# Through-Beam Sensor

P1PE102
Part Number

- **Condition monitoring**
- **High light intensity with large switching reserve**
- **IO-Link 1.1**
- **Test input for high operational reliability**

The through-beam sensor works with red light as well as a transmitter and a receiver. Thanks to their high light intensity, the sensor provides a high degree of operational reliability even with interferences like steam, fog or dust. The transmitter can be deactivated using test input in order to test the functionality of the through-beam sensor. The IO-Link interface can be used to configure the sensor (PNP/NPN, NC/NO, switching distance), as well as for reading out switching statuses and signal values.
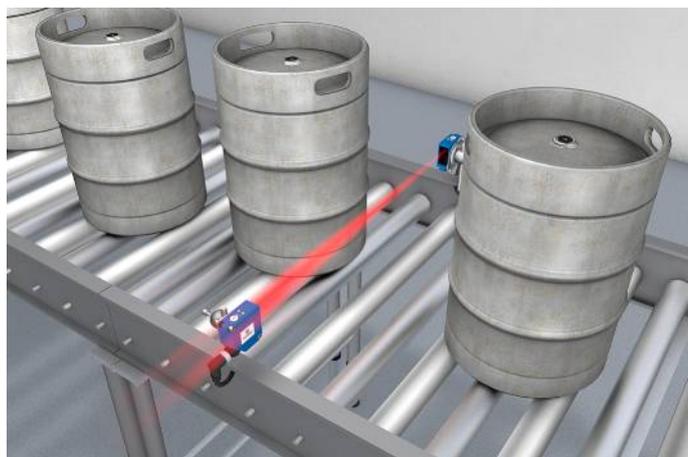
Technical Data

Optical Data	
Range	20000 mm
Smallest Recognizable Part	see Table 1
Switching Hysteresis	10 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Electrical Data	
Sensor Type	Receiver
Supply Voltage	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (Ub = 24 V)	< 25 mA
Switching Frequency	1000 Hz
Switching Frequency (interference-free mode)	500 Hz
Response Time	0,5 ms
Response time (interference-free mode)	1 ms
Temperature Drift	< 10 %
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 and Overload Protection	yes
Reverse Polarity Protection	yes
Interface	IO-Link V1.1
Protection Class	III
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)	1566,77 a
NPN NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	213
Control Panel No.	A32
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	380

Suitable Emitter

P1PS101

Complementary Products

IO-Link Master
Set Protective Housing Z1PS001
Software

Photoelectronic Sensors

1 = Receiver Diode
2 = Alignment aid/Switching Status Indicator
3 = Wrench Size 7
Screw M4 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

Ctrl. Panel

A32
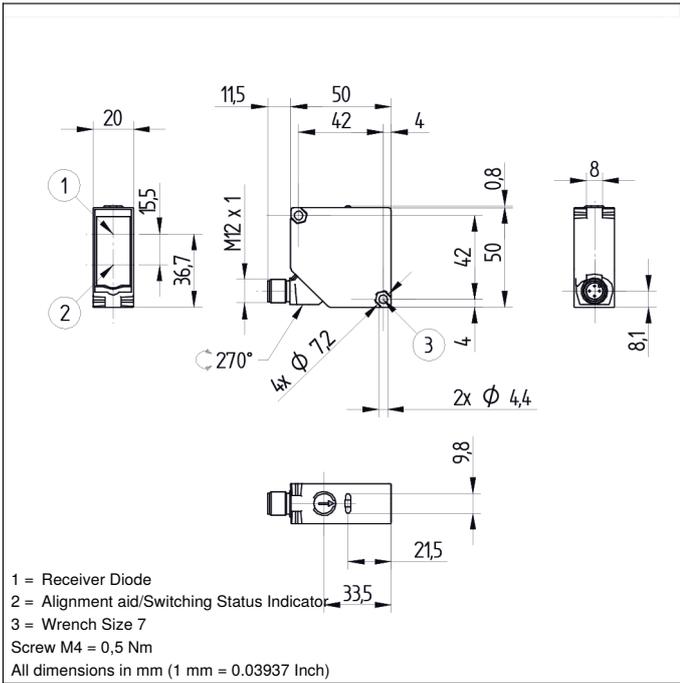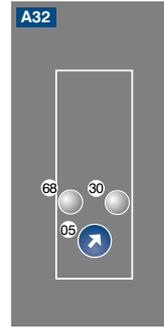
05 = Switching Distance Adjuster
30 = Switching Status/Contamination Warning
68 = Supply Voltage Indicator

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Pin		
1	+	
4	A/⬨	
2	Ā	
3	−	
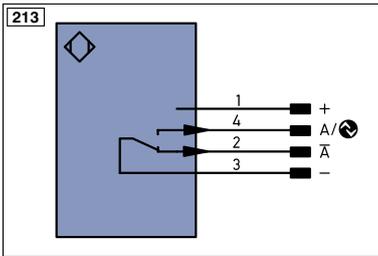
Legend

+	Supply Voltage +	PT	Platinum measuring resistor	EN$_{ARS422}$	Encoder A/Ā (TTL)	
−	Supply Voltage 0 V	nc	not connected	EN$_{BRS422}$	Encoder B/B̄ (TTL)	
~	Supply Voltage (AC Voltage)	U	Test Input	EN$_A$	Encoder A	
A	Switching Output (NO)	Ū	Test Input inverted	EN$_B$	Encoder B	
Ā	Switching Output (NC)	W	Trigger Input	A$_{MIN}$	Digital output MIN	
V	Contamination/Error Output (NO)	W−	Ground for the Trigger Input	A$_{MAX}$	Digital output MAX	
V̄	Contamination/Error Output (NC)	O	Analog Output	A$_{OK}$	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	
Z	Time Delay (activation)	A$_{MW}$	Valve Output	O$_{LT}$	Brightness output	
S	Shielding	a	Valve Control Output +	M	Maintenance	
RxD	Interface Receive Path	b	Valve Control Output 0 V	rsv	reserved	
TxD	Interface Send Path	SY	Synchronization		Wire Colors according to DIN IEC 757	
RDY	Ready	SY−	Ground for the Synchronization	BK	Black	
GND	Ground	E+	Receiver-Line	BN	Brown	
CL	Clock	S+	Emitter-Line	RD	Red	
E/A	Output/Input programmable	⏚	Grounding	OG	Orange	
⬨	IO-Link	SnR	Switching Distance Reduction	YE	Yellow	
PoE	Power over Ethernet	Rx+/−	Ethernet Receive Path	GN	Green	
IN	Safety Input	Tx+/−	Ethernet Send Path	BU	Blue	
OSSD	Safety Output	Bus	Interfaces-Bus A(+)/B(−)	VT	Violet	
Signal	Signal Output	La	Emitted Light disengageable	GY	Grey	
Bl_D+/−	Ethernet Gigabit bidirect. data line (A-D)	Mag	Magnet activation	WH	White	
EN$_{0RS422}$	Encoder 0-pulse 0-0̄ (TTL)	RES	Input confirmation	PK	Pink	
		EDM	Contactor Monitoring	GNYE	Green/Yellow	

Table 1

Distance transmitter/receiver	4 m	10 m	20 m
Smallest Recognizable Part	6 mm	2 mm	2,5 mm