

Retro-Reflex Sensor

Universal

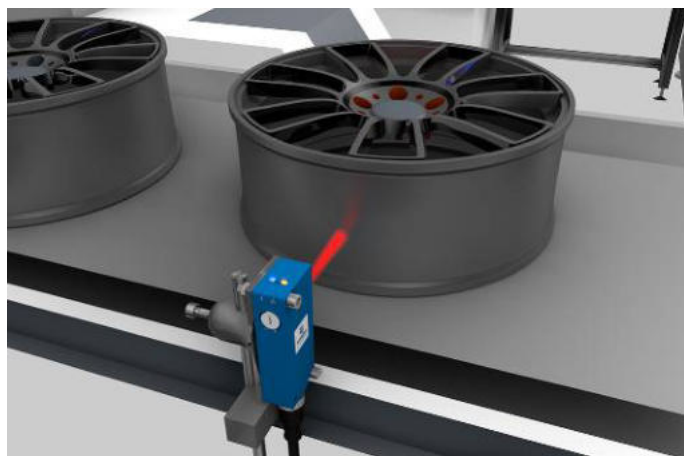
P1NL412 LASER

Part Number



- Condition monitoring
- Detect extremely small parts starting at 0.3 mm
- Focused optics
- High switching frequency

The retro-reflex sensor works with a fine laser beam and a reflector. The focused laser class 1 laser beam detects objects, e.g. during assembly, feed or presence checks, from 0.3 mm in size 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 states and signal values.



Technical Data

Optical Data

Range	5000 mm
Reference Reflector/Reflector Foil	RE6151BM
Min. Distance to Reflector	0 mm
Smallest Recognizable Part	0,3 mm
Switching Hysteresis	< 15 %
Light Source	Laser (red), focused
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Light Spot Diameter	1,5 mm
Focus Distance	180...220 mm
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	5000 Hz
Response Time	0,1 ms
On-Delay	20 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
Protection Class	III
FDA Accession Number	1911373-000

Mechanical Data

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

Safety-relevant Data

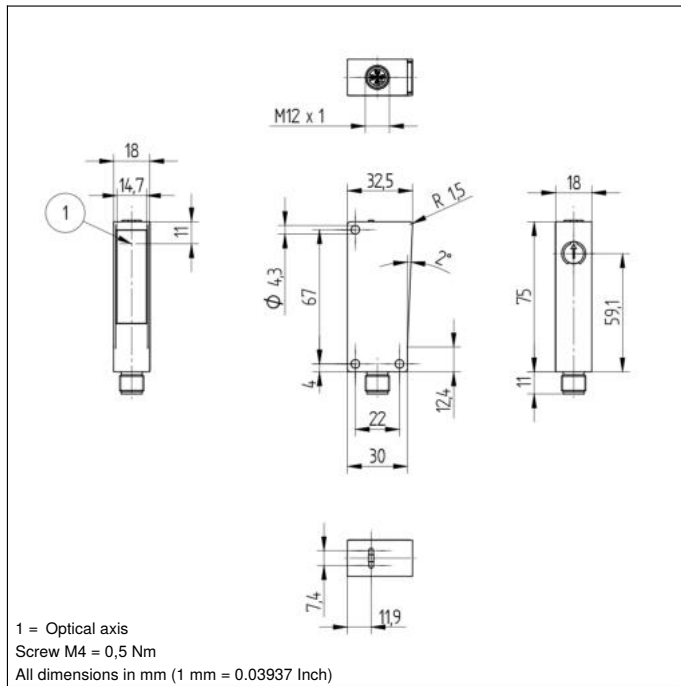
MTTFd (EN ISO 13849-1)	2369,59 a
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PNP NC	●
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Connection Diagram No.	108
Control Panel No.	A28
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	350

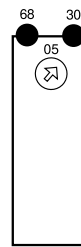
Complementary Products

Dust Extraction Tube STAUBTUBUS-03
Reflector, Reflector Foil
Set Protective Housing Z1NS001
Software

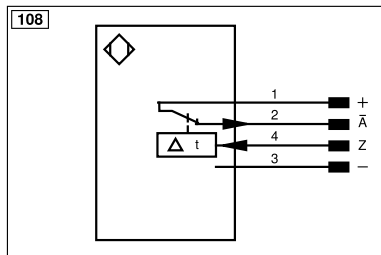


Ctrl. Panel

A28



01 = Switching Status Indicator
05 = Switching Distance Adjuster
68 = supply voltage indicator



Legend			
+	Supply Voltage +	nc	Not connected
-	Supply Voltage 0 V	U	Test Input
~	Supply Voltage (AC Voltage)	Ů	Test Input inverted
A	Switching Output (NO)	W	Trigger Input
Ā	Switching Output (NC)	W-	Ground for the Trigger Input
V	Contamination/Error Output (NO)	O	Analog Output
Ȳ	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	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
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation
ENo RS422	Encoder 0-pulse 0/0 (TTL)	EDM	Contact Monitoring
PT	Platinum measuring resistor	ENAR422	Encoder A/Ā (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	1 m	2,5 m	5 m
Light Spot Diameter	14 mm	37 mm	77 mm

Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0...6,5 m	Z90R005	0,15...3,6 m
RE18040BA	0...4,5 m	ZRAE02B01	0...2,8 m
RQ84BA	0...6 m	ZRME01B01	0...1 m
RR84BA	0...7,8 m	ZRME03B01	0...3,3 m
RE9538BA	0...2,5 m	ZRMR02K01	0...1,3 m
RE6151BM	0...5 m	ZRMS02_01	0...1,4 m
RR50_A	0...5 m	RF505	0...1,5 m
RE6040BA	0...6,7 m	RF255	0...1,3 m
RE8222BA	0...3,7 m	RF508	0...1,4 m
RR34_M	0...4,2 m	RF258	0...1,5 m
RE3220BM	0...3 m	RF4050	0...1,2 m
RE6210BM	0...1,8 m	ZRAF07K01	0...1,3 m
RR25_M	0...2,6 m	ZRAF08K01	0...1,5 m
RR25KP	0...1,2 m	Z91R001	0...4,2 m
RR21_M	0...1,5 m	ZRDF03K01	0...5 m
Z90R004	0,15...2,6 m	ZRDF10K01	0...4,4 m

