

# Reflex Sensor with Background Suppression

## P1MH201 LASER

Part Number



- Condition monitoring
- High switching frequency
- IO-Link 1.1
- Laser class 1

The reflex sensor with background suppression works with laser light according to the angle measurement principle and is designed to detect objects against any background. The sensor always has the same switching distance, regardless of the color, shape and surface of the objects. Thanks to the fine laser beam, even small parts can be reliably detected. The IO-Link interface can be used to configure reflex sensors (PNP/NPN, NC/NO) and to output switching statuses.

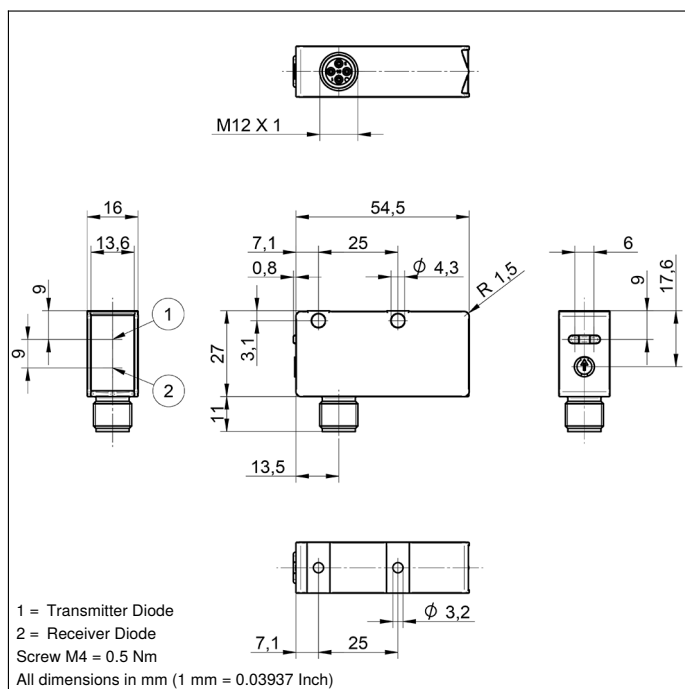


### Technical Data

| Optical Data                                 |                |
|----------------------------------------------|----------------|
| Range                                        | 200 mm         |
| Setting Range                                | 30...200 mm    |
| Switching Hysteresis                         | < 10 %         |
| Light Source                                 | Laser (red)    |
| Wavelength                                   | 655 nm         |
| Service Life (T = +25 °C)                    | 100000 h       |
| Laser Class (EN 60825-1)                     | 1              |
| 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                          | 1600 Hz        |
| Switching Frequency (interference-free mode) | 900 Hz         |
| Response Time                                | 0,31 ms        |
| Response time (interference-free mode)       | 0,6 ms         |
| Temperature Drift                            | < 5 %          |
| Temperature Range                            | -25...60 °C    |
| Switching Output Voltage Drop                | < 2 V          |
| Switching Output/Switching Current           | 100 mA         |
| Residual Current Switching Output            | < 50 µA        |
| Short Circuit and Overload Protection        | yes            |
| Reverse Polarity Protection                  | yes            |
| Lockable                                     | yes            |
| Interface                                    | IO-Link V1.1   |
| Protection Class                             | III            |
| FDA Accession Number                         | 2310152-000    |
| Mechanical Data                              |                |
| Setting Method                               | Potentiometer  |
| Housing Material                             | Plastic        |
| Degree of Protection                         | IP67/IP68      |
| Connection                                   | M12 × 1; 4-pin |
| Optic Cover                                  | PMMA           |
| Safety-relevant Data                         |                |
| MTTFd (EN ISO 13849-1)                       | 1664,58 a      |
| PNP NC, PNP NO                               | ●              |
| IO-Link                                      | ●              |
| Connection Diagram No.                       | 215            |
| Control Panel No.                            | A47            |
| Suitable Connection Equipment No.            | 2              |
| Suitable Mounting Technology No.             | 360            |

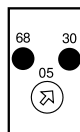
### Complementary Products

IO-Link Master  
Software

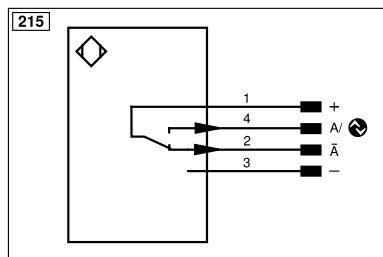


## Ctrl. Panel

A 47



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   | 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                   |

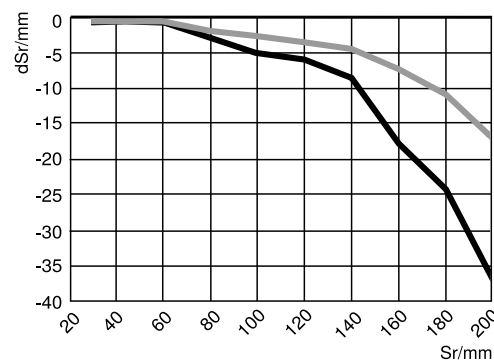
Table 1

| Detection Range     | 30 mm | 100 mm | 200 mm |
|---------------------|-------|--------|--------|
| Light Spot Diameter | 2 mm  | 1,5 mm | 1,5 mm |

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission

P1MH



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission  
— grey 18 % remission

