

# Reflex Sensor with Background Suppression

## P1NH304

Part Number



- Condition monitoring
- IO-Link 1.1
- Low switching distance deviation for black/white
- Reliably detect objects against any background

The reflex sensor with background suppression works with red light according to the angle measurement principle and is designed to detect objects against any background. The sensor always has the same switching distance, regardless of the color, shape and surface of the objects. The sensor detects minimal height differences and, for example, differentiates reliably various parts from each other. The IO-Link interface can be used to configure the reflex sensors (PNP/NPN, NC/NO, switching distance), as well as for reading out switching statuses and distance values.



### Technical Data

#### Optical Data

Range	500 mm
Adjustable Range	60...500 mm
Switching Hysteresis	< 3 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Light Spot Diameter	see Table 1

#### Electrical Data

Supply Voltage	15...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (Ub = 24 V)	< 25 mA
Switching Frequency	800 Hz
Switching Frequency (interference-free mode)	500 Hz
Response Time	1,25 ms
Response time (interference-free mode)	1,5 ms
Temperature Drift	< 5 %
Temperature Range	-40...60 °C
Switching Output Voltage Drop	< 2 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link V1.1
Protection Class	III

#### Mechanical Data

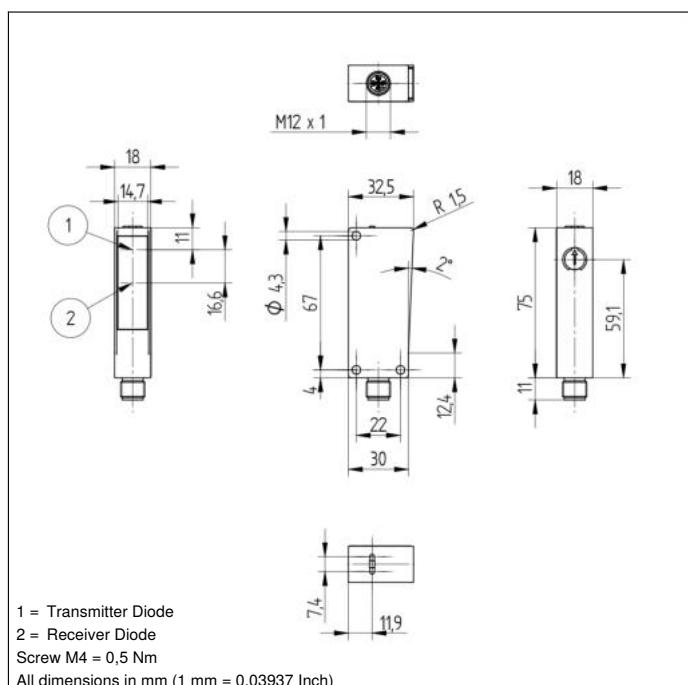
Setting Method	Potentiometer
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 x 1; 4-pin
Optic Cover	PMMA

#### Safety-relevant Data

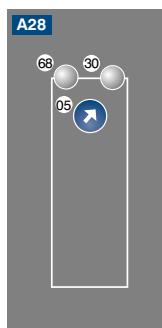
MTTFd (EN ISO 13849-1)	957,54 a
PNP NO/NC antivalent	● ●
IO-Link	● ●
Connection Diagram No.	215
Control Panel No.	A28
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	350

### Complementary Products

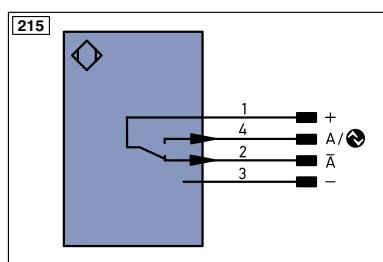
Dust Extraction Tube STAUBTUBUS-03
IO-Link Master
Set Protective Housing Z1NS001
Software



### Ctrl. Panel



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



#### Legend

+	Supply Voltage +	PT	Platinum measuring resistor
-	Supply Voltage 0 V	nc	not connected
~	Supply Voltage (AC Voltage)	U	Test Input
A	Switching Output (NO)	Ü	Test Input inverted
̄A	Switching Output (NC)	W	Trigger Input
V	Contamination/Error Output (NO)	W-	Ground for the Trigger Input
̄V	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)	Awv	Valve Output
S	Shielding	a	Valve Control Output +
		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		Rx+/-	Ethernet Receive Path
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)
DSO	Safety Output	La	Emitted Light disengageable
Signal	Signal Output	Mag	Magnet activation
BLD	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation
ENoRS422	Encoder 0-pulse 0-0 (TTL)	EDM	Contactor Monitoring

ENoRS422	Encoder A/̄A (TTL)
ENoRS422	Encoder B/̄B (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 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

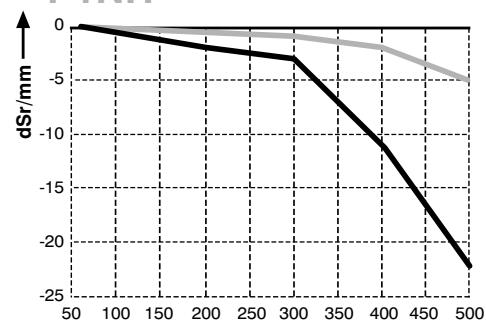
Table 1

Detection Range	100 mm	250 mm	500 mm
Light Spot Diameter	11 mm	13 mm	15 mm

### Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission

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Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission  
— grey 18 % remission

