

# Photoelectric Sensor

## Convergent Mode Sensor

### SM312CVGQDP



- Cable with male end M12 × 1, 4-pin, PVC, 150 mm
- Protection class IP67
- Sensitivity adjustable via potentiometer
- Alignment indicator
- Operating voltage: 10...30 VDC
- Switching output, bipolar
- Light/dark operation

#### Wiring Diagram



|      |             |
|------|-------------|
| Type | SM312CVGQDP |
| ID   | 3050993     |

|                |                  |
|----------------|------------------|
| Optical data   |                  |
| Function       | Proximity switch |
| Operating mode | Convergent       |
| Light type     | Green            |
| Wavelength     | 525 nm           |
| Focal distance | 16 mm            |

|                                  |                     |
|----------------------------------|---------------------|
| Electrical data                  |                     |
| Operating voltage $U_s$          | 10...30 VDC         |
| Residual ripple                  | < 10 % $U_s$        |
| DC rated operating current $I_s$ | ≤ 150 mA            |
| No-load current $I_o$            | ≤ 25 mA             |
| Output function                  | NO contact, PNP/NPN |
| Switching frequency              | ≤ 500 Hz            |
| Readiness delay                  | ≤ 100 ms            |
| Response time typical            | < 1 ms              |
| Overcurrent release              | > 220 mA            |
| Setting option                   | Potentiometer       |

|                       |                                            |
|-----------------------|--------------------------------------------|
| Mechanical data       |                                            |
| Design                | Rectangular with thread, Mini Beam         |
| Dimensions            | Ø 18 x 53.3 x 12.3 x 30.7 mm               |
| Housing material      | Plastic, Thermoplastic material, Yellow    |
| Lens                  | plastic, Acrylic                           |
| Electrical connection | Cable with connector, M12 × 1, 0.15 m, PVC |
| Number of cores       | 4                                          |
| Ambient temperature   | -20...+70 °C                               |
| Protection class      | IP67                                       |

|                        |                    |
|------------------------|--------------------|
| Special features       | Encapsulated       |
| Switching state        | LED, Red           |
| Excess gain indication | LED, red, flashing |

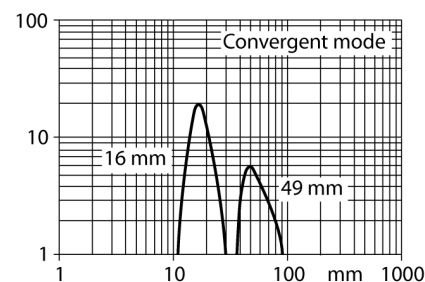
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|-----------------|----------------|
| Tests/approvals |                |
| Approvals       | CE, cURus, CSA |

#### Functional principle

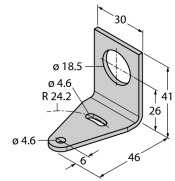
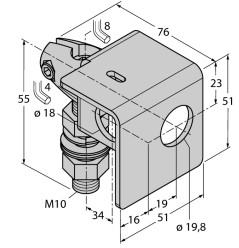
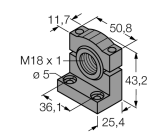
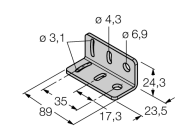
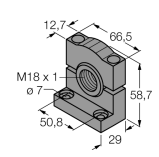
Convergent mode sensors are equipped with a lens in front of the emitter diode that produces a small and intense focal point at a defined distance from the sensor. Similar to diffuse mode sensors, the light reflected by the target is evaluated. Convergent mode sensors are ideal for detection of small targets or colour marks and edge guiding or positioning control of transparent materials. The targets must always be within the focal depth of the sensors. The focal depth is defined as the area in front of or behind the focal point within which the object can be detected. Based on the intense light concentration in the focal point, convergent mode sensors are capable of detecting targets with a low reflectivity.

#### Excess gain curve

Excess gain in relation to the distance



## Accessories

| Type code   | Ident no. |                                                                                 | Dimension drawing                                                                     |
|-------------|-----------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| SMB18A      | 3033200   | Mounting bracket, rectangular, stainless steel, for sensors with 18 mm thread   |    |
| SMB18AFAM10 | 3012558   | Mounting bracket, material VA 1.4401, for M10 x 1.5 thread, thread length 18 mm |    |
| SMB18SF     | 3052519   | Mounting bracket, PBT black, for sensors with 18 mm thread, rotatable           |   |
| SMB312B     | 3025519   | Mounting bracket, stainless steel, for MINI-BEAM NAMUR                          |  |
| SMB3018SC   | 3053952   | Mounting bracket, PTB black, for sensors with 18 mm thread                      |  |