

Reflex Sensor with Background Suppression

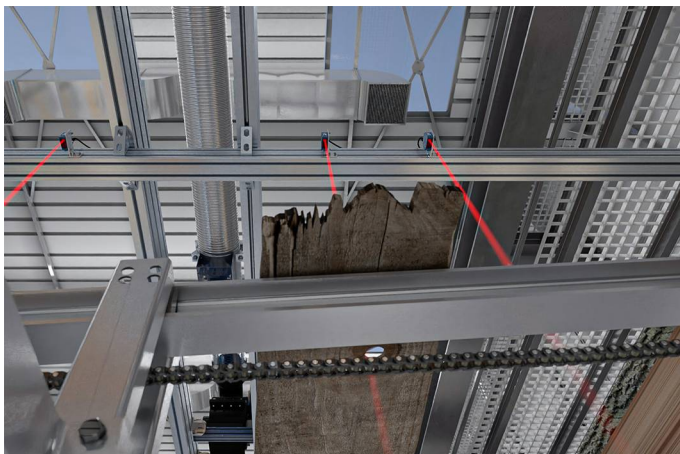
P1PH902

Part Number



- **Dynamic adjustment of the emitted light brightness**
- **IO-Link 1.1**
- **Low switching distance deviation for black/white**
- **Object detection over long distances**

The reflex sensor with background suppression works with red light according to the time-of-flight measurement principle and is suitable for detecting objects against any background. The sensor always has the same switching distance, regardless of the color, shape or surface of the objects. The dynamic adjustment of the transmitted light brightness enables reliable switching with varying object and background properties. The sensor is suitable for presence checks with a large detection range, even under adverse ambient conditions, such as in the presence of ambient light or contamination. The IO-Link interface can be used to configure the reflex sensors (NC/NO, switching distance), as well as to output switching statuses.

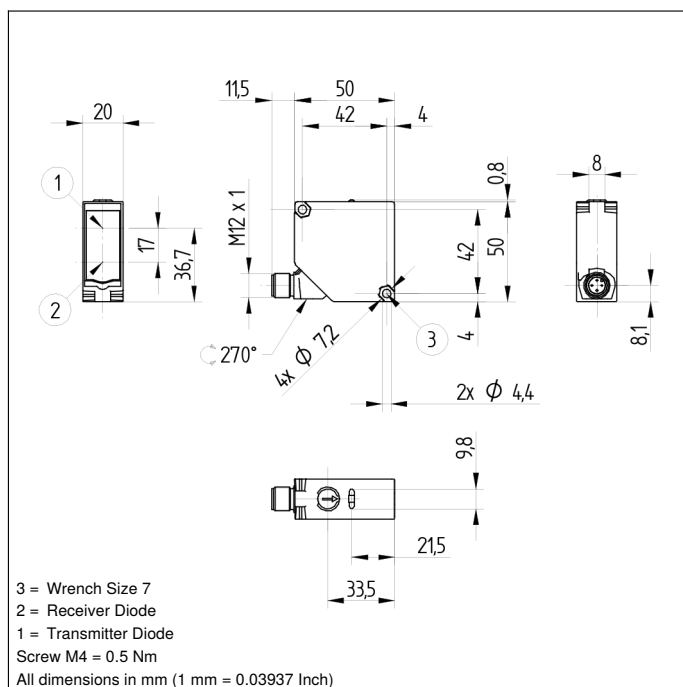


Technical Data

Optical Data	
Range	2500 mm
Setting Range	200...2500 mm
Switching Hysteresis	< 5 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	40000 Lux
Light Spot Diameter	see Table
Electrical Data	
Supply Voltage	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (U _b = 24 V)	< 25 mA
Switching Frequency	200 Hz
Switching Frequency (interference-free mode)	40 Hz
Response time (interference-free mode)	13 ms
Response Time	2,5 ms
Temperature Drift	< 10 %
Temperature Range	-40...60 °C
Switching Output Voltage Drop	< 2 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Lockable	yes
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic, ABS/PC
Degree of Protection	IP67
Degree of Protection	IP68
Connection	M12 × 1; 4-pin
Optic Cover	Plastic, PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1119,45 a
Scope of delivery	1 × initial start-up instructions 1 × sensor 1 × Z1PE002 mounting set
NPN NC, NPN NO	●
IO-Link	●
Connection Diagram No.	213
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	380

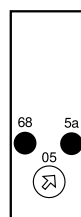
Complementary Products

Protective Screen

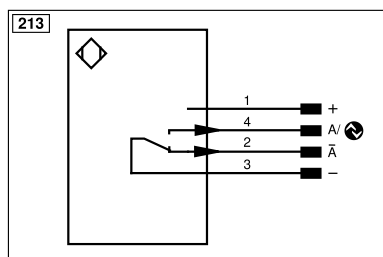


Ctrl. Panel

A61



05 = Switching Distance Adjuster
5a = Switching Status Indicator, O1
68 = Power LED



Legend					
+	Supply Voltage +	PT	Platinum measuring resistor	ENAR5422	Encoder A/Ā (TTL)
-	Supply Voltage 0 V	nc	Not connected	ENBR5422	Encoder B/B̄ (TTL)
~	Supply Voltage (AC Voltage)	U	Test Input	ENa	Encoder A
A	Switching Output (NO)	Ū	Test Input inverted	ENb	Encoder B
Ā	Switching Output (NC)	W	Trigger Input	AMIN	Digital output MIN
V	Contamination/Error Output (NO)	W-	Ground for the Trigger Input	AMAX	Digital output MAX
V̄	Contamination/Error Output (NC)	O	Analog Output	AOK	Digital output OK
E	Input (analog or digital)	O-	Ground for the Analog Output	SY In	Synchronization In
T	Teach Input	BZ	Block Discharge	SY OUT	Synchronization OUT
R	Reset input	Amv	Valve Output	OLT	Brightness output
Z	Time Delay (activation)	a	Valve Control Output +	M	Maintenance
S	Shielding	b	Valve Control Output 0 V	rsv	Reserved
RxD	Interface Receive Path	SY	Synchronization	Wire Colors according to DIN IEC 60757	
TxD	Interface Send Path	SY-	Ground for the Synchronization		
RDY	Ready	E+	Receiver-Line	BK	Black
GND	Ground	S+	Emitter-Line	BN	Brown
CL	Clock	⊕	Grounding	RD	Red
E/A	Output/Input programmable	SnR	Switching Distance Reduction	OG	Orange
IO-Link	IO-Link	Rx+/-	Ethernet Receive Path	YE	Yellow
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path	GN	Green
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	BU	Blue
QSSD	Safety Output	La	Emitted Light disengageable	VT	Violet
Signal	Signal Output	Mag	Magnet activation	GY	Grey
BL_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	WH	White
ENo RS422	Encoder 0-pulse 0/0 (TTL)	EDM	Contact Monitoring	PK	Pink
				GNYE	Green/Yellow

Table 1

Detection Range	250 mm	1200 mm	2500 mm
Light Spot Diameter	20 mm	35 mm	70 mm

Detection ranges

Related to remission value. Typical maximum switching distance deviation dSr = ± 0.06 m

white (90 %)	2,5 m	black (6 %)	1,2 m
grey (18 %)	2 m		