Retro-Reflex Sensor
Universal

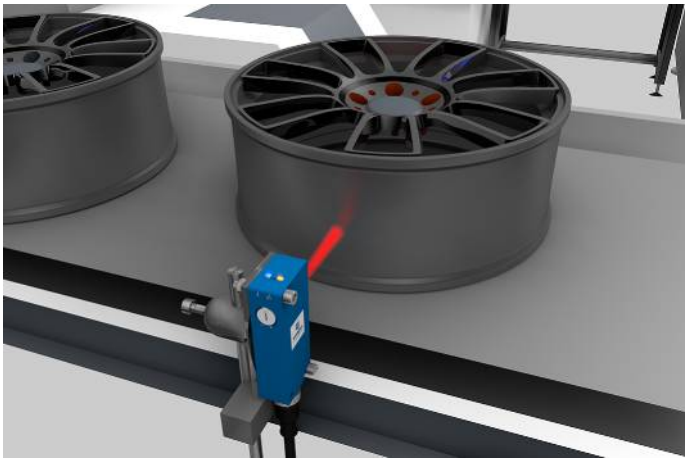
P1NL412 LASER

Part Number

PNG smart

- **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.

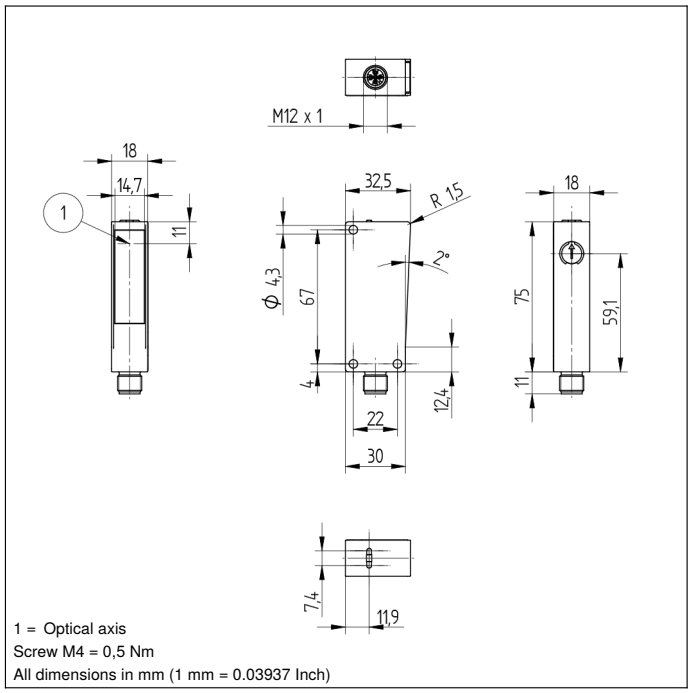


Technical Data

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 (Ub = 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
PNP NC	●
Connection Diagram No.	108
Control Panel No.	A28
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	350

Complementary Products

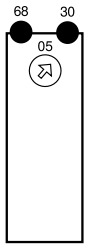
Dust Extraction Tube STAUBTUBUS-03
Reflector, Reflector Foil
Set Protective Housing Z1NS001
Software



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

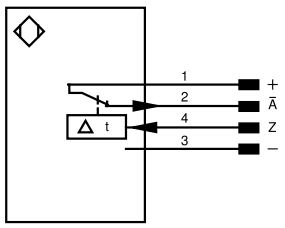
Ctrl. Panel

A28



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

108



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
V̄	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	Rx+/–	Ethernet Receive Path	GN	Green
PoE	ower 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
EN0 RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	ENARS422	Encoder A/Ā (TTL)		

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