

Retro-Reflex Sensor for Transparent Objects

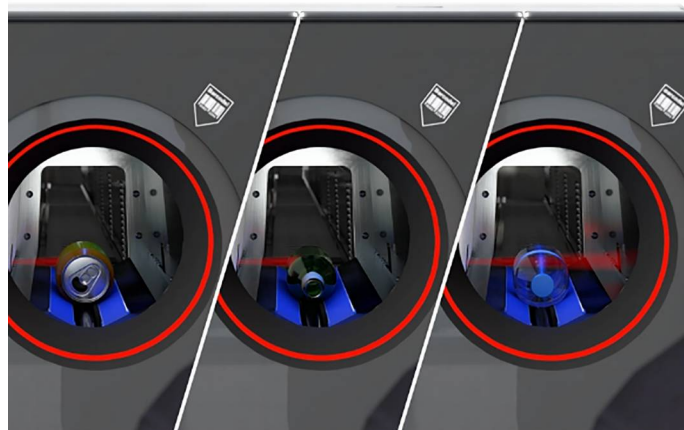
P1RK012

Part Number



- Dynamic readjustment of the switching threshold
- IO-Link 1.1
- Presence control in reverse vending machines (RVMs)
- Special for glass, PET and films
- Teach-free

These sensors are designed for reliable detection of bottles and cans in reverse vending machines (RVMs). The retro-reflex sensor for transparent objects, such as clear glass, works with red light and a reflector. It has an 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 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	4000 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
Optics	Single-Lens Optic

Electrical Data	
Supply Voltage	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (U _b = 24 V)	< 40 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
PNP Switching Output/Switching Current	100 mA
Residual Current Switching Output	< 50 µA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Lockable	yes
Teach Mode	NT, MT
Interface	IO-Link V1.1
Data Storage	yes
Protection Class	III

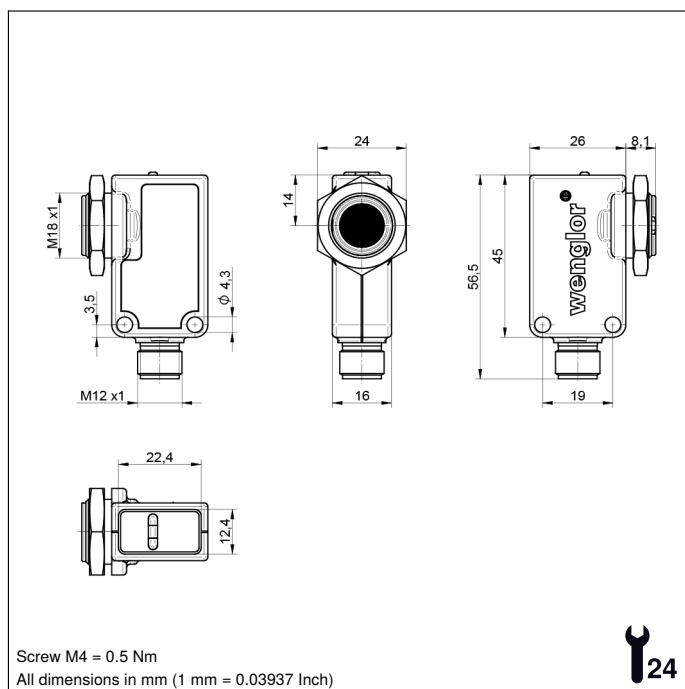
Mechanical Data	
Setting Method	Teach-free
Housing Material	Brass, nickel-plated
Housing Material	Plastic, PBT
Full Encapsulation	yes
Degree of Protection	IP67
Degree of Protection	IP68
Connection	M12 × 1; 4-pin

Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1995,65 a
Scope of delivery	1 × initial start-up instructions 1 × MUTTER-M18-E012 hex nut 1 × sensor

IO-Link	●
PNP NC	●
Connection Diagram No.	870
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	150 370

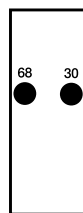
Complementary Products

Dust Extraction Tube STAUBTUBUS-01
IO-Link Master
Reflector, Reflector Foil
Software

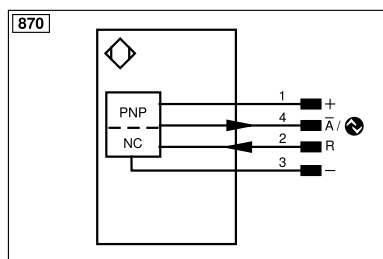


Ctrl. Panel

A 62



30 = Switching Status/Contamination Warning
68 = Power LED



Legend			
+	Supply Voltage +	PT	Platinum measuring resistor
-	Supply Voltage 0 V	nc	Not connected
~	Supply Voltage (AC Voltage)	U	Test Input
A	Switching Output (NO)	Ū	Test Input inverted
Ā	Switching Output (NC)	W	Trigger Input
V	Contamination/Error Output (NO)	W-	Ground for the Trigger Input
Ū	Contamination/Error Output (NC)	O	Analog Output
E	Input (analog or digital)	O-	Ground for the Analog Output
T	Teach Input	BZ	Block Discharge
R	Reset input	Amv	Valve Output
Z	Time Delay (activation)	a	Valve Control Output +
S	Shielding	b	Valve Control Output 0 V
RxD	Interface Receive Path	SY	Synchronization
TxD	Interface Send Path	SY-	Ground for the Synchronization
RDY	Ready	E+	Receiver-Line
GND	Ground	S+	Emitter-Line
CL	Clock	≡	Grounding
E/A	Output/Input programmable	SnR	Switching Distance Reduction
IO-Link	IO-Link	Rx+/-	Ethernet Receive Path
PoE	Power over Ethernet	Tx+/-	Ethernet Send Path
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(-)
QSSD	Safety Output	La	Emitted Light disengageable
Signal	Signal Output	Mag	Magnet activation
BI_D+/-	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation
ENo RS422	Encoder 0-pulse 0/0 (TTL)	EDM	Contactor Monitoring
		ENARs422	Encoder A/Ā (TTL)
		ENBRs422	Encoder B/B̄ (TTL)
		ENa	Encoder A
		ENb	Encoder B
		AMIN	Digital output MIN
		AMAX	Digital output MAX
		AOK	Digital output OK
		SY In	Synchronization In
		SY OUT	Synchronization OUT
		OLt	Brightness output
		M	Maintenance
		rsv	Reserved
		Wire Colors according to DIN IEC 60757	
		BK	Black
		BN	Brown
		RD	Red
		OG	Orange
		YE	Yellow
		GN	Green
		BU	Blue
		VT	Violet
		GY	Grey
		WH	White
		PK	Pink
		GNYE	Green/Yellow

Table 1

Working Distance	0,5 m	2 m	4 m
Light Spot Diameter	20 mm	50 mm	90 mm

Table 2

Distance, Sensor to Reflector	0,5 m	2 m	4 m
Smallest Recognizable Part	1 mm	5 mm	10 mm

Feasible reflector distance

Reflector type, mounting distance

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

