

Retro-Reflex Sensor

P1KL006

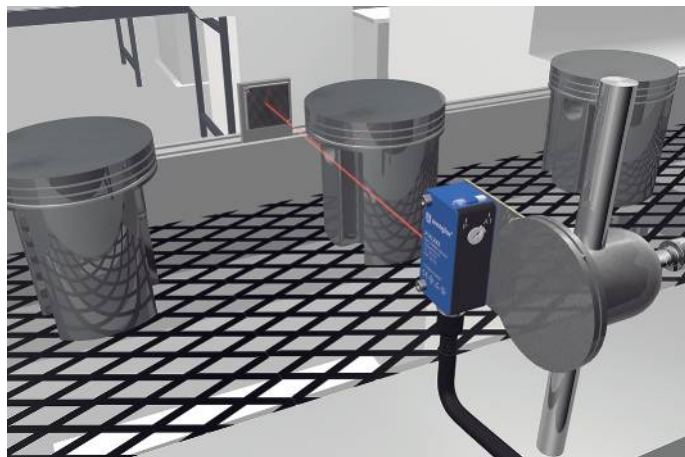
LASER

Part Number



- Condition monitoring
- Detect extremely small parts starting at 1 mm
- High switching frequency
- IO-Link 1.1

The retro-reflex sensor works with a fine laser beam and a reflector. The collimated laser beam of laser class 1 detects objects, for instance, when conducting installation, feed or presence controls, starting at a size of one millimeter over the entire range. The IO-Link interface can be used to configure retro-reflective barriers (PNP/NPN, NC/NO, switching distance), as well as for reading out switching statuses and signal values.



Technical Data

Optical Data

Range	12000 mm
Reference Reflector/Reflector Foil	RE6151BM
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 15 %
Light Source	Laser (red), collimated
Wavelength	680 nm
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 1
Two-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)	< 15 mA
Switching Frequency	2000 Hz
Switching frequency (speed mode)	4000 Hz
Response Time	0,25 ms
Response time (speed mode)	0,125 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
Lockable	yes
Interface	IO-Link V1.1
Protection Class	III
FDA Accession Number	1710976-001

Mechanical Data

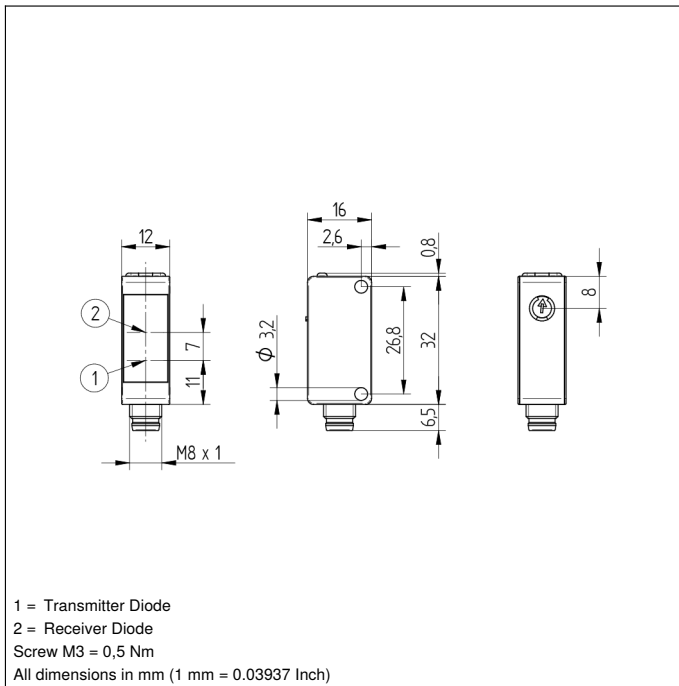
Setting Method	Potentiometer
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M8 × 1; 4-pin
Optic Cover	PMMA

Safety-relevant Data

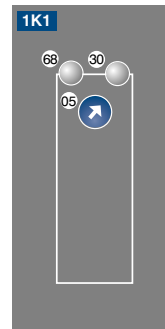
MTTFd (EN ISO 13849-1)	2617,62 a
IO-Link	●
PNP NO/NC antivalent	●
Connection Diagram No.	215
Control Panel No.	1K1
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

Complementary Products

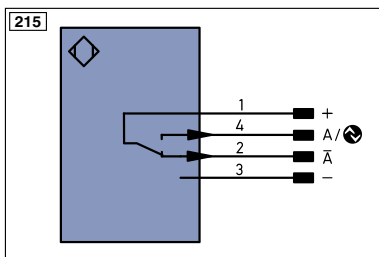
IO-Link Master	
Reflector, Reflector Foil	
Software	



Ctrl. Panel



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



Legend

+	Supply Voltage +	PT	Platinum measuring resistor	ENAR542Z	Encoder A/Ä (TTL)
-	Supply Voltage 0 V	nc	not connected	ENBP542Z	Encoder B/B̄ (TTL)
~	Supply Voltage (AC Voltage)	U	Test Input	ENa	Encoder A
A	Switching Output (NO)	Ů	Test Input inverted	ENb	Encoder B
Ä	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
Ů	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
Z	Time Delay (activation)	AWV	Valve Output	OLT	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 IEC 60757	
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	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
BI-D+/-	Ethernet Gigabit bidirect. data line (A-D)	Mag	Magnet activation	WH	White
ENBP542Z	Encoder 0-pulse 0-0̄ (TTL)	RES	Input confirmation	PK	Pink
		EDM	Contactur Monitoring	GNYE	Green/Yellow

Table 1

Working Distance	0,1 m	5 m	12 m
Light Spot Diameter	4 mm	11 mm	22 mm

Table 2

Distance, Sensor to Reflector	2 m	4 m	12 m
Smallest Recognizable Part	1,5 mm	1 mm	2,5 mm

Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0,1...16 m	RR21_M	0,1...7 m
RE18040BA	0,1...12 m	Z90R004	0,15...5 m
RQ84BA	0,1...16 m	Z90R005	0,15...5,9 m
RR84BA	0,1...16 m	ZRAE02B01	0,1...7 m
RE9538BA	0,1...4,5 m	ZRME01B01	0,1...3 m
RE6151BM	0,1...12 m	ZRME03B01	0,1...4,5 m
RR50_A	0,1...16 m	ZRMR02K01	0,1...5 m
RE6040BA	0,1...15 m	ZRMS02_01	0,1...7 m
RE8222BA	0,1...10 m	RF505	0,1...2 m
RR34_M	0,1...2,5 m	RF508	0,1...2 m
RE3220BM	0,1...7 m	RF258	0,1...2 m
RE6210BM	0,1...4,5 m	ZRDF03K01	0,1...4 m
RR25_M	0,1...7 m	ZRDF10K01	0,1...4 m
RR25KP	0,1...2,5 m		

