

# Retro-Reflex Sensor

## Universal

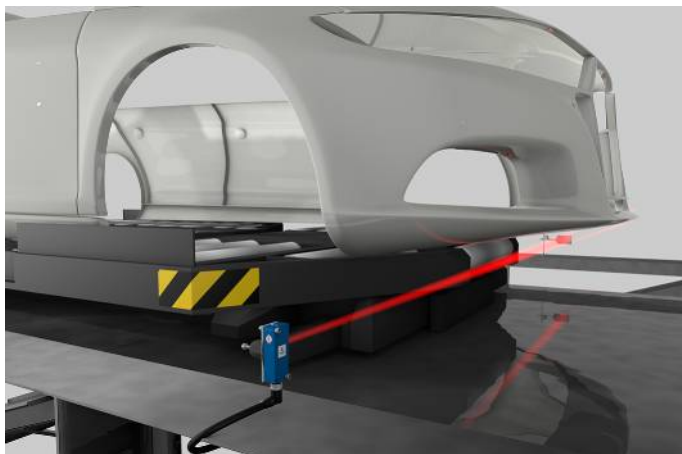
# P1NL301

Part Number



- Also suitable for glossy and reflective objects
- Condition monitoring
- High switching frequency
- IO-Link 1.1

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	11000 mm
Reference Reflector/Reflector Foil	RQ100BA
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
Two-Lens Optic	yes

Electrical Data	
Supply Voltage	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (U <sub>b</sub> = 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	Cable, 4-wire, 6 m
Optic Cover	PMMA

Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2991,63 a

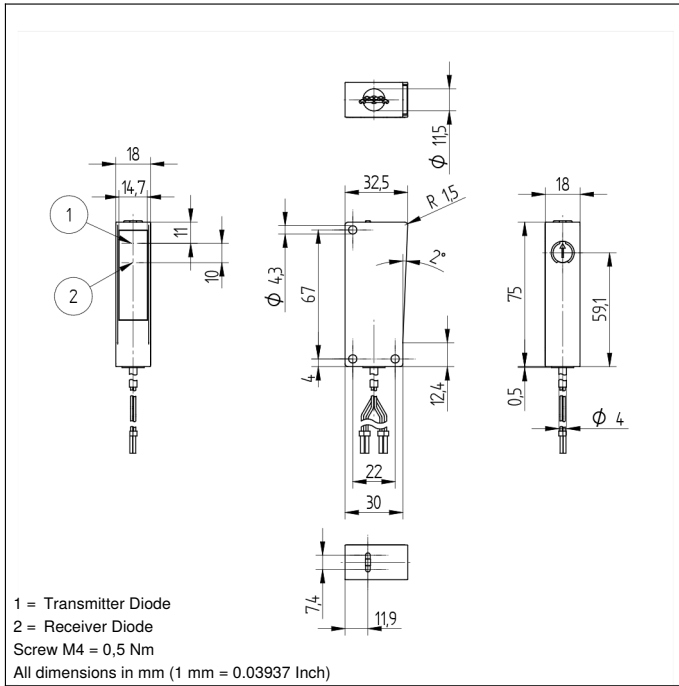
IO-Link	●
PNP NO/NC antivalent	●

Connection Diagram No.	<b>214</b>
Control Panel No.	<b>A28</b>
Suitable Mounting Technology No.	<b>350</b>

\* Temperature range with permanently installed cable, bending radius: > 40 mm

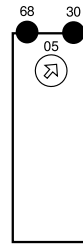
### Complementary Products

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

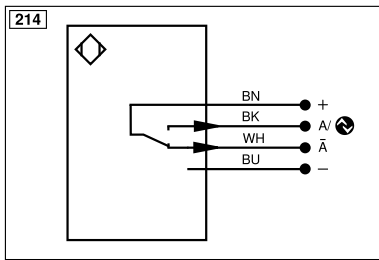


### Ctrl. Panel

A28



05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = supply voltage indicator



Legend	
+	Supply Voltage +
-	Supply Voltage 0 V
~	Supply Voltage (AC Voltage)
A	Switching Output (NO)
Ā	Switching Output (NC)
V	Contamination/Error Output (NO)
ȳ	Contamination/Error Output (NC)
E	Input (analog or digital)
T	Teach Input
Z	Time Delay (activation)
S	Shielding
RxD	Interface Receive Path
TxD	Interface Send Path
RDY	Ready
GND	Ground
CL	Clock
E/A	Output/Input programmable
	IO-Link
PoE	Power over Ethernet
IN	Safety Input
OSSD	Safety Output
Signal	Signal Output
Bl_D+/-	Ethernet Gigabit bidirect. data line (A-D)
ENo RS422	Encoder 0-pulse 0/0 (TTL)
PT	Platinum measuring resistor
nc	Not connected
U	Test Input
Ū	Test Input inverted
W	Trigger Input
W-	Ground for the Trigger Input
O	Analog Output
O-	Ground for the Analog Output
BZ	Block Discharge
Amv	Valve Output
a	Valve Control Output +
b	Valve Control Output 0 V
SY	Synchronization
SY-	Ground for the Synchronization
E+	Receiver-Line
S+	Emitter-Line
±	Grounding
SnR	Switching Distance Reduction
Rx+/-	Ethernet Receive Path
Tx+/-	Ethernet Send Path
Bus	Interfaces-Bus A(+)/B(-)
La	Emitted Light disengageable
Mag	Magnet activation
RES	Input confirmation
EDM	Contactor Monitoring
ENARs422	Encoder A/Ā (TTL)
ENBrs422	Encoder B/Ĕ (TTL)
ENA	Encoder A
ENb	Encoder B
AMIN	Digital output MIN
AMAX	Digital output MAX
Aok	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	2 m	5,5 m	11 m
Light Spot Diameter	120 mm	270 mm	500 mm

Table 2

Distance, Sensor to Reflector	2 m	5,5 m	11 m
Smallest Recognizable Part	40 mm	20 mm	30 mm

### Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0,02...11 m	RR21_M	0,1...2,8 m
RE18040BA	0,02...7,6 m	Z90R004	0,15...3,5 m
RQ84BA	0,04...10 m	Z90R005	0,15...5,1 m
RE9538BA	0,05...4,5 m	ZRAE02B01	0,02...4,5 m
RE6151BM	0,07...7,5 m	ZRME01B01	0,1...1,7 m
RR50_A	0,02...7 m	ZRME03B01	0,1...5 m
RE6040BA	0,15...7,5 m	ZRMR02K01	0,1...2 m
RE8222BA	0,02...5 m	ZRMS02_01	0,05...2,6 m
RR34_M	0,1...5 m	RF505	0,1...3,3 m
RE3220BM	0,1...3,4 m	RF508	0,1...3,1 m
RE6210BM	0,1...2,5 m	RF258	0,1...3 m
RR25_M	0,1...2,6 m	ZRAF08K01	0,1...3,3 m
RR25KP	0,1...2 m	ZRDF03K01	0,1...7 m

