

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.

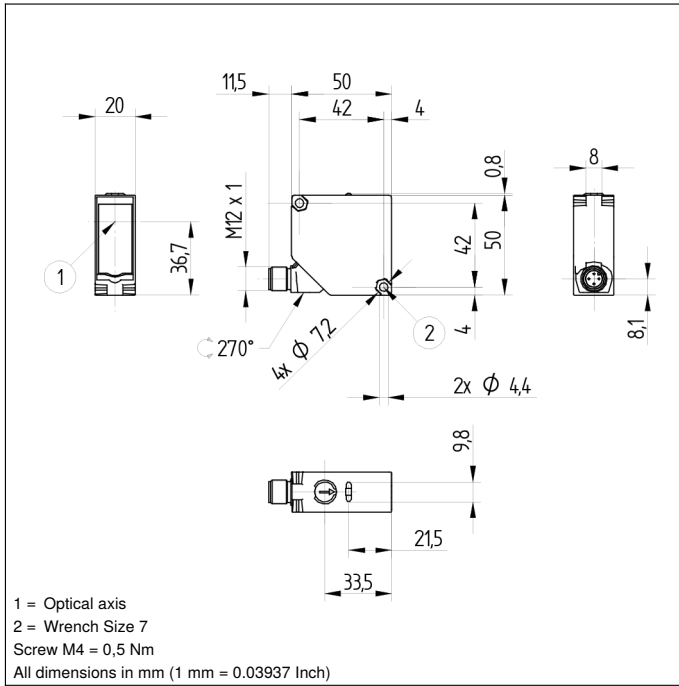


Technical Data

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

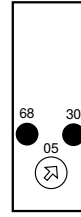
Complementary Products

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

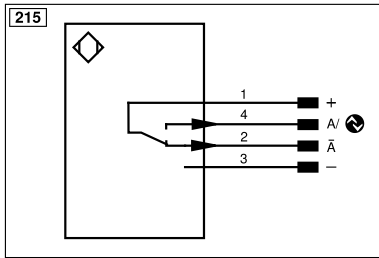


1 = Optical axis
 2 = Wrench Size 7
 Screw M4 = 0,5 Nm
 All dimensions in mm (1 mm = 0.03937 Inch)

Ctrl. Panel



05 = Switching Distance Adjuster
 30 = Switching Status/Contamination Warning
 68 = supply voltage indicator



Legend					
+	Supply Voltage +	nc	Not connected	ENBRS422	Encoder B/B̄ (TTL)
-	Supply Voltage 0 V	U	Test Input	ENA	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	ENB	Encoder B
A	Switching Output (NO)	W	Trigger Input	AMIN	Digital output MIN
Ā	Switching Output (NC)	W-	Ground for the Trigger Input	AMAX	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	AOK	Digital output OK
ȳ	Contamination/Error Output (NC)	O-	Ground for the Analog Output	SY In	Synchronization In
E	Input (analog or digital)	BZ	Block Discharge	SY OUT	Synchronization OUT
T	Teach 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	BK	Black
RDY	Ready	E+	Receiver-Line	BN	Brown
GND	Ground	S+	Emitter-Line	RD	Red
CL	Clock	±	Grounding	OG	Orange
E/A	Output/Input programmable	SnR	Switching Distance Reduction	YE	Yellow
IO-Link	IO-Link	Rx+/-	Ethernet Receive Path	GN	Green
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path	BU	Blue
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	VT	Violet
OSSD	Safety Output	La	Emitted Light disengageable	GY	Grey
Signal	Signal Output	Mag	Magnet activation	WH	White
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink
ENo RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contact Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	ENAR5422	Encoder A/Ā (TTL)		

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		

