

# Reflex Sensor with Background Suppression

## P1KH045

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 suitable for the detection of objects against any background. The sensor always has the same switching distance, regardless of the color, shape and surface of the objects. Minimal height differences can be detected with the sensors and, for example, various parts can be reliably differentiated from each other. The IO-Link interface can be used to configure reflex sensors (PNP/NPN, NC/NO, switching distance) and to output switching statuses and distance values.



### Technical Data

#### Optical Data

Range	150 mm
Adjustable Range	30...150 mm
Switching Hysteresis	< 10 %
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	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (Ub = 24 V)	< 20 mA
Switching Frequency	1000 Hz
Switching Frequency (interference-free mode)	500 Hz
Response Time	0,5 ms
Response time (interference-free mode)	1 ms
Temperature Drift	< 5 %
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 and Overload Protection	yes
Reverse Polarity Protection	yes
Lockable	yes
Interface	IO-Link V1.1
Protection Class	III

#### Mechanical Data

Setting Method	Potentiometer
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M8 x 1; 4-pin
Cable Length	200 mm
Optic Cover	PMMA

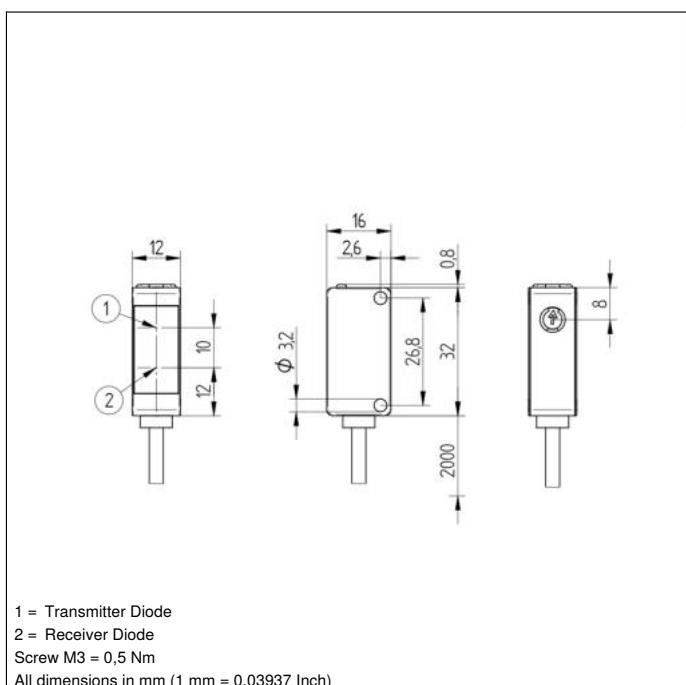
#### Safety-relevant Data

MTTFd (EN ISO 13849-1)	1718,95 a
PNP NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	215
Control Panel No.	1K1
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

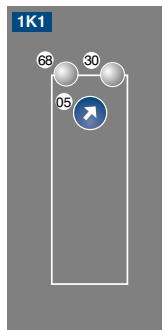
\* Temperature range with permanently installed cable, bending radius: > 20 mm

### Complementary Products

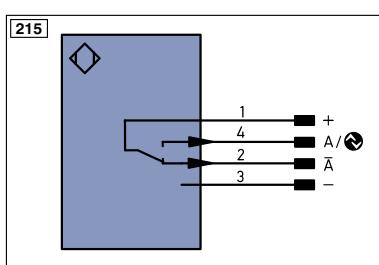
IO-Link Master  
Software



### Ctrl. Panel



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



### Legend

PT	Platinum measuring resistor
nc	not connected
U	Test Input
Ü	Test Input inverted
W	Trigger Input
W -	Ground for the Trigger Input
O	Analog Output
O -	Ground for the Analog Output
BZ	Block Discharge
AVV	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
RxD	Interface Receive Path
TXD	Interface Send Path
RDY	Ready
GND	Ground
CL	Clock
E/A	Output/Input programmable
IO-Link	IO-Link
PoE	Power over Ethernet
IN	Safety Input
DOSS	Safety Output
Signal	Signal Output
BL-D	Ethernet Gigabit bidirec. data line (A-D)
EN0RS422	Encoder 0-pulse 0-0 (TTL)
Encoder A/Ā (TTL)	ENARS422
Encoder B/Ā (TTL)	ENBRS422
Encoder A	ENA
Encoder B	ENB
Digital output MIN	AMIN
Digital output MAX	AMAX
Digital output OK	AOK
Synchronization In	SY IN
Synchronization OUT	SY OUT
Brightness output	OLT
Maintenance	M
reserved	rsv
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
GN/YE	Green/Yellow

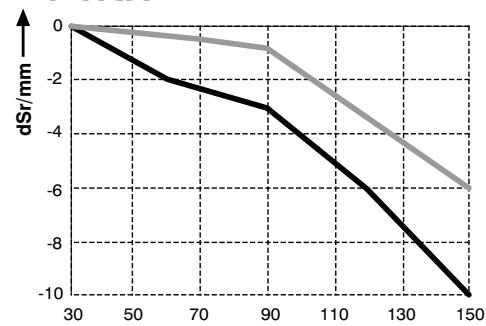
Table 1

Detection Range	50 mm	100 mm	150 mm
Light Spot Diameter	5 mm	7 mm	10 mm

### Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission

### P1KH



Sr = Switching Distance

dSr = Switching Distance Change

black 6 % remission  
grey 18 % remission

