Reflex Sensor
with Background Suppression

P1NH705 LASER

Part Number

- **Condition monitoring**
- **IO-Link 1.1**
- **Laser class 1**
- **Recognition of small parts**

The reflex sensor with background suppression works with laser 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. Even small parts can be reliably detected thanks to the thin laser beam. The IO-Link interface can be used to configure the reflex sensor (PNP/NPN, NC/NO), as well as to read out switching statuses values.
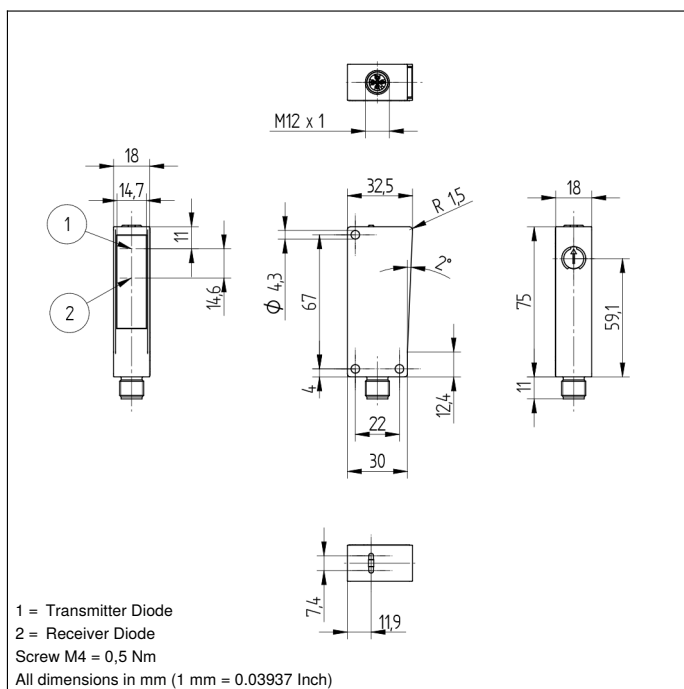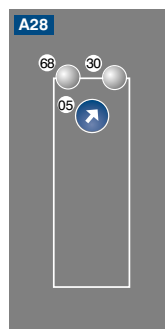
Technical Data

Optical Data	
Range	300 mm
Adjustable Range	65...300 mm
Switching Hysteresis	< 2 %
Light Source	Laser (red)
Wavelength	655 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
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)	< 15 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	< 3 %
Temperature Range	-25...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 × 1; 4-pin
Optic Cover	PMMA

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NPN NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	213
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

Photoelectronic Sensors

Dimensions (Technical Drawing)

M12 x 1

18
14,7
11
14,6

1
2

32,5
R 15
2°
Ø 4,3
67
4

18
75
59,1
11

22
12,4
30

7,4
11,9

1 = Transmitter Diode
2 = Receiver Diode
Screw M4 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

Ctrl. Panel

A28

68   30
05

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

Connection Diagram

213

1 +
4 A/⬙
2 Ā
3 −
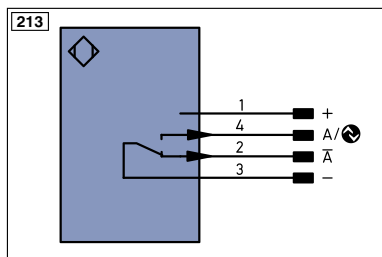
Legend

+	Supply Voltage +	PT	Platinum measuring resistor	EN$_{ARS422}$	Encoder A/Ā (TTL)	
−	Supply Voltage 0 V	nc	not connected	EN$_{BRS422}$	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	
V̄	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$_{VW}$	Valve Output	0$_{LT}$	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 IEC 60757	
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	SnR	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	La	Emitted Light disengageable	GY	Grey	
BI_D+/−	Ethernet Gigabit bidirect. data line (A-D)	Mag	Magnet activation	WH	White	
EN$_{0RS422}$	Encoder 0-pulse 0-0̄ (TTL)	RES	Input confirmation	PK	Pink	
		EDM	Contactor Monitoring	GNYE	Green/Yellow	

Table 1

Detection Range	60 mm	150 mm	300 mm
Light Spot Diameter	3 mm	2,5 mm	1,5 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