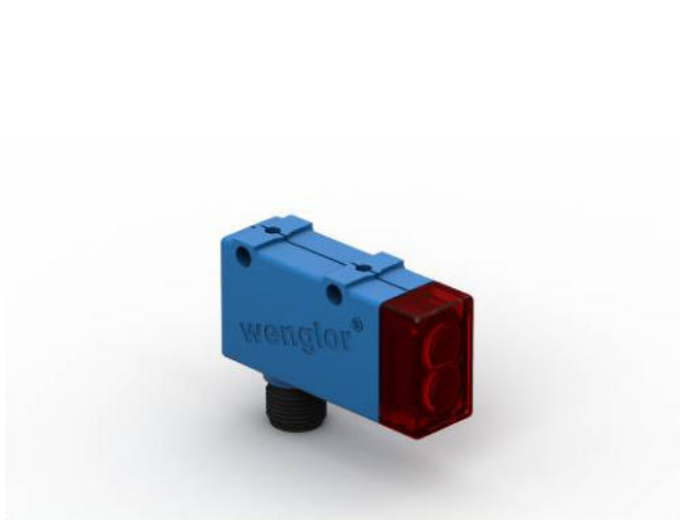


# Retro-Reflex Sensor

## P1MM001

Part Number

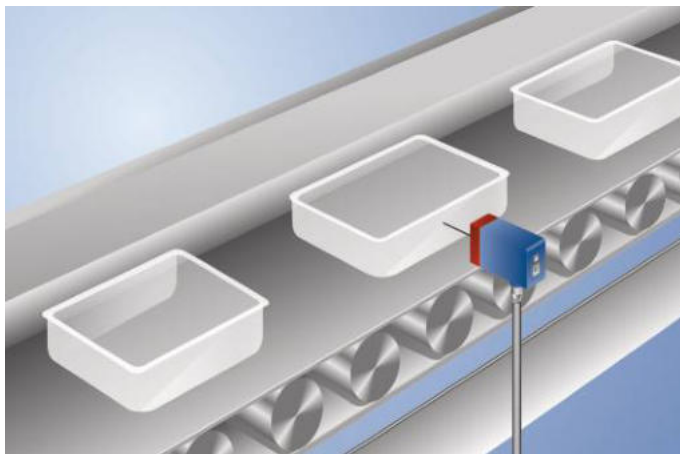


- Compact housing
- Dynamic readjustment of the switching threshold
- Recognition of transparent objects
- Teach-in, external teach-in

### Technical Data

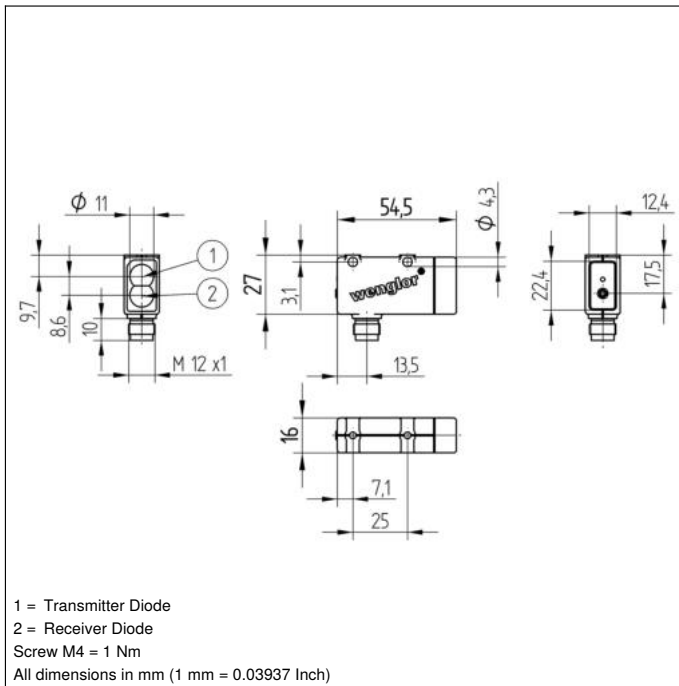
| Optical Data                                |                 |
|---------------------------------------------|-----------------|
| Range                                       | 500 mm          |
| Reference Background                        | Stainless Steel |
| Switching Hysteresis                        | < 5 %           |
| Light Source                                | Red Light       |
| Service Life (T = +25 °C)                   | 100000 h        |
| Max. Ambient Light                          | 10000 Lux       |
| Opening Angle                               | 3 °             |
| Light Spot Diameter                         | see Table 1     |
| Electrical Data                             |                 |
| Supply Voltage                              | 10...30 V DC    |
| Current Consumption (U <sub>b</sub> = 24 V) | < 40 mA         |
| Switching Frequency                         | 500 Hz          |
| Response Time                               | 1 ms            |
| Temperature Drift                           | < 5 %           |
| Temperature Range                           | -40...60 °C     |
| Switching Output Voltage Drop               | < 2,5 V         |
| PNP Switching Output/Switching Current      | 200 mA          |
| Residual Current Switching Output           | < 50 µA         |
| Short Circuit Protection                    | yes             |
| Reverse Polarity Protection                 | yes             |
| Overload Protection                         | yes             |
| Lockable                                    | yes             |
| Teach Mode                                  | HT              |
| Protection Class                            | III             |
| Mechanical Data                             |                 |
| Setting Method                              | Teach-In        |
| Housing Material                            | Plastic         |
| Full Encapsulation                          | yes             |
| Degree of Protection                        | IP67            |
| Connection                                  | M12 × 1; 4-pin  |
| PNP NC                                      |                 |
| Connection Diagram No.                      | 152             |
| Control Panel No.                           | M3              |
| Suitable Connection Equipment No.           | 2               |
| Suitable Mounting Technology No.            | 360             |

In order to function correctly, reflex light barrier only require the use of a selectable, defined background. There's no need for a reflector. They even detect transparent objects and sheet materials.



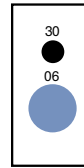
### Complementary Products

|                                  |
|----------------------------------|
| PNP-NPN Converter BG2V1P-N-2M    |
| Protective Housing ZSV-0x-01     |
| Set Protective Housing ZSM-NN-02 |

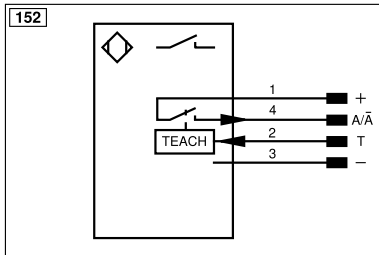


## Ctrl. Panel

M3



06 = Teach Button  
30 = Switching Status/Contamination Warning



| Legend    |                                            |                                        |                                |
|-----------|--------------------------------------------|----------------------------------------|--------------------------------|
| +         | Supply Voltage +                           | nc                                     | Not connected                  |
| -         | Supply Voltage 0 V                         | U                                      | Test Input                     |
| ~         | Supply Voltage (AC Voltage)                | Ū                                      | 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              |
| BL_D+/-   | Ethernet Gigabit bidirect. data line (A-D) | RES                                    | Input confirmation             |
| ENo RS422 | Encoder 0-pulse 0/Ū (TTL)                  | EDM                                    | Contact Monitoring             |
| PT        | Platinum measuring resistor                | ENARs422                               | Encoder A/Ā (TTL)              |
|           |                                            | ENBRs422                               | Encoder B/B̄ (TTL)             |
|           |                                            | ENa                                    | Encoder A                      |
|           |                                            | ENb                                    | Encoder B                      |
|           |                                            | AMIN                                   | Digital output MIN             |
|           |                                            | AMAX                                   | Digital output MAX             |
|           |                                            | AOK                                    | 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

| Range               | 0 mm | 250 mm | 500 mm |
|---------------------|------|--------|--------|
| Light Spot Diameter | 7 mm | 35 mm  | 50 mm  |

## Range

Reference material, range

|              |             |                 |             |
|--------------|-------------|-----------------|-------------|
| white (90 %) | 30...200 mm | black (6 %)     | 30...100 mm |
| grey (18 %)  | 30...150 mm | Stainless Steel | 30...500 mm |