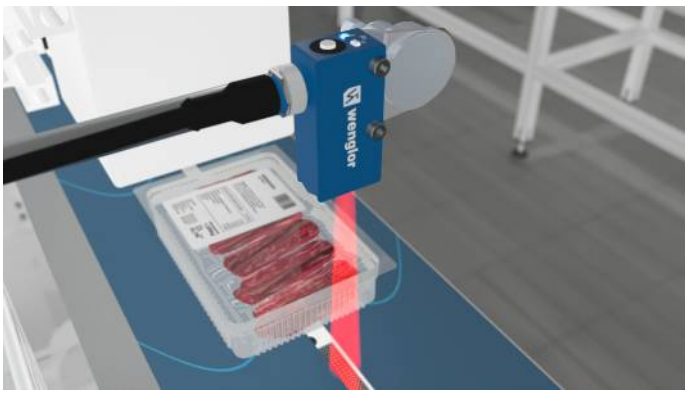
Retro-Reflex Sensor
for Transparent Objects

P1MK102
Part Number

PNG smart

- **Dynamic readjustment of the switching threshold**
- **High-end**
- **IO-Link 1.1**
- **Special for glass, PET and films**
- **Wireless settings via NFC**

The retro-reflex sensor for transparent objects, such as clear glass, works with red light and a reflector. It has a IO-Link interface with a data storage function as well as additional configuration and diagnostic options. The interface can also be used to configure the sensor settings (PNP/NPN, NC/NO, switching threshold, error output) as well as for reading out switching statuses and signal values. The dynamic readjustment of the switching threshold function automatically adjusts this for contamination, aging, or temperature deviations, meaning that these factors have almost no effect on functionality.

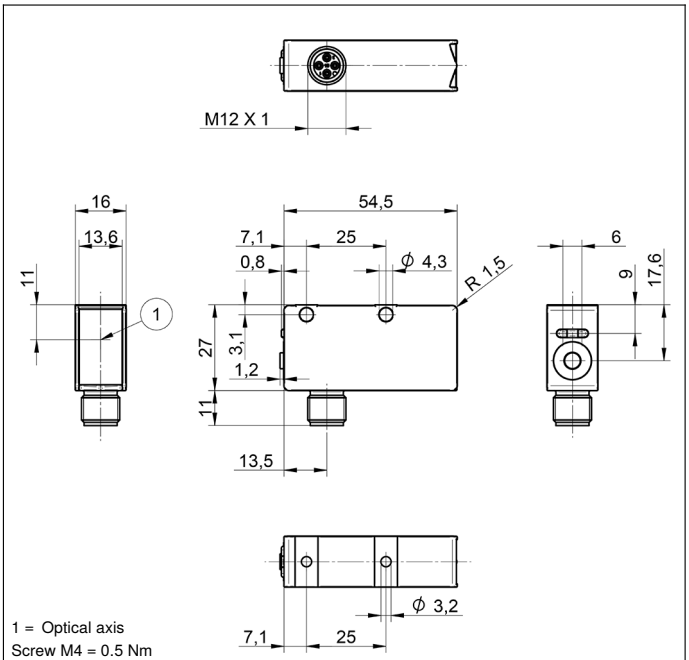


Technical Data

Optical Data	
Range	4500 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	1000 Hz
Switching frequency (speed mode)	2000 Hz
Response Time	0,5 ms
Response time (speed mode)	0,25 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
Teach Mode	NT, MT
Interface	IO-Link V1.1
Data Storage	yes
Protection Class	III
Mechanical Data	
Setting Method	Teach-in/NFC
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4-pin
Optic Cover	Plastic, PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1629,76 a
IO-Link	●
NPN NC	●
External teach-in input	●
NFC interface	●
Connection Diagram No.	709
Control Panel No.	A 53
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	360

Complementary Products

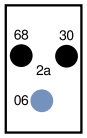
IO-Link Master
Reflector, Reflector Foil
Software



1 = Optical axis
Screw M4 = 0.5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

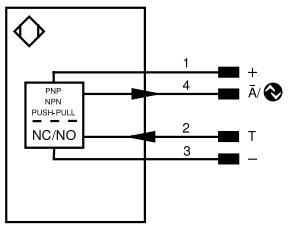
Ctrl. Panel

A 53



06 = Teach Button
2a = NFC interface
30 = Switching Status/Contamination Warning
68 = supply voltage indicator

709



Legend					
+	Supply Voltage +	nc	Not connected	ENBRS422	Encoder B/B̄ (TTL)
–	Supply Voltage 0 V	U	Test Input	ENA	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	ENB	Encoder B
A	Switching Output (NO)	W	Trigger Input	AMIN	Digital output MIN
Ā	Switching Output (NC)	W–	Ground for the Trigger Input	AMAX	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	AOK	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	AMV	Valve Output	OLT	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
EN0 RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	ENARS422	Encoder A/Ā (TTL)		

Table 1

Working Distance	1 m	2 m	4,5 m
Light Spot Diameter	50 mm	90 mm	180 mm

Table 2

Distance, Sensor to Reflector	1 m	2 m	4,5 m
Smallest Recognizable Part	1,5 mm	4 mm	10 mm

Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0...4,5 m	RR25KP	0...0,8 m
RE18040BA	0...3 m	RR21_M	0...1 m
RQ84BA	0...3,5 m	ZRAE02B01	0...2 m
RR84BA	0...4 m	ZRME01B01	0...0,6 m
RE9538BA	0...1,5 m	ZRME03B01	0...2,1 m
RE6151BM	0...3,6 m	ZRMR02K01	0...0,8 m
RR50_A	0...2,3 m	ZRMS02_01	0...1 m
RE6040BA	0...3,5 m	RF505	0...1,2 m
RE8222BA	0...2 m	RF508	0...1,1 m
RE3220BM	0...1,2 m	RF258	0...1 m
RE6210BM	0...1 m	ZRDF03K01	0...3 m
RR25_M	0...1,2 m		