

Retro-Reflex Sensor

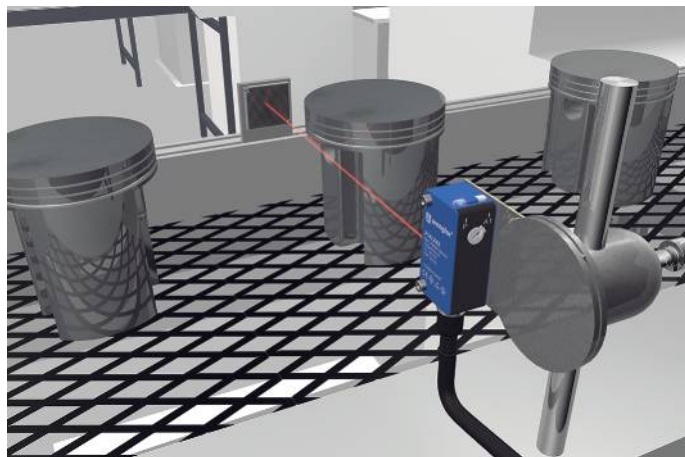
P1KL016 LASER

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.

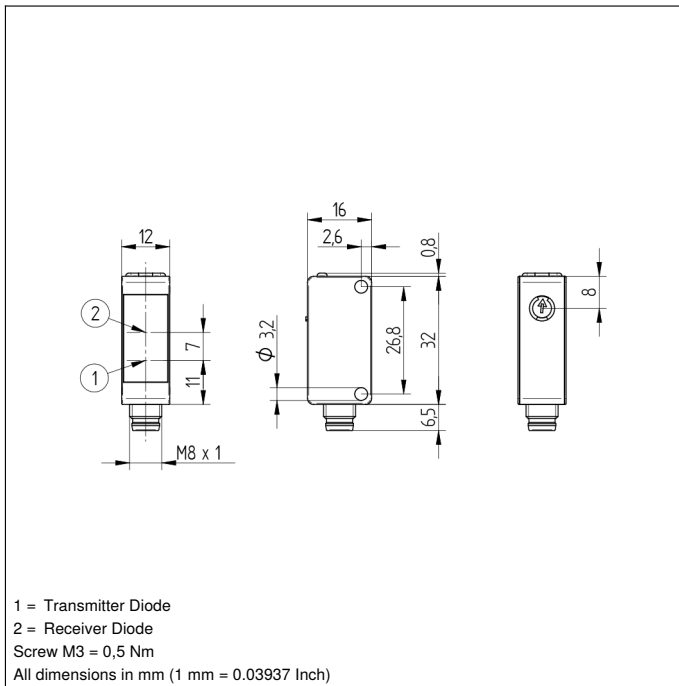


Technical Data

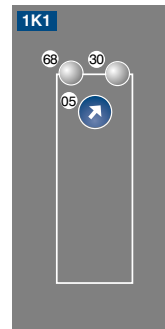
Optical Data	
Range	12000 mm
Reference Reflector/Reflector Foil	RE6151BM
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 15 %
Light Source	Laser (red), collimated
Wavelength	655 nm
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 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; 3-pin
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2633,47 a
IO-Link	●
NPN NC	●
Connection Diagram No.	218
Control Panel No.	1K1
Suitable Connection Equipment No.	8
Suitable Mounting Technology No.	400

Complementary Products

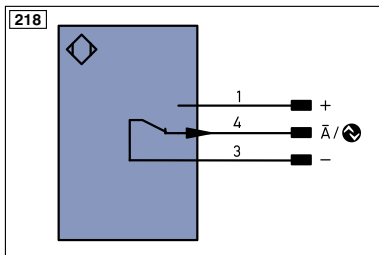
IO-Link Master	
Reflector, Reflector Foil	
Software	



Ctrl. Panel



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



Legend

+	Supply Voltage +	PT	Platinum measuring resistor
-	Supply Voltage 0 V	nc	not connected
~	Supply Voltage (AC Voltage)	U	Test Input
A	Switching Output (NO)	U	Test Input inverted
Ä	Switching Output (NC)	W	Trigger Input
V	Contamination/Error Output (NO)	W-	Ground for the Trigger Input
Ä	Contamination/Error Output (NC)	O	Analog Output
E	Input (analog or digital)	O-	Ground for the Analog Output
T	Teach Input	BZ	Block Discharge
Z	Time Delay (activation)	ÄW	Valve Output
S	Shielding	a	Valve Control Output +
RxD	Interface Receive Path	b	Valve Control Output 0 V
TxD	Interface Send Path	SY	Synchronization
RDY	Ready	SY-	Ground for the Synchronization
GND	Ground	E+	Receiver-Line
CL	Clock	S+	Emitter-Line
E/A	Output/Input programmable	±	Grounding
IO-Link	IO-Link	SnR	Switching Distance Reduction
PoE	Power over Ethernet	Rx+/-	Ethernet Receive Path
IN	Safety Input	Tx+/-	Ethernet Send Path
OSSD	Safety Output	Bus	Interfaces-Bus A(+)/B(-)
Signal	Signal Output	La	Emitted Light disengageable
BLD+/-	Ethernet Gigabit bidirect. data line (A-D)	Mag	Magnet activation
EN0.5A22	Encoder 0-pulse 0-0 (TTL)	RES	Input confirmation
		EDM	Contactur Monitoring

EN0.5A22	Encoder A/Ä (TTL)
EN0.5A22	Encoder B/Ä (TTL)
ENa	Encoder A
ENb	Encoder B
ÄMIN	Digital output MIN
ÄMAX	Digital output MAX
ÄOK	Digital output OK
SY in	Synchronization In
SY OUT	Synchronization OUT
OLT	Brightness output
M	Maintenance
rsv	reserved
Wire Colors according to 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	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		

