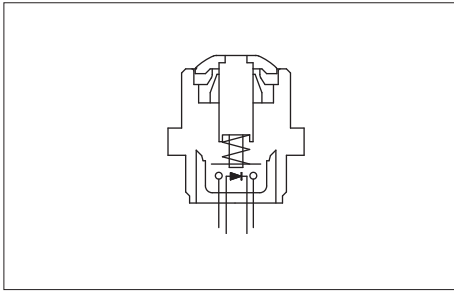
ermec@ermec.com

www.ermec.com

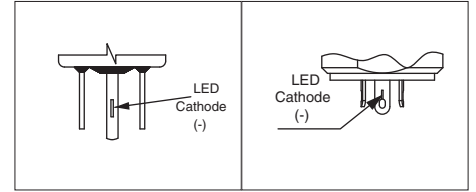
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - momentary

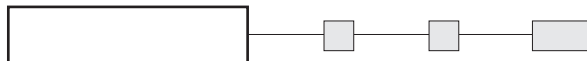
Illuminated



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



MODEL STRUCTURE



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

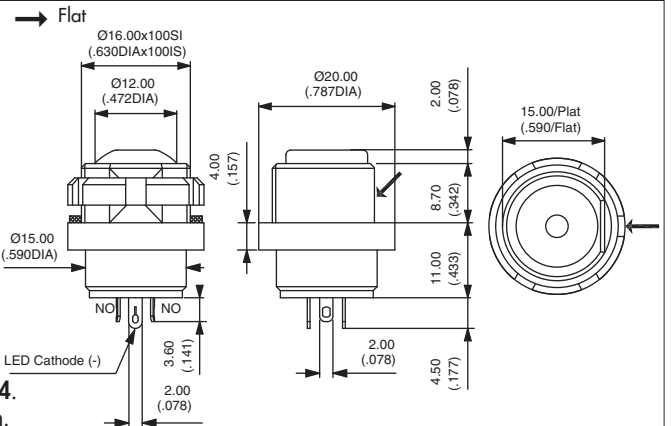
Solder lug terminals



Curved actuator
IZPR3S4 Normally Open

Flat actuator
IZPP3S4 Normally Open

Also available with straight PC terminals : **IZP•3P4**.
LED colour is indicated by the bottom of the switch.



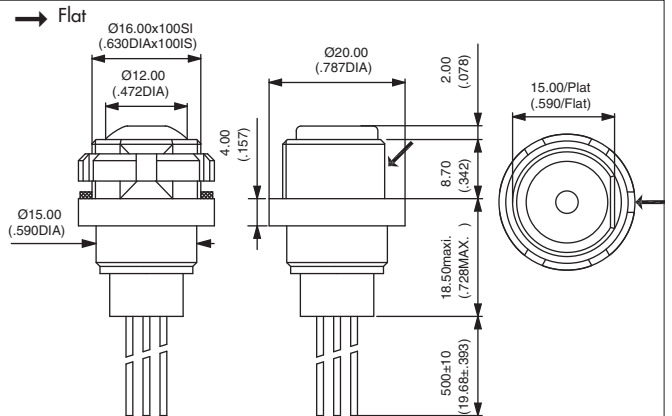
Flying lead terminals - momentary



Curved actuator
IZPR3F4 Normally Open

Flat actuator
IZPP3F4 Normally Open

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

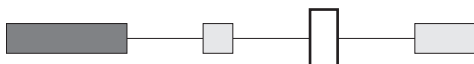


ACTUATOR COLOUR



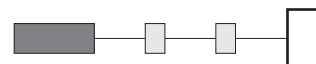
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



2 : black (standard)
Other : on request.

LED COLOUR

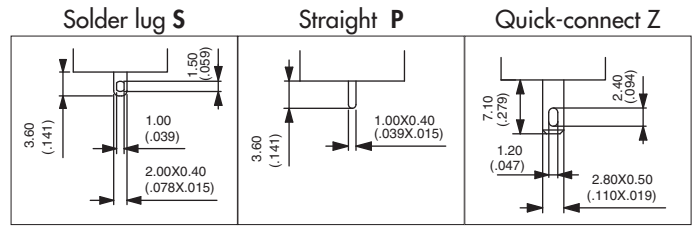
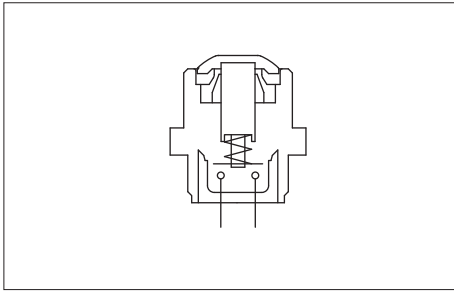


LOS : super red - LOY : yellow - LOG : green
LOB : blue - LOW : white

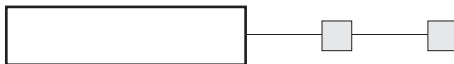
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - momentary

Non-illuminated



MODEL
STRUCTURE



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

Solder lug terminals - gold plated contacts



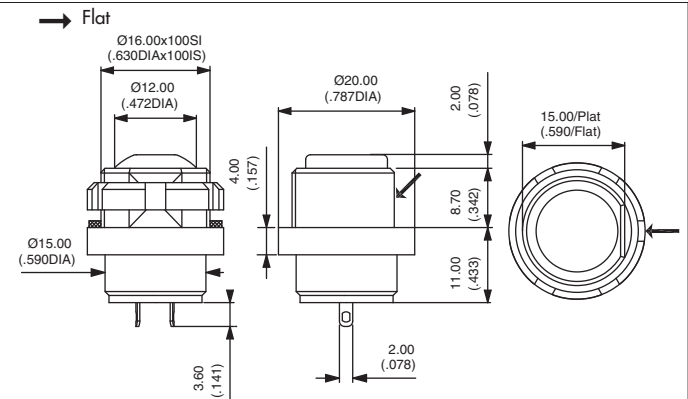
Curved actuator
IZPR3S4



Flat actuator
IZPP3S4



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



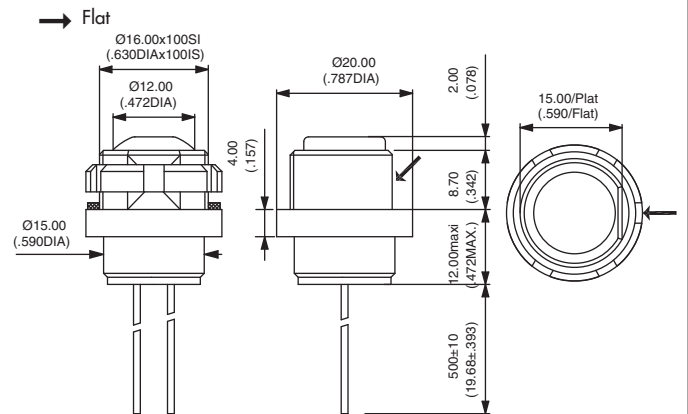
Sealed flying lead terminals - gold plated contacts



Curved actuator
IZPR3F4



Flat actuator
IZPP3F4



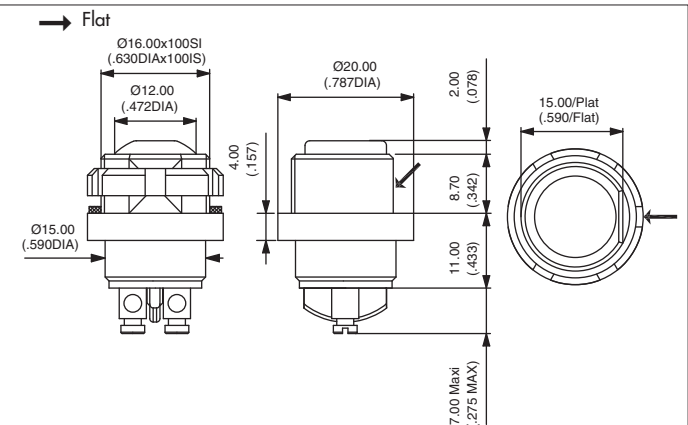
Screw terminals - silver contacts



Curved actuator
IZPR3V2



Flat actuator
IZPP3V2



Actuator colour and bushing/bezel colour : select the desired codes on previous page.



- Rear mounting for easier installation
- Latching action models
- Sealed to IP67
- Illuminated or non-illuminated
- Flat actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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
- Operating temperature : -40°C to +85°C

GENERAL SPECIFICATIONS

- Panel thickness : 3 mm (.118) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 cycles
- Torque : 0,7 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 100mA 24VDC - 200.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

A resistor must be series-connected by the user.

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

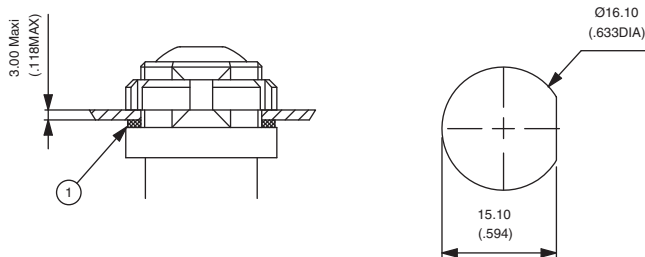
On flying lead versions, the LED resistor can be integrated by APEM on request.

MATERIALS

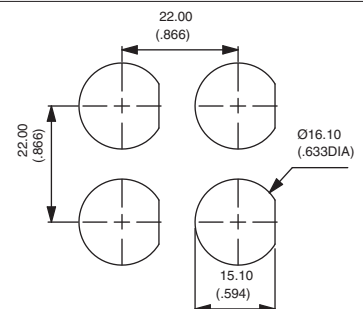
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

① Flat seal



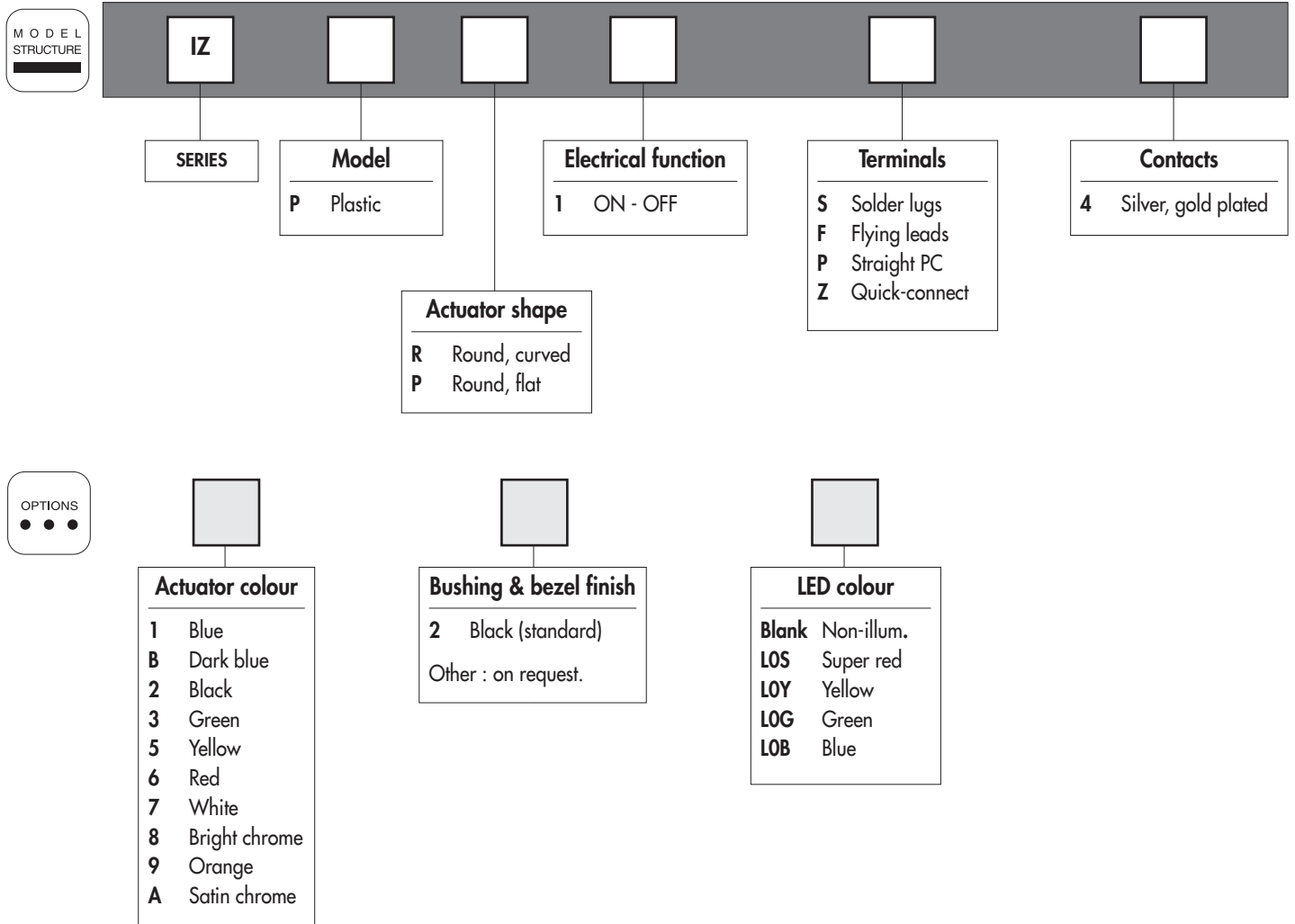
MATRIX MOUNTING



IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - latching

Distinctive features and specifications



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 castellated black plastic nut U4249 and 1 silicone flat seal.



Packaging unit : 25 pieces for flying lead models - 40 pieces for other models



Distribución de componentes
eléctricos y electrónicos

Tel.: (+34) 902 450 160

Fax: (+34) 902 433 088

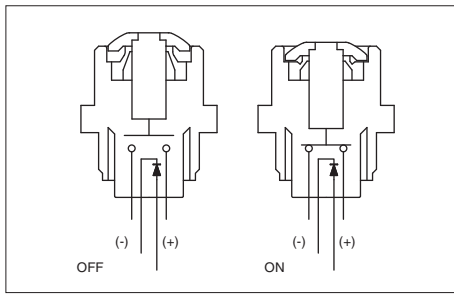
ermec@ermec.com

www.ermec.com

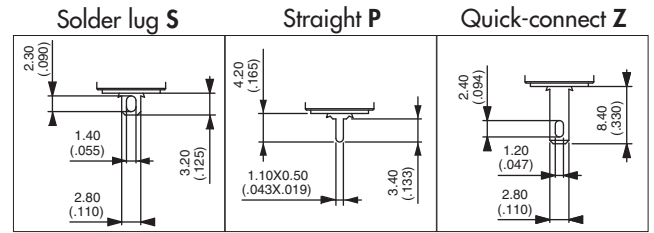
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - latching

Illuminated



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



MODEL STRUCTURE



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

Solder lug terminals



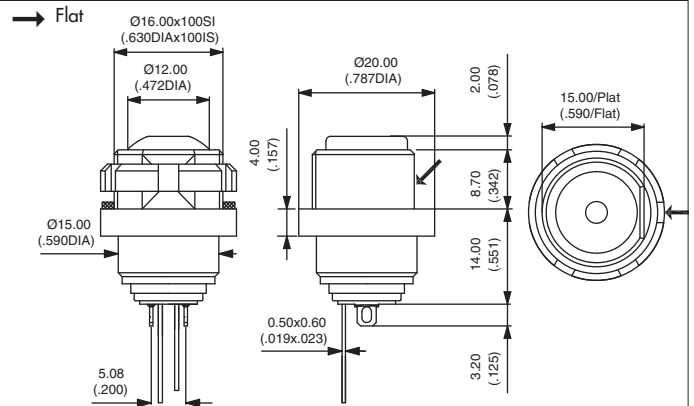
Curved actuator
IZPR1S4

ON - OFF

Flat actuator
IZPP1S4

ON - OFF

Also available with straight PC terminals : **IZP•1P4** and quick-connect terminals : **IZP•1Z4**.



Sealed flying lead terminals



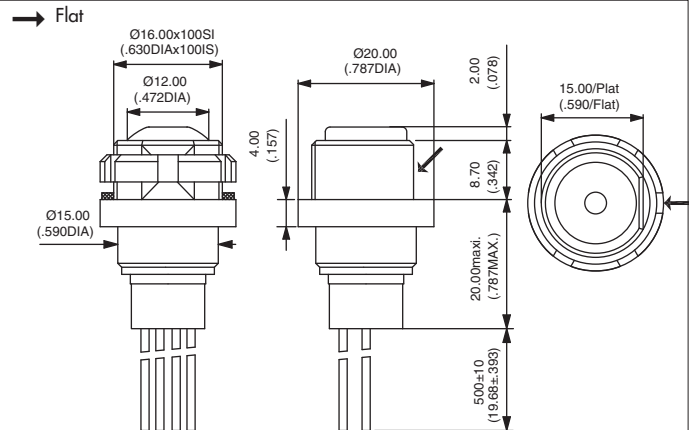
Curved actuator
IZPR1F4

ON - OFF

Flat actuator
IZPP1F4

ON - OFF

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

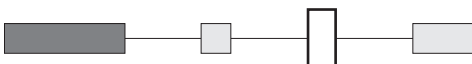


ACTUATOR COLOUR



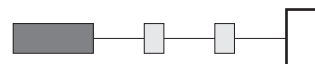
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL COLOUR



2 : black (standard)
Other : on request.

LED COLOUR

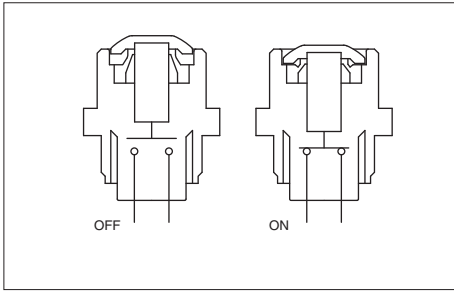


LOS : super red - LOY : yellow - LOG : green
LOB : blue

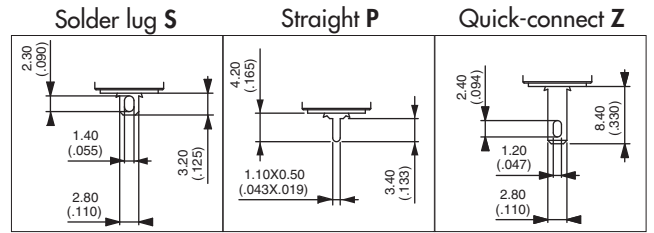
IZ series

Rear mounted sealed pushbutton switches - bushing Ø 16 mm - latching

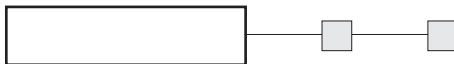
Non-illuminated



- Gold plated contacts



MODEL STRUCTURE



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

Solder lug terminals



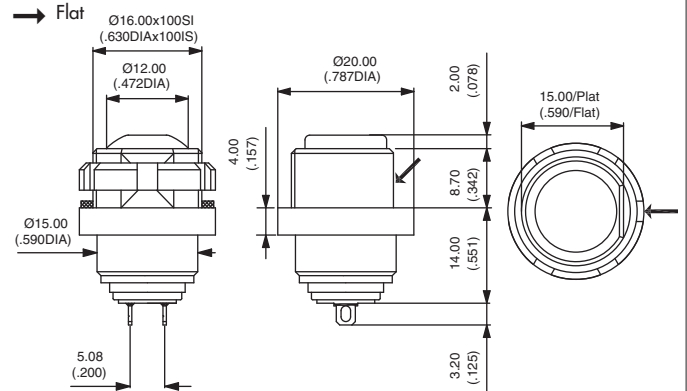
Curved actuator
IZPR1S4

ON - OFF

Flat actuator
IZPP1S4

ON - OFF

Also available with straight PC terminals : **IZP•1P4** and quick-connect terminals : **IZP•1Z4**.



Sealed flying lead terminals

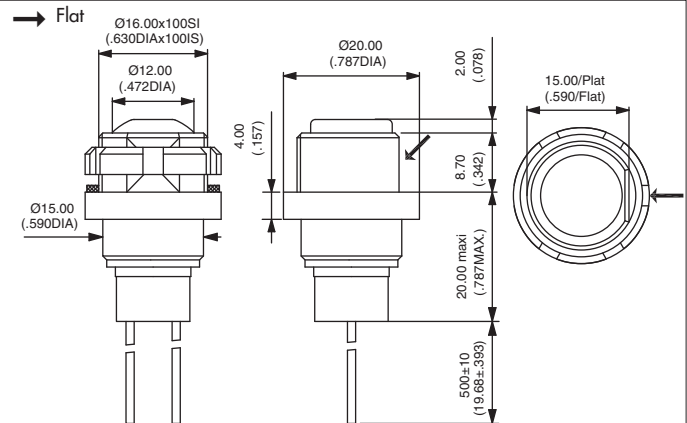


Curved actuator
IZPR1F4

ON - OFF

Flat actuator
IZPP1F4

ON - OFF

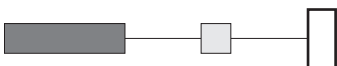


ACTUATOR COLOUR



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 COLOUR



2 : black (standard)
Other : on request.



Tel.: (+34) 902 450 160
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ermec@ermec.com
www.ermec.com

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, flying lead, straight PC, quick-connect, screw
- Screw versions withstanding up to 4A
- Electrical function : NO (2 terminals)



NO - Screw terminals



NO - Illuminated
Wire lead terminals



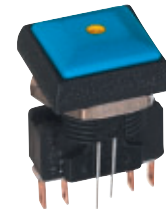
NO - Solder lug
terminals

Microswitch versions

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



NC+NO - 3 terminals



NC/NO - 4 terminals - Illuminated

Optional marking

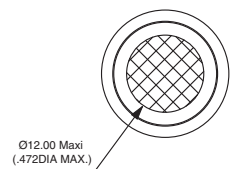
Actuator marking is available on request for models with flat round actuator.



Standard version

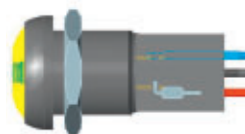


Microswitch version



Integrated resistor

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



IR series

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

Distinctive features and specifications



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

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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
- Operating temperature : -40°C to +85°C

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

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.

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

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

GENERAL SPECIFICATIONS

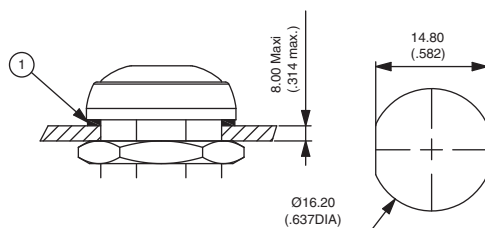
- Panel thickness : 8 mm (.314) max.
- Total travel : 1,6 mm (.062) +/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 0,8 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

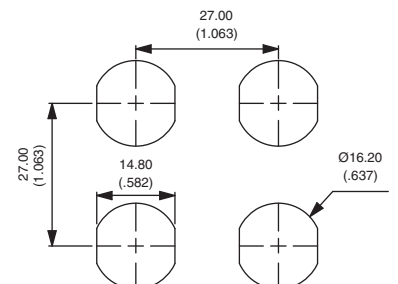
- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts :
 - 4 : silver, gold plated
 - 2 : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

PANEL CUT-OUT

① Flat seal



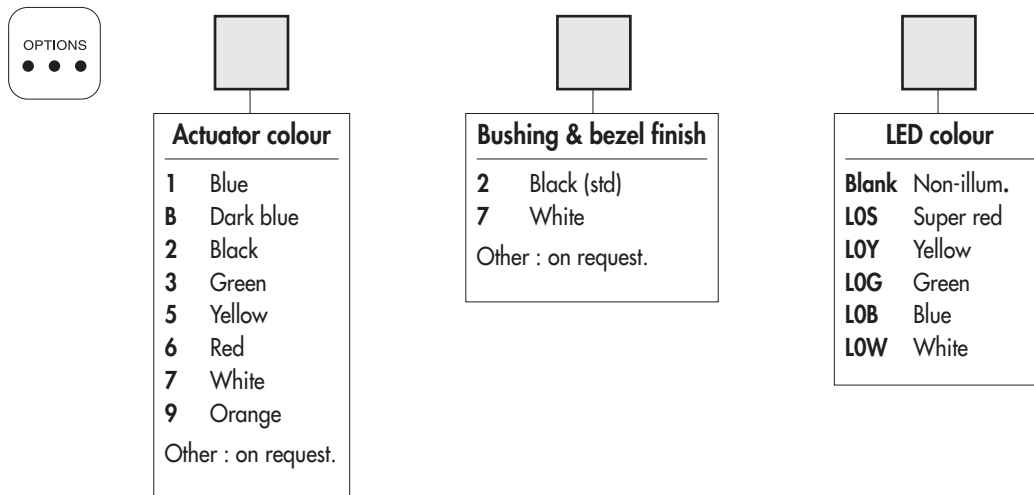
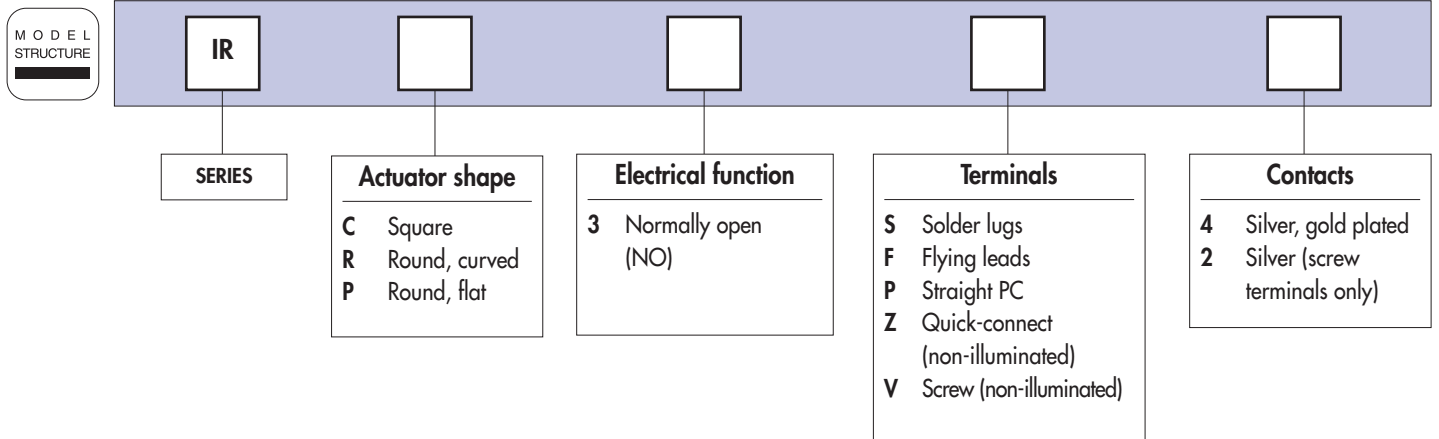
MATRIX MOUNTING



IR series

Sealed pushbutton switches - bushing Ø 16 mm - momentary - 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



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 flying lead models - 40 pieces for other models



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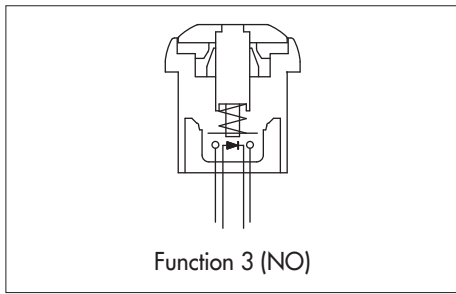
ermec@ermec.com

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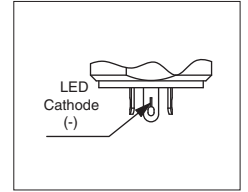
IR series

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

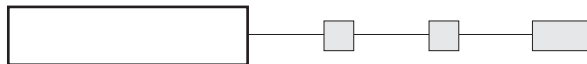
Round - illuminated



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



MODEL STRUCTURE



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

Solder lug terminals

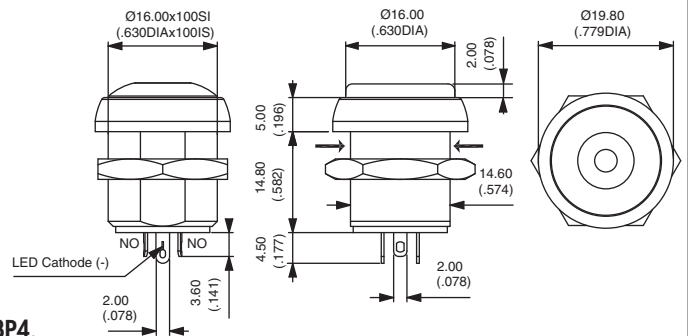
→ Flat



Curved actuator
IRR3S4 Normally Open

Flat actuator
IRP3S4 Normally Open

Also available with straight PC terminals : **IR•3P4**.
LED colour is indicated by the bottom of the switch.



Sealed flying lead terminals

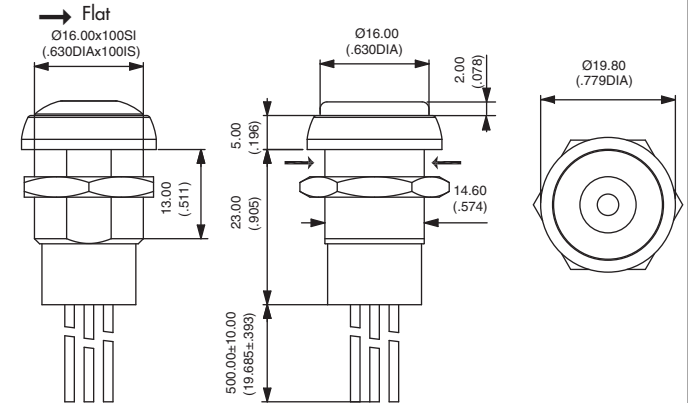
→ Flat



Curved actuator
IRR3F4 Normally Open

Flat actuator
IRP3F4 Normally Open

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

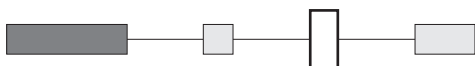


ACTUATOR COLOUR



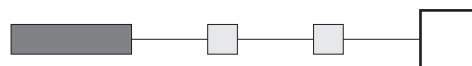
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR

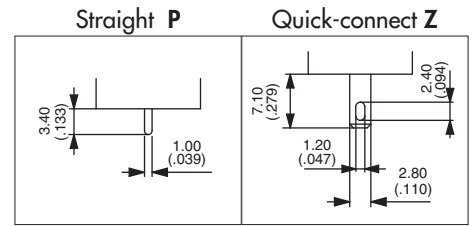
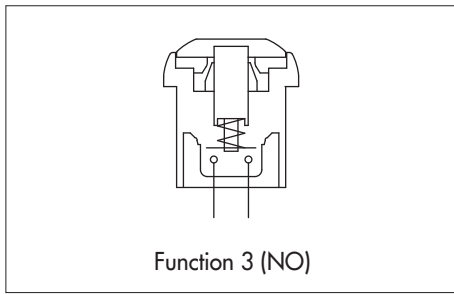


LOS : super red - LOY : yellow - LOG : green - LOB : blue
LOW : white

IR series

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

Round - non-illuminated



MODEL STRUCTURE



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

Solder lug terminals - gold plated contacts



Curved actuator
IRR3S4

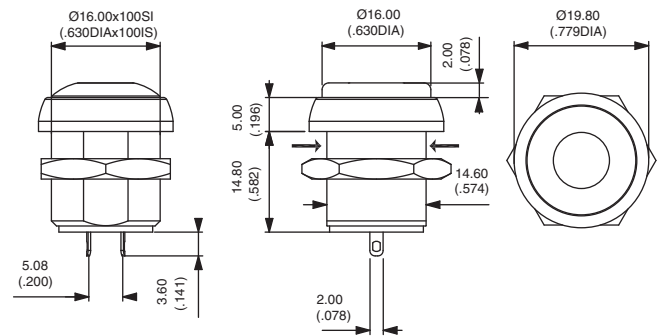


Flat actuator
IRP3S4



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

→ Flat



Sealed flying lead terminals - gold plated contacts



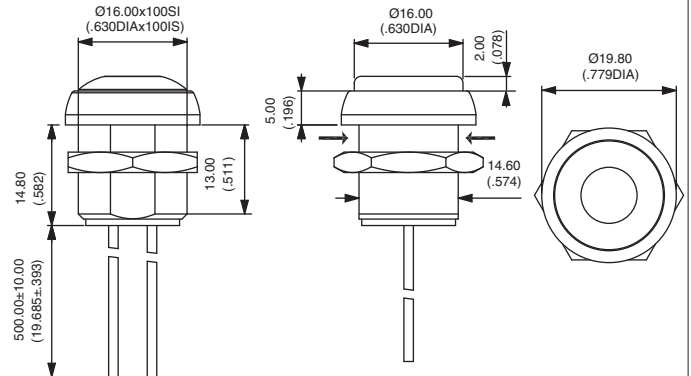
Curved actuator
IRR3F4



Flat actuator
IRP3F4



→ Flat



Screw terminals - silver contacts



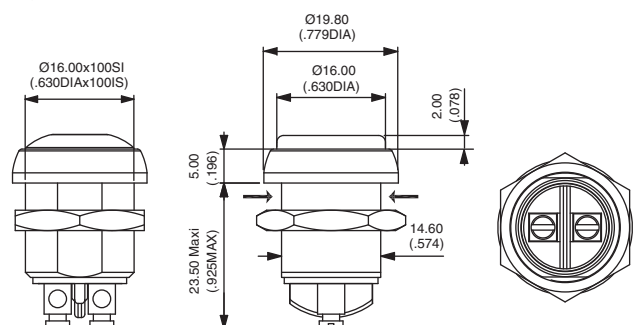
Curved actuator
IRR3V2



Flat actuator
IRP3V2



→ Flat

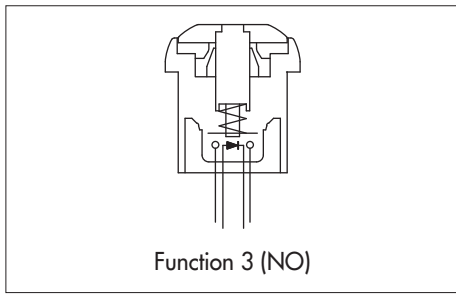


Actuator colour and bushing/bezel finish : select the desired codes on previous page.

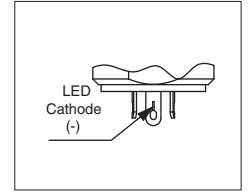
IR series

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

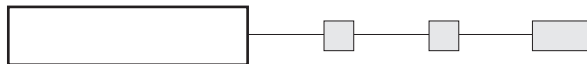
Square - illuminated



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



MODEL
STRUCTURE



Solder lug terminals

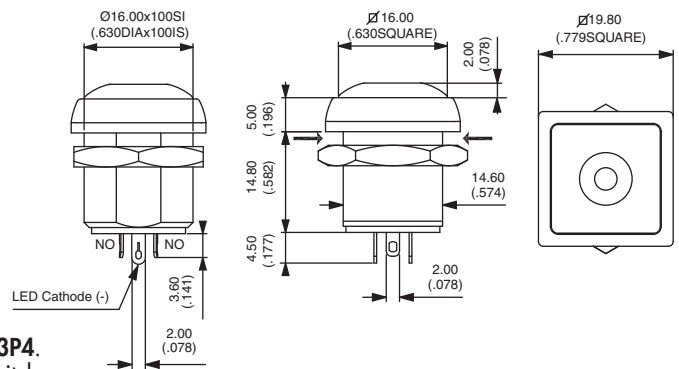


IRC3S4



Also available with straight PC terminals : **IRC3P4**.
LED colour is indicated by the bottom of the switch.

→ Flat



Sealed flying lead terminals

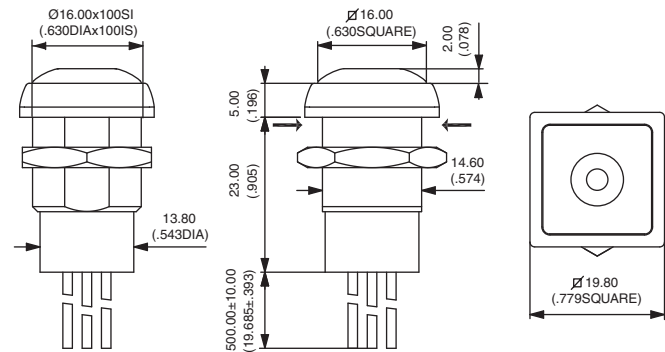


IRC3F4



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

→ Flat

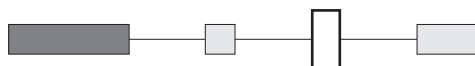


ACTUATOR COLOUR



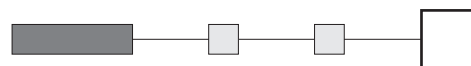
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR

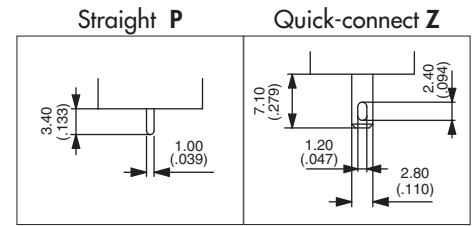
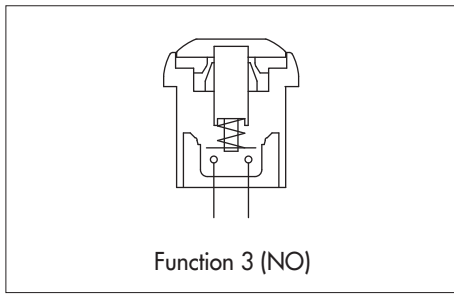


LOS : super red - LOY : yellow - LOG : green - LOB : blue
LOW : white

IR series

Sealed pushbutton switches - bushing \varnothing 16 mm - momentary - standard version

Square - non-illuminated



MODEL
STRUCTURE



Solder lug terminals - gold plated contacts

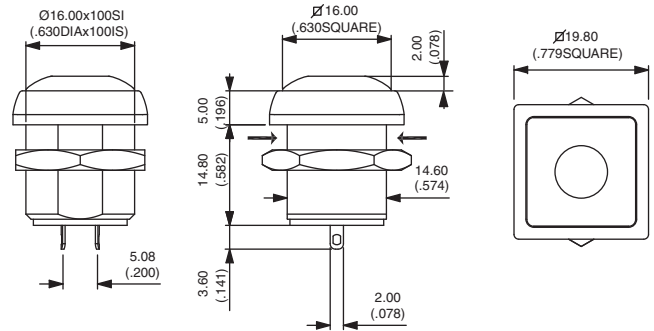


IRC3S4



Normally Open

→ Flat



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

Sealed flying lead terminals - gold plated contacts

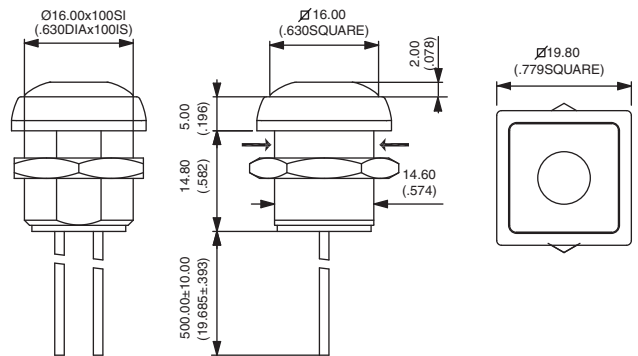


IRC3F4



Normally Open

→ Flat



Screw terminals - silver contacts

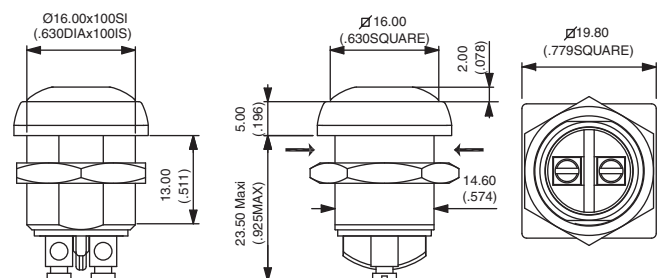


IRC3V2



Normally Open

→ Flat

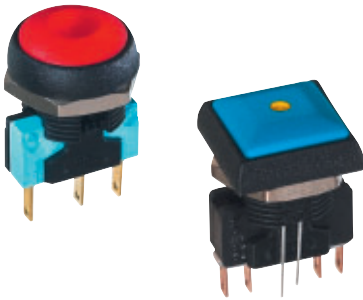


Actuator colour and bushing/bezel finish : select the desired codes on previous page.

IR series

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

Distinctive features and specifications



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

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -20°C to +85°C

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

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

GENERAL SPECIFICATIONS

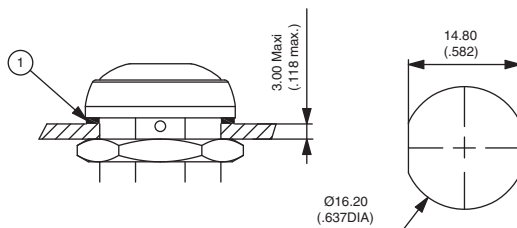
- Panel thickness : 3 mm (.118) max.
- Total travel : 1,6 mm (.062) +/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Torque : 0,8 Nm max. applied to nut
- Soldering : 320°C max. for 3 sec.

MATERIALS

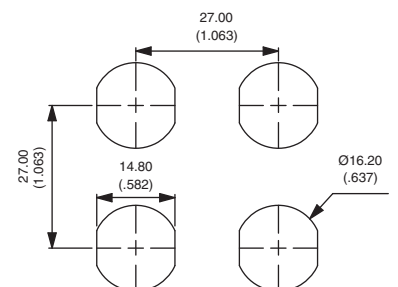
- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts : silver
- Lens : polycarbonate

PANEL CUT-OUT

① Flat seal



MATRIX MOUNTING



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Fax: (+34) 902 433 088

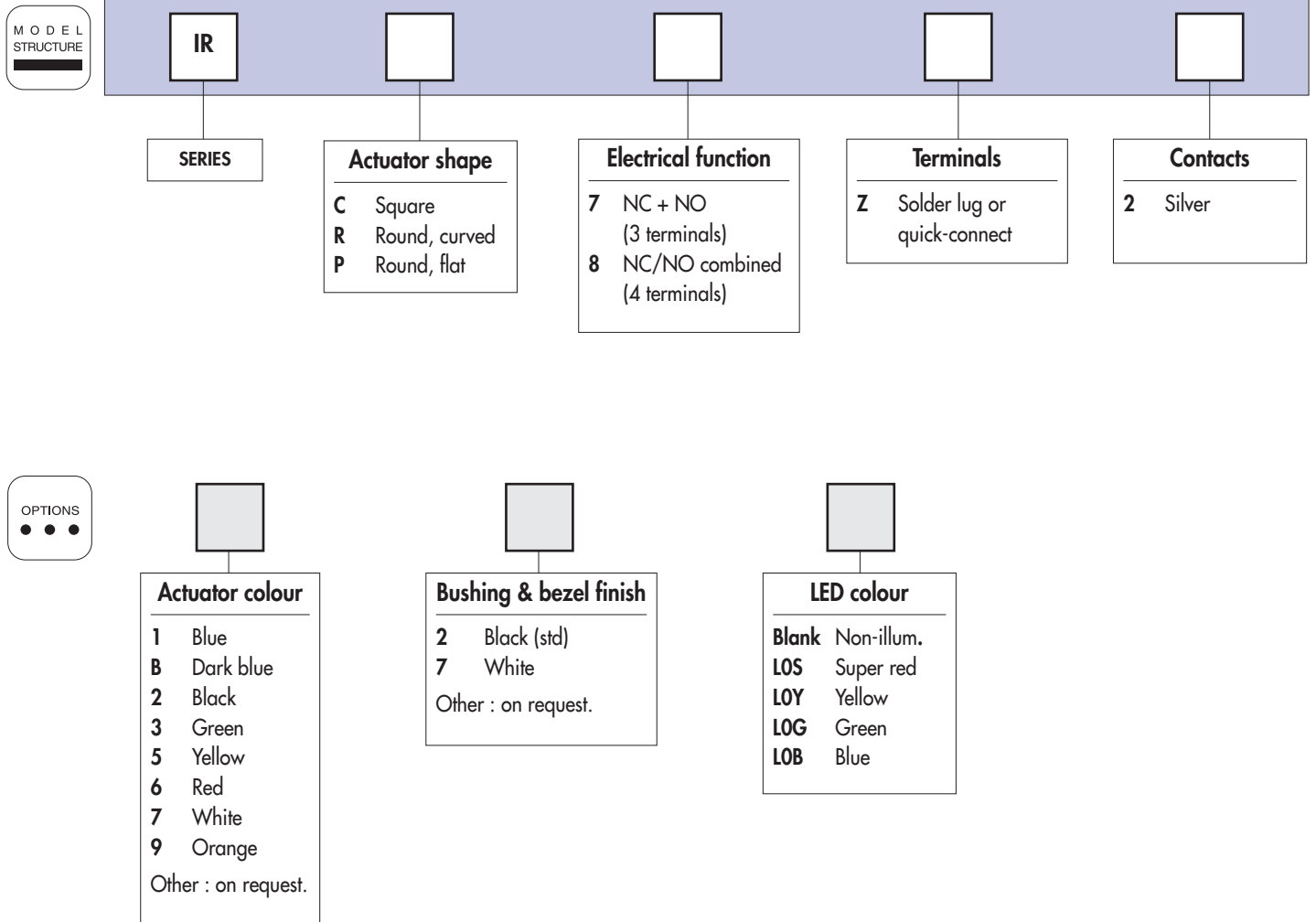
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www.ermec.com

IR series

Sealed pushbutton switches - bushing \varnothing 16 mm - momentary - 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



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 flying lead models - 40 pieces for other models



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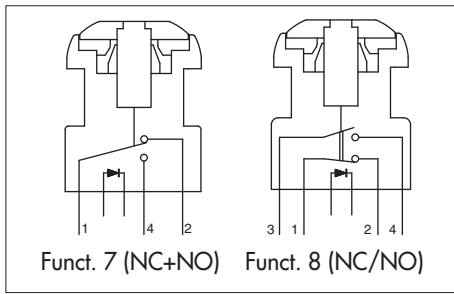
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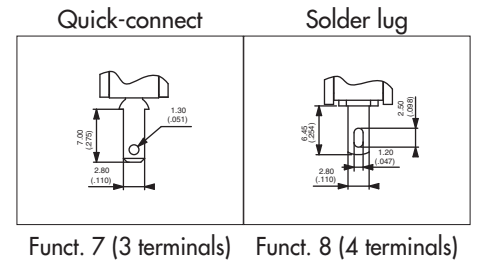
IR series

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

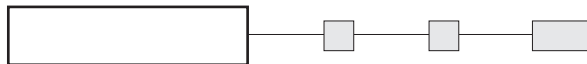
Round - illuminated



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



MODEL STRUCTURE

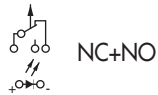


Actuator marking available on IRP models (symbol 12 mm max.). On request.

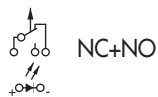
Quick-connect terminals - NC+NO - 3 terminals



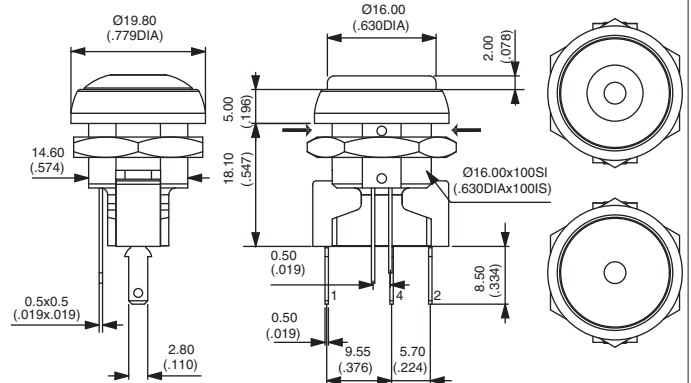
Curved actuator
IRR7Z2



Flat actuator
IRP7Z2



→ Flat



Solder lug terminals - NC/NO - 4 terminals



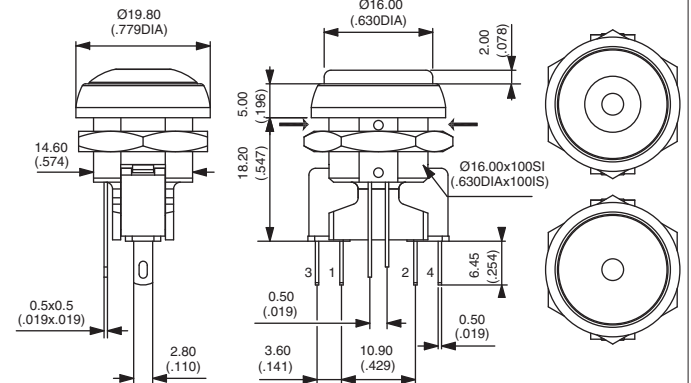
Curved actuator
IRR8Z2



Flat actuator
IRP8Z2



→ Flat



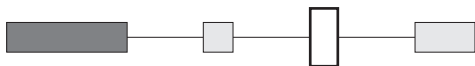
Terminals should be used as solder lugs only.

ACTUATOR COLOUR



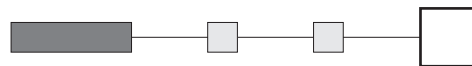
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR

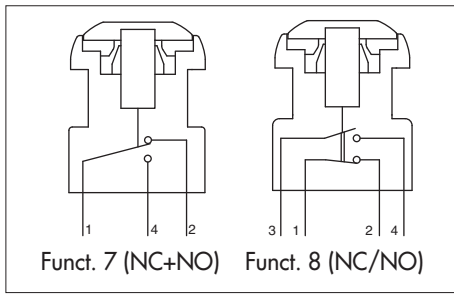


LOS : super red - LOY : yellow - LOG : green - LOB : blue

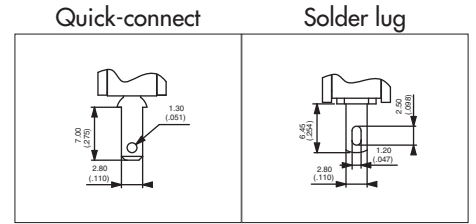
IR series

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

Round - non-illuminated

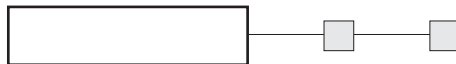


• Silver contacts



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

MODEL
STRUCTURE



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

Quick-connect terminals - NC+NO - 3 terminals



Curved actuator
IRR7Z2



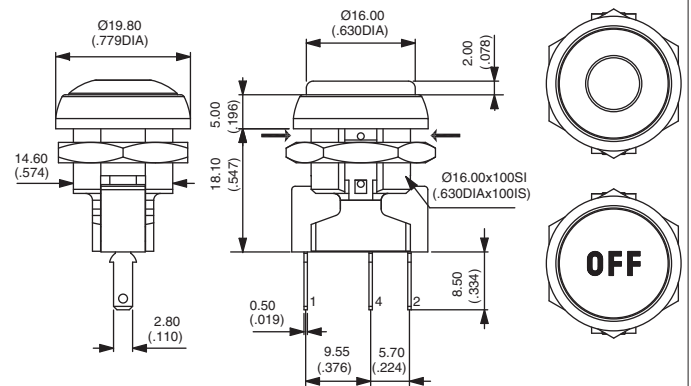
NC+NO

Flat actuator
IRP7Z2



NC+NO

→ Flat



Solder lug terminals - NC/NO - 4 terminals



Curved actuator
IRR8Z2



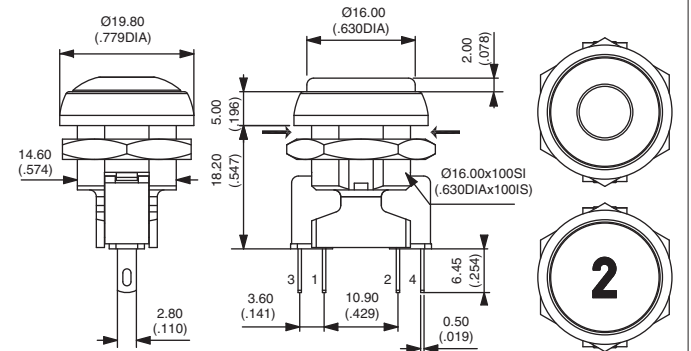
NC/NO combined

Flat actuator
IRP8Z2



NC/NO combined

→ Flat



Terminals should be used as solder lugs only.

ACTUATOR COLOUR



1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

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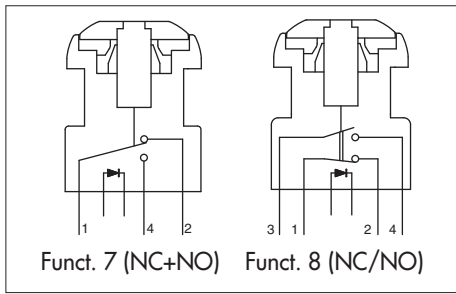
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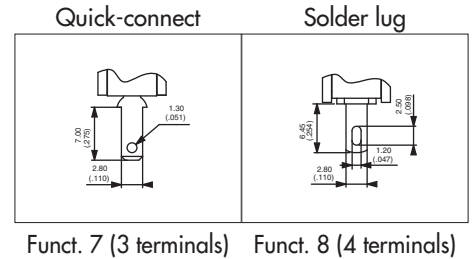
IR series

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

Square - illuminated



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



MODEL STRUCTURE



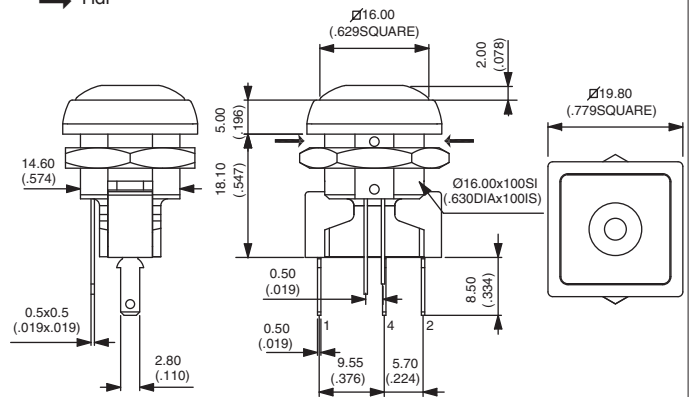
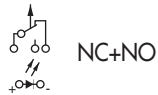
Funct. 7 (3 terminals) Funct. 8 (4 terminals)

Quick-connect terminals - NC+NO - 3 terminals

→ Flat



IRC7Z2

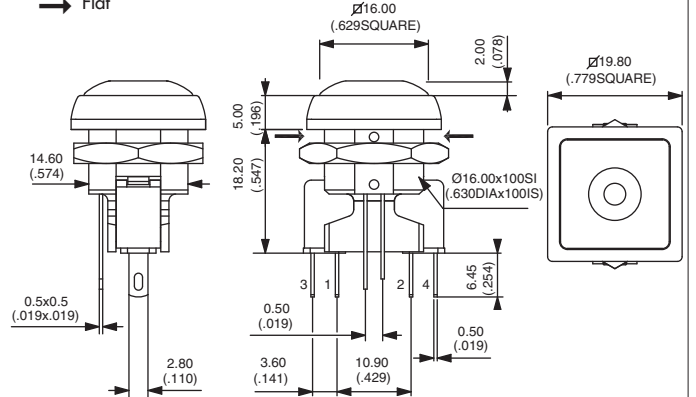


Solder lug terminals - NC/NO - 4 terminals

→ Flat



IRC8Z2



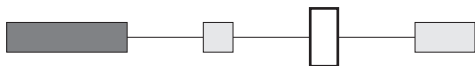
Terminals should be used as solder lugs only.

ACTUATOR COLOUR



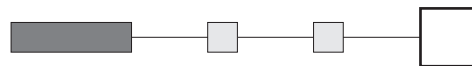
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white

LED COLOUR

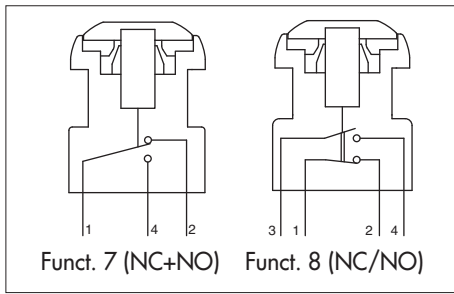


LOS : super red - LOY : yellow - LOG : green - LOB : blue

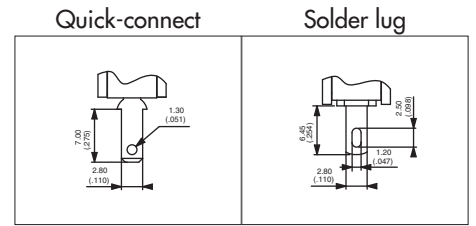
IR series

Sealed pushbutton switches - bushing \varnothing 16 mm - momentary - microswitch version

Square - non-illuminated

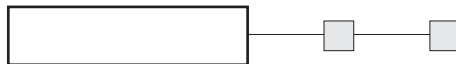


• Silver contacts



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

MODEL
STRUCTURE



Quick-connect terminals - NC+NO - 3 terminals

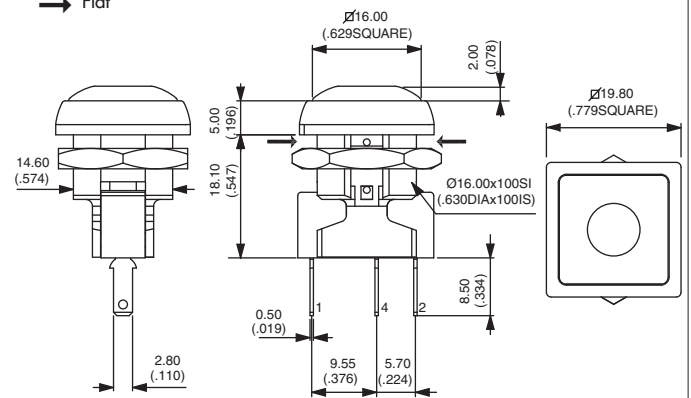


IRC7Z2



NC+NO

→ Flat



Solder lug terminals - NC/NO - 4 terminals

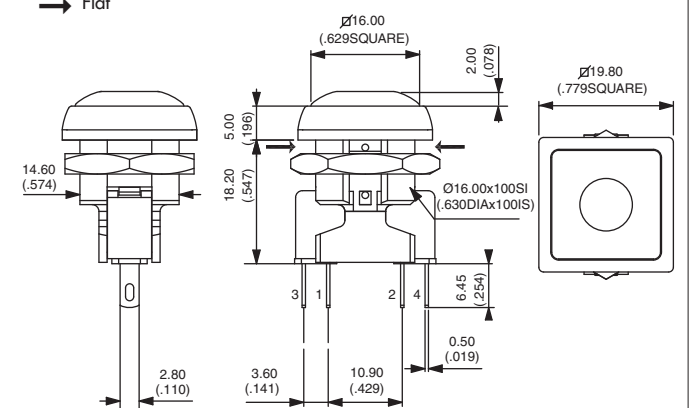


IRC8Z2



NC/NO combined

→ Flat



Terminals should be used as solder lugs only.

ACTUATOR COLOUR



1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 9 : orange

BUSHING AND BEZEL FINISH



2 : black (standard) - 7 : white



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- Latching action models
- Sealed to IP67
- Illuminated or non-illuminated
- Flat round actuator for optional marking

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing : IP67 according to IEC 60529
- 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
- Operating temperature : -40°C to +85°C

GENERAL SPECIFICATIONS

- Panel thickness : 8 mm (.314) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 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 : 100mA 24VDC - 200.000 cycles
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1 GΩ min. at 500VDC
- Dielectric strength : 1.500 Vrms between terminals

LED COMPONENT SPECIFICATIONS

LED colour	Forward current	Typ. forward voltage	Max. forward voltage
Super red (LOS)	20mA	1,95V	1,95V
Yellow (LOY)	20mA	2V	2,05V
Green (LOG)	20mA	3,2V	3,70V
Blue (LOB)	20mA	3,2V	4V

A resistor must be series-connected by the user.

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

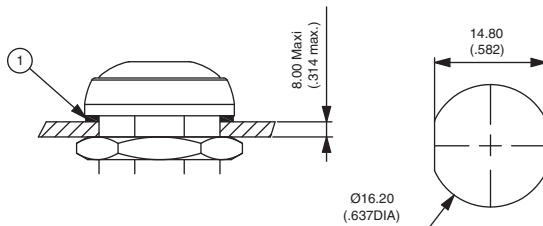
On flying lead versions, the LED resistor can be integrated by APEM on request.

MATERIALS

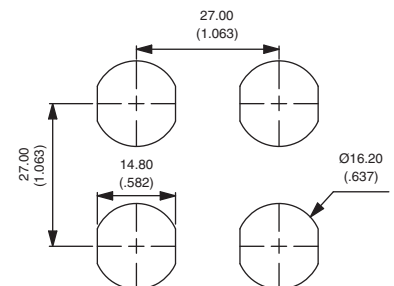
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

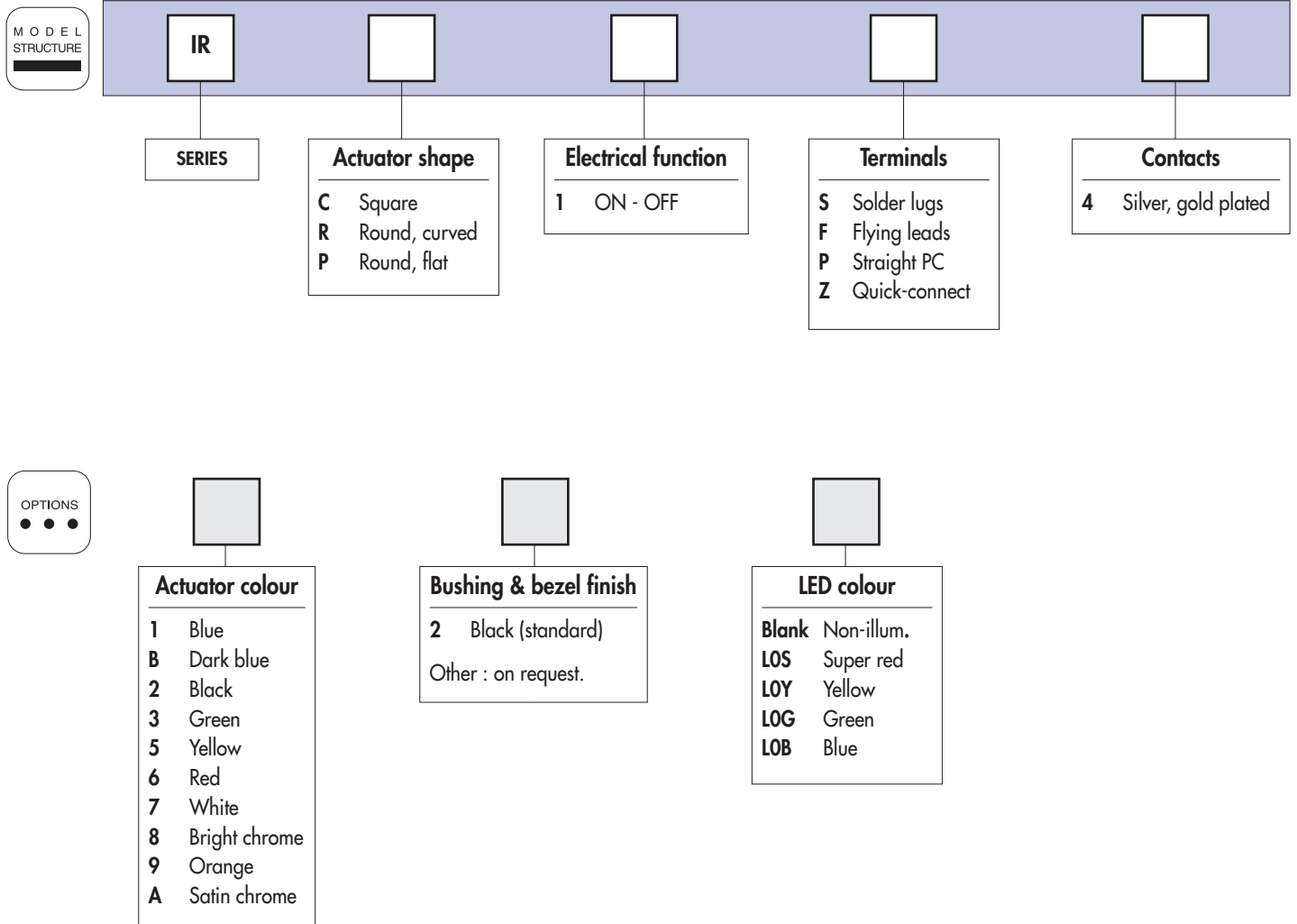
PANEL CUT-OUT

① Flat seal



MATRIX MOUNTING





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 flying lead models - 40 pieces for other models

IR series

Sealed pushbutton switches - bushing Ø 16 mm - latching

Round - illuminated



www.ermec.com

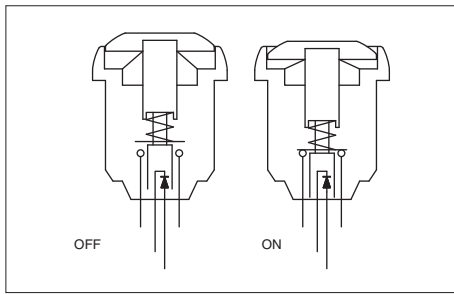
Distribución de componentes eléctricos y electrónicos

Tel.: (+34) 902 450 160

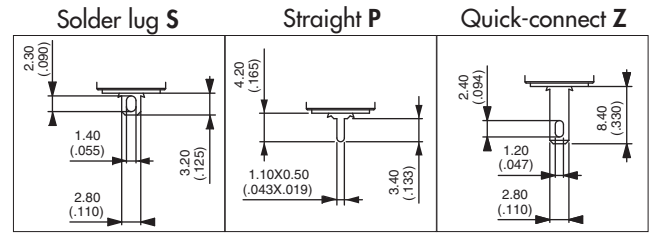
Fax: (+34) 902 433 088

ermec@ermec.com

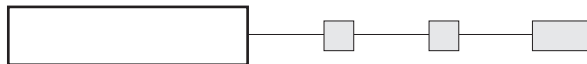
www.ermec.com



- Four 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



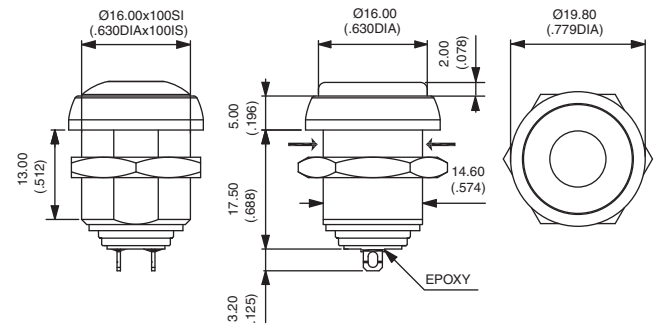
Curved actuator
IRR1S4

OFF - ON

Flat actuator
IRP1S4

OFF - ON

→ Flat



Also available with straight PC terminals : **IR•1P4**
& quick-connect terminals : **IR•1Z4**.

Sealed flying lead terminals



Curved actuator
IRR1F4

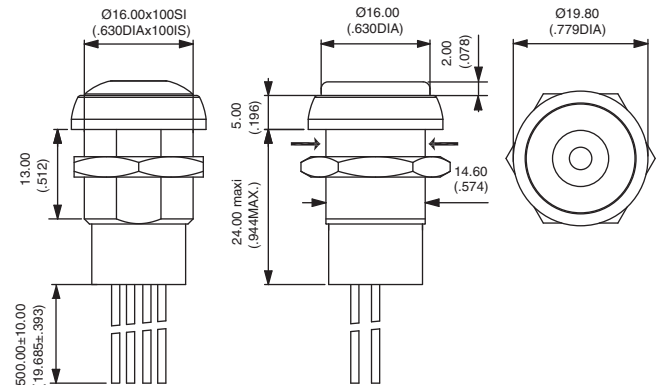
OFF - ON

Flat actuator
IRP1F4

OFF - ON

Wire colours : black : contact,
red : LED anode (+), blue : LED cathode (-)

→ Flat

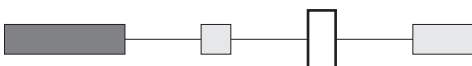


ACTUATOR COLOUR



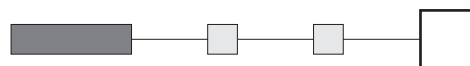
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL FINISH



2 : black (standard)

LED COLOUR

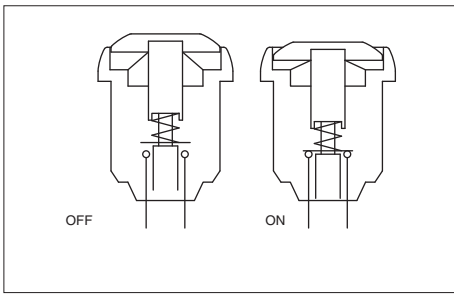


LOS : super red - LOY : yellow - LOG : green - LOB : blue

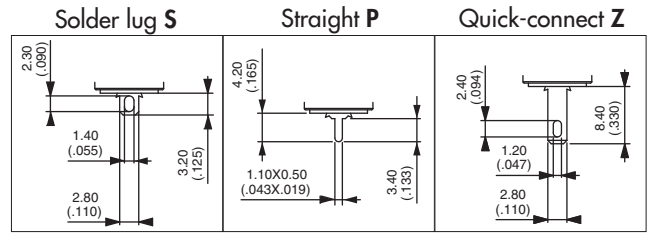
IR series

Sealed pushbutton switches - bushing Ø 16 mm - latching

Round - non-illuminated



- Gold plated contacts



MODEL STRUCTURE



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

Solder lug terminals



Curved actuator
IRR1S4

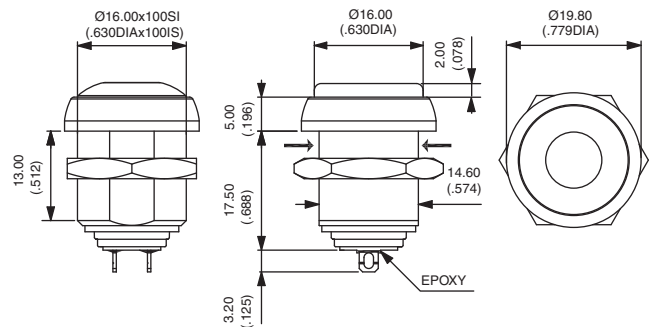
OFF - ON

Flat actuator
IRP1S4

OFF - ON

Also available with straight PC terminals : **IR•1P4**
& quick-connect terminals : **IR•1Z4**.

→ Flat



Sealed flying lead terminals



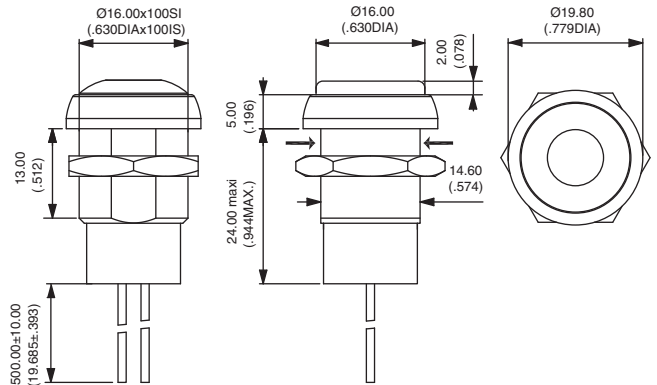
Curved actuator
IRR1F4

OFF - ON

Flat actuator
IRP1F4

OFF - ON

→ Flat



ACTUATOR 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)



Distribución de componentes eléctricos y electrónicos

Tel.: (+34) 902 450 160

Fax: (+34) 902 433 088

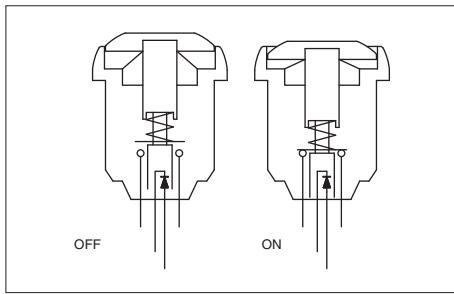
ermec@ermec.com

www.ermec.com

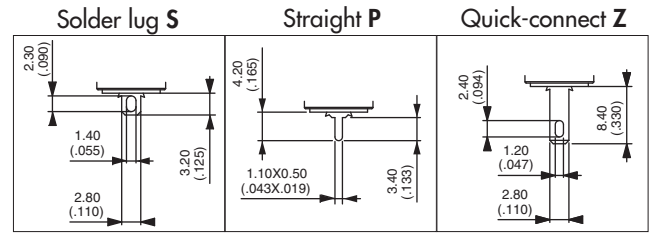
IR series

Sealed pushbutton switches - bushing Ø 16 mm - latching

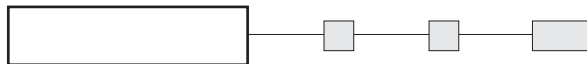
Square - illuminated



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



MODEL STRUCTURE



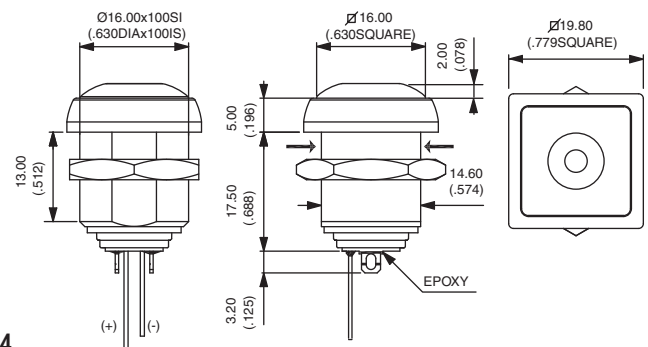
Solder lug terminals



Curved actuator
IRC154

OFF - ON

→ Flat



Also available with straight PC terminals : **IRC1P4**
& quick-connect terminals : **IRC1Z4**.

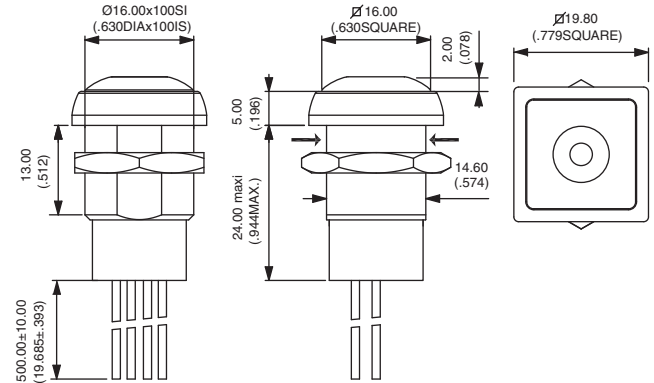
Sealed flying lead terminals



Curved actuator
IRC1F4

OFF - ON

→ Flat



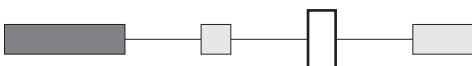
Wire colours : black : contact,
red : LED anode(+), blue : LED cathode (-)

ACTUATOR COLOUR



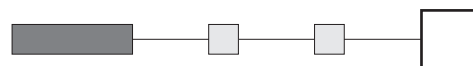
1 : blue - B : dark blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7 : white - 8 : bright chrome - 9 : orange
A : satin chrome

BUSHING AND BEZEL FINISH

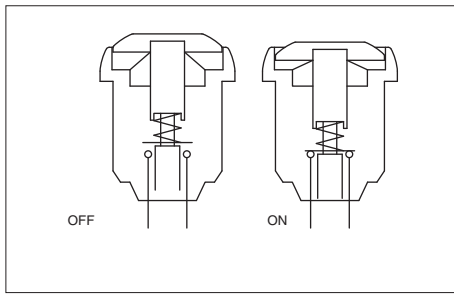


2 : black (standard)

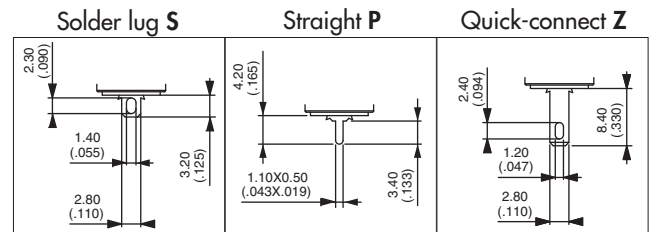
LED COLOUR



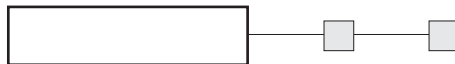
LOS : super red - LOY : yellow - LOG : green - LOB : blue



- Gold plated contacts



MODEL STRUCTURE



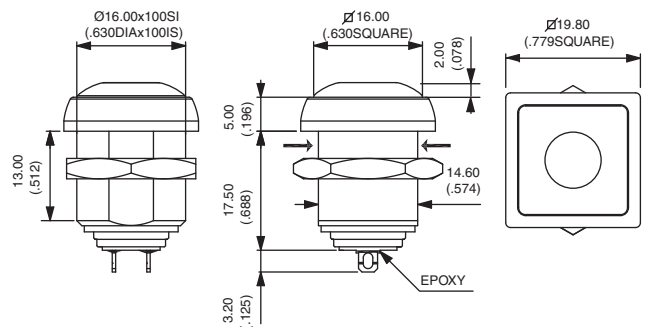
Solder lug terminals



Curved actuator
IRC154

OFF - ON

→ Flat



Also available with straight PC terminals : **IRC1P4**
& quick-connect terminals : **IRC1Z4**.

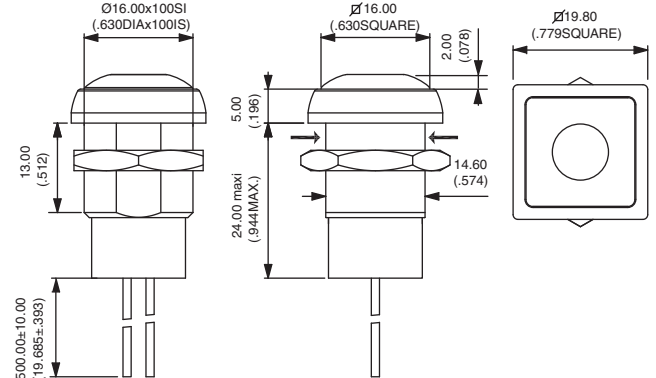
Sealed flying lead terminals



Curved actuator
IRC1F4

OFF - ON

→ Flat



ACTUATOR 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)

IA series

Low profile pushbutton switches for harsh environments - bushing Ø 16 mm - momentary

Distinctive features - Specifications - Overview



- Resistant to frost, sand and hydrocarbons
- Tactile feedback
- Front panel sealed to IP67

ENVIRONMENTAL SPECIFICATIONS

- Front panel sealing (see drawing opposite) : IP67
- Salt spray : IEC 512-6, test 11f
- Operating temperature : -20°C to +65°C

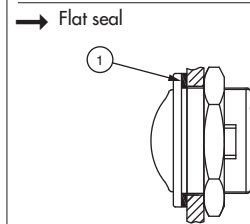
ELECTRICAL AND GENERAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 24VDC
- Initial contact resistance : 100mΩ max.
- Insulation resistance : 100 MΩ min. at 500VDC
- Dielectric strength : 500 Vrms
- Electrical life at full load : 1.000.000 cycles
- Panel thickness : 7 mm (.276) max.
- Total travel : 1,5 mm (.059) +/- 0,3 mm
- Typical operating force : 7N +/- 2N
- Mechanical life : 1.000.000 cycles
- **Torque : 0,5 to 1Nm max. applied to nut**

MATERIALS

- Case/bushing : thermoplastic
- Actuator : polyurethane
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm².
- Terminal seal : epoxy

PANEL MOUNTING



IA							
SERIES	Actuator shape	Electrical function	Terminals	Contacts	Acuator colours	Case colour	
	R round	3 Normally open (NO) 5 NC/NO combined	F Flying leads	1 Silver, gold plated	1 Blue 2 Black 3 Green 5 Yellow 6 Red 7/1 White 9 Orange	00 Black	

Dimensions : First dimensions are in mm while inches are shown as bracketed numbers.



A **sealing boot** is available to protect the switches against frost and sand. See end of this catalogue.



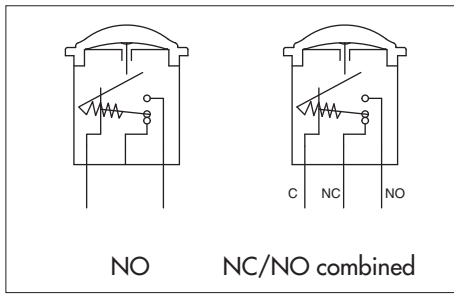
Mounting accessories : Standard hardware supplied : 1 hex nut 19 mm (.748) across flats and 1 flat seal. Knurled nut U3327 available on request.



Packaging unit : 25 pieces

IA series

Low profile pushbutton switches for harsh environments - bushing Ø 16 mm - momentary



- Panel cut-out Ø 16,2 mm (.657)
- Min. pitch for matrix mounting :
 - with standard hex nut : 27 x 27 mm (1.062 x 1.062)
 - with knurled nut U3327: 20 x 20 mm (.787x.787)

MODEL STRUCTURE



NO model has 2 terminals only.

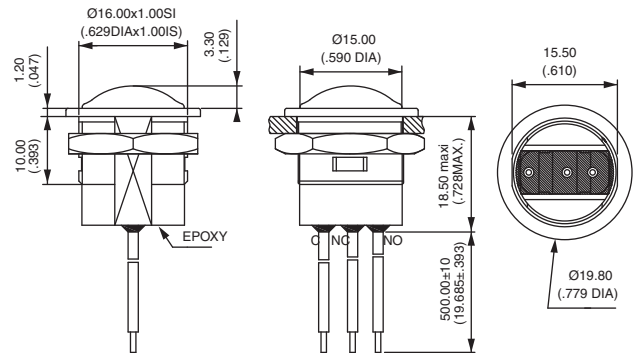
Models



Normally open (NO)
IAR3F



NC/NO combined
IAR5F



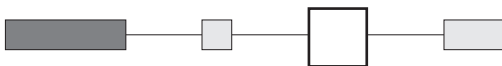
Wire colours (NC/NO) : black = common, brown = NC, blue = NO

CONTACT MATERIAL



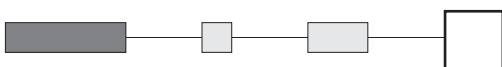
1 Silver, gold plated

ACTUATOR COLOUR



1 : blue - 2 : black - 3 : green - 5 : yellow - 6 : red - 7/1 : white - 9 : orange

CASE COLOUR



00 : black



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Degree of protection provided by the enclosures of electric appliances according to IEC 60529, DIN 40050 and NFC 20-010.

SEALING IP67

IP

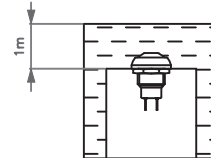
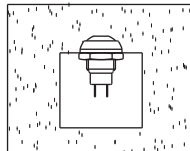
(Ingress Protection)

6

Totally protected against dust

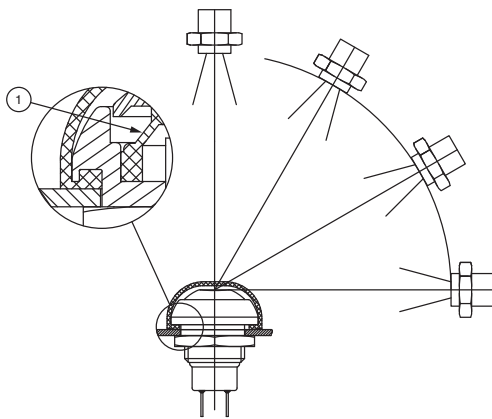
7

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



The illustrations show non-illuminated models.

SEALING IP69K



High pressure, high temperature wash down

IP69K test conditions

- . Pressure : 80 - 120 bars
- . Distance : 15 cm
- . Temperature : 80°C ± 5°C
- . Flow : 14 - 16 l/mn
- . Duration : 30 seconds per position

① Elastomeric membrane

ADDITIONAL SEALING FOR IP-IB-IS SERIES

For ROUND plungers only, illuminated or non-illuminated.

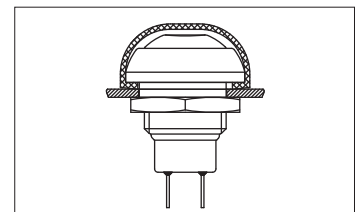
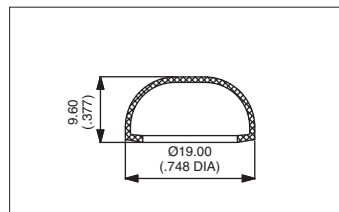
By silicone boot for protection against frost and abrasion by sand. Order separately.

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

Operating temperature : -40°C to +85°C

Life expectancy : 500.000 cycles

Note : the flat seal should not be used in this case.



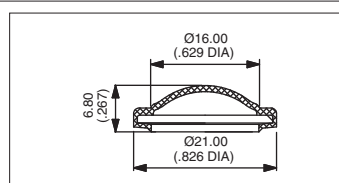
ADDITIONAL SEALING FOR IA SERIES

By silicone boot. Order separately.

- Black : **U6602**
- Yellow : **U6605**
- Red : **U6606**

Operating temperature : -40°C to +85°C

Life expectancy : 1.000.000 cycles



APEM, a world of switching capabilities

The APEM group is one of the world's largest manufacturers of switches, LED indicators, joysticks and switch panels.

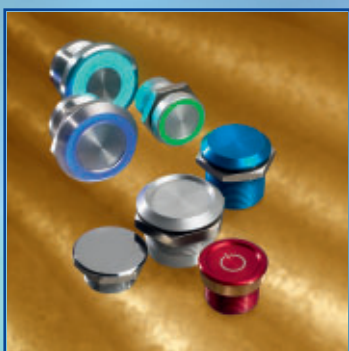
APEM manufactures switch products for multiple industrial markets including: instrumentation, medical, security, communications, industrial automation, military and transport.

Other pushbutton switches



■ AV pushbutton switches

The AV series is a range of very robust pushbutton switches consisting of 2 families: anti-vandal and security pushbutton switches. This range features a large variety of models, with different bushing diameters, numerous materials and many electrical functions. Marking and illumination options are also available.

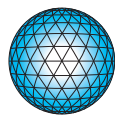


■ PBA piezo switches

PBA series piezo switches feature very long life expectancy, high performance sealing, easy to clean metal surface, ring or dot illumination and a large variety of shapes.

Applications for these products include medical, food-processing, home automation, car wash and mining.

APEM product ranges



APEM

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