

Retro-Reflex Sensor

P1NL101

Part Number



- Also suitable for glossy and reflective objects
- Condition monitoring
- High switching frequency
- IO-Link 1.1
- No blind spot from single-lens optics

The retro-reflex sensor works with red light and a reflector. It also reliably detects objects with reflective or glossy surfaces at high speeds. Thanks to its great range, the sensor can, for example, be used to manage feed and presence controls as well as to detect objects on wide feed belts. 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.

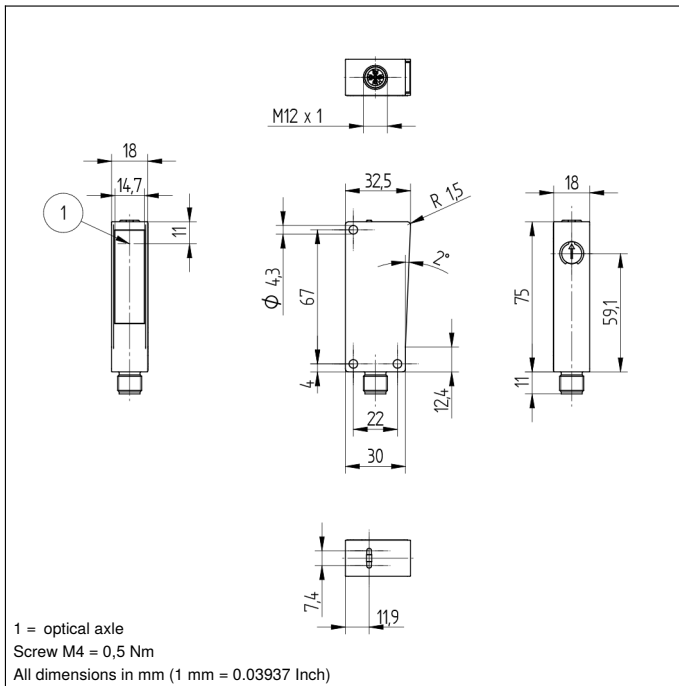


Technical Data

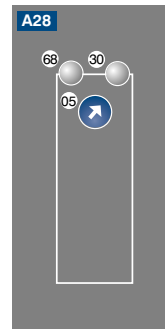
Optical Data	
Range	7000 mm
Reference Reflector/Reflector Foil	RQ100BA
Min. Distance to Reflector	0 mm
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 15 %
Light Source	Red Light
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Light Spot Diameter	see Table 1
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	-40...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)	2690,44 a
IO-Link	●
PNP NO/NC antivalent	●
Connection Diagram No.	215
Control Panel No.	A28
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	350

Complementary Products

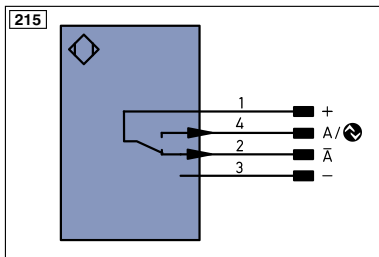
Dust Extraction Tube STAUBTUBUS-03
IO-Link Master
Reflector, Reflector Foil
Set Protective Housing Z1NS001
Software



Ctrl. Panel



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



Legend					
+	Supply Voltage +	PT	Platinum measuring resistor	EN ^{A/RS422}	Encoder A/Ā (TTL)
-	Supply Voltage 0 V	nc	not connected	EN ^{B/RS422}	Encoder B/B̄ (TTL)
~	Supply Voltage (AC Voltage)	U	Test Input	EN ^A	Encoder A
A	Switching Output (NO)	Ū	Test Input inverted	EN ^B	Encoder B
Ā	Switching Output (NC)	W	Trigger Input	A ^{MIN}	Digital output MIN
V	Contamination/Error Output (NO)	W-	Ground for the Trigger Input	A ^{MAX}	Digital output MAX
Ṽ	Contamination/Error Output (NC)	O	Analog Output	A ^{OK}	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)	A ^{WV}	Valve Output	OL ^T	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 DIN IEC 757	
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	S ^{nR}	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	L ^a	Emitted Light disengageable	GY	Grey
Bl_D+/-	Ethernet Gigabit bidirect. data line (A-D)	Mag	Magnet activation	WH	White
EN ^{0/RS422}	Encoder 0-pulse 0-0̄ (TTL)	RES	Input confirmation	PK	Pink
		EDM	Contactur Monitoring	GNVE	Green/Yellow

Table 1

Working Distance	1,5 m	3,5 m	7 m
Light Spot Diameter	60 mm	120 mm	250 mm

Table 2

Distance, Sensor to Reflector	1,5 m	3,5 m	7 m
Smallest Recognizable Part	10 mm	6 mm	15 mm

Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0...7 m	RR25_M	0...2,2 m
RE18040BA	0...5 m	RR25KP	0...1,3 m
RQ84BA	0...5,8 m	RR21_M	0...1,4 m
RR84BA	0...7 m	ZRAE02B01	0...3,1 m
RE9538BA	0...2,5 m	ZRME01B01	0...0,9 m
RE6151BM	0...5,2 m	ZRME03B01	0...3,2 m
RR50_A	0...5 m	ZRMR02K01	0...1,1 m
RE6040BA	0...5,7 m	RF505	0...2,1 m
RE8222BA	0...3,4 m	RF508	0...2,1 m
RR34_M	0...3 m	RF258	0...1,8 m
RE3220BM	0...2,5 m	ZRDF03K01	0...4,5 m
RE6210BM	0...1,8 m	ZRDF10K01	0...5,5 m

