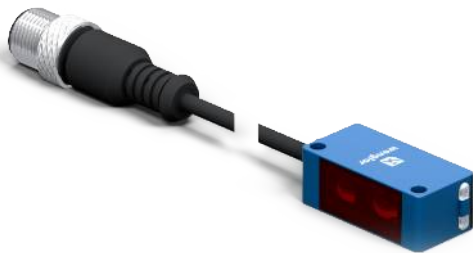


# Retro-Reflex Sensor

## Universal

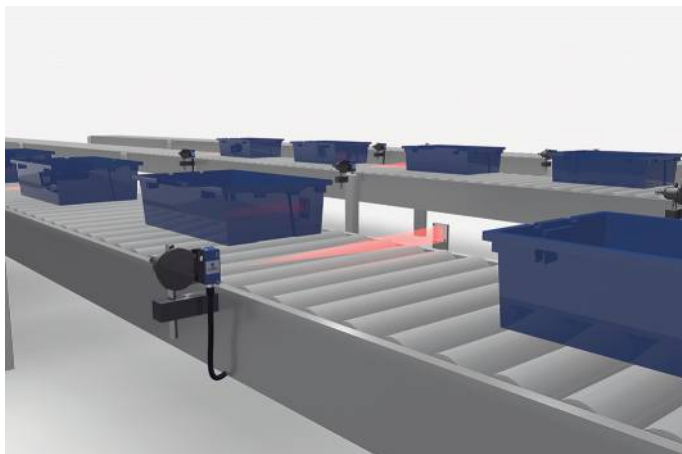
# P1KL020

Part Number



- Also suitable for glossy and reflective objects
- Condition monitoring
- High switching frequency
- IO-Link 1.1

The retro-reflex sensor works with red light and a reflector. It also reliably detects objects with reflective or glossy surfaces at high speeds. Thanks to its great range, the sensor can, for example, be used to manage feed and presence controls as well as to detect objects on wide feed belts. The IO-Link interface can be used to configure retro-reflective barriers (PNP/NPN, NC/NO, switching distance), as well as for reading out switching statuses and signal values.



## Technical Data

Optical Data	
Range	5000 mm
Reference Reflector/Reflector Foil	RQ100BA
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 10 %
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
Two-Lens Optic	yes

Electrical Data	
Supply Voltage	10...30 V DC
Supply Voltage with IO-Link	18...30 V DC
Current Consumption (U <sub>b</sub> = 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	< 10 %
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 Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Lockable	yes
Interface	IO-Link V1.1
Protection Class	III

Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic, ABS/PC
Degree of Protection	IP67
Degree of Protection	IP68
Connection	M12 × 1; 4-pin
Cable length (L)	1 m
Cable Jacket Material	Plastic, PUR
Optic Cover	Plastic, PMMA

Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2808,97 a
Scope of delivery	1 × initial start-up instructions 1 × sensor

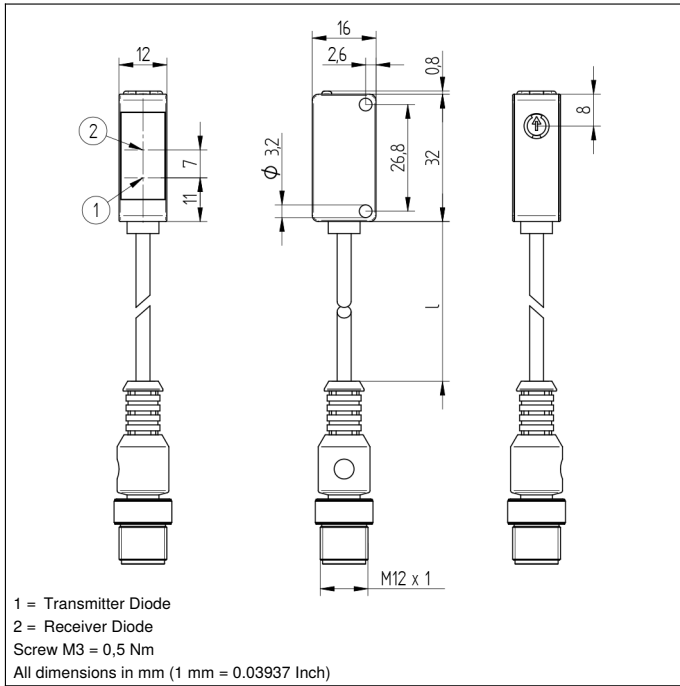
IO-Link	●
PNP NC	●

Connection Diagram No.	1038
Control Panel No.	1K1
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	400

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

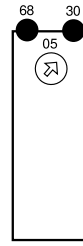
## Complementary Products

IO-Link Master	
Reflector, Reflector Foil	
Software	

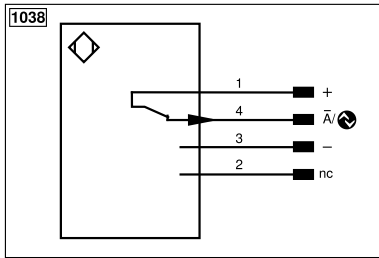


### Ctrl. Panel

1K1



05 = Switching Distance Adjuster  
 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	
Ṽ	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	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	
Bl_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	0,2 m	2 m	5 m
Light Spot Diameter	30 mm	180 mm	400 mm

Table 2

Distance, Sensor to Reflector	1 m	2,5 m	5 m
Smallest Recognizable Part	10 mm	20 mm	30 mm

### Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0,01...5 m	RR21_M	0,01...1,1 m
RE18040BA	0,01...4,5 m	Z90R004	0,15...1,65 m
RQ84BA	0,01...4,5 m	Z90R005	0,15...2,3 m
RR84BA	0,01...4,5 m	ZRAE02B01	0,01...2 m
RE9538BA	0,01...2 m	ZRME01B01	0,01...0,9 m
RE6151BM	0,01...3,5 m	ZRME03B01	0,01...1,6 m
RR50_A	0,01...3 m	ZRMR02K01	0,01...1 m
RE6040BA	0,01...3,5 m	ZRMS02_01	0,01...1 m
RE8222BA	0,01...2,5 m	RF505	0,02...1,9 m
RR34_M	0,01...1,6 m	RF508	0,02...1,7 m
RE3220BM	0,01...1,5 m	RF258	0,02...1,4 m
RE6210BM	0,01...1,5 m	ZRDF03K01	0,03...3 m
RR25_M	0,01...1,3 m	ZRDF10K01	0,03...3,5 m
RR25KP	0,01...0,8 m		

