

Retro-Reflex Sensor

Universal

P1PL301 LASER

Part Number



- Condition monitoring
- Detect extremely small parts starting at 0.75 mm
- High switching frequency
- IO-Link 1.1

The retro-reflex sensor works with a fine laser beam and a reflector. The laser class 1 collimated laser beam detects objects, for instance, when checking installation, feed or presence, starting at a size of 0.75 mm over the entire range. The IO-Link interface can be used to configure retro-reflex sensors (PNP/NPN, NC/NO, switching distance) and to output switching statuses and signal values.



Technical Data

Optical Data

Range	9500 mm
Reference Reflector/Reflector Foil	RE6151BM
Min. Distance to Reflector	0 mm
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 15 %
Light Source	Laser (red), collimated
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Light Spot Diameter	see Table
Single-Lens Optic	yes

Electrical Data

Supply Voltage	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (U _b = 24 V)	< 20 mA
Switching Frequency	2000 Hz
Switching frequency (speed mode)	3500 Hz
Response Time	0,25 ms
Response time (speed mode)	0,14 ms
Temperature Drift	< 10 %
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 Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link V1.1
Protection Class	III

Mechanical Data

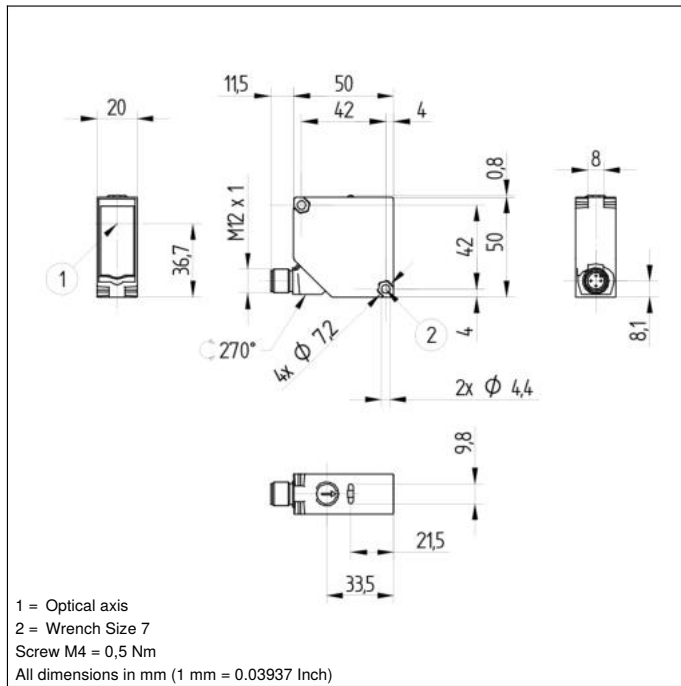
Setting Method	Potentiometer
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4-pin
Optic Cover	PMMA

Safety-relevant Data

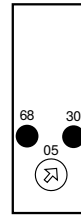
MTTFd (EN ISO 13849-1)	2427,93 a
IO-Link	●
PNP NO/NC antivalent	●
Connection Diagram No.	215
Control Panel No.	A32
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	380

Complementary Products

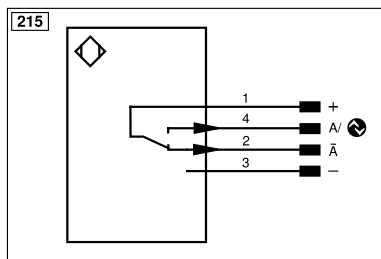
IO-Link Master
Reflector, Reflector Foil
Set Protective Housing Z1PS001
Software



Ctrl. Panel



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)	Ü	Test Input inverted
A	Switching Output (NO)	W	Trigger Input
Ä	Switching Output (NC)	W-	Ground for the Trigger Input
V	Contamination/Error Output (NO)	O	Analog Output
V̄	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/Ü (TTL)	EDM	Contact Monitoring
PT	Platinum measuring resistor	ENAR422	Encoder A/Ä (TTL)
		ENBR422	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

Working Distance	2 m	5 m	9,5 m
Light Spot Diameter	20 mm	50 mm	70 mm

Table 2

Distance, Sensor to Reflector	2 m	5 m	9,5 m
Smallest Recognizable Part	0,75 mm	5 mm	8 mm

Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0,07...9,5 m	RR21_M	0...1,8 m
RE18040BA	0,07...6 m	Z90R004	0,15...4 m
RQ84BA	0,07...8 m	Z90R005	0,15...5,7 m
RR84BA	0,07...9,5 m	ZRAE02B01	0,07...4,5 m
RE9538BA	0...3 m	ZRME01B01	0...1 m
RE6151BM	0...9,5 m	ZRME03B01	0...3,8 m
RR50_A	0,06...8,5 m	ZRMR02K01	0...1,5 m
RE6040BA	0,07...9 m	RF505	0...1,5 m
RE8222BA	0,06...5 m	RF508	0...1,6 m
RR34_M	0...4,5 m	RF258	0...1,5 m
RE3220BM	0...5 m	ZRAF08K01	0...1,5 m
RE6210BM	0...2 m	ZRDF03K01	0...6 m
RR25_M	0...3,3 m	ZRDF10K01	0...6 m
RR25KP	0...1,3 m		

