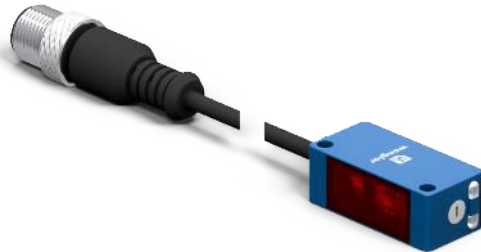


# Reflex Sensor with Background Suppression

## P1KH011

Part Number



- Condition monitoring
- IO-Link 1.1
- Low switching distance deviation for black/white
- Reliably detect objects against any background

The reflex sensor with background suppression works with red light according to the angle measurement principle and is suitable for the detection of objects against any background. The sensor always has the same switching distance, regardless of the color, shape and surface of the objects. Minimal height differences can be detected with the sensors and, for example, various parts can be reliably differentiated from each other. The IO-Link interface can be used to configure reflex sensors (PNP/NPN, NC/NO) and to output switching statuses.



### Technical Data

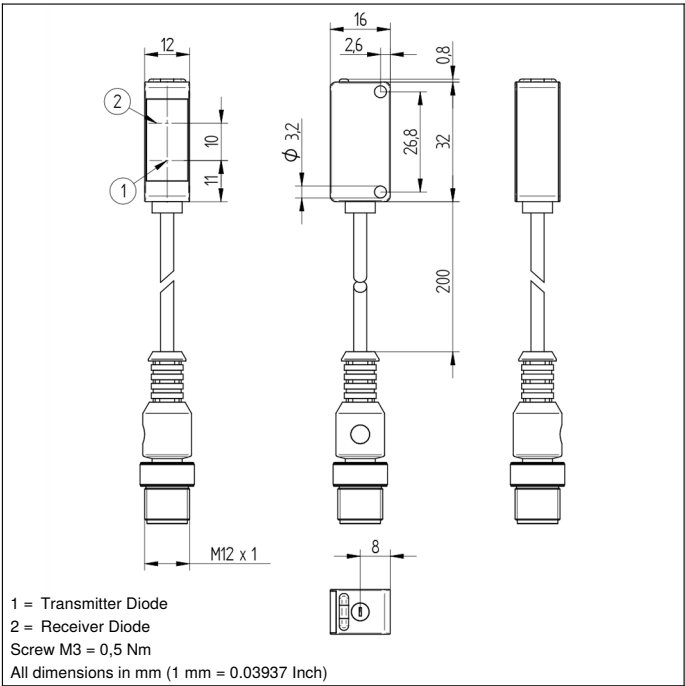
| Optical Data                                      |                 |
|---------------------------------------------------|-----------------|
| Range                                             | 300 mm          |
| Setting Range                                     | 30...300 mm     |
| Switching Hysteresis                              | < 5 %           |
| Light Source                                      | Red Light       |
| Service Life (T = +25 °C)                         | 100000 h        |
| Max. Ambient Light                                | 10000 Lux       |
| Light Spot Diameter                               | see Table 1     |
| Electrical Data                                   |                 |
| Supply Voltage                                    | 10...30 V DC    |
| Supply Voltage with IO-Link                       | 18...30 V DC    |
| Current Consumption (U <sub>b</sub> = 24 V)       | < 20 mA         |
| Switching Frequency                               | 1000 Hz         |
| Switching Frequency (interference-free mode)      | 500 Hz          |
| Response time (interference-free mode)            | 1 ms            |
| Response Time                                     | 0,5 ms          |
| Temperature Drift (0 °C < T <sub>u</sub> < 40 °C) | < 5 % *         |
| Temperature Range                                 | -40...60 °C     |
| Switching Output Voltage Drop                     | < 2 V           |
| Switching Output/Switching Current                | 100 mA          |
| Residual Current Switching Output                 | < 50 µA         |
| Short Circuit Protection                          | yes             |
| Reverse Polarity Protection                       | yes             |
| Overload Protection                               | yes             |
| Interface                                         | IO-Link V1.1    |
| Protection Class                                  | III             |
| Mechanical Data                                   |                 |
| Setting Method                                    | Multi-turn      |
| Housing Material                                  | Plastic, ABS/PC |
| Degree of Protection                              | IP67/IP68       |
| Connection                                        | M12 × 1; 4-pin  |
| Cable Length                                      | 20 cm           |
| Cable Jacket Material                             | Plastic, PUR    |
| Optic Cover                                       | Plastic, PMMA   |
| Safety-relevant Data                              |                 |
| MTTFd (EN ISO 13849-1)                            | 2035,82 a       |
| PNP NC, PNP NO                                    | ●               |
| IO-Link                                           | ●               |
| Connection Diagram No.                            | 215             |
| Control Panel No.                                 | 1K3             |
| Suitable Connection Equipment No.                 | 2               |
| Suitable Mounting Technology No.                  | 400             |

\* See operating instructions for further information

\* Temperature range with permanently installed cable, bending radius: > 20 mm

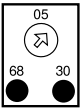
### Complementary Products

IO-Link Master  
Software

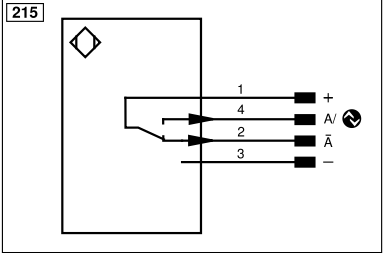


# Ctrl. Panel

1K3



05 = Switching Distance Adjuster  
30 = Switching Status/Contamination Warning  
68 = supply voltage indicator



| Legend    |                                            |                                        |                                |
|-----------|--------------------------------------------|----------------------------------------|--------------------------------|
| +         | Supply Voltage +                           | nc                                     | Not connected                  |
| -         | Supply Voltage 0 V                         | U                                      | Test Input                     |
| ~         | Supply Voltage (AC Voltage)                | Ů                                      | Test Input inverted            |
| A         | Switching Output (NO)                      | W                                      | Trigger Input                  |
| Ā         | Switching Output (NC)                      | W-                                     | Ground for the Trigger Input   |
| V         | Contamination/Error Output (NO)            | O                                      | Analog Output                  |
| Ȳ         | Contamination/Error Output (NC)            | O-                                     | Ground for the Analog Output   |
| E         | Input (analog or digital)                  | BZ                                     | Block Discharge                |
| T         | Teach Input                                | Amv                                    | Valve Output                   |
| Z         | Time Delay (activation)                    | a                                      | Valve Control Output +         |
| S         | Shielding                                  | b                                      | Valve Control Output 0 V       |
| RxD       | Interface Receive Path                     | SY                                     | Synchronization                |
| TxD       | Interface Send Path                        | SY-                                    | Ground for the Synchronization |
| RDY       | Ready                                      | E+                                     | Receiver-Line                  |
| GND       | Ground                                     | S+                                     | Emitter-Line                   |
| CL        | Clock                                      | ±                                      | Grounding                      |
| E/A       | Output/Input programmable                  | SnR                                    | Switching Distance Reduction   |
| IO-Link   |                                            | Rx+/-                                  | Ethernet Receive Path          |
| PoE       | Power over Ethernet                        | Tx+/-                                  | Ethernet Send Path             |
| IN        | Safety Input                               | Bus                                    | Interfaces-Bus A(+)/B(-)       |
| OSSD      | Safety Output                              | La                                     | Emitted Light disengageable    |
| Signal    | Signal Output                              | Mag                                    | Magnet activation              |
| BI_D+/-   | Ethernet Gigabit bidirect. data line (A-D) | RES                                    | Input confirmation             |
| ENo RS422 | Encoder 0-pulse 0/0 (TTL)                  | EDM                                    | Contact Monitoring             |
| PT        | Platinum measuring resistor                | ENARIS422                              | Encoder A/Ā (TTL)              |
|           |                                            | ENBRIS422                              | Encoder B/B̄ (TTL)             |
|           |                                            | ENA                                    | Encoder A                      |
|           |                                            | ENB                                    | Encoder B                      |
|           |                                            | AMIN                                   | Digital output MIN             |
|           |                                            | AMAX                                   | Digital output MAX             |
|           |                                            | ACK                                    | Digital output OK              |
|           |                                            | SY In                                  | Synchronization In             |
|           |                                            | SY OUT                                 | Synchronization OUT            |
|           |                                            | OLT                                    | Brightness output              |
|           |                                            | M                                      | Maintenance                    |
|           |                                            | rsv                                    | Reserved                       |
|           |                                            | Wire Colors according to DIN IEC 60757 |                                |
|           |                                            | BK                                     | Black                          |
|           |                                            | BN                                     | Brown                          |
|           |                                            | RD                                     | Red                            |
|           |                                            | OG                                     | Orange                         |
|           |                                            | YE                                     | Yellow                         |
|           |                                            | GN                                     | Green                          |
|           |                                            | BU                                     | Blue                           |
|           |                                            | VT                                     | Violet                         |
|           |                                            | GY                                     | Grey                           |
|           |                                            | WH                                     | White                          |
|           |                                            | PK                                     | Pink                           |
|           |                                            | GNYE                                   | Green/Yellow                   |

Table 1

| Detection Range     | 30 mm | 130 mm | 300 mm |
|---------------------|-------|--------|--------|
| Light Spot Diameter | 8 mm  | 7 mm   | 18 mm  |

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission

