

Metal push-button with switching voltage up to 250 VAC



Momentary Action Switches  
Non-illuminated



Push button  
Ring illumination  
red



Point Illumination  
blue

See below:

### Approvals and Compliances

#### Description

- Mechanical switch with stroke MO (Momentary)
- With or without illumination
- With torsion protection for easier positioning
- Equipped with quick connect terminals to permit fast connection

#### Unique Selling Proposition

- Attractive tactile feedback
- High quality materials
- Long life span
- Color marking and variety of design options regarding size, color and illumination

#### Characteristics

- Housing material in stainless steel
- Actuator in stainless steel or ceramic
- Housing and actuator material of the ring-illuminated RD version in black anodized aluminum
- Switching voltage from 30 VDC to 250 VAC
- Switching current from 0.1 A to 10 A, with gold 100mA
- All laser marked, ring-illuminated and point-illuminated versions have anti-rotation protection for easy mounting

#### References

Other versions on request

#### Weblinks

[pdf data sheet](#), [html datasheet](#), [General Product Information](#), [CAD-Drawings](#), [Product News](#), [Detailed request for product](#), [Configurator](#)

#### Technical Data

##### Electrical Data

|                                 |                                            |
|---------------------------------|--------------------------------------------|
| Switching Function              | See table of Subminiature and Micro-switch |
| Supply Voltage LED              | 5 VDC - 24 VDC, see table of variants      |
| Impulse Withstand Voltage (ESD) | 8 kV contact discharge                     |
|                                 | 15 kV air discharge                        |

##### Mechanical Data

|                                   |                        |
|-----------------------------------|------------------------|
| Actuating Force                   | 4.5 N                  |
| Actuating Travel                  | 1.0 mm                 |
| Lifetime                          | 1.5 million actuations |
| Shock Protection                  | IK08 / IK07 (M30)      |
| Mounting screw torque Plastic Nut | max. 3.5 Nm            |

##### Climatical Data

|                                          |                                          |
|------------------------------------------|------------------------------------------|
| Operating Temperature                    | -30 to 85 °C (Sub. Microswitch to -40°C) |
| Storage Temperature                      | -40 to 85 °C                             |
| Protection Class                         | IP66 and IP67 Front Side                 |
| Salt Spray Test (acc. to IEC 60068-2-11) | 24 h / 48 h / 96 h Residence Time        |

##### Material

|             |                                        |
|-------------|----------------------------------------|
| Housing     | Aluminium / Stainless Steel            |
| Actuator    | Aluminium / Stainless Steel / Ceramics |
| Seal Ring   | NBR70                                  |
| Plastic Nut | PA, UL94                               |

#### Approvals and Compliances

Detailed information on product approvals, code requirements, usage instructions and detailed test conditions can be looked up in [Details about Approvals](#)

SCHURTER products are designed for use in industrial environments. They have approvals from independent testing bodies according to national and international standards. Products with specific characteristics and requirements such as required in the automotive sector according to IATF 16949, medical technology according to ISO 13485 or in the aerospace industry can be offered exclusively with customer-specific, individual agreements by SCHURTER.

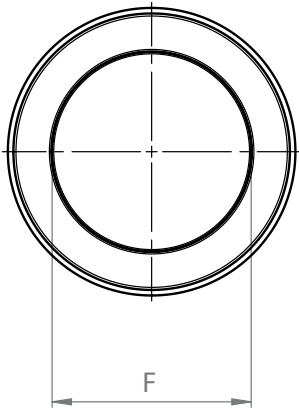
Compliances

The product complies with following Guide Lines

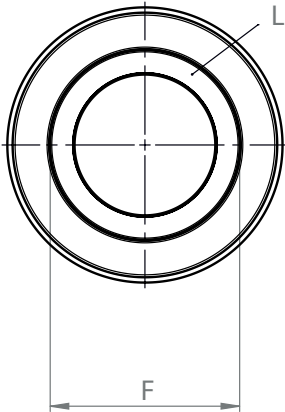
| Identification                                                                   | Details                                        | Initiator   | Description                                                                                                                                                                                           |
|----------------------------------------------------------------------------------|------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <a href="#">CE declaration of conformity</a>   | SCHURTER AG | The CE marking declares that the product complies with the applicable requirements laid down in the harmonisation of Community legislation on its affixing in accordance with EU Regulation 765/2008. |
|  | <a href="#">UKCA declaration of conformity</a> | SCHURTER AG | The UKCA marking declares that the product complies with the applicable requirements laid down in the British Amendment of Regulation (EC) 765/2008.                                                  |
|  | <a href="#">RoHS</a>                           | SCHURTER AG | Directive RoHS 2011/65/EU, Amendment (EU) 2015/863                                                                                                                                                    |
|  | <a href="#">REACH</a>                          | SCHURTER AG | On 1 June 2007, Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals 1 (abbreviated as "REACH") entered into force.                               |

Dimension [mm]

Non illuminated push buttons

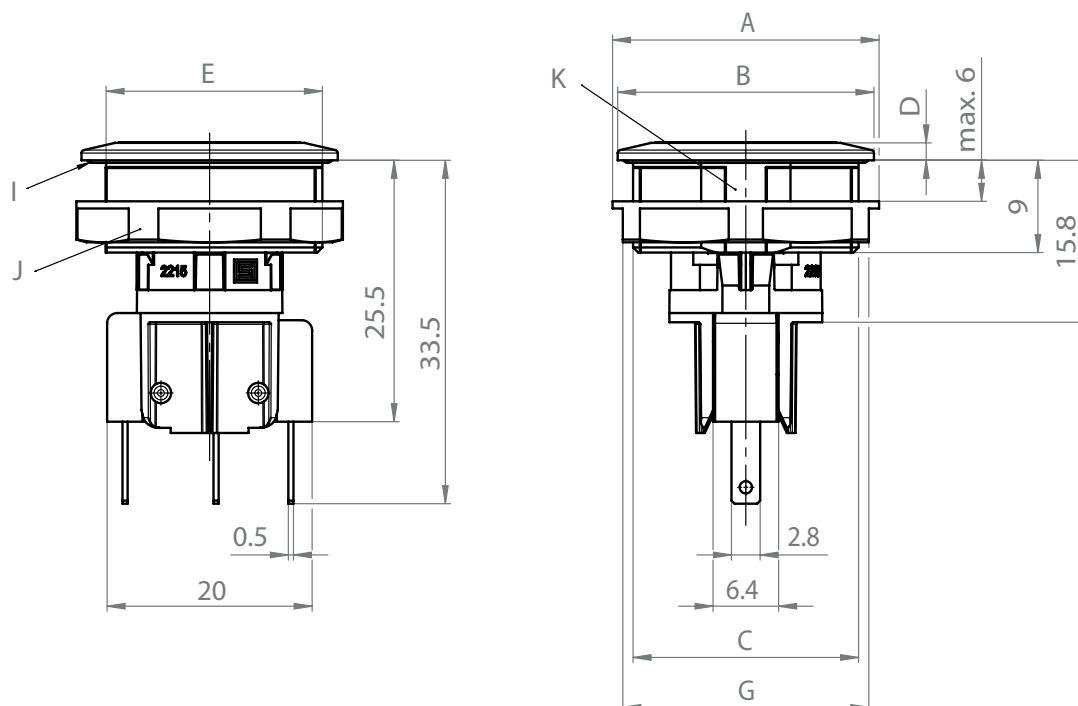


Non illuminated

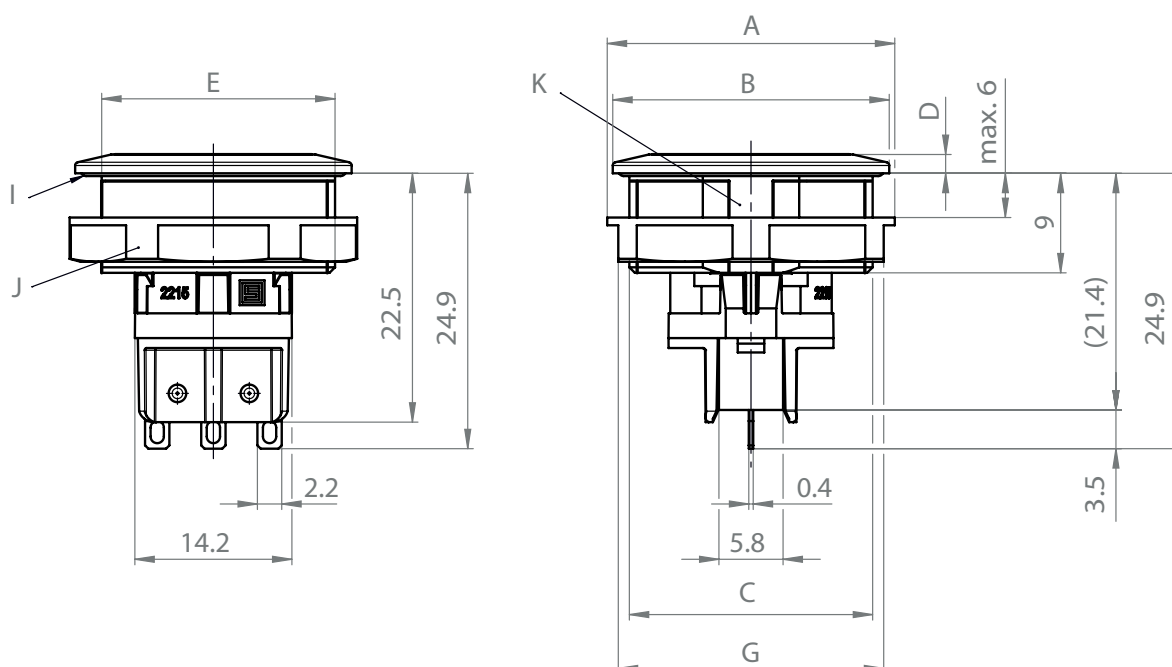


Non illuminated  
with color ring (RC)

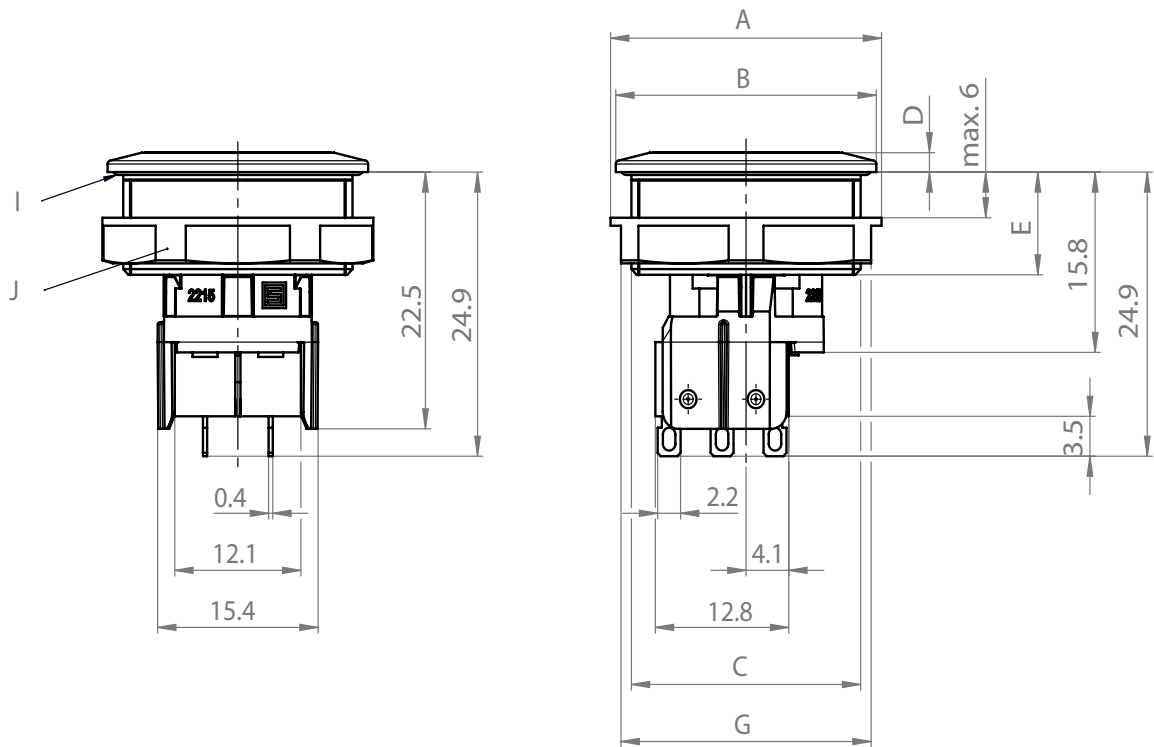
MSM II SPDT with Microswitch and Quick Connect Terminal



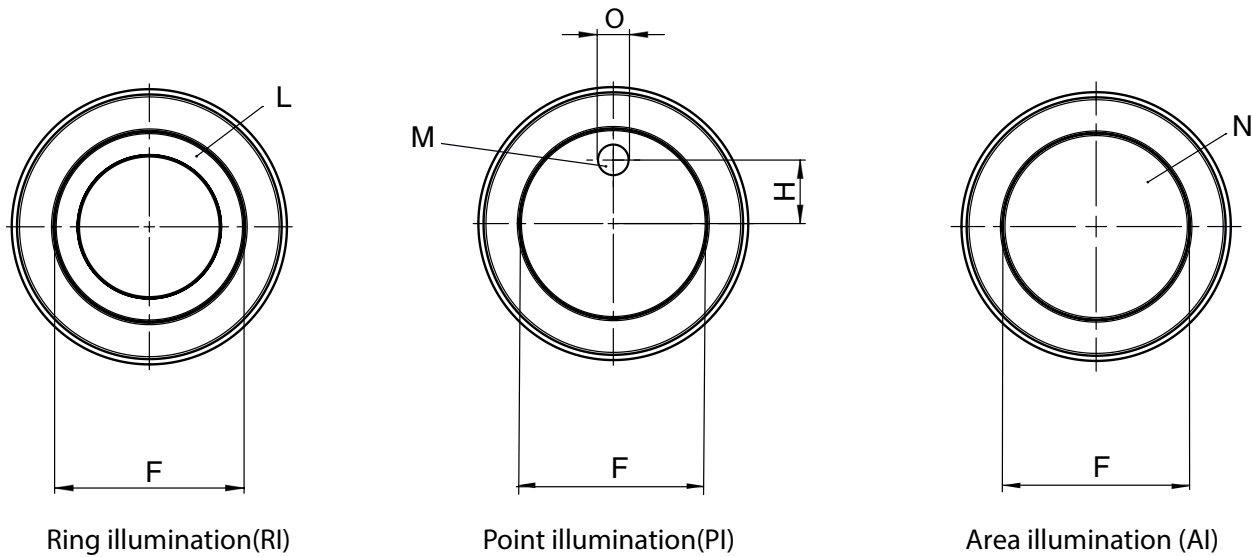
MSM II SPDT with Subminiature Microswitch and Solder Terminal



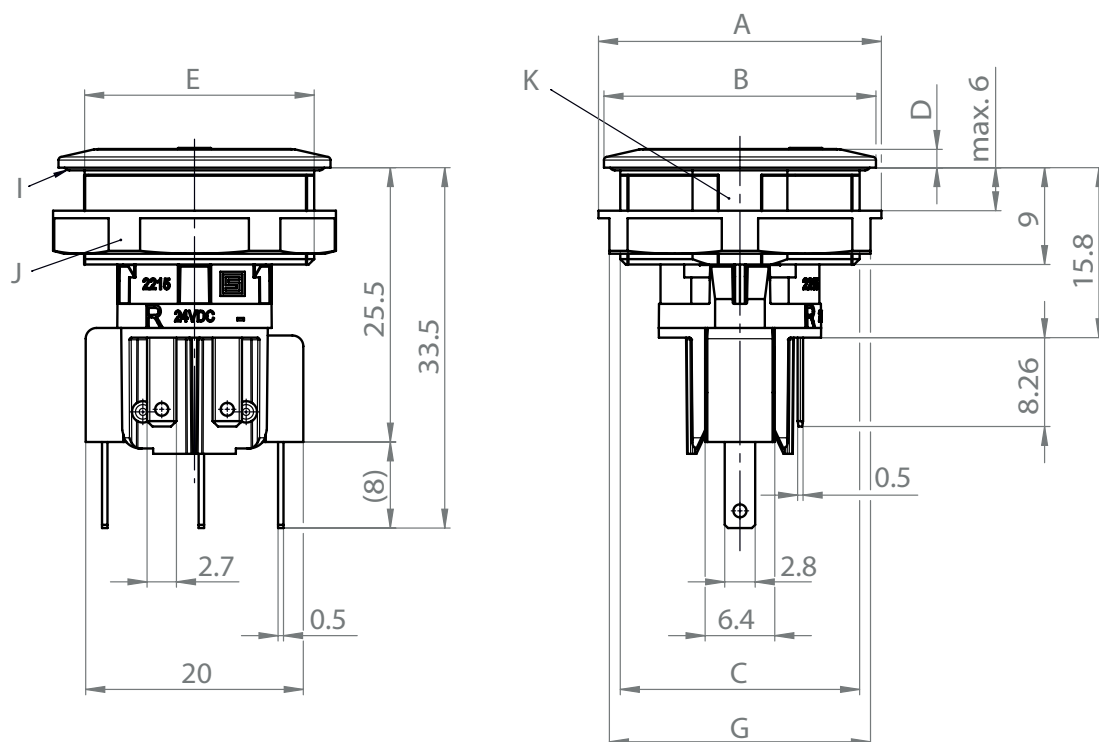
MSM II DPDT Subminiature Microswitch



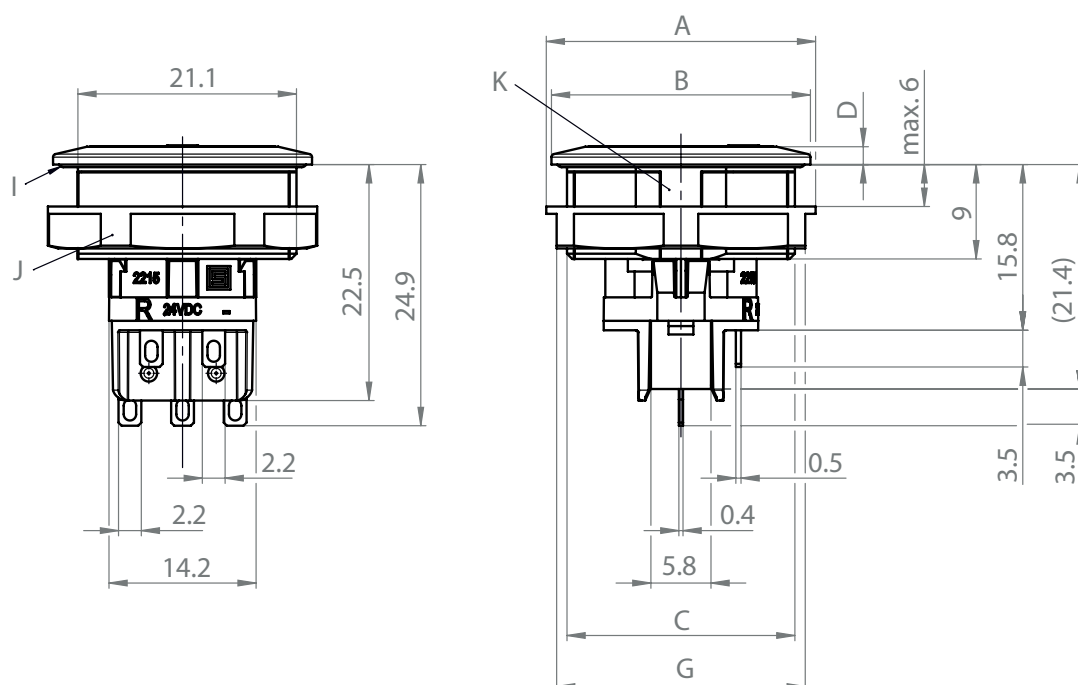
Illuminated push buttons



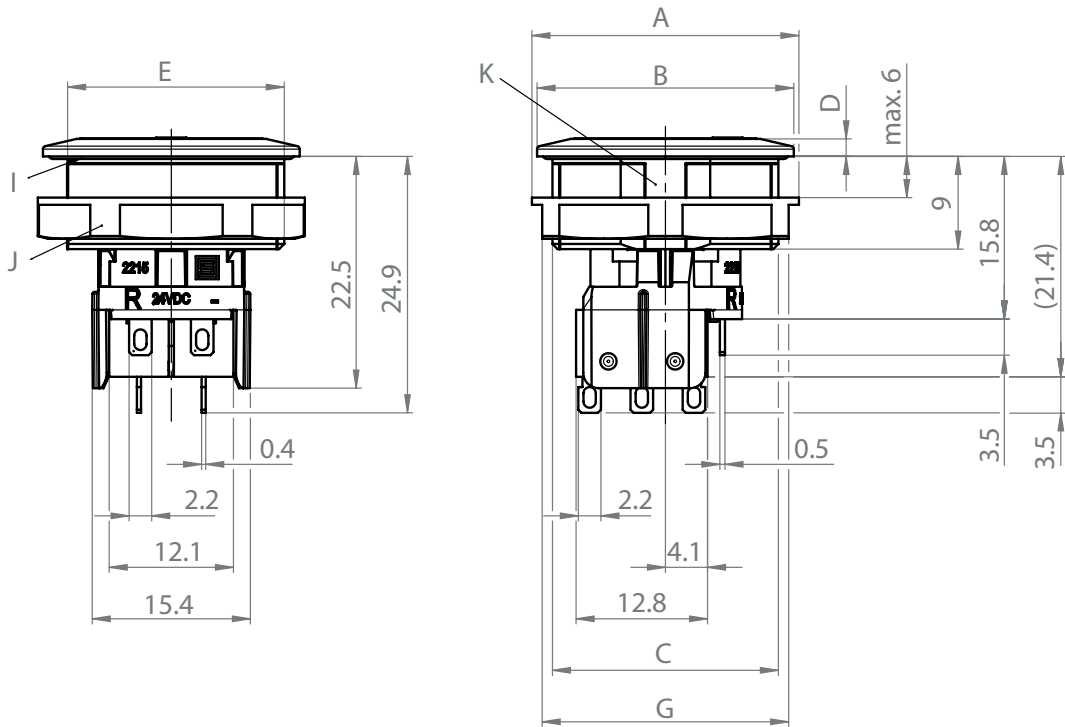
MSM II PI/RI SPDT with Microswitch and Quick Connect Terminal



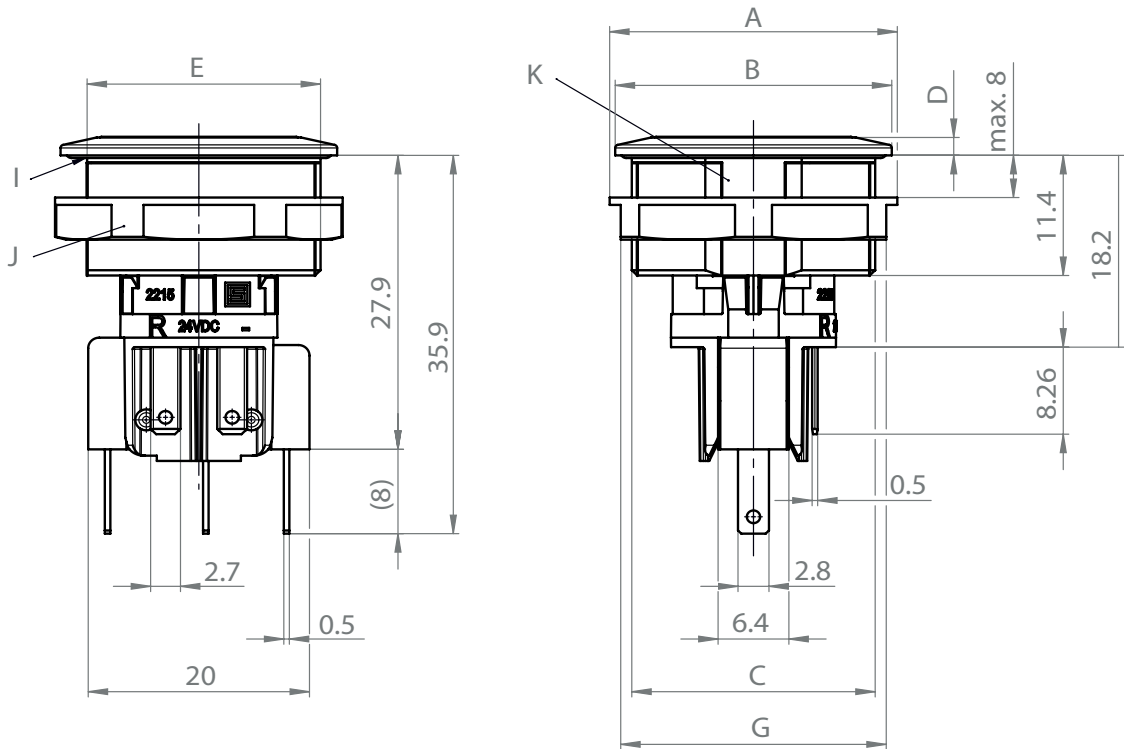
MSM II PI/RI SPDT with Subminiature Microswitch and Solder Terminal



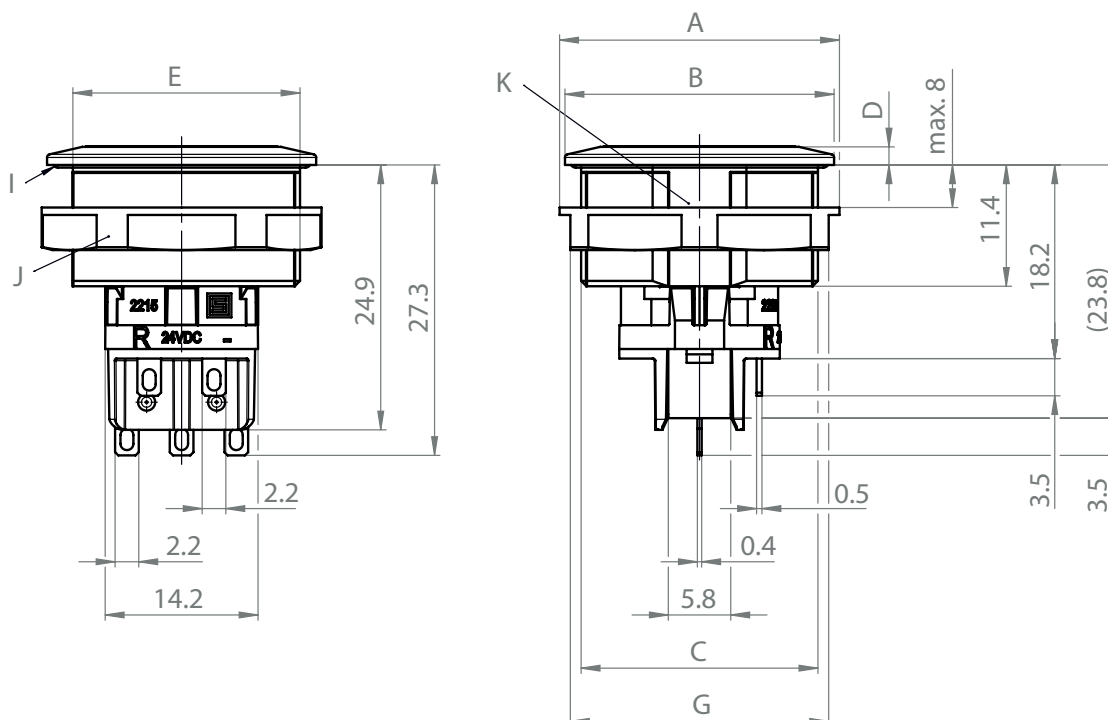
MSM II PI/RI DPDT with Subminiature Microswitch and Solder Terminal



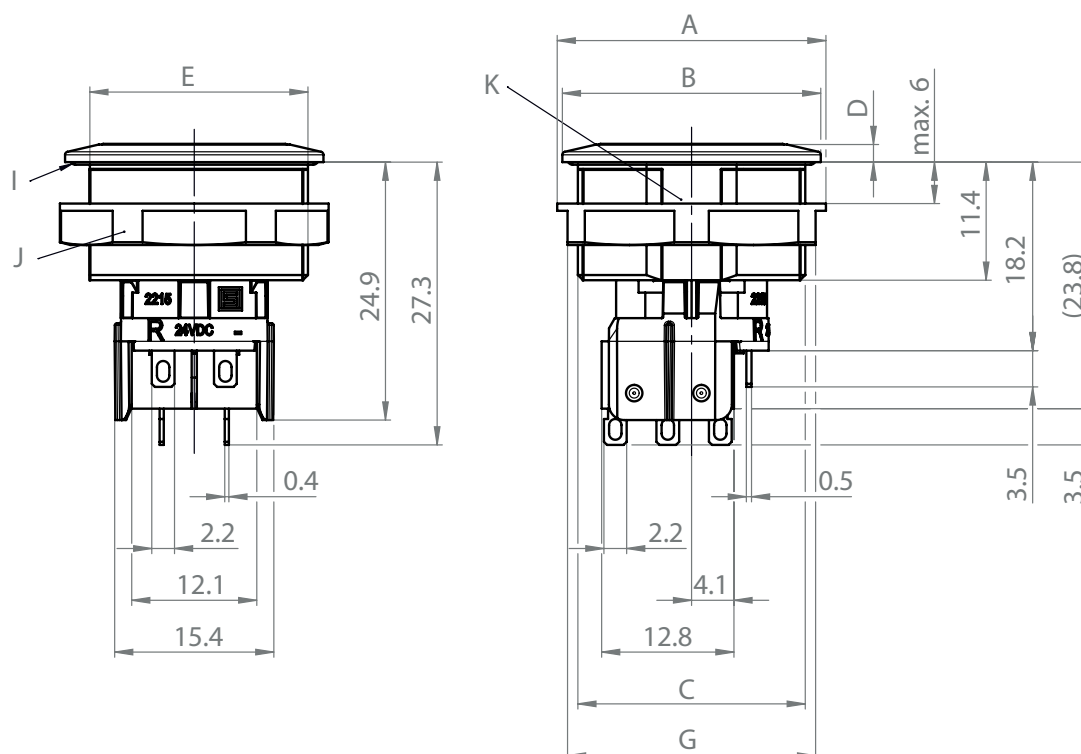
MSM II AI SPDT with Microswitch and Quick Connect Terminal



### MSM II AI SPDT with Subminiature Microswitch and Solder Terminal



## MSM II AI DPDT with Subminiature Microswitch and Solder Terminal

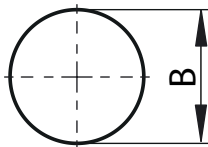
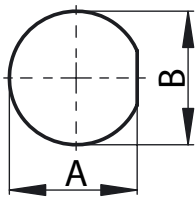


| Diameter in mm                       | 16                 | 19       | 22    | 30      |
|--------------------------------------|--------------------|----------|-------|---------|
| A                                    | Ø20                | Ø24      | Ø26   | Ø34.5   |
| B                                    | Ø19                | Ø22      | Ø25   | Ø34     |
| C                                    | M16x1              | M19x0.75 | M22x1 | M30x1.5 |
| D                                    | 1.7                | 1.7      | 1.7   | 2       |
| E                                    | 15.1               | 18.1     | 21.1  | 28.8    |
| F Operating area / illumination area | Ø12.8              | Ø15.8    | Ø18   | Ø25     |
| G                                    | AF19               | AF22     | AF24  | AF32    |
| H                                    | 4.3                | 5.3      | 6.1   | 8.4     |
| O                                    | 2.2                | 2.7      | 3.1   | 4.3     |
| I                                    | O-Ring             |          |       |         |
| J                                    | Nut                |          |       |         |
| K                                    | Anti-rotation lock |          |       |         |
| L                                    | Lighting ring      |          |       |         |
| M                                    | Point illumination |          |       |         |
| N                                    | Area illumination  |          |       |         |

Dimension

All illuminated products and all non illuminated push buttons with symbols are supplied with anti-rotation protection

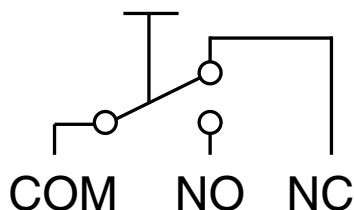
Non-illuminated push-buttons are supplied without anti-rotation protection



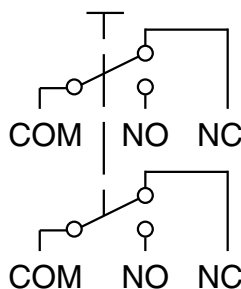
| Diameter (mm) | A          | B         |
|---------------|------------|-----------|
| 16            | 15.15+0.05 | 16.1 +0.1 |
| 19            | 18.15+0.05 | 19.1 +0.1 |
| 22            | 21.15+0.05 | 22.1 +0.1 |
| 24            | 23.50+0.05 | 24.1 +0.1 |
| 30            | 28.85+0.05 | 30.1 +0.1 |

## Diagrams

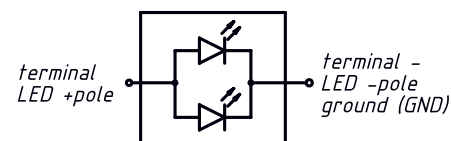
Switching element SPDT



Switching element DPDT

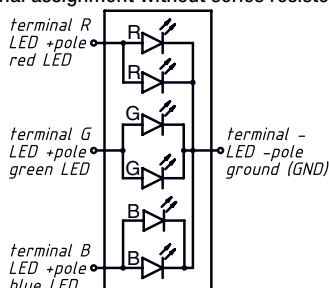


Illumination single color  
Terminal assignment without series resistor



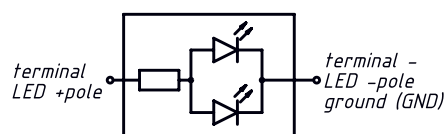
Illumination RGB

Terminal assignment without series resistor



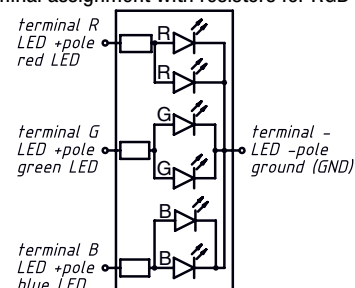
Illumination single color

Terminal assignment with resistors for 5 VDC



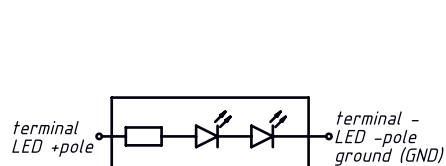
Illumination RGB

Terminal assignment with resistors for RGB 5 VDC



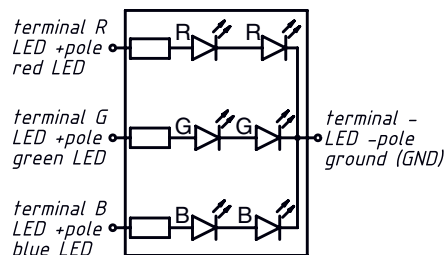
Illumination single color

Terminal assignment with resistors for 12 VDC and 24 VDC



Illumination RGB

Terminal assignment with resistors for RGB 12 VDC and 24 VDC



Illumination options for RGB

| Lighting type             | Wire red | Wire green | Wire blue | Resulting Color |
|---------------------------|----------|------------|-----------|-----------------|
| Multicolor Singlecolor    | x        |            |           | Red             |
| Multicolor Singlecolor    |          | x          |           | Green           |
| Multicolor Singlecolor    |          |            | x         | Blue            |
| Multicolor RGB Additive 2 | x        | x          |           | Yellow          |
| Multicolor RGB Additive 2 | x        |            | x         | Magenta         |
| Multicolor RGB Additive 2 |          | x          | x         | Cyan            |
| Multicolor RGB Additive 3 | x        | x          | x         | White           |

## Illumination

| Operating Data | Forward Current max. | Forward Voltage at 10 mA | Forward Voltage max. |
|----------------|----------------------|--------------------------|----------------------|
| LED red        | 25 mA                | 1,7 VDC                  | 2,4 VDC              |
| LED green      | 25 mA                | 2,6 VDC                  | 3,2 VDC              |
| LED blue       | 25 mA                | 2,6 VDC                  | 3,2 VDC              |

## Micro Switch

| Micro Switch                            | Contact Material | Switching Voltage  | Switching current | Rated Switching Capacity | Lifetime  | Contact Resistance | Insulation Resistance | Duration of Bounce |
|-----------------------------------------|------------------|--------------------|-------------------|--------------------------|-----------|--------------------|-----------------------|--------------------|
| 0.1 A, IP40                             | Au               | max. 30 VDC        | max. 0.1 A        | 3 W                      | 0.2 Mio.  | < 50 mΩ            | > 100 MΩ              | < 5 ms             |
| 0.1 A, IP67                             |                  | max. 30 VDC        | max. 0.1 A        | 25 W                     | 0.05 Mio. |                    |                       |                    |
| 5 A / 125 VAC resp. 3 A / 250 VAC, IP40 | Ag               | max. 125 / 250 VAC | max. 5 / 3 A      | 750 W                    | 0.2 Mio.  | < 30 mΩ            | > 100 MΩ              | < 5 ms             |
| 6 A, IP67                               |                  | max. 250 VAC       | max. 5 A          | 1250 W                   | 0.01 Mio. |                    |                       |                    |
| 10 A, IP40                              | Ag               | max. 250 VAC       | max. 10 A         | 2500 W                   | 0.05 Mio. | < 30 mΩ            | > 100 MΩ              | < 5 ms             |
| 10 A, IP67                              |                  | max. 250 VAC       | max. 10 A         | 2500 W                   | 0.01 Mio. |                    |                       |                    |

Subminiature Microswitch

| Subminiature Microswitch | Contact Material | Switching Voltage | Switching current | Rated Switching Capacity | Lifetime  | Contact Resi- stance | Insulation Resi- stance | Duration of Bounce |
|--------------------------|------------------|-------------------|-------------------|--------------------------|-----------|----------------------|-------------------------|--------------------|
| 0.1 A, IP40              | Au               | max. 30 VDC       | max. 0.1 A        | 3 W                      | 0.1 Mio.  | < 100 mΩ             | > 100 MΩ                | < 10 ms            |
| 3 A , IP40               | Ag               | max. 125 VAC      | max. 3 A          | 375 W                    | 0.03 Mio. | < 30 mΩ              | > 100 MΩ                | < 10 ms            |

## Order number key

|   |   |   |    |   |    |   |    |    |     |   |   |   |   |   |    |   |   |   |    |     |     |    |   |    |    |   |   |    |    |    |   |   |     |   |   |
|---|---|---|----|---|----|---|----|----|-----|---|---|---|---|---|----|---|---|---|----|-----|-----|----|---|----|----|---|---|----|----|----|---|---|-----|---|---|
| M | S | M | II | - | 19 | - | MO | NX | A10 | - | B | 1 | - | B | A0 | - | A | - | PI | 0GN | 012 | A0 | - | S0 | NC | B | - | S0 | NC | NF | - | 1 | 074 | - | C |
|   |   |   |    |   | 1  |   |    |    |     |   |   |   |   |   |    |   | 4 |   |    | 5   | 6   | 7  | * | *  | *  |   |   |    | 8  |    |   | 9 | *   |   |   |

| Diameter            |   |  | 1  |
|---------------------|---|--|----|
| 16 mm <sup>1)</sup> | = |  | 16 |
| 19 mm               | = |  | 19 |
| 22 mm               | = |  | 22 |
| 30 mm <sup>2)</sup> | = |  | 30 |

| Switch function   |   |      | 2 |
|-------------------|---|------|---|
| Switch            | = | MONX |   |
| Indicator element | = | 0000 |   |

| Design |  |  | 3 |
|--------|--|--|---|
|--------|--|--|---|

| Switches                                     |   |            |  |
|----------------------------------------------|---|------------|--|
| Switch with Microswitch SPDT / quick connect |   |            |  |
| 100 mA Gold contact                          | = | A10-B1-AA0 |  |
| 3 A                                          | = | 03A-B1-BA0 |  |
| 5 A                                          | = | 05A-B1-BA0 |  |
| 6 A                                          | = | 06A-B1-BA0 |  |
| 10 A                                         | = | 10A-B1-BA0 |  |

|                                                 |   |            |  |
|-------------------------------------------------|---|------------|--|
| Switch with Subminiature SPDT / solder terminal |   |            |  |
| 100 mA Gold contact                             | = | A10-B2-AE0 |  |
| 3 A                                             | = | 03A-B2-BE0 |  |

|                                                 |   |            |  |
|-------------------------------------------------|---|------------|--|
| Switch with Subminiature DPDT / solder terminal |   |            |  |
| 100 mA Gold contact                             | = | A10-D3-AE0 |  |
| 3 A                                             | = | 03A-D3-BE0 |  |

| Indicator Elements                     |   |            |  |
|----------------------------------------|---|------------|--|
| Indicator element with quick connect   | = | 000-01-000 |  |
| Indicator element with solder terminal | = | 000-02-000 |  |

| Microswitch version           |   |      | 4 |
|-------------------------------|---|------|---|
| IP40 (100 mA, 3 A, 5 A, 10 A) | = | A    |   |
| IP67 (100 mA, 3 A, 6 A, 10 A) | = | B*** |   |

| Illumination / Appearance            |   |    | 5 |
|--------------------------------------|---|----|---|
| No illumination                      | = | 00 |   |
| No illumination with colored ring    | = | RC |   |
| Area illumination                    | = | AI |   |
| Ring illumination                    | = | RI |   |
| Point illumination                   | = | PI |   |
| Ring illumination Discreet/DeadFront | = | RD |   |

| Illumination / Color     |   |     | 6 |
|--------------------------|---|-----|---|
| None                     | = | 000 |   |
| Red                      | = | 0RD |   |
| Green                    | = | 0GN |   |
| Blue                     | = | 0BL |   |
| Yellow                   | = | 0YL |   |
| White                    | = | 0WT |   |
| Multicolor <sup>1)</sup> | = | RGB |   |

| Supply voltage illumination |   |     | 7 |
|-----------------------------|---|-----|---|
| No illumination             | = | 000 |   |
| 5 V                         | = | 005 |   |
| 12 V                        | = | 012 |   |
| 24 V                        | = | 024 |   |
| LED without resistor        | = | 00R |   |

| Housing material and color        |          |   | *    |
|-----------------------------------|----------|---|------|
| Stainless steel <sup>1.4305</sup> | (Silver) | = | S0NC |
| Aluminum EN AW-6082 (3.3215)      | (Black)  | = | A0BK |

| Actuator material                   |          |   | 8    |
|-------------------------------------|----------|---|------|
| Stainless steel <sup>1.4305</sup>   | (Silver) | = | S0NC |
| Ceramic (only with stainless steel) | (White)  | = | C0WT |
| Aluminum (only on RD version)       | (Black)  | = | A0BK |

| Marking type                                                                        |   |      | 9 |
|-------------------------------------------------------------------------------------|---|------|---|
| None                                                                                | = | 0000 |   |
| Laser marking                                                                       |   |      |   |
| STOP                                                                                | = | 1057 |   |
| ON                                                                                  | = | 1065 |   |
| OFF                                                                                 | = | 1066 |   |
| ON/OFF                                                                              | = | 1071 |   |
| START                                                                               | = | 1072 |   |
|  | = | 1074 |   |
|  | = | 1075 |   |
|  | = | 1076 |   |
|  | = | 1077 |   |

further lettering on request

| Accessories                 |   |   | * |
|-----------------------------|---|---|---|
| Hex nut plastic with O-ring | = | C |   |

Stainless steel nut can be ordered additionally

|           |                         |
|-----------|-------------------------|
| 0098.9260 | Stainless steel nut M16 |
| 0098.9250 | Stainless steel nut M19 |
| 0098.9253 | Stainless steel nut M22 |
| 0098.9216 | Stainless steel nut M30 |

1) Not available for DPDT

2) 30 mm diameter not available with Area Illumination

\* Values marked with an asterisk depend on the selected properties.

\*\*\* All Indicator elements have IP rate 67 also from backside

## Variants

| Diameter | Switching current | Electrical contact | Style | IP specification backside | Illumination                      | Illumination color | Supply Voltage LED | Order Number |
|----------|-------------------|--------------------|-------|---------------------------|-----------------------------------|--------------------|--------------------|--------------|
| 16       | 100mA             | SPDT               | 1)    | IP40                      | non-illuminated                   | -                  | -                  | 3-145-122    |
| 16       | 5A                | SPDT               | 1)    | IP40                      | non-illuminated                   | -                  | -                  | 3-145-273    |
| 19       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | red                | 24VDC              | 3-145-448    |
| 19       | 100mA             | SPDT               | 1)    | IP40                      | AI                                | RGB                | 24VDC              | 3-145-539    |
| 19       | 5A                | SPDT               | 1)    | IP40                      | non-illuminated with colored ring | red                | -                  | 3-145-556    |
| 19       | 5A                | SPDT               | 1)    | IP40                      | non-illuminated with colored ring | green              | -                  | 3-145-559    |
| 19       | 5A                | SPDT               | 1)    | IP40                      | RI DeadFront                      | RGB                | 24VDC              | 3-145-567    |
| 19       | 3A                | DPDT               | 3)    | IP40                      | non-illuminated                   | -                  | -                  | 3-145-766    |
| 19       | 3A                | DPDT               | 3)    | IP40                      | PI                                | green              | -                  | 3-145-768    |
| 19       | 3A                | DPDT               | 3)    | IP40                      | PI                                | blue               | -                  | 3-146-007    |
| 22       | 5A                | SPDT               | 1)    | IP40                      | non-illuminated                   | -                  | -                  | 3-145-478    |
| 22       | 10A               | SPDT               | 1)    | IP40                      | non-illuminated                   | -                  | -                  | 3-145-479    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | red                | 24VDC              | 3-145-527    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | blue               | 24VDC              | 3-145-534    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | yellow             | 24VDC              | 3-145-535    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | RGB                | 24VDC              | 3-145-546    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI DeadFront                      | RGB                | 24VDC              | 3-145-729    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | red                | 12VDC              | 3-145-731    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | green              | 12VDC              | 3-145-742    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | red                | 5VDC               | 3-145-746    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | green              | 5VDC               | 3-145-747    |
| 22       | 5A                | SPDT               | 1)    | IP40                      | RI                                | blue               | 5VDC               | 3-145-749    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | RI                                | white              | 5VDC               | 3-145-751    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | PI                                | blue               | -                  | 3-145-777    |
| 22       | 3A                | DPDT               | 3)    | IP40                      | non-illuminated                   | -                  | -                  | 3-145-879    |
| 22       | 100mA             | SPDT               | 1)    | IP40                      | AI                                | RGB                | 24VDC              | 3-145-891    |
| 22       | 3A                | DPDT               | 3)    | IP40                      | RI                                | white              | 24VDC              | 3-145-920    |
| 30       | 5A                | SPDT               | 1)    | IP40                      | non-illuminated                   | -                  | -                  | 3-145-589    |
| 30       | 5A                | SPDT               | 1)    | IP40                      | RI DeadFront                      | RGB                | 24VDC              | 3-145-657    |
| 30       | 3A                | DPDT               | 3)    | IP40                      | RI                                | red                | 24VDC              | 3-146-043    |
| 30       | 3A                | DPDT               | 3)    | IP40                      | RI                                | green              | 24VDC              | 3-146-044    |

Availability for all products can be searched real-time: <https://www.schurter.com/en/info-center/support-tools/stock-check-distributors>

1) Microswitch SPDT / Indicator with quick connect terminals

2) Subminiature Switch SPDT / Indicator with solder terminals

3) Subminiature Switch DPDT with solder terminals

**Packaging unit**

10 pcs.

In box or packed in air cushion bags



The nut with gasket and micro switch are enclosed in the box.