

# Laser Distance Sensor

High-Precision

## YP05PBV3

## LASER

Part Number

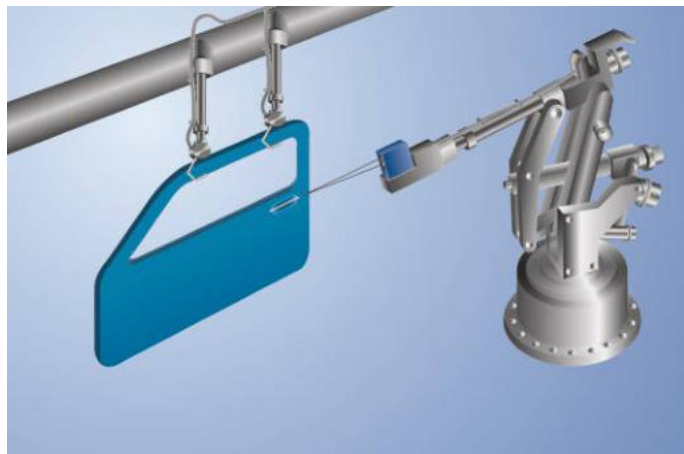


- Smallest recognizable distance difference: 50  $\mu\text{m}$
- Spot diameter: 0,5 mm

### Technical Data

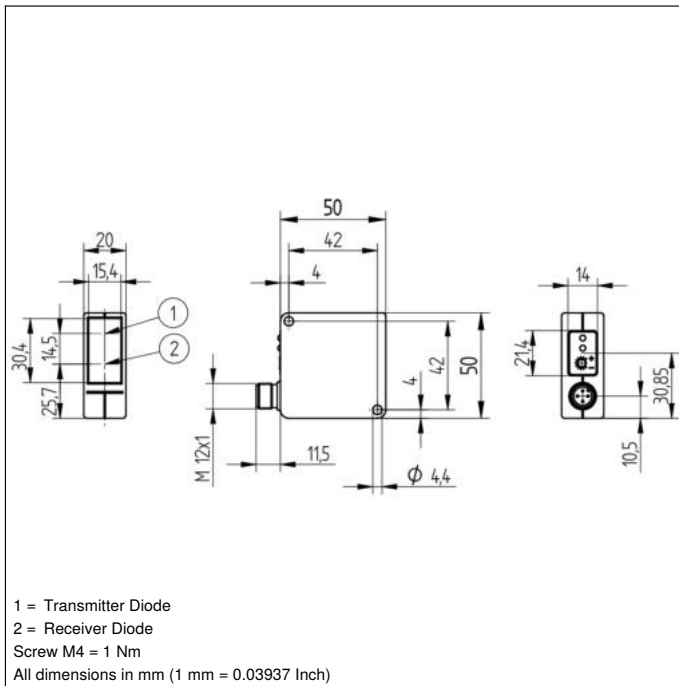
| Optical Data                                |                       |
|---------------------------------------------|-----------------------|
| Range                                       | 55 mm                 |
| Adjustable Range                            | 45...55 mm            |
| Switching Hysteresis                        | < 50 $\mu\text{m}$    |
| Light Source                                | Laser (red)           |
| Wavelength                                  | 660 nm                |
| Service Life (T = +25 °C)                   | 100000 h              |
| Laser Class (EN 60825-1)                    | 2                     |
| Max. Ambient Light                          | 10000 Lux             |
| Light Spot Diameter                         | 0,5 mm                |
| Focus Distance                              | 75 mm                 |
| Electrical Data                             |                       |
| Supply Voltage                              | 10...30 V DC          |
| Current Consumption (U <sub>b</sub> = 24 V) | < 30 mA               |
| Switching Frequency                         | 1500 Hz               |
| Response Time                               | 333 $\mu\text{s}$     |
| Temperature Drift                           | < 5 $\mu\text{m/K}$   |
| Temperature Range                           | -25...60 °C           |
| Switching Output Voltage Drop               | < 2,5 V               |
| PNP Switching Output/Switching Current      | 200 mA                |
| PNP Contamination Output/Switching Current  | 50 mA                 |
| Short Circuit Protection                    | yes                   |
| Reverse Polarity Protection                 | yes                   |
| Overload Protection                         | yes                   |
| Protection Class                            | III                   |
| Mechanical Data                             |                       |
| Setting Method                              | Potentiometer         |
| Housing Material                            | Plastic               |
| Full Encapsulation                          | yes                   |
| Degree of Protection                        | IP67                  |
| Connection                                  | M12 $\times$ 1; 4-pin |
| Contamination Output                        | ●                     |
| PNP NO                                      | ●                     |
| Connection Diagram No.                      | 103                   |
| Control Panel No.                           | P2                    |
| Suitable Connection Equipment No.           | 2                     |
| Suitable Mounting Technology No.            | 380                   |

These sensors detect distance by measuring angles. They are particularly good at recognizing objects in front of any background. The color, shape and surface characteristics of the object have practically no influence on sensor switching performance.



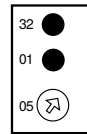
### Complementary Products

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

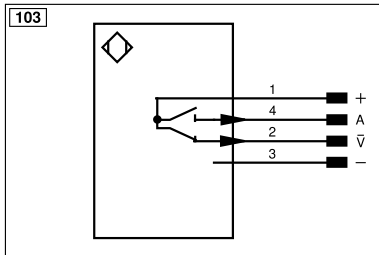


## Ctrl. Panel

P2



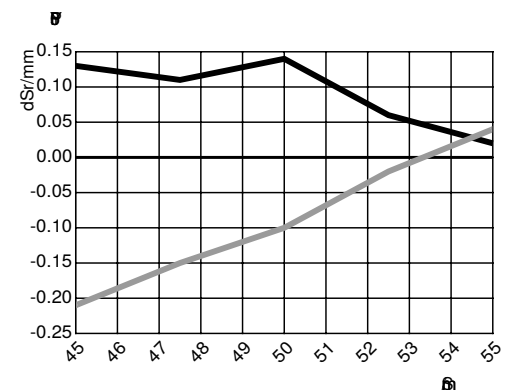
01 = Switching Status Indicator  
05 = Switching Distance Adjuster  
32 = Contamination Warning/Error Warning



| 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                  |
| Ū         | 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                   |

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

black 6 % remission

Aluminum

