# 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

# 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 (L0S) | 20mA | 2,1V | 2,3V |
| Yellow (L0Y) | 20mA | 2,1V | 2,3V |
| Green (L0G) | 20mA | 2,1V | 2,3V |
| Blue (L0B) | 20mA | 3,2V | 3,8V |
| White (L0W) | 20mA | 3,35V | 4,25V |

A resistor must be series-connected by the user.

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

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

### GENERAL SPECIFICATIONS

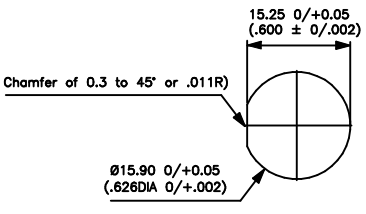
- Panel thickness :
  with flat seal : 2,20 mm (.088) max.
  without flat seal : 3 mm (.118) max.
- Total travel : 1,6 mm (.062) +/- 0,3 mm
- Typical operating force : 4N +/- 2N
- Mechanical life : 1.000.000 cycles
- Soldering : 320°C max. for 3 sec.

### MATERIALS

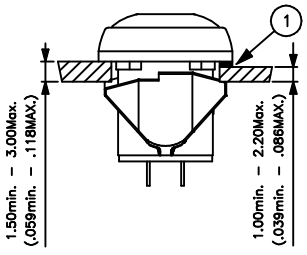
- Case : thermoplastic UL94-V0
- Actuator : polyamide 6/6
- Bushing/bezel : polyamide 6/6
- Contacts :
  **4** : silver, gold plated
  **2** : silver (screw terminals)
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

### MOUNTING

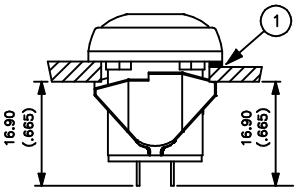
**Panel cut-out**



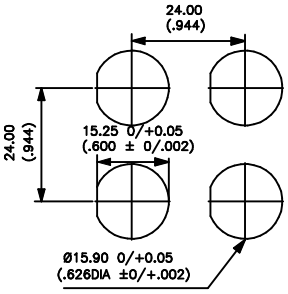

① Flat seal




**Back of panel space requirement**




**Matrix mounting**



# IQ series

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

*Overview*

MODEL STRUCTURE

IQ | [ ] | [ ] | [ ] | [ ]

**SERIES**

**Actuator shape**

- **C** Square
- **R** Round, curved
- **P** Round, flat

**Electrical function**

- **3** Normally open (NO)

**Terminals**

- **S** Solder lugs
- **F** Flying leads
- **P** Straight PC
- **Z** Quick-connect (non-illuminated)
- **V** Screw (non-illuminated)

**Contacts**

- **4** Silver, gold plated
- **2** Silver (screw terminals only)

OPTIONS

**Actuator colour**

- **1** Blue
- **2** Black
- **3** Green
- **5** Yellow
- **6** Red
- **7** White
- **9** Orange
- **A** Satin chrome
- **B** Dark blue

**Bushing & bezel finish**

- **2** Black (std)

Other : on request.

**LED colour**

- **Blank** Non-illum.
- **L0S** Super red
- **L0Y** Yellow
- **L0G** Green
- **L0B** Blue
- **L0W** White

**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.

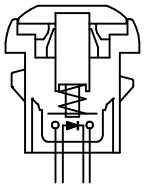
**Mounting accessories** : Standard hardware supplied : 1 flat seal

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

# IQ series

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

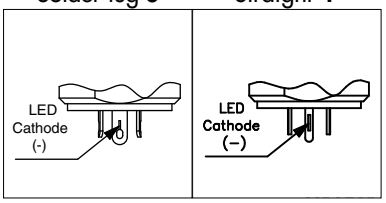
*Round - illuminated*



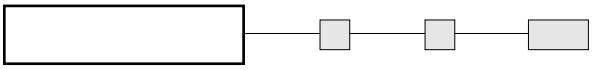
Function 3 (NO)

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

Solder lug **S** Straight **P**




**MODEL STRUCTURE**



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

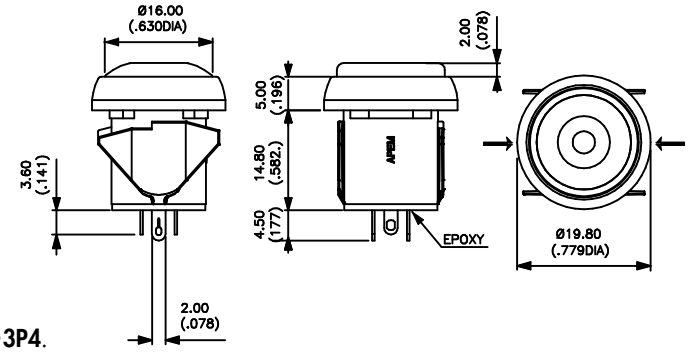
### Solder lug terminals

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.

→ Flat



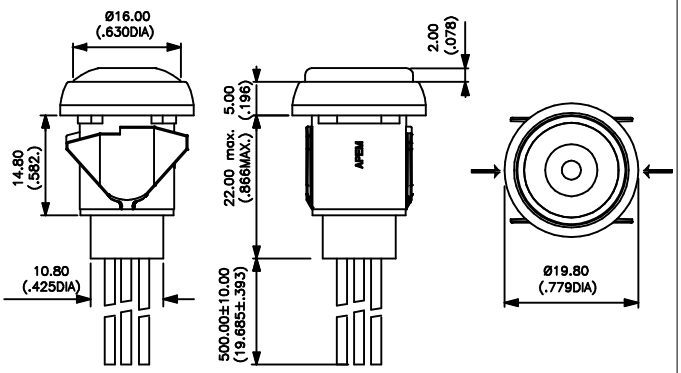

### Sealed flying lead terminals

Curved actuator **IQR3F4** Normally Open

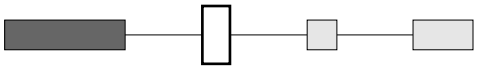
Flat actuator **IQP3F4** Normally Open

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

→ Flat

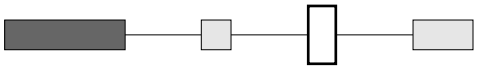



**ACTUATOR COLOUR**



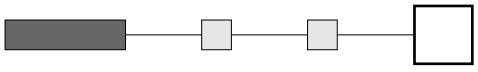
**1** : blue - **2** : black - **3** : green - **5** : yellow - **6** : red - **7** : white - **9** : orange - **A** : satin chrome - **B** : dark blue

**BUSHING AND BEZEL FINISH**

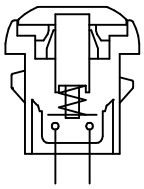


**2** : black (standard)

**LED COLOUR**



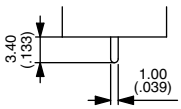
**L0S** : super red - **L0Y** : yellow - **L0G** : green - **L0B** : blue
**L0W** : white



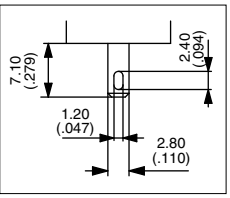
Function 3 (NO)

- Gold plated or silver contacts depending on terminal type

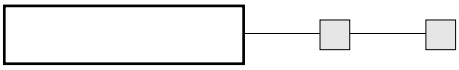
Straight **P**




Quick-connect **Z**




**MODEL STRUCTURE**



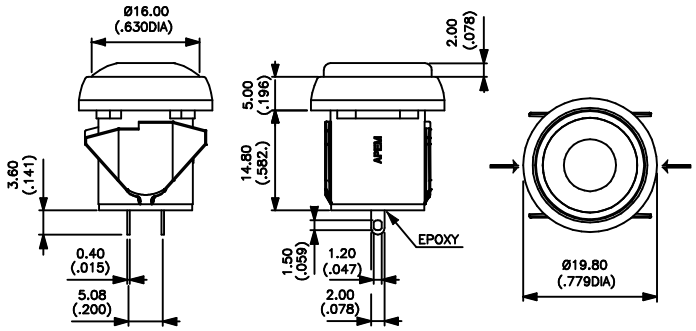
Actuator marking available on IQP models (symbol 12 mm max.). On request.

## Solder lug terminals - gold plated contacts

→ Flat

Curved actuator
**IQR3S4** Normally open

Flat actuator
**IQP3S4** Normally open



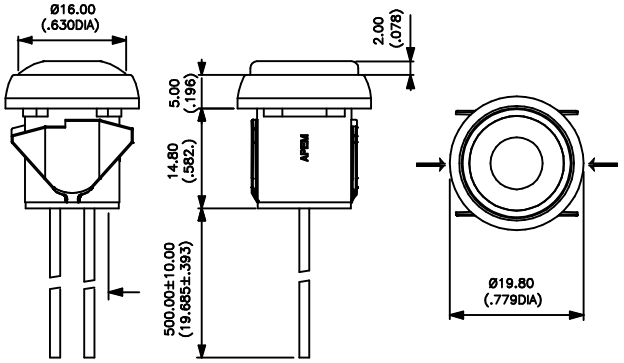

Also available with straight PC terminals : **IQ•3P4** and quick-connect terminals : **IQ•3Z4**.

## Sealed flying lead terminals - gold plated contacts

→ Flat

Curved actuator
**IQR3F4** Normally open

Flat actuator
**IQP3F4** Normally open

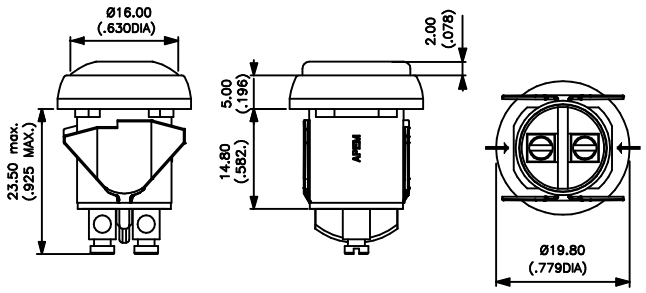



## Screw terminals - silver contacts

→ Flat

Curved actuator
**IQR3V2** Normally open

Flat actuator
**IQP3V2** Normally open

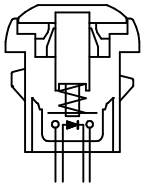



**Actuator colour and bushing/bezel finish** : select the desired codes on previous page.

# IQ series

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

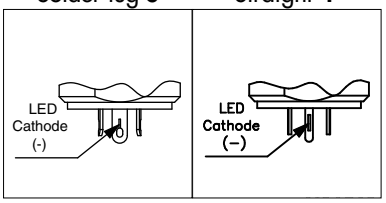
*Square - illuminated*



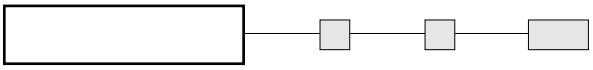
Function 3 (NO)

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

Solder lug **S** Straight **P**




**MODEL STRUCTURE**

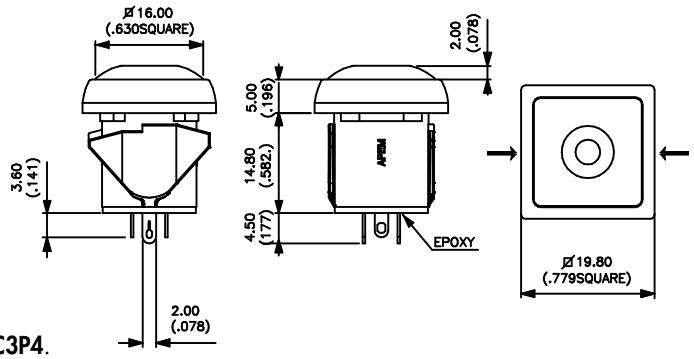


### Solder lug terminals

**IQC3S4**

Normally Open

→ Flat



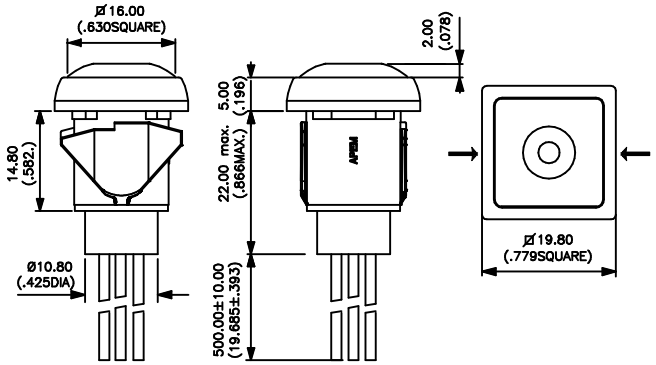

Also available with straight PC terminals : **IQC3P4**.
LED colour is indicated by the bottom of the switch.

### Sealed flying lead terminals

**IQC3F4**

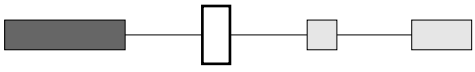
Normally Open

→ Flat



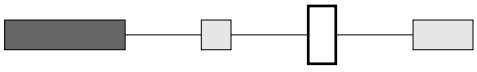

Wire colours : black : NO contact,
red : LED anode (+), blue : LED cathode (-)

### ACTUATOR COLOUR



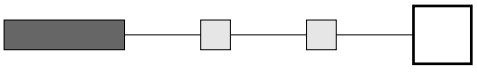
**1** : blue - **2** : black - **3** : green - **5** : yellow - **6** : red - **7** : white - **9** : orange - **A** : satin chrome - **B** : dark blue

### BUSHING AND BEZEL FINISH

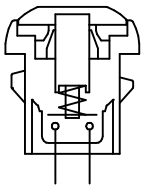


**2** : black (standard)

### LED COLOUR



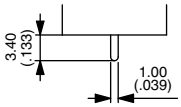
**L0S** : super red - **L0Y** : yellow - **L0G** : green - **L0B** : blue
**L0W** : white



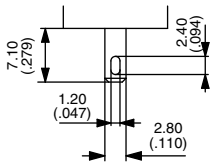
Function 3 (NO)

- Gold plated or silver contacts depending on terminal type

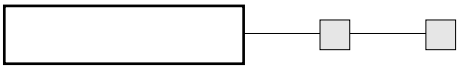
Straight **P**




Quick-connect **Z**



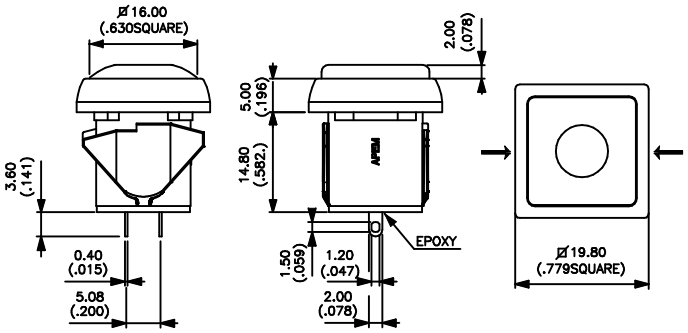

**MODEL STRUCTURE**



### Solder lug terminals - gold plated contacts

→ Flat

**IQC3S4** Normally Open

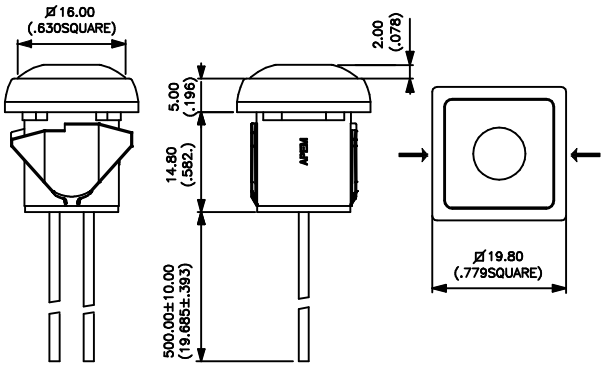



Also available with straight PC terminals : **IQC3P4** or quick-connect terminals : **IQC3Z4**.

### Sealed flying lead terminals - gold plated contacts

→ Flat

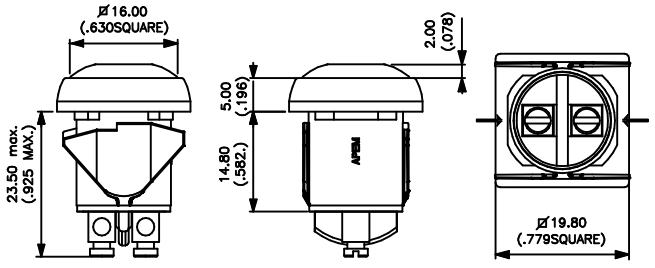
**IQC3F4** Normally Open




### Screw terminals - silver contacts

→ Flat

**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 (L0S) | 20mA | 1,95V | 1,95V |
| Yellow (L0Y) | 20mA | 2V | 2,05V |
| Green (L0G) | 20mA | 3,2V | 3,70V |
| Blue (L0B) | 20mA | 3,2V | 4V |

A resistor must be series-connected by the user.

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

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

### GENERAL SPECIFICATIONS

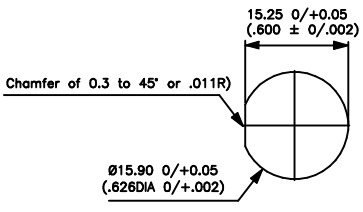
- **Panel thickness :**
  with flat seal : 2,20 mm (.088) max.
  without flat seal : 3 mm (.118) max.
- Total travel : 2,5 mm (.098) +/- 0,3 mm
- Typical operating force : 5N +/- 2N
- Mechanical life : 200.000 cycles
- Soldering : 320°C max. for 3 sec.

### MATERIALS

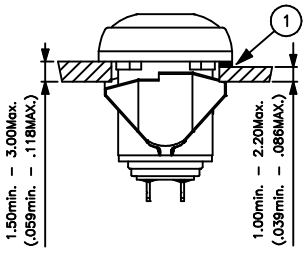
- Case : thermoplastic UL94-V0
- Plunger : polyamide
- Bushing/bezel : polyamide
- Contacts : silver, gold plated
- Multi-wire lead AWG20, section 0,6 mm²
- LED wire : AWG26, section 0,12 mm²
- Lens : polycarbonate
- Terminal seal : epoxy

### MOUNTING

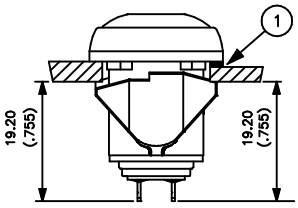
**Panel cut-out**



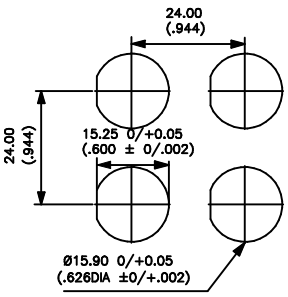

① Flat seal




**Back of panel space requirement**




**Matrix mounting**



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

*Overview*

MODEL STRUCTURE

IQ | ☐ | ☐ | ☐ | ☐

**SERIES**

**Actuator shape**

| | |
|---|---|
| **C** | Square |
| **R** | Round, curved |
| **P** | Round, flat |

**Electrical function**

| | |
|---|---|
| **1** | OFF - ON |

**Terminals**

| | |
|---|---|
| **S** | Solder lugs |
| **F** | Flying leads |
| **P** | Straight PC |
| **Z** | Quick-connect |

**Contacts**

| | |
|---|---|
| **4** | Silver, gold plated |

OPTIONS

**Actuator colour**

| | |
|---|---|
| **1** | Blue |
| **2** | Black |
| **3** | Green |
| **5** | Yellow |
| **6** | Red |
| **7** | White |
| **9** | Orange |
| **A** | Satin chrome |
| **B** | Dark blue |

**Bushing & bezel finish**

| | |
|---|---|
| **2** | Black (standard) |

Other : on request.

**LED colour**

| | |
|---|---|
| **Blank** | Non-illum. |
| **L0S** | Super red |
| **L0Y** | Yellow |
| **L0G** | Green |
| **L0B** | Blue |

**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.

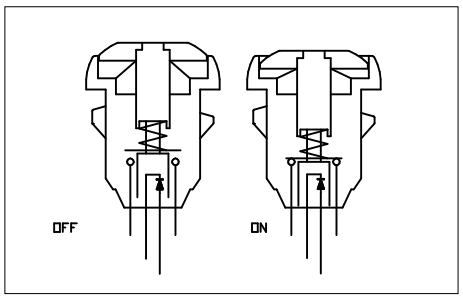
**Mounting accessories** : Standard hardware supplied : 1 flat seal

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

# IQ series

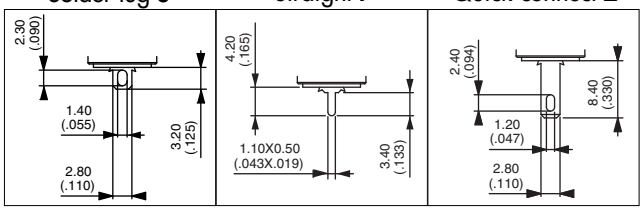
## Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - latching

*Round - illuminated*

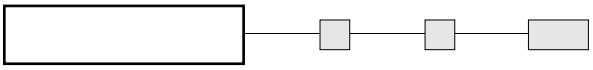



- Four LED colours
- Tin plated LED terminals
- Gold plated contacts

Solder lug **S** | Straight **P** | Quick-connect **Z**




**MODEL STRUCTURE**



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

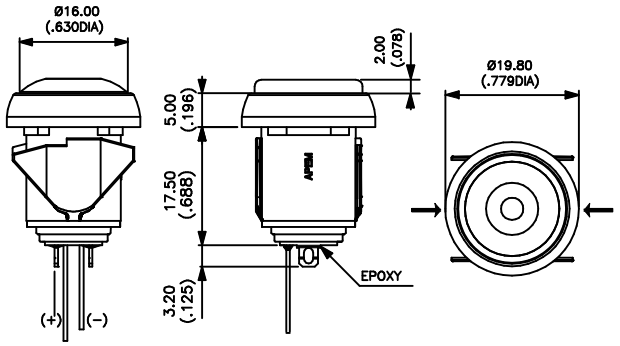
### Solder lug terminals

Curved actuator
**IQR1S4** OFF - ON

Flat actuator
**IQP1S4** OFF - ON

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

→ Flat



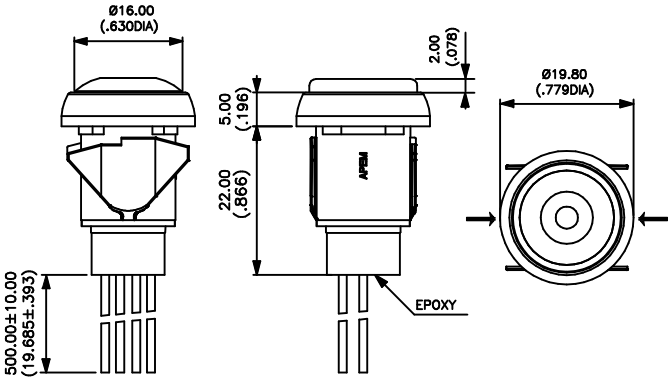

### Sealed flying lead terminals

Curved actuator
**IQR1F4** OFF - ON

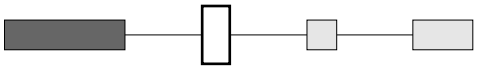
Flat actuator
**IQP1F4** OFF - ON

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

→ Flat

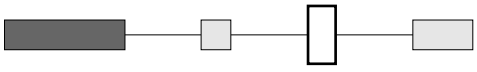



**ACTUATOR COLOUR**



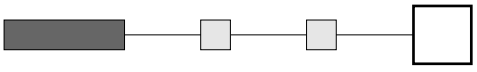
**1** : blue - **2** : black - **3** : green - **5** : yellow - **6** : red - **7** : white - **9** : orange - **A** : satin chrome - **B** : dark blue

**BUSHING AND BEZEL FINISH**

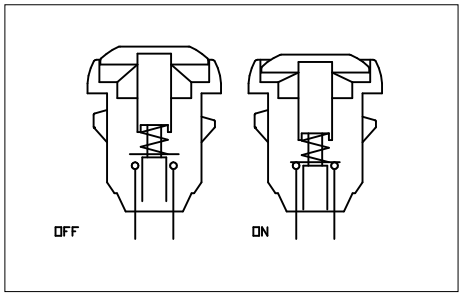


**2** : black (standard)

**LED COLOUR**

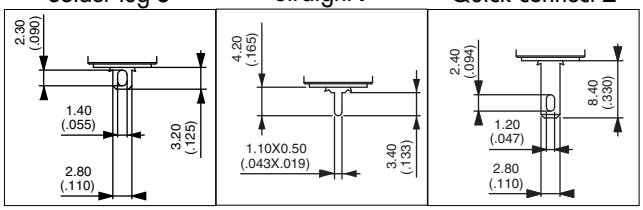


**L0S** : super red - **L0Y** : yellow - **L0G** : green - **L0B** : blue

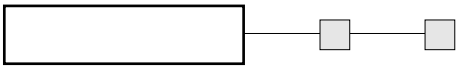



- Gold plated contacts

Solder lug **S** | Straight **P** | Quick-connect **Z**




**MODEL STRUCTURE**



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

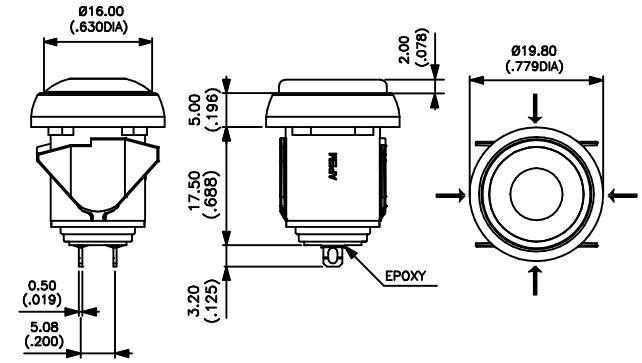
## Solder lug terminals

Curved actuator
**IQR1S4** OFF - ON

Flat actuator
**IQP1S4** OFF - ON

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

→ Flat

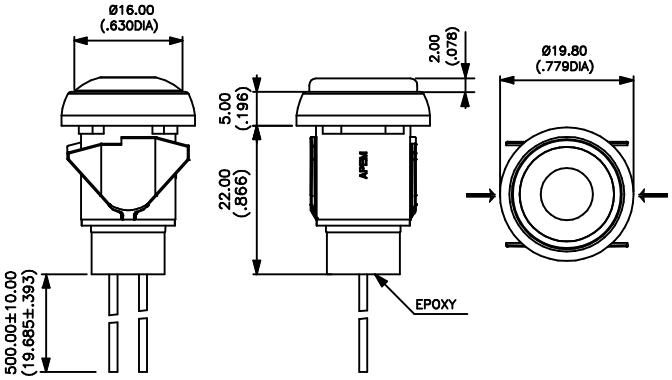



## Sealed flying lead terminals

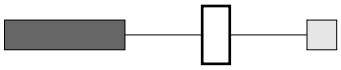
Curved actuator
**IQR1F4** OFF - ON

Flat actuator
**IQP1F4** OFF - ON

→ Flat

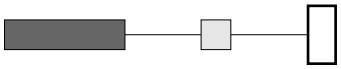



**ACTUATOR COLOUR**



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

**BUSHING AND BEZEL FINISH**

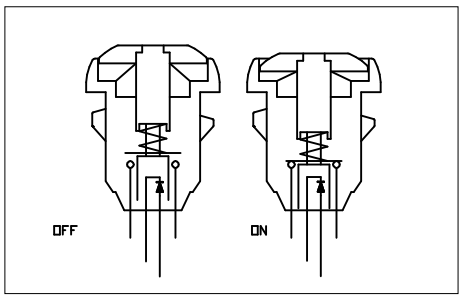


**2** : black (standard)

# IQ series

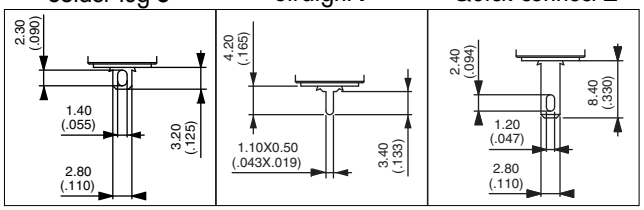
## Sealed pushbutton switches - bushing Ø 16 mm - snap-in mounting - latching

*Square - illuminated*

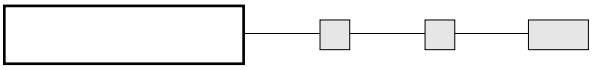



- Four LED colours
- Tin plated LED terminals
- Gold plated contacts

Solder lug **S** | Straight **P** | Quick-connect **Z**




**MODEL STRUCTURE**

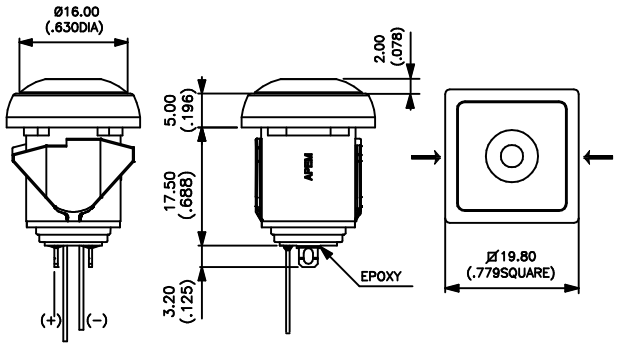


### Solder lug terminals

Curved actuator
**IQC1S4** OFF - ON

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

→ Flat

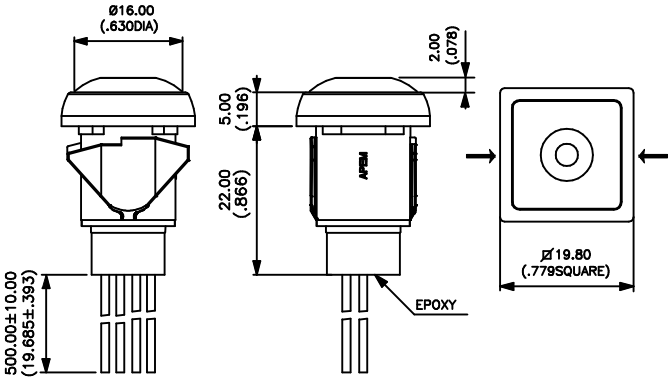



### Sealed flying lead terminals

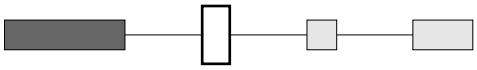
Curved actuator
**IQC1F4** OFF - ON

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

→ Flat

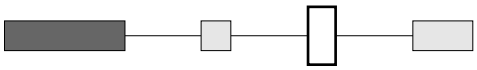



**ACTUATOR COLOUR**



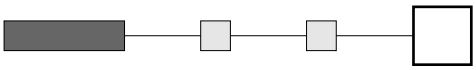
**1** : blue - **2** : black - **3** : green - **5** : yellow - **6** : red - **7** : white - **9** : orange - **A** : satin chrome - **B** : dark blue

**BUSHING AND BEZEL FINISH**

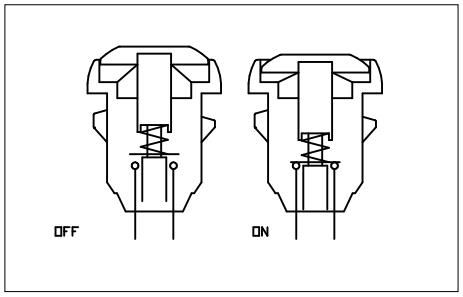


**2** : black (standard)

**LED COLOUR**

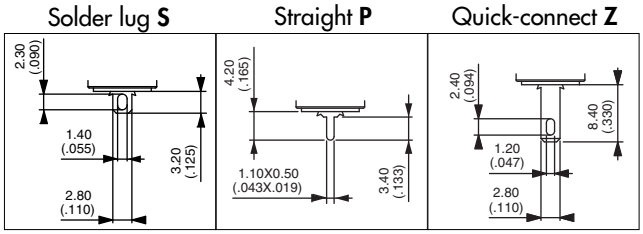


**L0S** : super red - **L0Y** : yellow - **L0G** : green - **L0B** : blue

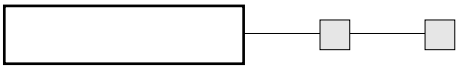



- Gold plated contacts

Solder lug **S** | Straight **P** | Quick-connect **Z**

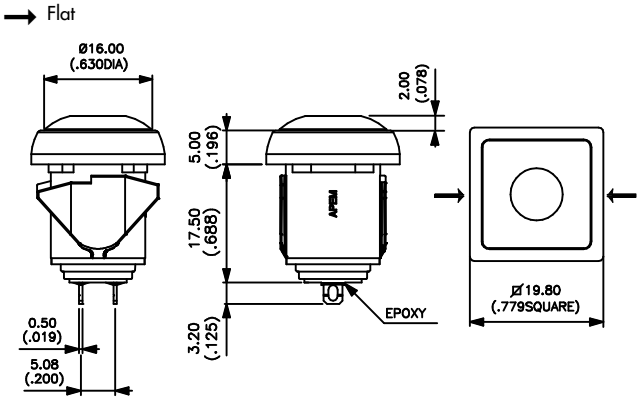



**MODEL STRUCTURE**



## Solder lug terminals

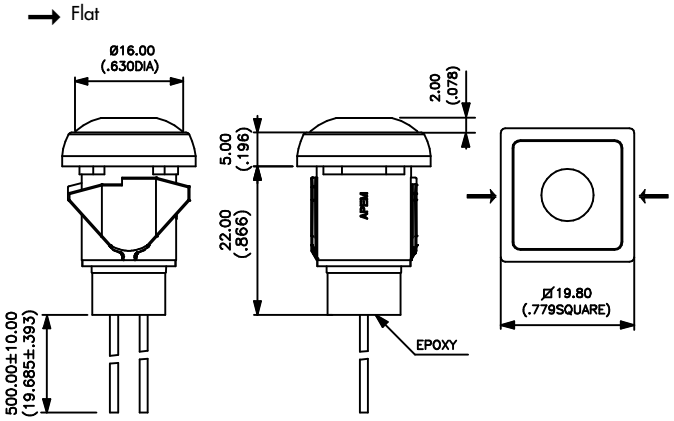
Curved actuator
**IQC1S4** OFF - ON



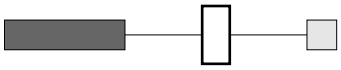

Also available with straight PC terminals : **IQC1P4**
& quick-connect terminals : **IQC1Z4**.

## 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)