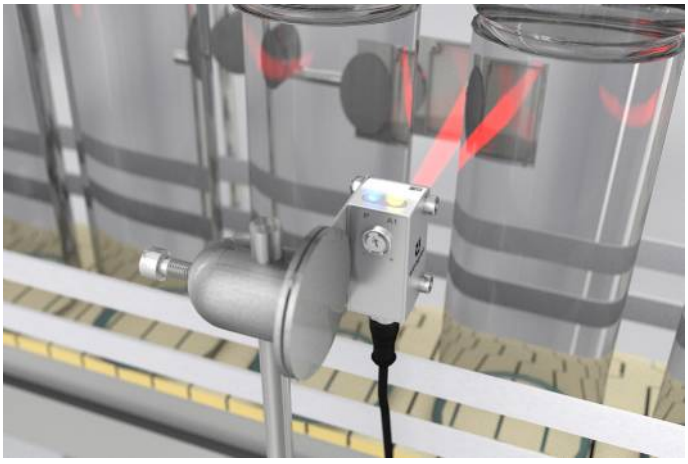
Retro-Reflex Sensor
for Transparent Objects

P2KK003
Part Number

PNG smart

- **Condition monitoring**
- **No blind spot from single-lens optics**
- **Robust stainless steel housing with IP69K**
- **Special for glass, PET and films**

The retro-reflex barrier for clear glass recognition works with red light and a reflector. Where conventional retro-reflex light barriers reach their limits, this retro-reflective barrier for clear glass recognition ensures that extremely shiny objects like glass, PET bottles, trays or film can be detected. Via the single-lens optic without blind spots, the sensor can detect objects even through small holes and gaps. 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 signal values. The robust V4A (1.4404/316L) stainless steel housing is resistant to oils and coolants, as well as cleaning agent.

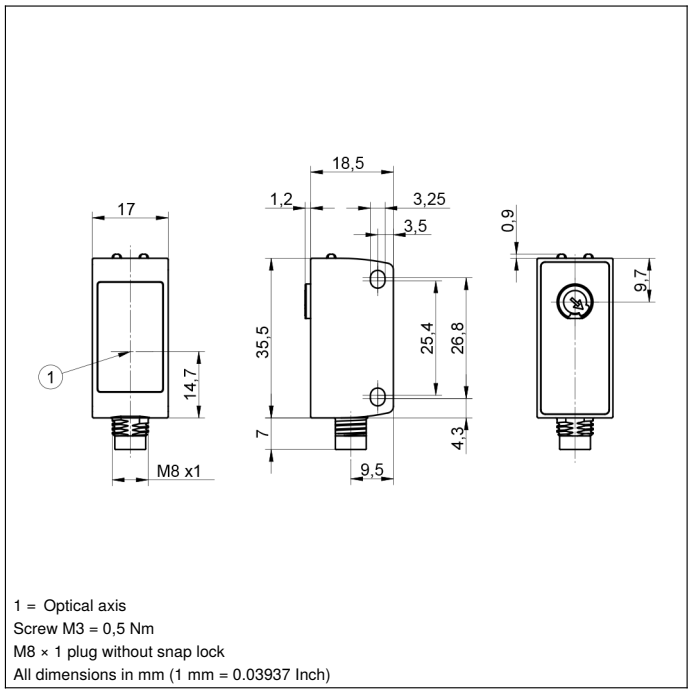


Technical Data

Optical Data	
Range	1500 mm
Reference Reflector/Reflector Foil	RQ100BA
Clear Glass Recognition	yes
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 5 %
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
Single-Lens Optic	yes
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	2000 Hz
Switching frequency (speed mode)	3500 Hz
Response Time	0,25 ms
Response time (speed mode)	0,14 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	Stainless steel 316L
Degree of Protection	IP68/IP69K
Connection	M8 × 1; 4-pin
Optic Cover	PMMA
Ecolab	yes
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2375,05 a
IO-Link	●
NPN NO/NC antivalent	●
Connection Diagram No.	213
Control Panel No.	1K1
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

Complementary Products

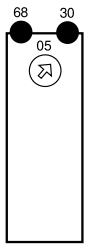
IO-Link Master
Reflector, Reflector Foil
Software



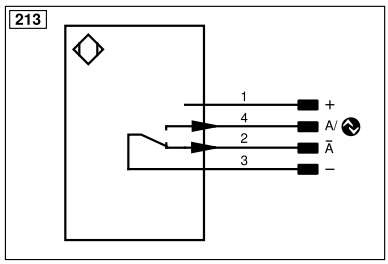
1 = Optical axis
Screw M3 = 0,5 Nm
M8 × 1 plug without snap lock
All dimensions in mm (1 mm = 0.03937 Inch)

Ctrl. Panel

1K1



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



Legend					
+	Supply Voltage +	nc	Not connected	$EN_{B\,RS422}$	Encoder B/B̄ (TTL)
–	Supply Voltage 0 V	U	Test Input	EN_A	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	EN_B	Encoder B
A	Switching Output (NO)	W	Trigger Input	A_{MIN}	Digital output MIN
Ā	Switching Output (NC)	W–	Ground for the Trigger Input	A_{MAX}	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	A_{OK}	Digital output OK
V̄	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	A_{MV}	Valve Output	O_{LT}	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	ower over Ethernet	Tx+/–	Ethernet Send Path	BU	Blue
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(–)	VT	Violet
OSSD	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
$EN_{0\,RS422}$	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	EN_{ARS422}	Encoder A/Ā (TTL)		

Table 1

Working Distance	0,2 m	1 m	1,5 m
Light Spot Diameter	20 mm	90 mm	130 mm

Table 2

Distance, Sensor to Reflector	0,2 m	1 m	1,5 m
Smallest Recognizable Part	0,7 mm	6 mm	10 mm

Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0...1,5 m	RR25KP	0...0,25 m
RE18040BA	0...1,5 m	RR21_M	0...0,6 m
RQ84BA	0...1,5 m	ZRAE02B01	0...0,6 m
RR84BA	0...1,5 m	ZRME01B01	0...0,25 m
RE9538BA	0...0,7 m	ZRME03B01	0...0,65 m
RE6151BM	0...1,3 m	ZRMR02K01	0...0,4 m
RR50_A	0...1,5 m	ZRMS02_01	0...0,55 m
RE6040BA	0...1,4 m	RF505	0...0,5 m
RE8222BA	0...1 m	RF508	0...0,5 m
RR34_M	0...1 m	RF258	0...0,45 m
RE3220BM	0...0,6 m	ZRDF03K01	0...1,1 m
RE6210BM	0...0,6 m	ZRDF10K01	0...1,2 m
RR25_M	0...0,7 m		