

# Reflex Sensor with Background Suppression

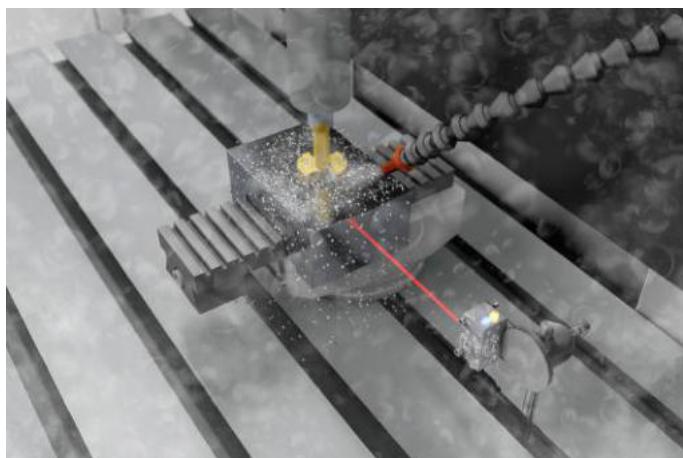
## P2KH029 LASER

Part Number



- Condition monitoring
- Detect extremely small parts starting at 0.1 mm
- Laser class 1
- Robust stainless steel housing with IP69K

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. The fine laser beam means that even the smallest parts, starting at 0.1 mm in size, can be reliably detected. The IO-Link interface can be used to configure retro-reflex sensors (PNP/NPN, NC/NO, switching distance), as well as to output switching statuses and distance values. The robust V4A (1.4404/316L) stainless steel housing is resistant to oils and coolants, as well as cleaning agent.



PNG//smart

### Technical Data

#### Optical Data

Range	120 mm
Adjustable Range	30...120 mm
Switching Hysteresis	< 10 %
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	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (Ub = 24 V)	< 15 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...50 °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
FDA Accession Number	1710976-002

#### Mechanical Data

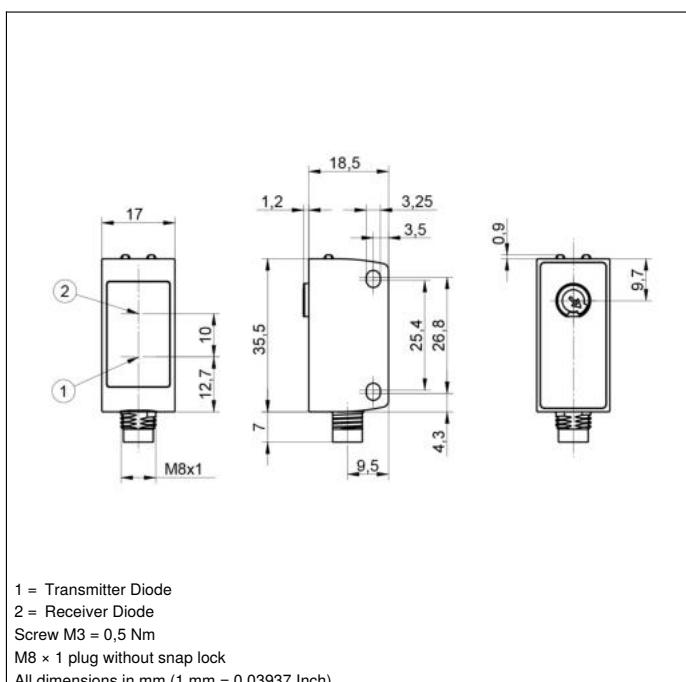
Setting Method	Potentiometer
Housing Material	Stainless steel 316L
Degree of Protection	IP68/IP69K
Connection	M8 x 1; 3-pin
Optic Cover	PMMA
Ecolab	yes

#### Safety-relevant Data

MTTFd (EN ISO 13849-1)	1629,22 a
NPN NO	●
IO-Link	●
Connection Diagram No.	171
Control Panel No.	1K1
Suitable Connection Equipment No.	8
Suitable Mounting Technology No.	400

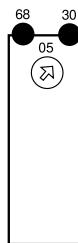
### Complementary Products

IO-Link Master  
Software

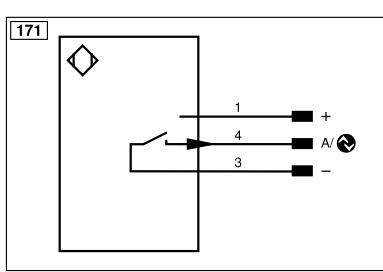


### Ctrl. Panel

1K1



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



#### Legend

+	Supply Voltage +	nc	Not connected	EN <sub>RS422</sub>	Encoder B/B (TTL)
-	Supply Voltage 0 V	U	Test Input	EN <sub>A</sub>	Encoder A
~	Supply Voltage (AC Voltage)	Ü	Test Input inverted	EN <sub>B</sub>	Encoder B
A	Switching Output (NO)	W	Trigger Input	AMIN	Digital output MIN
Ä	Switching Output (NC)	W-	Ground for the Trigger Input	A <sub>MAX</sub>	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	Aok	Digital output OK
Ý	Contamination/Error Output (NC)	O-	Ground for the Analog Output	SY In	Synchronization IN
E	Input (analog or digital)	BZ	Block Discharge	SY OUT	Synchronization OUT
T	Teach Input	AMV	Valve Output	Ol <sub>r</sub>	Brightness output
Z	Time Delay (activation)	a	Valve Control Output +	M	Maintenance
S	Shielding	b	Valve Control Output 0 V	rsv	Reserved
RxD	Interface Receive Path	SY	Synchronization	Wire Colors according to DIN IEC 60757	
TxD	Interface Send Path	SY-	Ground for the Synchronization	BK	Black
RDY	Ready	E+	Receiver-Line	BN	Brown
GND	Ground	S+	Emitter-Line	RD	Red
CL	Clock	±	Grounding	OG	Orange
E/A	Output/Input programmable	SnR	Switching Distance Reduction	YE	Yellow
IO-Link		Rx+/-	Ethernet Receive Path	GN	Green
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path	BU	Blue
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)	VT	Violet
OSD	Safety Output	La	Emitted Light disengageable	GY	Grey
Signal	Signal Output	Mag	Magnet activation	WH	White
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink
EN <sub>0 RS422</sub>	Encoder 0-pulse 0/Ü (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	EN <sub>RS422</sub>	Encoder A/A (TTL)		

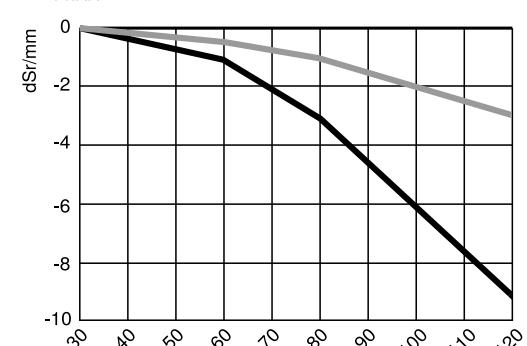
Table 1

Detection Range	40 mm	80 mm	120 mm
Light Spot Diameter	2,5 mm	1,5 mm	1 mm

### Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission

PxKH



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission  
— grey 18 % remission

