



## **Electrolux Group**

### Released Component List (RCL)

Photoelectronic Sensors

Inductive Sensors

Image Processing and Smart Cameras

1D/2D and Barcode Scanners

System Components and Software

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### High-Performance Distance Sensors

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Part Number	Range	Light Source	Housing	Housing Material	
OCP801H0180	30...80 mm	Laser (red)	50 × 50 × 20 mm (P)	Plastic	11
OCP162H0180	40...160 mm	Laser (red)	50 × 50 × 20 mm (P)	Plastic	13
OCP352H0180	50...350 mm	Laser (red)	50 × 50 × 20 mm (P)	Plastic	15
OCP352P0150P	50...350 mm	Laser (red)	50 × 50 × 30 mm (P)	Metal	17
P1KY006	0...1000 mm	Laser (red)	32 × 22 × 12 mm (1K)	Plastic	19
OY2P303A0135	0...3 m	Laser (red)	50 × 50 × 20 mm (P)	Plastic	21
P1PY001	0...3 m	Laser (red)	50 × 50 × 20 mm (1P)	Plastic	23
OY1TA603P0003	0,2...6,2 m	Laser (red)	81 × 55 × 30 mm (TA)	Plastic	25
X1TA100QXT3	0,1...10,2 m	Laser (red)	81 × 55 × 30 mm (TA)	Plastic	27
X1TA101MHT88	0,2...100,2 m	Laser (red)	81 × 55 × 30 mm (TA)	Plastic	29
OY1P303P0102	0,05...3,05 m	Laser (red)	50 × 50 × 20 mm (P)	Plastic	31

### Reflex Sensors with Background Suppression

32-57

Part Number	Range	Light Source	Housing	Housing Material	
OCP801P0150P	30...80 mm	Laser (red)	50 × 50 × 30 mm (P)	Metal	33
OHP551B0003	55 mm	Laser (red)	50 × 50 × 20 mm (P)	Plastic	35
OHP102B0003	100 mm	Laser (red)	50 × 50 × 20 mm (P)	Plastic	37
OCP242X0135	240 mm	Laser (red)	50 × 50 × 20 mm (P)	Plastic	39
OCP662X0135	660 mm	Laser (red)	50 × 50 × 20 mm (P)	Plastic	41
P1KH007	120 mm	Laser (red)	32 × 16 × 12 mm (1K)	Plastic	43
P1NH707	300 mm	Laser (red)	75 × 32,5 × 18 mm (1N)	Plastic	45
HO08PA3	80 mm	Red Light	M12 × 1	CuZn, nickel-plated	47
OHD202A0103	200 mm	Red Light	M18 × 1	Stainless Steel	49
P1KH011	300 mm	Red Light	32 × 16 × 12 mm (1K)	Plastic	51
P1NH202	300 mm	Red Light	75 × 32,5 × 18 mm (1N)	Plastic	53
P1NH302	500 mm	Red Light	75 × 32,5 × 18 mm (1N)	Plastic	55
P1NH601	1200 mm	Red Light	75 × 32,5 × 18 mm (1N)	Plastic	57

### Fiber-Optic Cable Sensors

58-63

Part Number	Range	Light Source	Housing	Housing Material	
ODX402P0007		Red Light	53 × 60 × 15 mm (X)	Plastic	59
OUM502C0002	500 mm	Infrared Light	57,8 × 27 × 16 mm (M)	Plastic	61
UC88PCV3	2000 mm	Infrared Light	M18 × 1	Stainless Steel	63

### Color Sensors

64-65

Part Number	Range	Light Source	Housing	Housing Material	
OFP401P0189	30...40 mm	White Light	50 × 50 × 20 mm (P)	Plastic	65

### Retro-Reflex Sensors

66-79

Part Number	Range	Light Source	Housing	Housing Material	
OLD104C0003	10000 mm	Laser (red)	M18 × 1	Stainless Steel	67
RO88PB3	2500 mm	Red Light	M12 × 1	CuZn, nickel-plated	69
P1KL003	10...5000 mm	Red Light	32 × 16 × 12 mm (1K)	Plastic	71
LD86PA3	6000 mm	Red Light	M18 × 1	Stainless Steel	73

## Photoelectronic Sensors

### Retro-Reflex Sensors

66-79

Part Number	Range	Light Source	Housing	Housing Material	
LW86PA3	6000 mm	Red Light	M18 × 1; angled	Stainless Steel	75
P1NL101	7000 mm	Red Light	75 × 32,5 × 18 mm (1N)	Plastic	77
P1NL302	11000 mm	Red Light	75 × 32,5 × 18 mm (1N)	Plastic	79

### Through-Beam Sensors

80-87

Part Number	Range	Light Source	Housing	Housing Material	
OSD124Z0003	12000 mm	Laser (red)	M18 × 1	Stainless Steel	81
OED000C0003	12000 mm	Laser (red)	M18 × 1	Stainless Steel	81
OSD404Z0003	12000...40000 mm	Laser (red)	M18 × 1	Stainless Steel	83
SO953N	5000 mm	Red Light	M12 × 1	CuZn, nickel-plated	85
EO95VD3N	5000 mm	Red Light	M12 × 1	CuZn, nickel-plated	85
SD983	10000 mm	Red Light	M18 × 1	Stainless Steel	87
ED98PCV3	10000 mm	Red Light	M18 × 1	Stainless Steel	87

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90-93

Part Number	Range	Mounting	Housing	Housing Material	
I12N001	2 mm	flush	M12 × 1	CuZn, nickel-plated	90
IB040BM70VA3	4 mm	flush	M12 × 1	CuZn, nickel-plated	91
IW050BM80VA3	5 mm	flush	M18 × 1	CuZn, nickel-plated	92
I30N004	10 mm	flush	M30 × 1,5	CuZn, nickel-plated	93

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94-96

Part Number	Range	Mounting	Housing	Housing Material	
I08H007	2 mm	flush	M8 × 1	CuZn, nickel-plated	94
I18H003	8 mm	flush	M18 × 1	CuZn, nickel-plated	95
I30H007	22 mm	semi-flush	M30 × 1,5	CuZn, nickel-plated	96
I30H008	22 mm	semi-flush	M30 × 1,5	CuZn, nickel-plated	96

### Inductive Sensors Welding Field Resistant with Correction Factor 1

97-101

Part Number	Range	Mounting	Housing	Housing Material	
I12A001	4 mm	flush	M12 × 1	CuZn; Teflon	97
I18A001	8 mm	flush	M18 × 1	CuZn; Teflon	98
I30A001	15 mm	flush	M30 × 1,5	CuZn; Teflon	99
I1QA001	20 mm	flush	40 × 40 × 55 mm (1Q)	Plastic	100

## Image Processing and Smart Cameras

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104-105

Part Number	Range	Light Source	Housing	Housing Material	
B50S001	> 20 mm	White Light	45 × 52 × 72,5 mm	Aluminum	105
B50S100	> 20 mm	White Light	45 × 52 × 72,5 mm	Aluminum	105

## Image Processing and Smart Cameras

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106-107

Part Number	Range	Light Source	Housing	Housing Material	
B50M001	> 20 mm	White Light	45 × 52 × 72,5 mm	Aluminum	107
B50M100	> 20 mm	White Light	45 × 52 × 72,5 mm	Aluminum	107

## 1D/2D and Barcode Scanners

108 - 123

### Barcode Line Scanners

110-111

Part Number	Range	Light Source	Housing	Housing Material	
BLN0L1R10	10...320 mm	Red Light	29 × 60 × 52 mm	Aluminum	111

### Barcode Raster Scanners

112-113

Part Number	Range	Light Source	Housing	Housing Material	
FIS-0830-1100	51...762 mm	Laser (red)	35,1 × 65,7 × 87,9 mm	Aluminum	113
FIS-0830-1101	51...762 mm	Laser (red)	35,1 × 65,7 × 87,9 mm	Aluminum	113
FIS-0830-1102	51...762 mm	Laser (red)	35,1 × 65,7 × 87,9 mm	Aluminum	113

### Barcode Sweep Raster Scanners

114-117

Part Number	Range	Light Source	Housing	Housing Material	
FIS-0870-0107	25...762 mm	Laser (red)	45 × 95 × 109 mm	Aluminum	115
FIS-0870-0108	25...762 mm	Laser (red)	45 × 95 × 109 mm	Aluminum	115
FIS-0870-0109	25...762 mm	Laser (red)	45 × 95 × 109 mm	Aluminum	115
FIS-0870-1105	25...762 mm	Laser (red)	45 × 95 × 109 mm	Aluminum	117
FIS-0870-1106	25...762 mm	Laser (red)	45 × 95 × 109 mm	Aluminum	117
FIS-0870-1107	25...762 mm	Laser (red)	45 × 95 × 109 mm	Aluminum	117

### 1D/2D Handheld Scanners

118-119

Part Number	Range	Light Source	Housing	Housing Material	
CSMH001	38...394 mm	Red Light	131 × 91 × 52 mm	Plastic	119
CSMH002	38...394 mm	Red Light	131 × 91 × 52 mm	Plastic	119
CSMH003	38...394 mm	Red Light	131 × 91 × 52 mm	Plastic	119
CSMH004	38...394 mm	Red Light	131 × 91 × 52 mm	Plastic	119

### 1D/2D Code Scanners

120-123

Part Number	Range	Light Source	Housing	Housing Material	
C50C001	> 20 mm	White Light	45 × 52 × 72,5 mm	Aluminum	121
C50C002	> 20 mm	Infrared Light	45 × 52 × 72,5 mm	Aluminum	121
C50C003	> 20 mm	Red Light	45 × 52 × 72,5 mm	Aluminum	121
C50C100	> 20 mm	White Light	45 × 52 × 72,5 mm	Aluminum	121
C50C101	> 20 mm	Infrared Light	45 × 52 × 72,5 mm	Aluminum	121
C50C102	> 20 mm	Red Light	45 × 52 × 72,5 mm	Aluminum	121
C50C011			45 × 52 × 83,1 mm	Aluminum	123
C50C110			45 × 52 × 83,1 mm	Aluminum	123

**System Components and Software**

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**Mounting Technology**

126-127

**Part Number**

<b>Z08M001</b>	Mounting Console with Fixed Limit Stop for M8 × 1; Flush Mounting	126
<b>Z12M001</b>	Mounting Console with Fixed Limit Stop for M12 × 1; Flush Mounting	126
<b>Z18M001</b>	Mounting Console with Fixed Limit Stop for M18 × 1; Flush Mounting	126
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# Photoelectronic Sensors

wenglor sensoric is your competent partner for photoelectronic sensors. Our diverse range of innovative products provide solutions for complex automation applications. Our photoelectronic sensors can detect or count objects without contact, measure distances with high accuracy and identify colors, brightness or luminescence.

Various mounting systems allow for easy, flexible installation. Fiber optic cables that can be connected to sensors allow them to be used under extreme conditions or in tight spaces.

On the following pages you will find:

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# High-Performance Distance Sensor

**30...80 mm** LASER

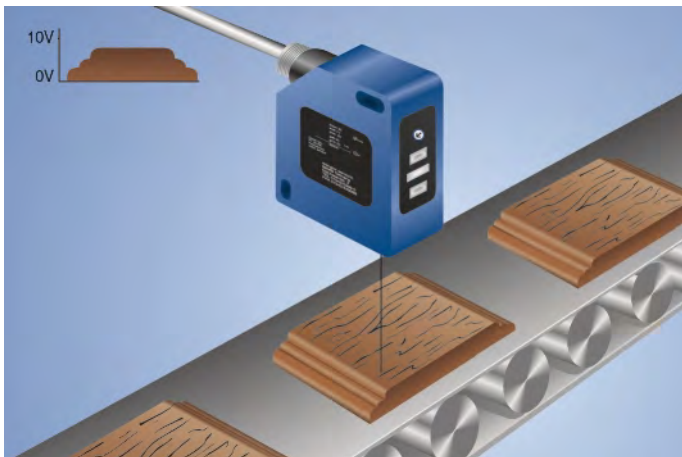
Range



- High resolution: 8  $\mu\text{m}$  (resolution-mode)
- Linearity: 0,1 % (resolution-mode)
- Measured value independent of material, color and brightness
- Zoom function

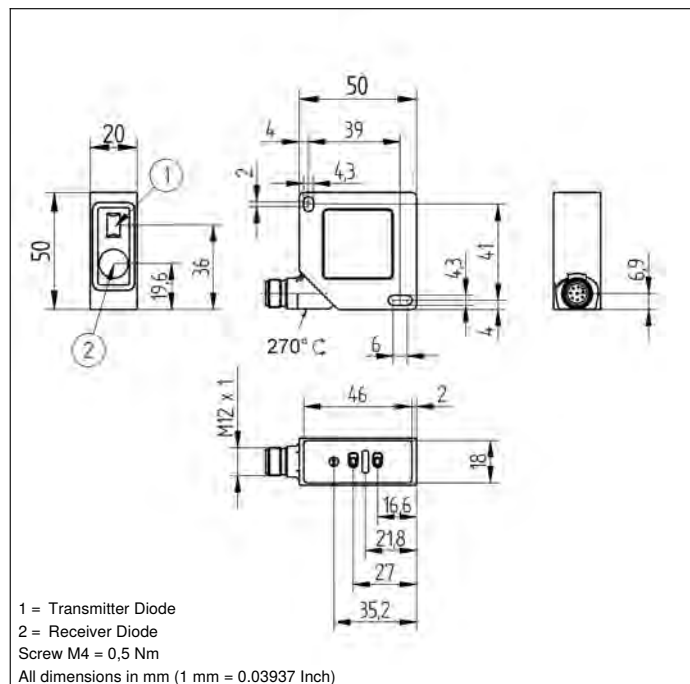
These sensors work with a high-resolution CMOS line and DSP technology and determine distance using angular measurement. As a result, material, color and brightness related measurement differences are virtually eliminated.


Integrated analogue output can be configured for voltage 0...10 V (10...0 V) or current 4...20 mA (20...4 mA).



## Technical Data

Optical Data	
Working Range	30...80 mm
Measuring Range	50 mm
Resolution	8 $\mu\text{m}$
Resolution (Speed-Mode)	12 $\mu\text{m}$
Linearity	0,1 %
Linearity (Speed-Mode)	0,2 %
Light Source	Laser (red)
Wavelength	660 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	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 80 mA
Measuring Rate	1000 /s
Measuring Rate (Resolution-Mode)	500 /s
Response Time	< 1000 $\mu\text{s}$
Response Time (Resolution Mode)	< 2000 $\mu\text{s}$
Temperature Drift	< 5 $\mu\text{m}/\text{K}$
Temperature Range	-25...50 °C
Analog Output	0...10 V/4...20 mA
Load Current Voltage Output	< 1 mA
Current Output Load Resistance	< 500 Ohm
Interface	RS-232
Baud Rate	38400 Bd
Protection Class	III
FDA Accession Number	1120734-000
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Degree of Protection	IP67
Connection	M12 $\times$ 1; 8-pin



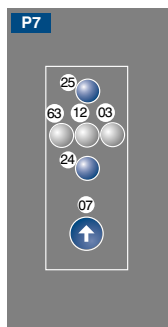
Plug Version	
	<b>Part Number</b> <b>OCP801H0180</b>
Error Output	●
Analog Output	●
RS-232 Interface	●
Connection Diagram No.	<b>529</b>
Control Panel No.	<b>P7</b>
Suitable Connection Equipment No.	<b>80</b>
Suitable Mounting Technology No.	<b>380</b>

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## Complementary Products

Analog Evaluation Unit AW02
Fieldbus Gateway ZAGxxxN01, EPGG001
Interface Cable S232W3
Protective Housing ZSV-0x-01
Set Protective Housing ZSP-NN-02
Software

## Ctrl. Panel

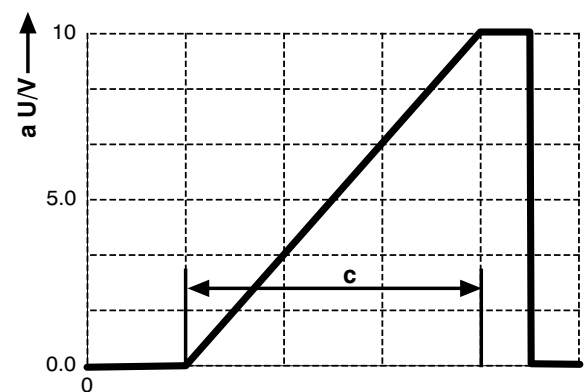


03 = Error Indicator	25 = Minus Button
07 = Selector Switch	63 = Analog Output Current Indicator
12 = Analog Output Indicator	
24 = Plus Button	

**Table 1**

<b>Working Distance</b>	30 mm	80 mm
<b>Spot Size</b>	0,4 × 0,8 mm	0,7 × 1,4 mm

## Output Graph



c = Measuring Range

a = Analog Voltage Output

# High-Performance Distance Sensor

**40...160 mm** LASER

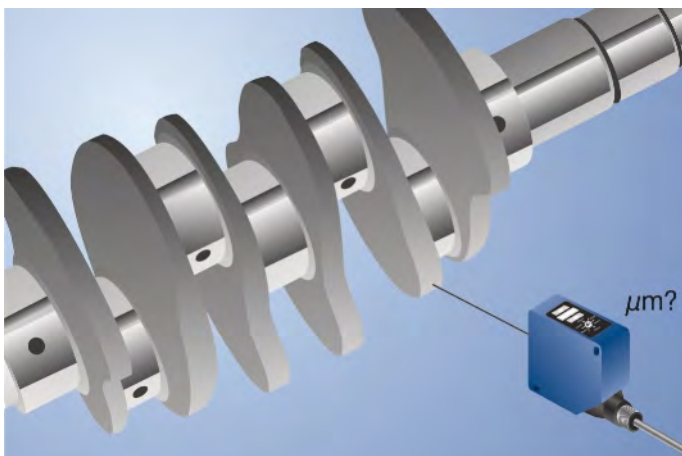
Range



- High resolution: 20  $\mu\text{m}$  (resolution-mode)
- Linearity: 0,1 % (resolution-mode)
- Measured value independent of material, color and brightness
- Zoom function

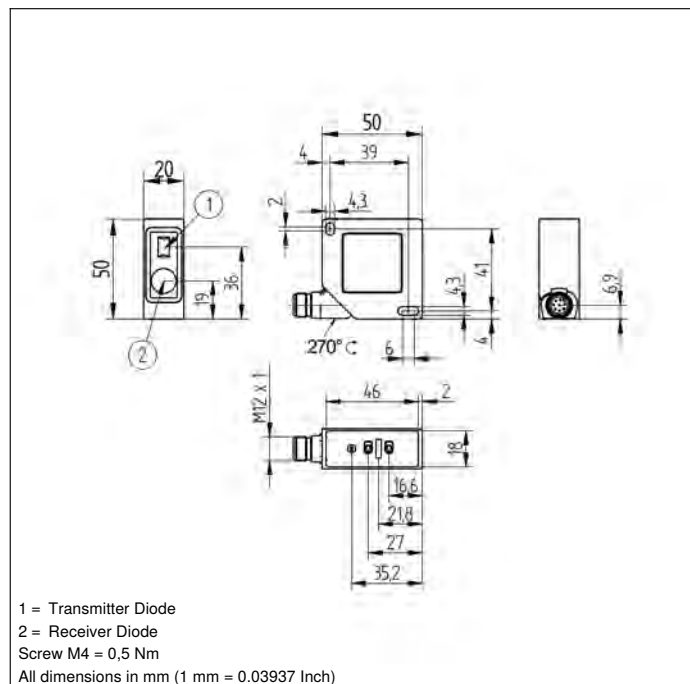
These sensors work with a high-resolution CMOS line and DSP technology and determine distance using angular measurement. As a result, material, color and brightness related measurement differences are virtually eliminated.


Integrated analogue output can be configured for voltage 0...10 V (10...0 V) or current 4...20 mA (20...4 mA).



## Technical Data

Optical Data	
Working Range	40...160 mm
Measuring Range	120 mm
Resolution	20 $\mu\text{m}$
Resolution (Speed-Mode)	30 $\mu\text{m}$
Linearity	0,1 %
Linearity (Speed-Mode)	0,2 %
Light Source	Laser (red)
Wavelength	660 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	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 80 mA
Measuring Rate	1000 /s
Measuring Rate (Resolution-Mode)	500 /s
Response Time	< 1000 $\mu\text{s}$
Response Time (Resolution Mode)	< 2000 $\mu\text{s}$
Temperature Drift	< 10 $\mu\text{m}/\text{K}$
Temperature Range	-25...50 °C
Analog Output	0...10 V/4...20 mA
Load Current Voltage Output	< 1 mA
Current Output Load Resistance	< 500 Ohm
Interface	RS-232
Baud Rate	38400 Bd
Protection Class	III
FDA Accession Number	1120717-000
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Degree of Protection	IP67
Connection	M12 x 1; 8-pin



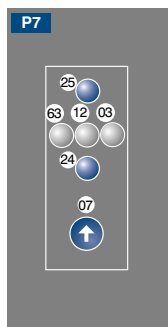
Plug Version	
	<b>Part Number</b> <b>OCP162H0180</b>
Error Output	●
Analog Output	●
RS-232 Interface	●
Connection Diagram No.	<b>529</b>
Control Panel No.	<b>P7</b>
Suitable Connection Equipment No.	<b>80</b>
Suitable Mounting Technology No.	<b>380</b>

Connection Diagrams page 128 / System Components page 124

## Complementary Products

- Analog Evaluation Unit AW02
- Fieldbus Gateway ZAGxxxN01, EPGG001
- Interface Cable S232W3
- Protective Housing ZSV-0x-01
- Set Protective Housing ZSP-NN-02
- Software

## Ctrl. Panel

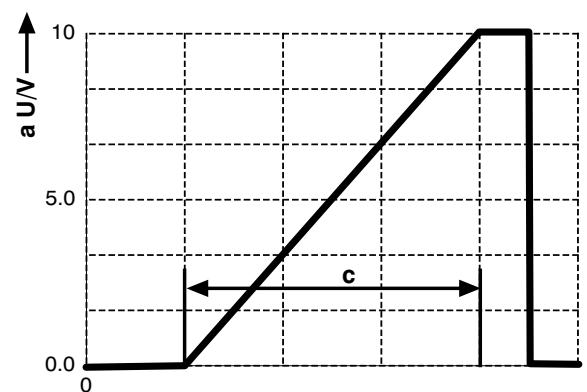


- 03 = Error Indicator
- 07 = Selector Switch
- 12 = Analog Output Indicator
- 24 = Plus Button
- 25 = Minus Button
- 63 = Analog Output Current Indicator

**Table 1**

<b>Working Distance</b>	40 mm	160 mm
<b>Spot Size</b>	0,4 × 0,9 mm	0,9 × 1,8 mm

## Output Graph



c = Measuring Range

a = Analog Voltage Output

# High-Performance Distance Sensor

**50...350 mm** LASER

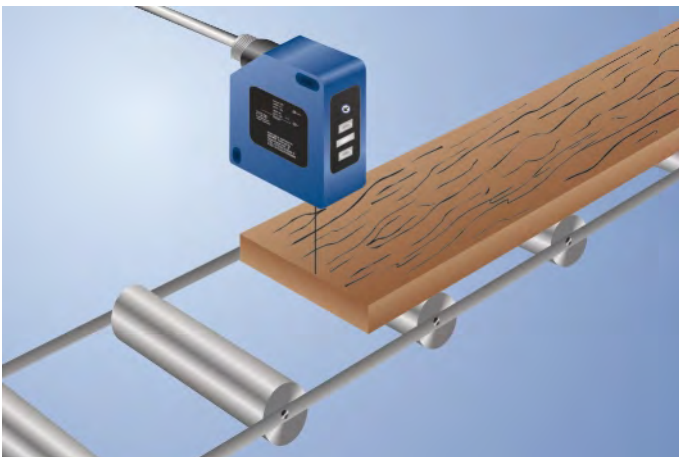
Range



- High resolution: 50  $\mu\text{m}$  (resolution-mode)
- Linearity: 0,15 % (resolution-mode)
- Measured value independent of material, color and brightness
- Zoom function

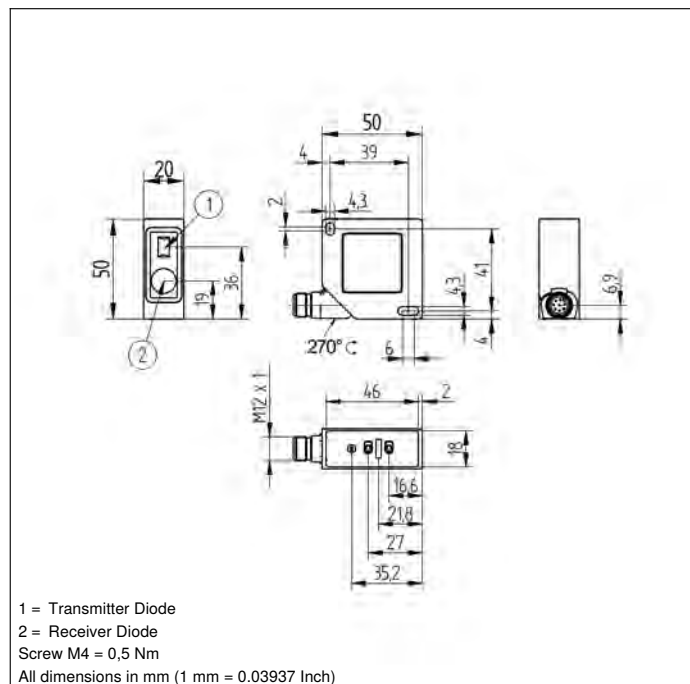
These sensors work with a high-resolution CMOS line and DSP technology and determine distance using angular measurement. As a result, material, color and brightness related measurement differences are virtually eliminated.


Integrated analogue output can be configured for voltage 0...10 V (10...0 V) or current 4...20 mA (20...4 mA).



## Technical Data

Optical Data	
Working Range	50...350 mm
Measuring Range	300 mm
Resolution	50 $\mu\text{m}$
Resolution (Speed-Mode)	80 $\mu\text{m}$
Linearity	0,15 %
Linearity (Speed-Mode)	0,2 %
Light Source	Laser (red)
Wavelength	660 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	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 80 mA
Measuring Rate	500 /s
Measuring Rate (Resolution-Mode)	250 /s
Response Time	< 2000 $\mu\text{s}$
Response Time (Resolution Mode)	< 4000 $\mu\text{s}$
Temperature Drift	< 25 $\mu\text{m}/\text{K}$
Temperature Range	-25...50 °C
Analog Output	0...10 V/4...20 mA
Load Current Voltage Output	< 1 mA
Current Output Load Resistance	< 500 Ohm
Interface	RS-232
Baud Rate	38400 Bd
Protection Class	III
FDA Accession Number	1120723-000
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Degree of Protection	IP67
Connection	M12 x 1; 8-pin



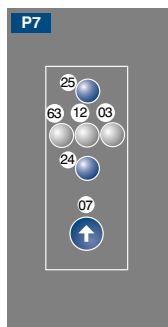
Plug Version	
	<b>Part Number</b> <b>OCP352H0180</b>
Error Output	●
Analog Output	●
RS-232 Interface	●
Connection Diagram No.	<b>529</b>
Control Panel No.	<b>P7</b>
Suitable Connection Equipment No.	<b>80</b>
Suitable Mounting Technology No.	<b>380</b>

Connection Diagrams page 128 / System Components page 124

## Complementary Products

- Analog Evaluation Unit AW02
- Fieldbus Gateway ZAGxxxN01, EPGG001
- Interface Cable S232W3
- Protective Housing ZSV-0x-01
- Set Protective Housing ZSP-NN-02
- Software

## Ctrl. Panel

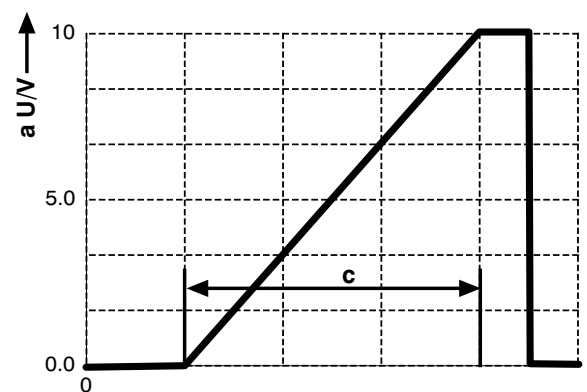


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- 07 = Selector Switch
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- 25 = Minus Button
- 63 = Analog Output Current Indicator

**Table 1**

<b>Working Distance</b>	50 mm	350 mm
<b>Spot Size</b>	0,4 × 1 mm	1,4 × 3,1 mm

## Output Graph



c = Measuring Range

a = Analog Voltage Output

# High-Performance Distance Sensor

**50...350 mm**

**LASER**

**IndustrialEthernet**

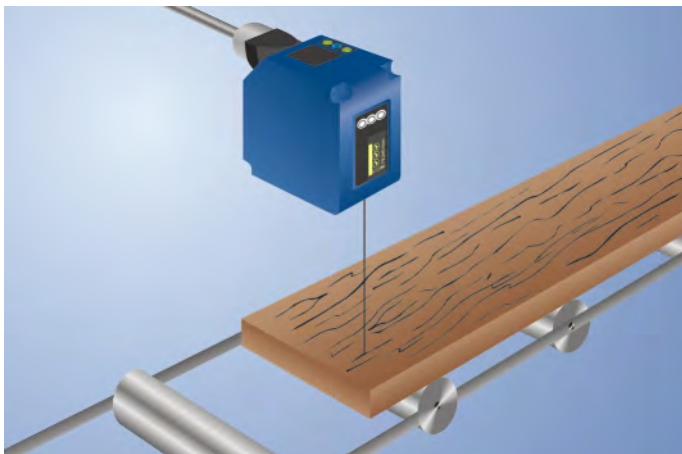
Range



- CMOS line array
- Industrial Ethernet
- Measured value independent of material, color and brightness
- Web server and graphic display for simple operation

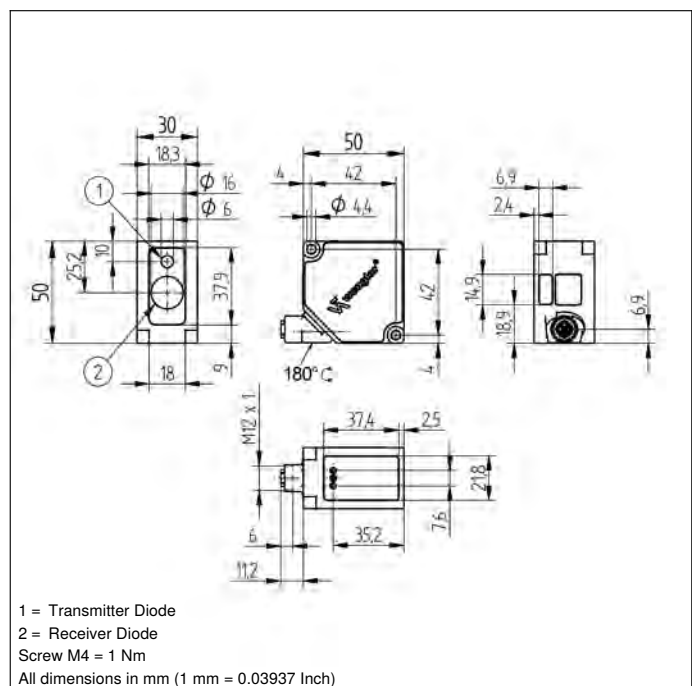
These sensors work with a high-resolution CMOS line and DSP technology and determine distance using angular measurement.

Sensors with Industrial Ethernet make the analog and digital input cards at control units unnecessary, as all service and measurement data is read, analyzed and processed in the control unit in real time, without the need for conversion. Power over Ethernet connects data transfer and power supply in one cable and thus reduces the wiring effort.




## Technical Data

Optical Data	
Working Range	50...350 mm
Measuring Range	300 mm
Reproducibility maximum	20...150 $\mu\text{m}$
Linearity Deviation	100...500 $\mu\text{m}$
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	3,6 × 0,9 mm
Electrical Data	
Port Type	100BASE-TX
PoE Class	1
Output rate	330 /s
Temperature Drift	< 20 $\mu\text{m}/\text{K}$
Temperature Range	-25...50 °C
Reverse Polarity Protection	yes
Interface	PROFINET
Protection Class	III
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Metal
Degree of Protection	IP68
Connection	M12 × 1; 8-pin, X-cod.
Safety-relevant Data	
MTTfd (EN ISO 13849-1)	350,69 a





Display brightness may decrease with age. This does not result in any impairment of the sensor function.

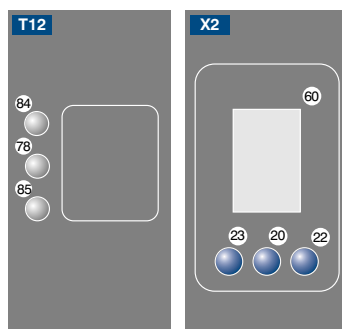
Plug Version	
	<b>Part Number</b> <b>OCP352P0150P</b>
Web server	yes
PROFINET IO, CC-B	●
Connection Diagram No.	<b>001</b>
Control Panel No.	<b>X2</b>   <b>T12</b>
Suitable Connection Equipment No.	<b>50</b>
Suitable Mounting Technology No.	<b>380</b>

Connection Diagrams page 128 / System Components page 124

## Complementary Products

- Midspan Adapter Z0029
- Protective Housing ZNNS001, ZNNS002
- Switch/Junction with PoE ZAC50xN0x

## Ctrl. Panel



- 20 = Enter Button    78 = Module status
- 22 = UP Button      84 = Communication Status
- 23 = Down Button    85 = Link/Act LED
- 60 = Display

# High-Performance Distance Sensor

**0...1000 mm**

**LASER**

**PNG//smart WinTec**

Range



- 2 mutually independent switching outputs
- Interference-free towards gloss in the background with WinTec
- Miniature design
- No mutual interference with WinTec
- Reliable in case of glossy objects with WinTec
- Secure detection of black objects also in extremely inclined positions with WinTec

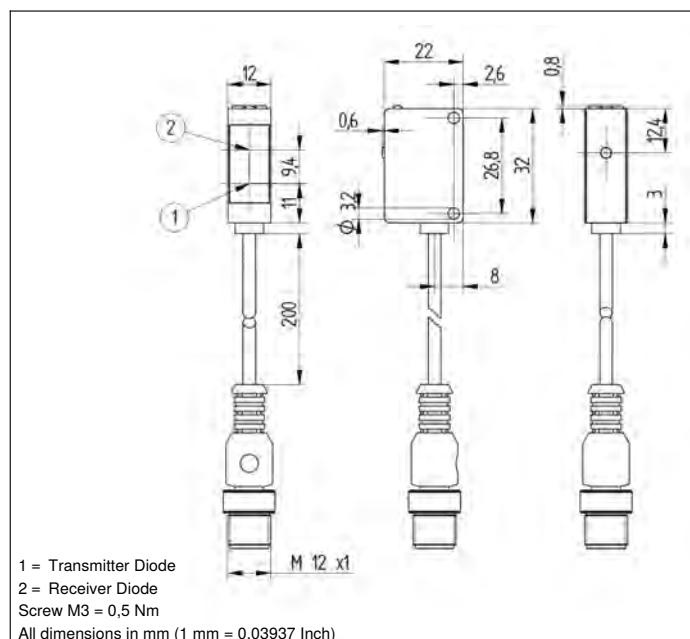
These miniature sensors determine distance between the sensor and the object by means of transit time measurement.


wenglor's interference-free technology (WinTec) is revolutionizing sensor technology: it prevents numerous sensors arranged directly opposite or next to each other from interfering with one another. The sensors reach a very high switching frequency and use laser class 1, which is safe for the human eye.



## Technical Data

Optical Data	
Working Range	0...1000 mm
Adjustable Range	100...1000 mm
Switching Hysteresis	< 20 mm
Light Source	Laser (red)
Wavelength	680 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Beam Divergence	< 16 mrad
Max. Ambient Light	10000 Lux
Light Spot Diameter	see Table 1
Triple Dot Laser	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)	< 30 mA
Switching Frequency	500 Hz
Response Time	1 ms
Temperature Drift (-10 °C < T <sub>u</sub> ≤ 50 °C)	< 2 %
Temperature Drift (-40 °C < T <sub>u</sub> ≤ 50 °C)	< 3 %
Temperature Range	-40...50 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link V1.1
Protection Class	III
FDA Accession Number	1620293-001
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Optic Cover	PMMA
Degree of Protection	IP67
Connection	M12 × 1; 4-pin
Cable Length	200 mm
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1021,76 a



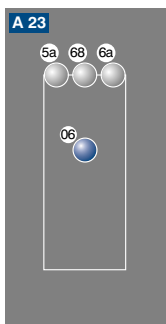
Plug Version	
	Part Number <b>P1KY006</b>
PNP NO	●
IO-Link	●
Connection Diagram No.	<b>223</b>
Control Panel No.	<b>A23</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>400</b>

Connection Diagrams page 128 / System Components page 124

## Complementary Products

IO-Link Master  
Software

## Ctrl. Panel



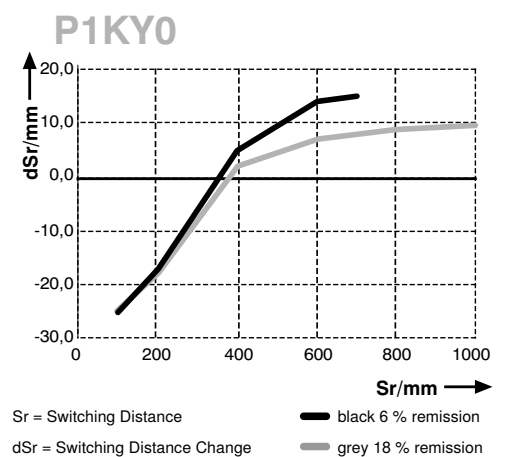
06 = Teach Button  
 5a = Switching Status Display, O1  
 68 = Supply Voltage Indicator  
 6a = Switching Status Display, O2

**Table 1**

Working Distance	100 mm	500 mm	1000 mm
Light Spot Diameter	4 mm	7 mm	15 mm

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



# High-Performance Distance Sensor

**0...3 m**

**LASER**

WinTec

Range

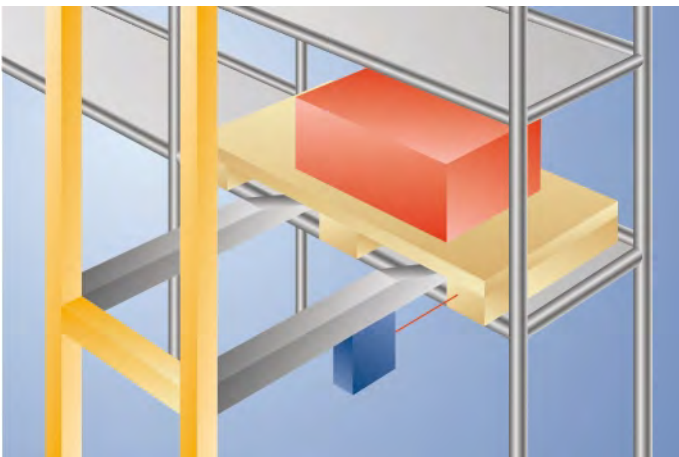


- Interference-free towards gloss in the background with WinTec
- No mutual interference with WinTec
- Reliable in case of glossy objects with WinTec
- Secure detection of black objects also in extremely inclined positions with WinTec

These sensors have scratch-resistant optics and the emitted light can be switched off. They use the transit time measurement principle to measure the distance between the sensor and the object.

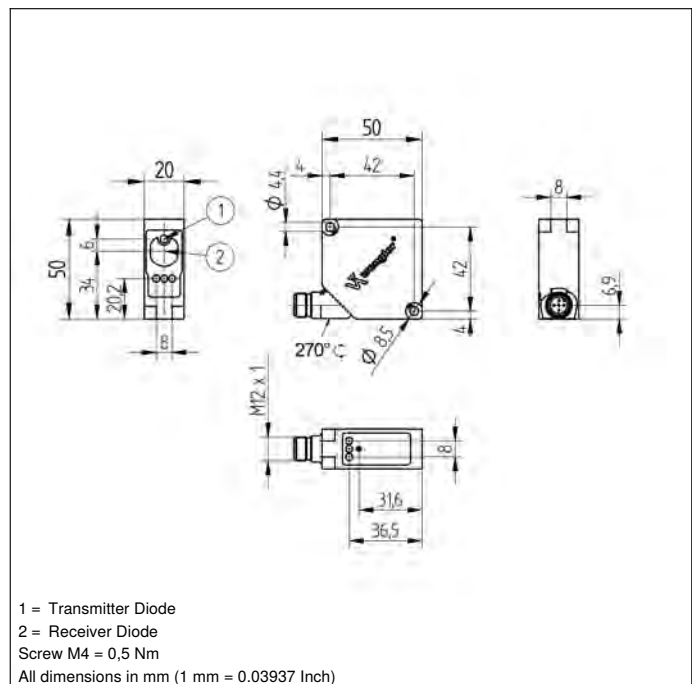
wenglor interference-free technology (WinTec) has revolutionized sensor technology:


It makes it possible to mount several sensors directly next to, or opposite each other without the sensors influencing each other. The sensors reach a very high switching frequency and use laser class 1, which is safe for the human eye.



## Technical Data

Optical Data	
Working Range	0...3000 mm
Adjustable Range	200...3000 mm
Switching Hysteresis	< 15 mm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Beam Divergence	< 2 mrad
Max. Ambient Light	10000 Lux
Light Spot Diameter	see Table 1
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 50 mA
Switching Frequency	1000 Hz
Response Time	0,5 ms
Temperature Drift (-10 °C < T <sub>u</sub> < 50 °C)	< 1 %
Temperature Drift (T <sub>u</sub> < -10 °C, T <sub>u</sub> > 50 °C)	< 2,5 %
Temperature Range	-40...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
FDA Accession Number	0710891-003
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Optic Cover	PMMA
Degree of Protection	IP68
Connection	M12 × 1; 4/5-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	771,39 a



Plug Version	
	<b>Part Number</b> OY2P303A0135
PNP NO/NC antivalent	●
Connection Diagram No.	<b>780</b>
Control Panel No.	<b>P10</b>
Suitable Connection Equipment No.	<b>2   35</b>
Suitable Mounting Technology No.	<b>380</b>

Connection Diagrams page 128 / System Components page 124

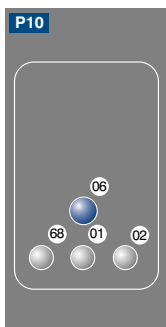
## Complementary Products

PNP-NPN Converter BG2V1P-N-2M

Protective Housing ZSV-0x-01

Set Protective Housing ZSP-NN-02

## Ctrl. Panel



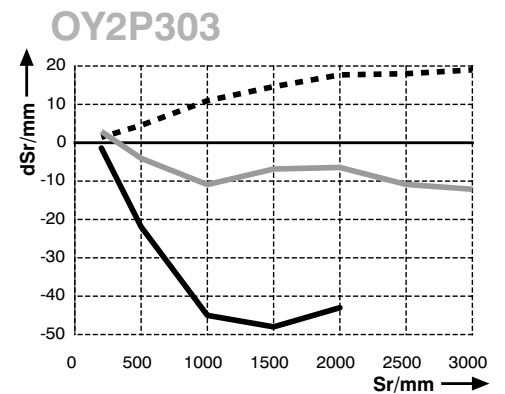
- 01 = Switching Status Indicator
- 02 = Contamination Warning
- 06 = Teach Button
- 68 = Supply Voltage Indicator

**Table 1**

Working Distance	0 m	3 m
Light Spot Diameter	5 mm	9 mm

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— grey 18 % remission

--- Aluminum

# High-Performance Distance Sensor

0...3 m

LASER

Range

PNG//smart WinTec



- 2 mutually independent switching outputs
- Interference-free towards gloss in the background with WinTec
- No mutual interference with WinTec
- Reliable in case of glossy objects with WinTec
- Secure detection of black objects also in extremely inclined positions with WinTec

These sensors have scratch-resistant optics and the emitted light can be switched off. They use the transit time measurement principle to measure the distance between the sensor and the object.

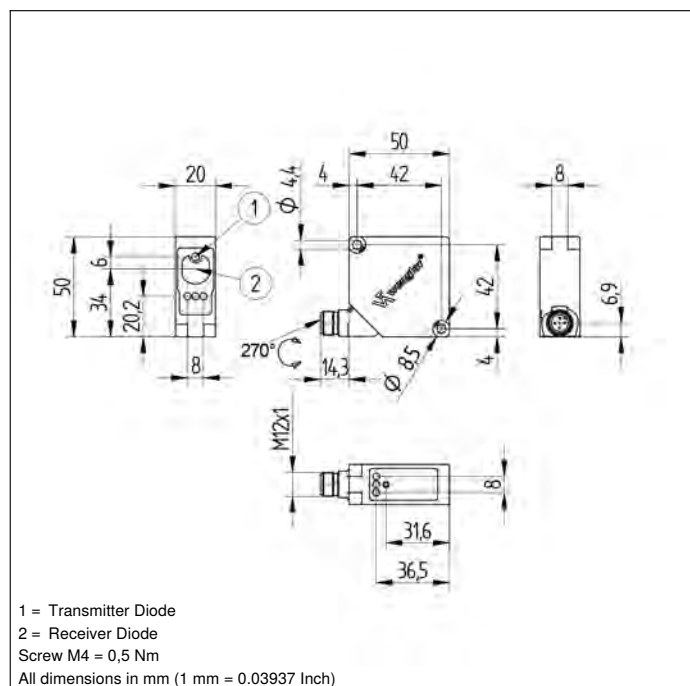
wenglor interference-free technology (WinTec) has revolutionized sensor technology:


It makes it possible to mount several sensors directly next to, or opposite each other without the sensors influencing each other. The sensors reach a very high switching frequency and use laser class 1, which is safe for the human eye.



## Technical Data

Optical Data	
Working Range	0...3000 mm
Adjustable Range	200...3000 mm
Switching Hysteresis	< 15 mm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Beam Divergence	< 2 mrad
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 (U <sub>b</sub> = 24 V)	< 40 mA
Switching Frequency	500 Hz
Response Time	1 ms
Temperature Drift (-10 °C < T <sub>u</sub> < 50 °C)	< 1 %
Temperature Drift (T <sub>u</sub> < -10 °C, T <sub>u</sub> > 50 °C)	< 2,5 %
Temperature Range	-40...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link V1.1
Protection Class	III
FDA Accession Number	1910001-000
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Optic Cover	PMMA
Degree of Protection	IP68
Connection	M12 × 1; 4/5-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	949,92 a



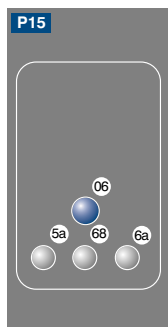
		Plug Version	
		Part Number	
		P1PY001	
PNP NO		●	
IO-Link		●	
Connection Diagram No.		235	
Control Panel No.		P15	
Suitable Connection Equipment No.		2	35
Suitable Mounting Technology No.		380	

Connection Diagrams page 128 / System Components page 124

## Complementary Products

IO-Link Master
Protective Housing ZSV-0x-01
Set Protective Housing ZSP-NN-02
Software

## Ctrl. Panel



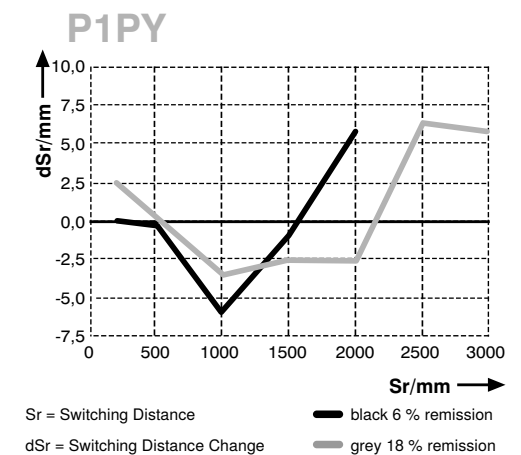
06 = Teach Button  
 5a = Switching Status Display, O1  
 68 = Supply Voltage Indicator  
 6a = Switching Status Display, O2

Table 1

Working Distance	0 m	3 m
Light Spot Diameter	5 mm	9 mm

## Switching Distance Deviation

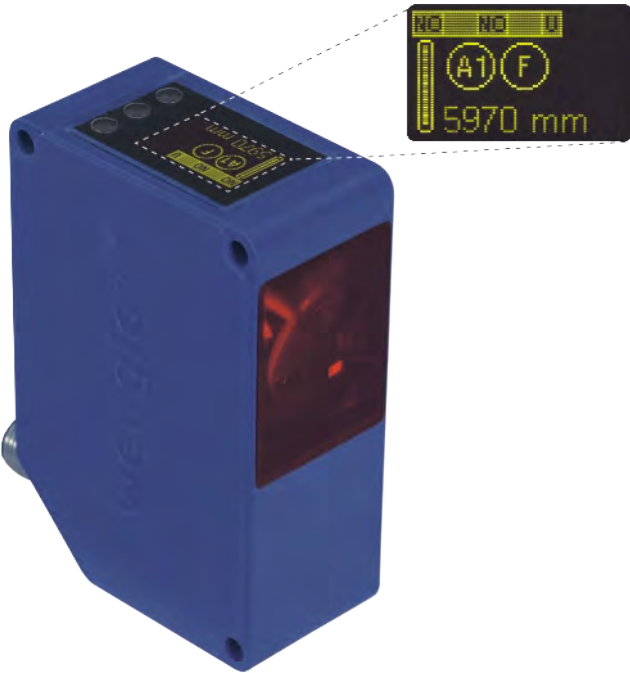
Typical characteristic curve based on white, 90 % remission



# High-Performance Distance Sensor

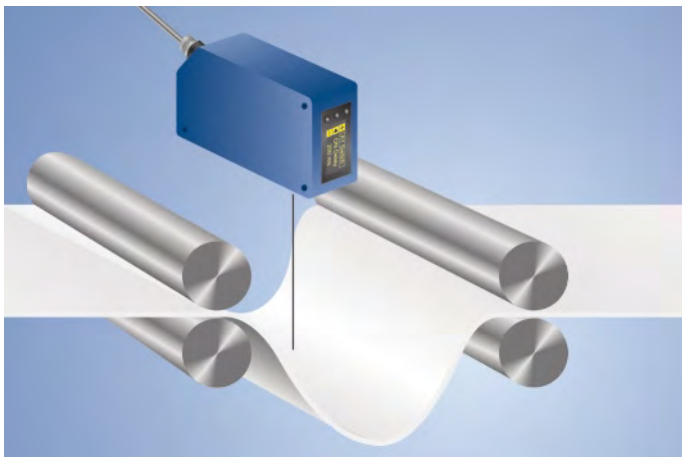
**0,2...6,2 m** LASER

Range



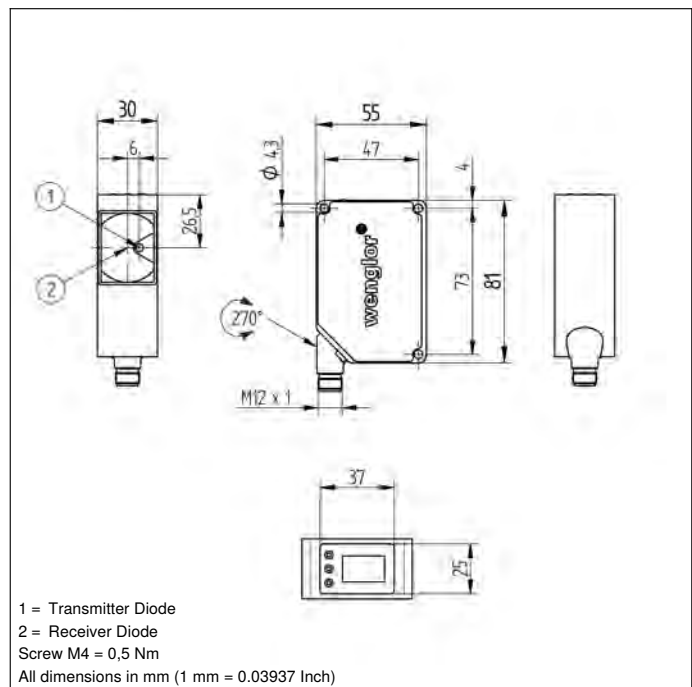
- 2 mutually independent switching outputs
- Graphical display for easy operation
- Switching output A1 as analog output switchable (0...10 V/4...20 mA)
- Temperature drift eliminable

These sensors have scratch-resistant optics and the emitted light can be switched off. They use the transit time measurement principle to measure the distance between the sensor and the object. For this reason, the object's color, shape and surface characteristics have practically no influence on measurement results. Even dark objects can be reliably recognized.



## Technical Data

Optical Data	
Working Range	0,2...6,2 m
Measuring Range	6 m
Resolution	1...12 mm
Linearity	0,5 %
Switching Hysteresis	3...20 mm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Beam Divergence	< 2 mrad
Light Spot Diameter	see Table 1
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 100 mA
Switching Frequency	50 Hz
Measuring Rate	1...100 /s
Response Time	10...200 ms
On-/Off-Delay	0...10000 ms
Temperature Drift (-10 °C < T <sub>u</sub> < 50 °C)	< 0,2 mm/K
Temperature Drift (T <sub>u</sub> < -10 °C, T <sub>u</sub> > 50 °C)	< 0,4 mm/K
Temperature Range	-25...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Analog Output	0...10 V/4...20 mA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III
FDA Accession Number	0920381-000
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Plastic
Degree of Protection	IP68
Connection	M12 x 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	346,68 a





Display brightness may decrease with age. This does not result in any impairment of the sensor function.



### Plug Version

<b>Part Number</b>	<b>OY1TA603P0003</b>
Configurable as PNP/NPN/Push-Pull	●
Analog Output	●
Connection Diagram No.	<b>755</b>
Control Panel No.	<b>TA1</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>340</b>

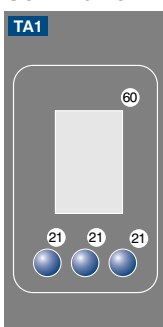
Connection Diagrams page 128 / System Components page 124

## Complementary Products

Analog Evaluation Unit AW02

Set Protective Housing ZST-NN-02

## Ctrl. Panel



21 = Mode Button  
 60 = Display

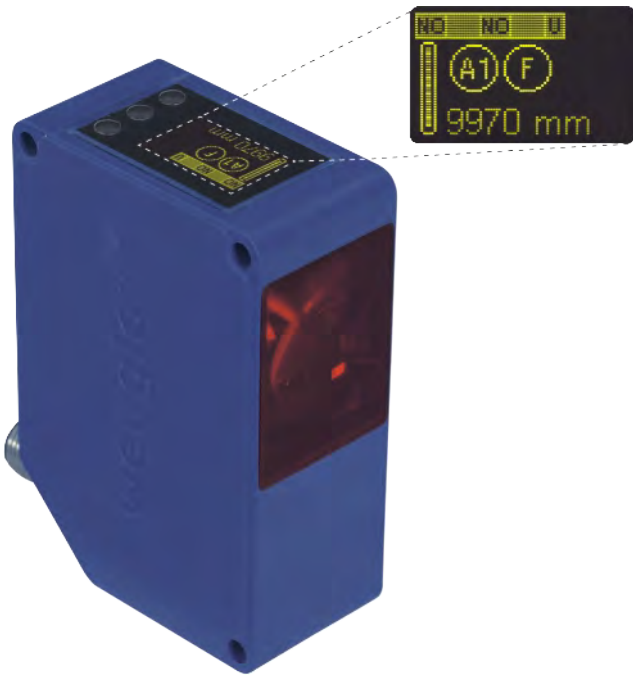
**Table 1**

<b>Working Distance</b>	0 m	6 m
<b>Light Spot Diameter</b>	5 mm	< 12 mm

# High-Performance Distance Sensor

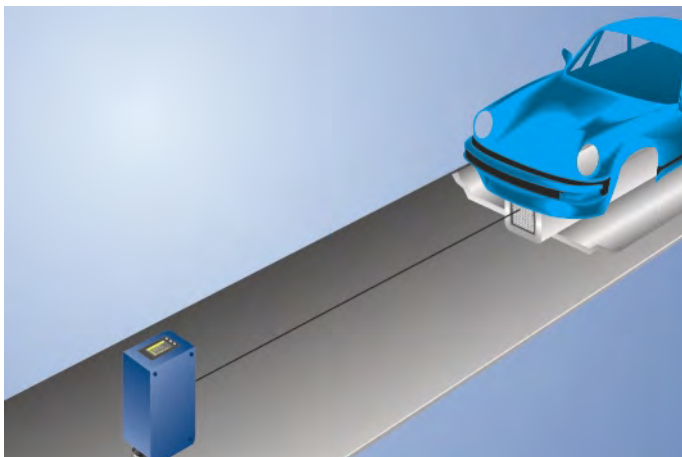
**0,1...10,2 m** LASER

Range



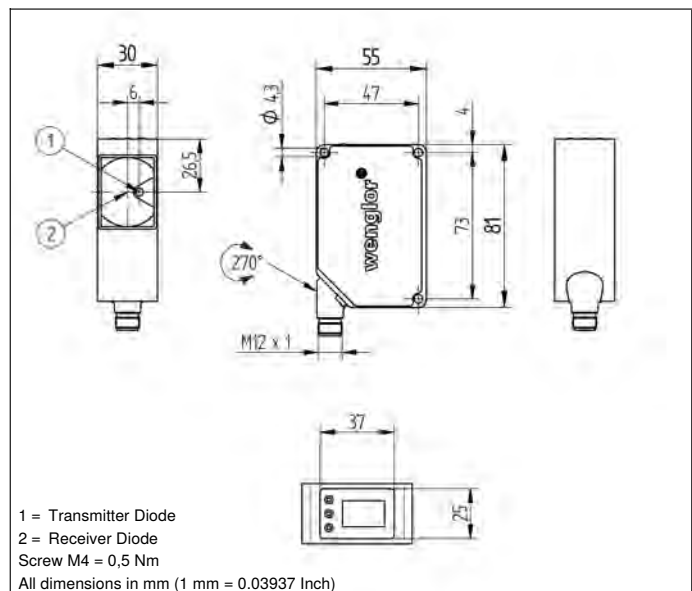
- Emitted light disengageable
- Graphical display for easy operation
- Switching output A1 as analog output switchable (0...10 V/4...20 mA)
- Temperature drift eliminable

These sensors have scratch-resistant optics and the emitted light can be switched off. They use the transit time measurement principle to measure the distance between the sensor and the object. Using a suitable reflector at the object, a highly accurate position measurement at large distances is also possible. The configurations are selected using a menu and can be protected by a password.




## Technical Data

Optical Data	
Working Range	0,1...10,2 m
Analog Working Range	0,2...10,2 m
Measuring Range	10 m
Reference Reflector/Reflector Foil	RF508
Resolution	2...6 mm
Linearity	0,5 %
Switching Hysteresis	3...20 mm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Beam Divergence	< 2 mrad
Reflector required	yes
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 100 mA
Switching Frequency	50 Hz
Measuring Rate	1...100 /s
Response Time	10...200 ms
On-/Off-Delay	0...10000 ms
Temperature Drift (-10 °C < T <sub>u</sub> < 50 °C)	< 0,2 mm/K
Temperature Drift (T <sub>u</sub> < -10 °C, T <sub>u</sub> > 50 °C)	< 0,4 mm/K
Temperature Range	-25...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Analog Output	0...10 V/4...20 mA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III
FDA Accession Number	0920382-000
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Plastic
Degree of Protection	IP68
Connection	M12 x 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	346,68 a



Display brightness may decrease with age. This does not result in any impairment of the sensor function.

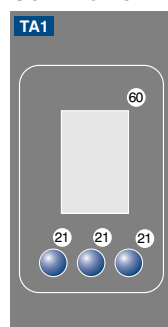
Plug Version	
	<b>Part Number</b> <b>X1TA100QXT3</b>
Error Output	●
Configurable as PNP/NPN/Push-Pull	●
Analog Output	●
Connection Diagram No.	<b>755</b>
Control Panel No.	<b>TA1</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>340</b>

Connection Diagrams page 128 / System Components page 124

## Complementary Products

- Analogue Evaluation Unit AW02
- Reflector, Reflector Foil
- Set Protective Housing ZST-NN-02

## Ctrl. Panel



21 = Mode Button  
 60 = Display

**Table 1**

<b>Working Distance</b>	0 m	10 m
<b>Light Spot Diameter</b>	5 mm	< 20 mm

## Feasible reflector distance

Reflector type, mounting distance

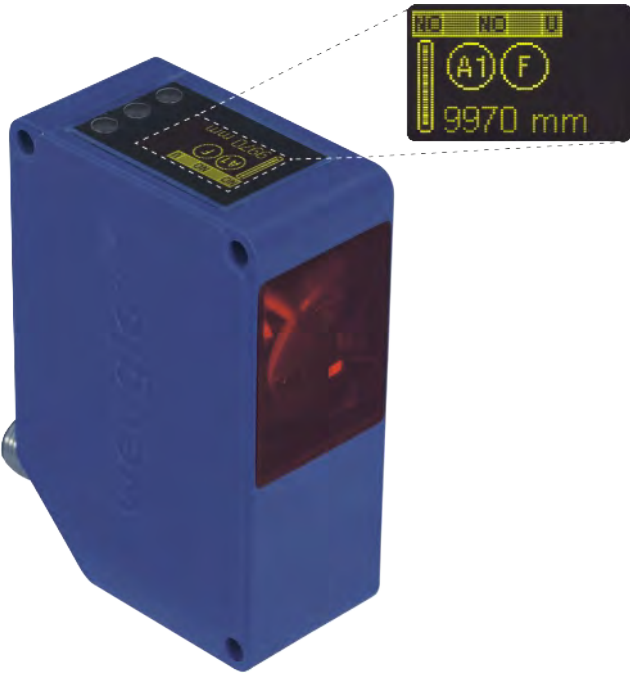
<b>RF505</b>	0,1...10 m	<b>ZRAF07K01</b>	0,1...10 m
<b>RF508</b>	0,1...10 m	<b>ZRAF08K01</b>	0,1...10 m
<b>RF258</b>	0,1...10 m	<b>ZRDF__K01</b>	0...10 m

# High-Performance Distance Sensor

**0,2...100,2 m**

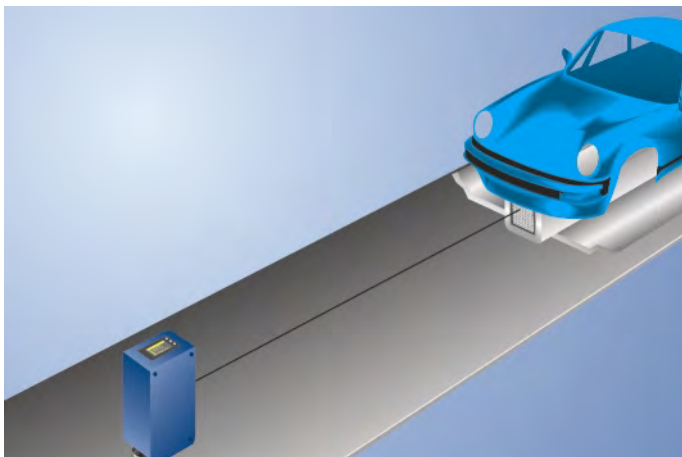
**LASER**

Range



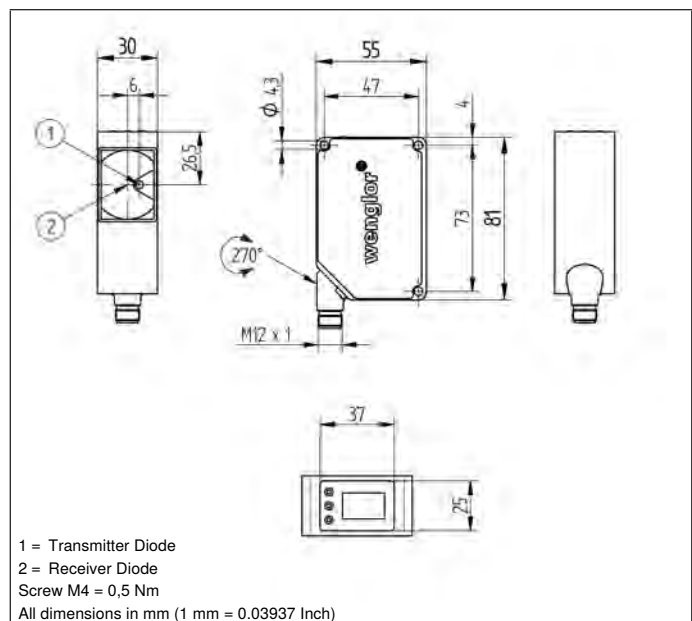
- Analog output (0...10 V/4...20 mA)
- Emitted light disengageable
- Graphical display for easy operation
- Temperature drift eliminable

These sensors have scratch-resistant optics and the emitted light can be switched off. They use the transit time measurement principle to measure the distance between the sensor and the object. Using a suitable reflector at the object, a highly accurate position measurement at large distances is also possible. The configurations are selected using a menu and can be protected by a password.



## Technical Data

Optical Data	
Working Range	0,2...100,2 m
Measuring Range	100 m
Reference Reflector/Reflector Foil	4 × RQ100BA
Resolution	4...20 mm
Linearity	0,05 %
Switching Hysteresis	13...50 mm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Beam Divergence	< 2 mrad
Light Spot Diameter	see Table 1
Reflector required	yes
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 100 mA
Switching Frequency	50 Hz
Measuring Rate	1...100 /s
On-/Off-Delay	0...10000 ms
Temperature Drift	0,5 mm/K
Temperature Range	-25...60 °C
Number of Switching Outputs	1
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Analog Output	0...10 V/4...20 mA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Interface	RS-232
Protection Class	III
FDA Accession Number	0920382-000
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Plastic
Degree of Protection	IP68
Connection	M12 × 1; 8-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	345,65 a



Display brightness may decrease with age. This does not result in any impairment of the sensor function.



### Plug Version

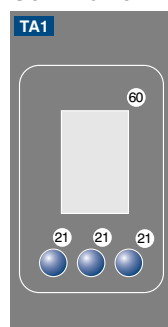
<b>Part Number</b>	<b>X1TA101MHT88</b>
Error Output	●
Configurable as PNP/NPN/Push-Pull	●
Analog Output	●
RS-232 Interface	●
Connection Diagram No.	<b>516</b>
Control Panel No.	<b>TA1</b>
Suitable Connection Equipment No.	<b>88</b>
Suitable Mounting Technology No.	<b>340</b>

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## Complementary Products

- Analog Evaluation Unit AW02
- Fieldbus Gateway ZAGxxxN01, EPGG001
- Interface Cable S232W3
- Reflector, Reflector Foil
- Set Protective Housing ZST-NN-02
- Software

## Ctrl. Panel



21 = Mode Button  
60 = Display

**Table 1**

<b>Working Distance</b>	0 m	40 m	100 m
<b>Light Spot Diameter</b>	5 mm	80 mm	< 200 mm

## Feasible reflector distance

Reflector type, mounting distance

<b>RQ100BA</b>	5...100 m	<b>ZRAF07K01</b>	0,2...40 m
<b>RF505</b>	0,2...40 m	<b>ZRAF08K01</b>	0,2...40 m
<b>RF508</b>	0,2...40 m	<b>ZRDF03K01</b>	0,2...40 m
<b>RF258</b>	0,2...40 m	<b>ZRDF10K01</b>	0,2...100 m

# High-Performance Distance Sensor

**0,05...3,05 m**

Range

**LASER**

WinTec

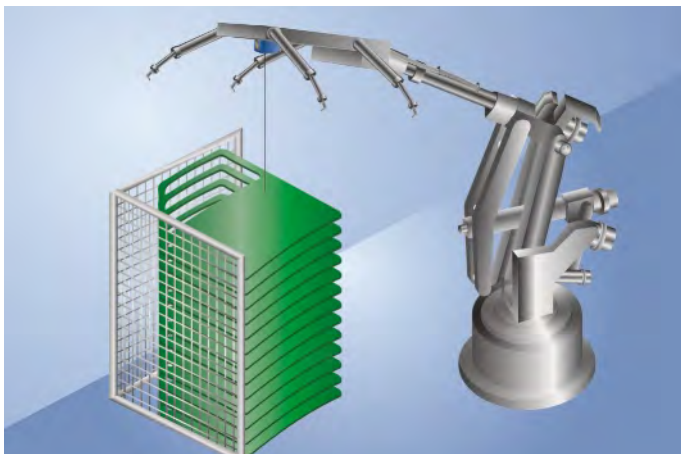


- 2 mutually independent switching outputs
- Analog output (0...10 V/4...20 mA)
- Graphical display for easy operation
- Reliable in case of glossy objects with WinTec
- Secure detection of black objects also in extremely inclined positions with WinTec

These sensors have scratch-resistant optics and the emitted light can be switched off. They use the transit time measurement principle to measure the distance between the sensor and the object.

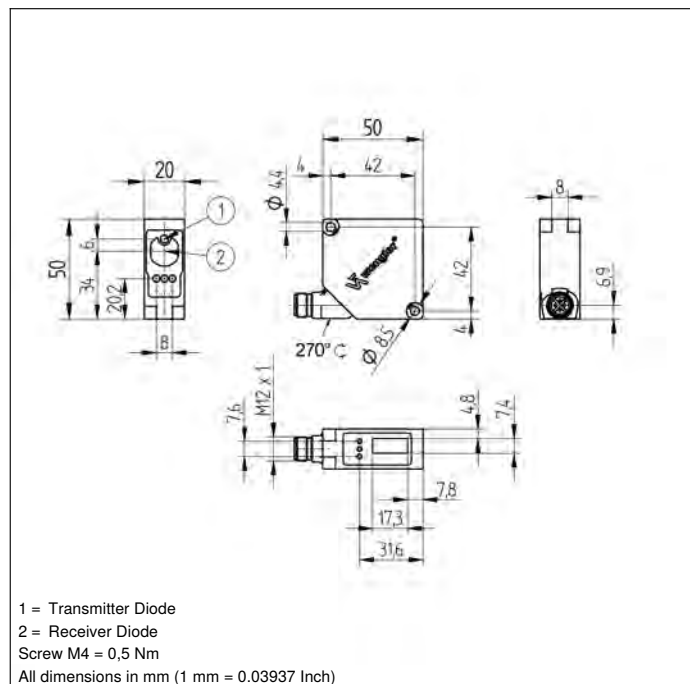
wenglor interference-free technology (WinTec) has revolutionized sensor technology:

It makes it possible to mount several sensors directly next to, or opposite each other without the sensors influencing each other. The sensors reach a very high switching frequency and use laser class 1, which is safe for the human eye.




## Technical Data

Optical Data	
Working Range	50...3050 mm
Measuring Range	3000 mm
Reproducibility maximum	1 mm
Linearity Deviation (200...3050 mm)	7 mm
Linearity Deviation (50...200 mm)	15 mm
Switching Hysteresis	3...20 mm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Beam Divergence	< 2 mrad
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 70 mA
Switching Frequency	250 Hz
Measuring Rate	1...500 /s
On-/Off-Delay	0...10000 ms
Temperature Drift	< 0,4 mm/K
Temperature Range	-40...50 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Analog Output	0...10 V/4...20 mA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Teach Mode	HT, VT, FT, TP
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Plastic
Optic Cover	PMMA
Degree of Protection	IP68
Connection	M12 x 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	349,73 a



Display brightness may decrease with age. This does not result in any impairment of the sensor function.

Plug Version	
	<b>Part Number</b> <b>OY1P303P0102</b>
Error Output	●
Contamination Output	●
Configurable as PNP/NPN/Push-Pull	●
Analog Output	●
IO-Link	●
Connection Diagram No.	<b>782</b>
Control Panel No.	<b>X2</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>380</b>

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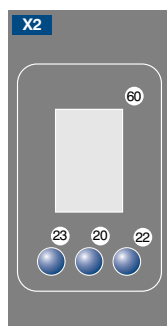
## Complementary Products

Analog Evaluation Unit AW02
IO-Link Master
Protective Housing ZSV-0x-01
Set Protective Housing ZSP-NN-02
Software

**Table 1**

<b>Working Distance</b>	0 m	3 m
<b>Light Spot Diameter</b>	5 mm	9 mm

## Ctrl. Panel



20 = Enter Button  
 22 = UP Button  
 23 = Down Button  
 60 = Display

# High-Performance Distance Sensor

**30...80 mm**

**LASER**

IndustrialEthernet

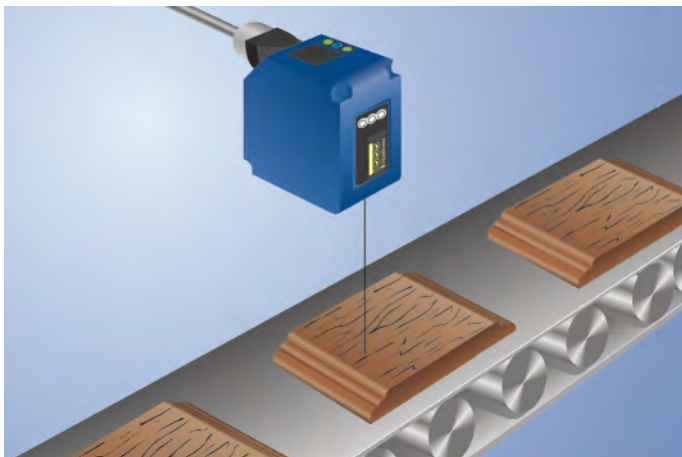
Range



- CMOS line array
- Industrial Ethernet
- Measured value independent of material, color and brightness
- Web server and graphic display for simple operation

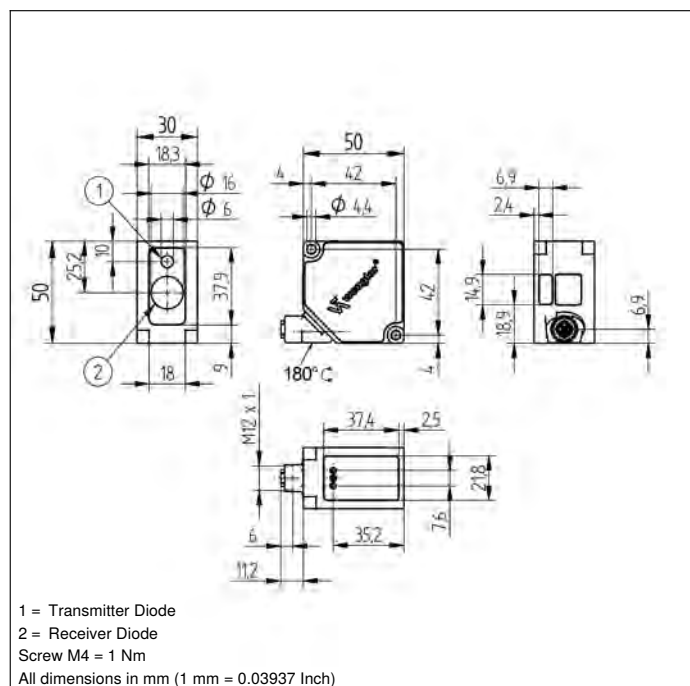
These sensors work with a high-resolution CMOS line and DSP technology and determine distance using angular measurement.

Sensors with Industrial Ethernet make the analog and digital input cards at control units unnecessary, as all service and measurement data is read, analyzed and processed in the control unit in real time, without the need for conversion. Power over Ethernet connects data transfer and power supply in one cable and thus reduces the wiring effort.




## Technical Data

Optical Data	
Working Range	30...80 mm
Measuring Range	50 mm
Reproducibility maximum	15...50 $\mu\text{m}$
Linearity Deviation	50...100 $\mu\text{m}$
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	3,6 × 0,9 mm
Electrical Data	
Port Type	100BASE-TX
PoE Class	1
Output rate	330 /s
Temperature Drift	< 5 $\mu\text{m}/\text{K}$
Temperature Range	-25...50 °C
Reverse Polarity Protection	yes
Interface	PROFINET
Protection Class	III
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Metal
Degree of Protection	IP68
Connection	M12 × 1; 8-pin, X-cod.
Safety-relevant Data	
MTTfd (EN ISO 13849-1)	350,69 a





Display brightness may decrease with age. This does not result in any impairment of the sensor function.

		Plug Version	
		<b>Part Number</b> <b>OCP801P0150P</b>	
Web server		yes	
PROFINET IO, CC-B		●	
Connection Diagram No.		<b>001</b>	
Control Panel No.		<b>X2</b>	<b>T12</b>
Suitable Connection Equipment No.		<b>50</b>	
Suitable Mounting Technology No.		<b>380</b>	

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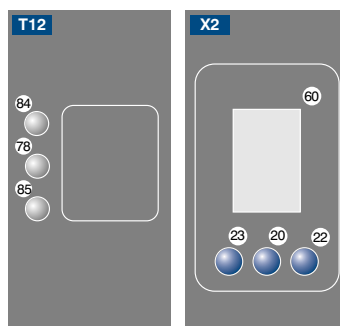
## Complementary Products

Midspan Adapter Z0029

Protective Housing ZNNS001, ZNNS002

Switch/Junction with PoE ZAC50xN0x

## Ctrl. Panel



20 = Enter Button    78 = Module status  
 22 = UP Button      84 = Communication Status  
 23 = Down Button    85 = Link/Act LED  
 60 = Display

# High-Performance Distance Sensor

**55 mm**

**LASER**

Range

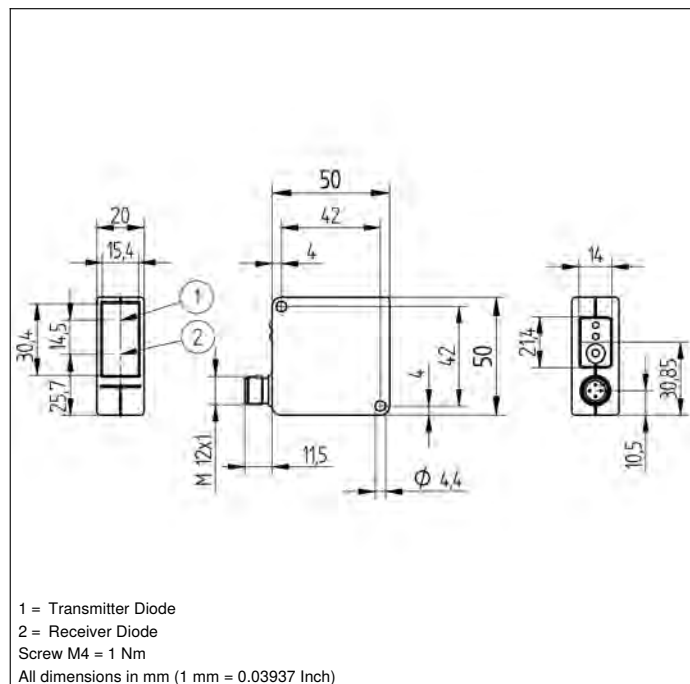
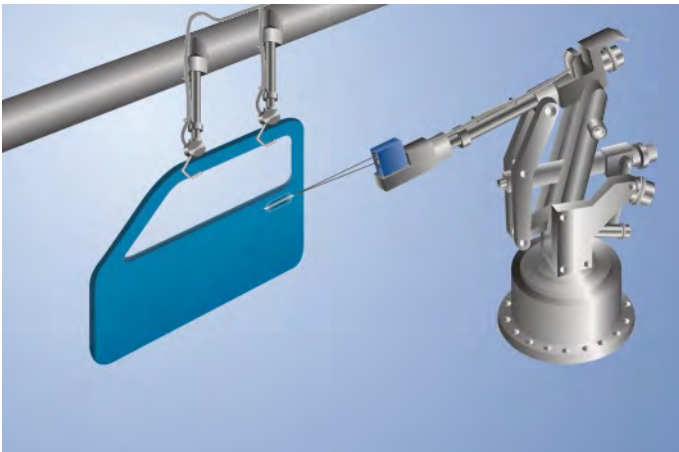



- **Smallest recognizable distance difference: 100  $\mu\text{m}$**
- **Spot diameter: 0,3 mm**

## Technical Data

Optical Data	
Range	55 mm
Adjustable Range	45...55 mm
Switching Hysteresis	< 100 $\mu\text{m}$
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Light Spot Diameter	< 0,3 mm
Focus Distance	75 mm
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 30 mA
Switching Frequency	800 Hz
Response Time	650 $\mu\text{s}$
Temperature Drift	< 5 $\mu\text{m/K}$
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
PNP Contamination Output/Switching Current	50 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
FDA Accession Number	1120738-000
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin

These sensors detect distance by measuring angles. They are particularly good at recognizing objects in front of any background. The color, shape and surface characteristics of the object have practically no influence on sensor switching performance.



Plug Version	
	<b>Part Number</b> <b>OHP551B0003</b>
Contamination Output	●
PNP NO	●
Connection Diagram No.	<b>103</b>
Control Panel No.	<b>P2</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>380</b>

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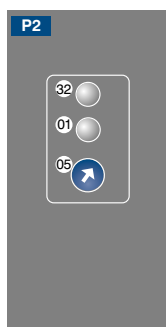
## Complementary Products

PNP-NPN Converter BG2V1P-N-2M

Protective Housing ZSV-0x-01

Set Protective Housing ZSP-NN-02

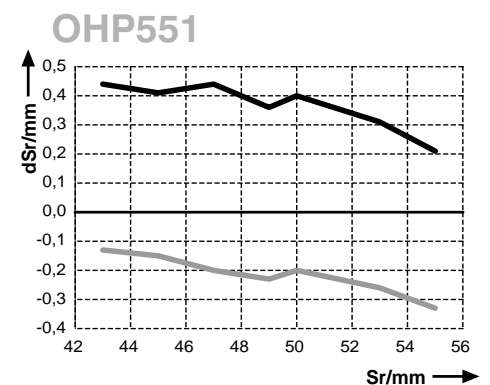
## Ctrl. Panel



01 = Switching Status Indicator  
 05 = Switching Distance Adjuster  
 32 = Contamination Warning/Error Warning

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— grey 18 % remission

# High-Performance Distance Sensor

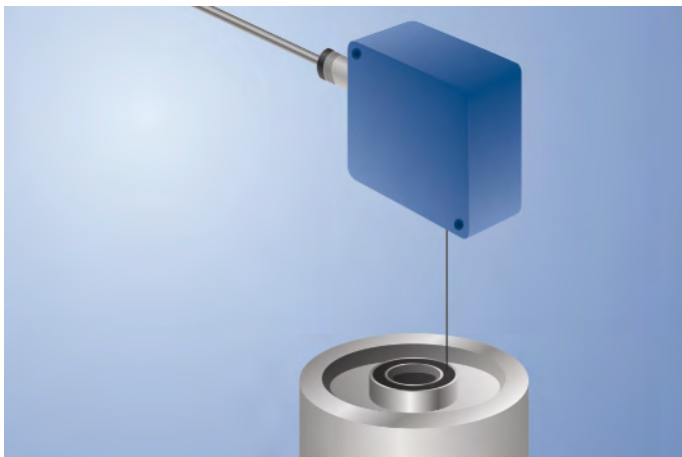
**100 mm** LASER

Range



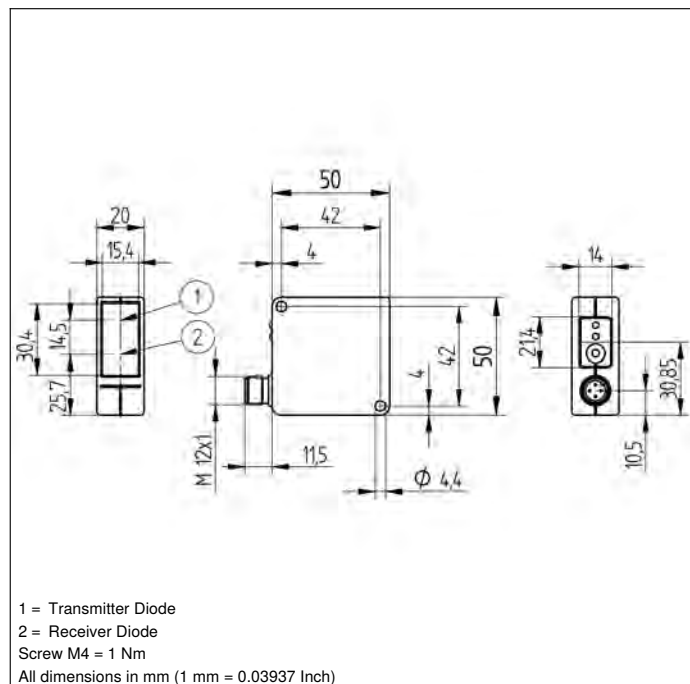
- **Smallest recognizable distance difference: 400 µm**
- **Spot diameter: 0,6 mm**


These sensors detect distance by measuring angles. They are particularly good at recognizing objects in front of any background. The color, shape and surface characteristics of the object have practically no influence on sensor switching performance.



## Technical Data

Optical Data	
Range	100 mm
Adjustable Range	60...100 mm
Switching Hysteresis	< 400 µm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Light Spot Diameter	< 0,6 mm
Focus Distance	110 mm
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 30 mA
Switching Frequency	800 Hz
Response Time	650 µs
Temperature Drift	< 15 µm/K
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
PNP Contamination Output/Switching Current	50 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
FDA Accession Number	1120737-000
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



Plug Version	
	<b>Part Number</b> <b>OHP102B0003</b>
Contamination Output	●
PNP NO	●
Connection Diagram No.	<b>103</b>
Control Panel No.	<b>P2</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>380</b>

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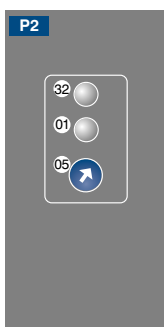
## Complementary Products

PNP-NPN Converter BG2V1P-N-2M

Protective Housing ZSV-0x-01

Set Protective Housing ZSP-NN-02

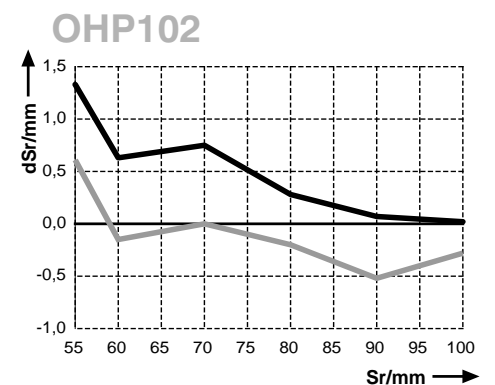
## Ctrl. Panel



01 = Switching Status Indicator  
 05 = Switching Distance Adjuster  
 32 = Contamination Warning/Error Warning

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— grey 18 % remission

# High-Performance Distance Sensor

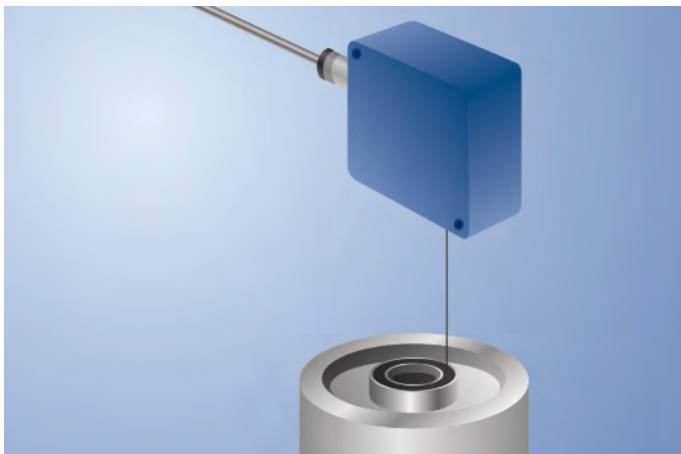
**240 mm** LASER

Range



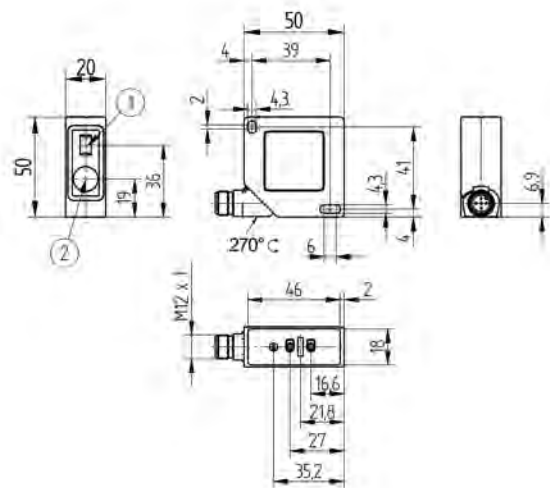
- CMOS line array
- Highly accurate switching distance
- Minimal switching hysteresis
- Switching point independent of material, color and brightness

These sensors work with a high-resolution CMOS line and DSP technology and determine distance using angular measurement. As a result, material, color and brightness related switching point differences are virtually eliminated. Two independent switching outputs are available, at which two switching thresholds and one on or off-delay time (in 10 ms steps) can be configured. Sensor functions can be activated, and scanning results can be acquired via the RS-232 interface.




## Technical Data

Optical Data	
Range	240 mm
Adjustable Range	40...240 mm
Switching Hysteresis	< 0,5 %
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
Current Consumption (U <sub>b</sub> = 24 V)	< 50 mA
Switching Frequency	300 Hz
Response Time	< 1,7 ms
On-/Off-Delay (RS-232)	0...1 s
Temperature Drift	< 15 µm/K
Temperature Range	-25...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 1,5 V
Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Teach Mode	HT, VT, FT, TP
Baud Rate	9600 Bd
Protection Class	III
FDA Accession Number	1120718-000
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Degree of Protection	IP67
Connection	M12 x 1; 4/5-pin



1 = Transmitter Diode  
 2 = Receiver Diode  
 Screw M4 = 0,5 Nm  
 All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version	
	<b>Part Number</b> <b>OCP242X0135</b>	
Error Output	●	
Configurable as PNP/NPN/Push-Pull	●	
Switchable to NC/NO	●	
RS-232 with Adapterbox	●	
External teach-in input	●	
Connection Diagram No.	<b>779</b>	
Control Panel No.	<b>P8</b>	
Suitable Connection Equipment No.	<b>2</b>	<b>35</b>
Suitable Mounting Technology No.	<b>380</b>	

Connection Diagrams page 128 / System Components page 124

## Complementary Products

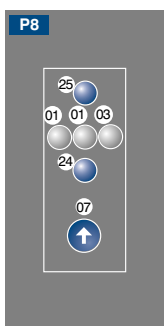
Adapterbox A232

Protective Housing ZSV-0x-01

Set Protective Housing ZSP-NN-02

Software

## Ctrl. Panel



01 = Switching Status Indicator    25 = Minus Button

03 = Error Indicator

07 = Selector Switch

24 = Plus Button

**Table 1**

<b>Detection Range</b>	40 mm	240 mm
<b>Spot Size</b>	0,4 × 0,9 mm	1,1 × 2,3 mm

# High-Performance Distance Sensor

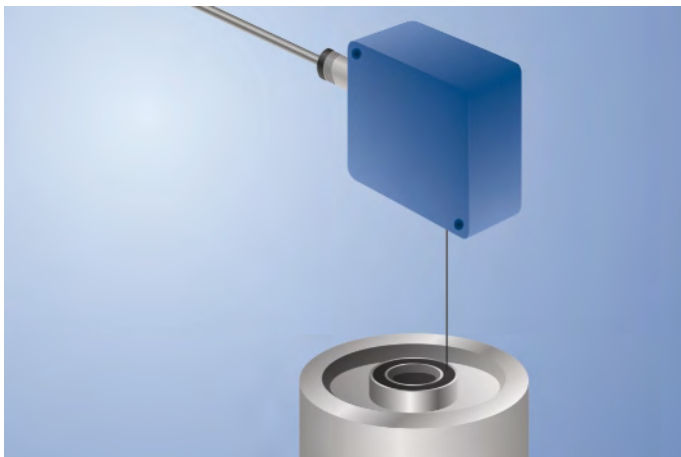
**660 mm** LASER

Range



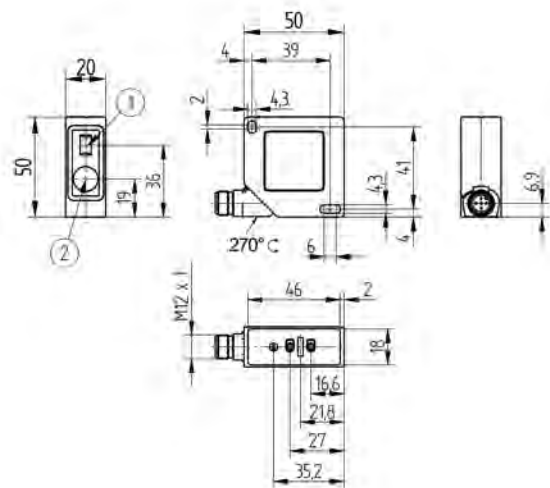
- CMOS line array
- Highly accurate switching distance
- Minimal switching hysteresis
- Switching point independent of material, color and brightness

These sensors work with a high-resolution CMOS line and DSP technology and determine distance using angular measurement. As a result, material, color and brightness related switching point differences are virtually eliminated. Two independent switching outputs are available, at which two switching thresholds and one on or off-delay time (in 10 ms steps) can be configured. Sensor functions can be activated, and scanning results can be acquired via the RS-232 interface.




## Technical Data

Optical Data	
Range	660 mm
Adjustable Range	60...660 mm
Switching Hysteresis	< 1 %
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
Current Consumption (U <sub>b</sub> = 24 V)	< 50 mA
Switching Frequency	100 Hz
Response Time	< 5 ms
On-/Off-Delay (RS-232)	0...1 s
Temperature Drift	< 50 μm/K
Temperature Range	-25...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 1,5 V
Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Teach Mode	HT, VT, FT, TP
Baud Rate	9600 Bd
Protection Class	III
FDA Accession Number	1120728-000
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Degree of Protection	IP67
Connection	M12 × 1; 4/5-pin



1 = Transmitter Diode  
 2 = Receiver Diode  
 Screw M4 = 0,5 Nm  
 All dimensions in mm (1 mm = 0.03937 Inch)



	Plug Version	
	<b>Part Number</b> <b>OCP662X0135</b>	
Error Output	●	
Configurable as PNP/NPN/Push-Pull	●	
Switchable to NC/NO	●	
RS-232 with Adapterbox	●	
External teach-in input	●	
Connection Diagram No.	<b>779</b>	
Control Panel No.	<b>P8</b>	
Suitable Connection Equipment No.	<b>2</b>	<b>35</b>
Suitable Mounting Technology No.	<b>380</b>	

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## Complementary Products

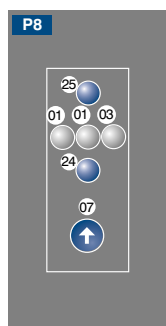
Adapterbox A232

Protective Housing ZSV-0x-01

Set Protective Housing ZSP-NN-02

Software

## Ctrl. Panel



01 = Switching Status Indicator 25 = Minus Button

03 = Error Indicator

07 = Selector Switch

24 = Plus Button

**Table 1**

Detection Range	60 mm	660 mm
Spot Size	0,5 x 1,2 mm	2 x 5,5 mm

# Reflex Sensor

with Background Suppression

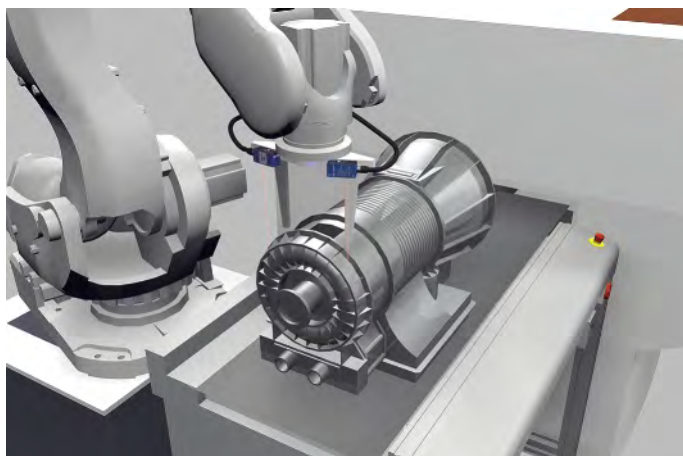
**120 mm** LASER

Range



- Condition monitoring
- Detect extremely small parts starting at 0.1 mm
- IO-Link 1.1
- Laser class 1

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 the reflex sensors (PNP/NPN, NC/NO, switching distance), as well as for reading out switching statuses and distance values.



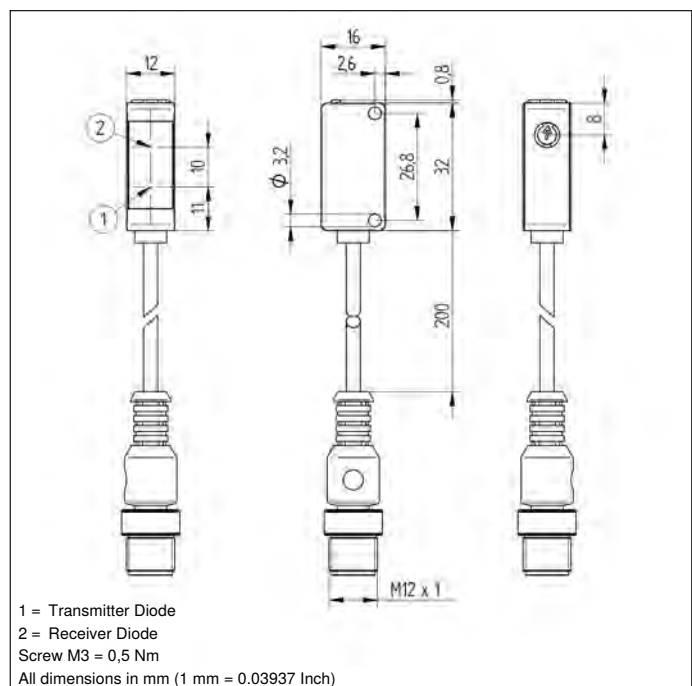
## Technical Data


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 (U <sub>b</sub> = 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...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
FDA Accession Number	1710976-001

Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4-pin
Cable Length	20 cm
Optic Cover	PMMA

Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1641,23 a



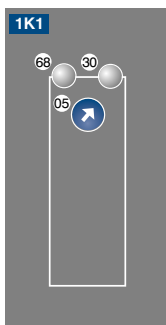
Plug Version	
	Part Number <b>P1KH007</b>
PNP NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	<b>215</b>
Control Panel No.	<b>1K1</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>400</b>

Connection Diagrams page 128 / System Components page 124

## Complementary Products

IO-Link Master  
Software

## Ctrl. Panel



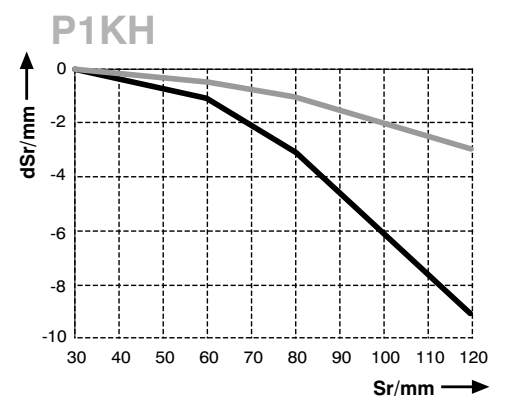
05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**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



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— grey 18 % remission

# Reflex Sensor

with Background Suppression

**300 mm** LASER

Range



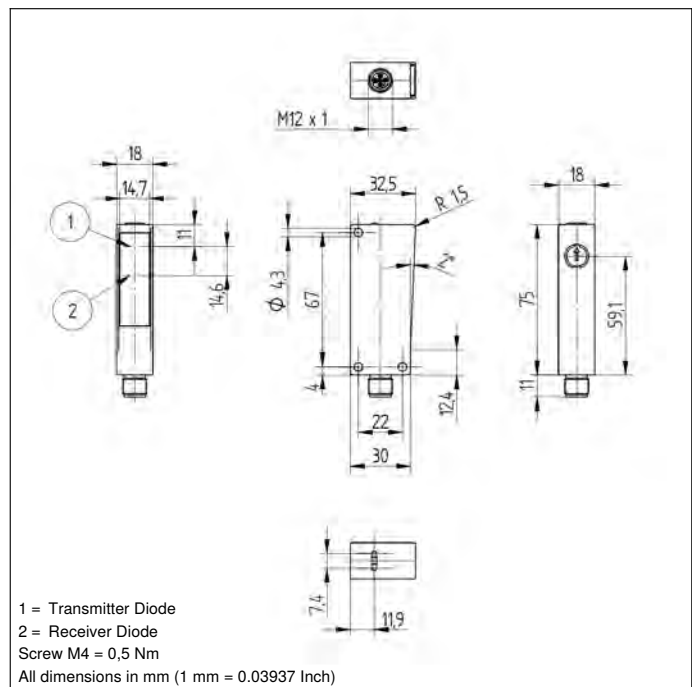
- Condition monitoring
- IO-Link 1.1
- Laser class 1
- Recognition of small parts


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. Even small parts can be reliably detected thanks to the thin laser beam. The IO-Link interface can be used to configure the reflex sensor (PNP/NPN, NC/NO), as well as to read out switching statuses values.



## Technical Data

Optical Data	
Range	300 mm
Adjustable Range	65...300 mm
Switching Hysteresis	< 1 %
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 (U <sub>b</sub> = 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	< 2 %
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Single-turn
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4-pin
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2096,76 a



Plug Version	
	Part Number <b>P1NH707</b>
Contamination Output	●
PNP NO	●
IO-Link	●
Connection Diagram No.	<b>1027</b>
Control Panel No.	<b>A28</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>350</b>

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### Complementary Products

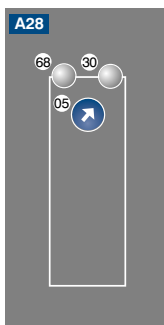
Dust Extraction Tube STAUBTUBUS-03

IO-Link Master

Set Protective Housing Z1NS001

Software

### Ctrl. Panel



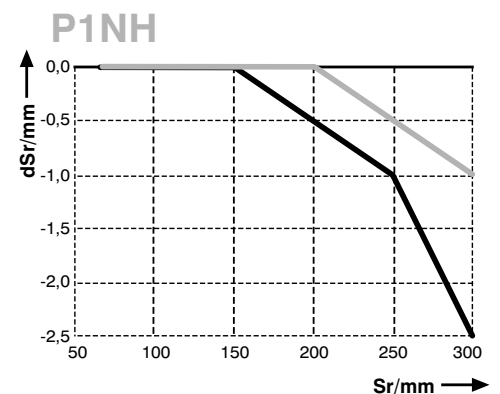
05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

Detection Range	65 mm	150 mm	300 mm
Light Spot Diameter	3 mm	2,5 mm	1,5 mm

### Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— grey 18 % remission

# Reflex Sensor

with Background Suppression

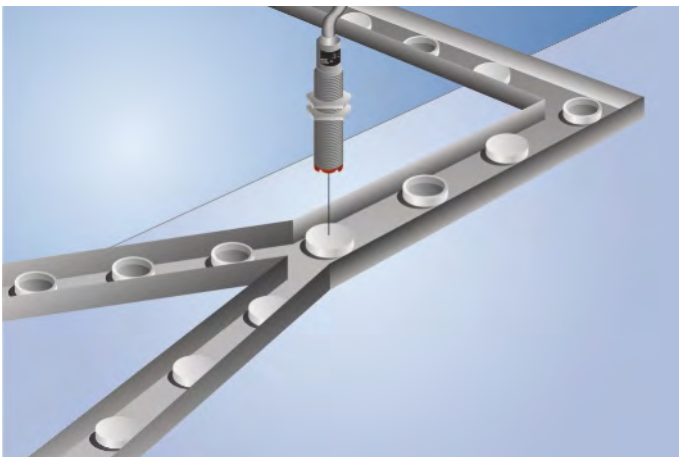
## 80 mm

Range



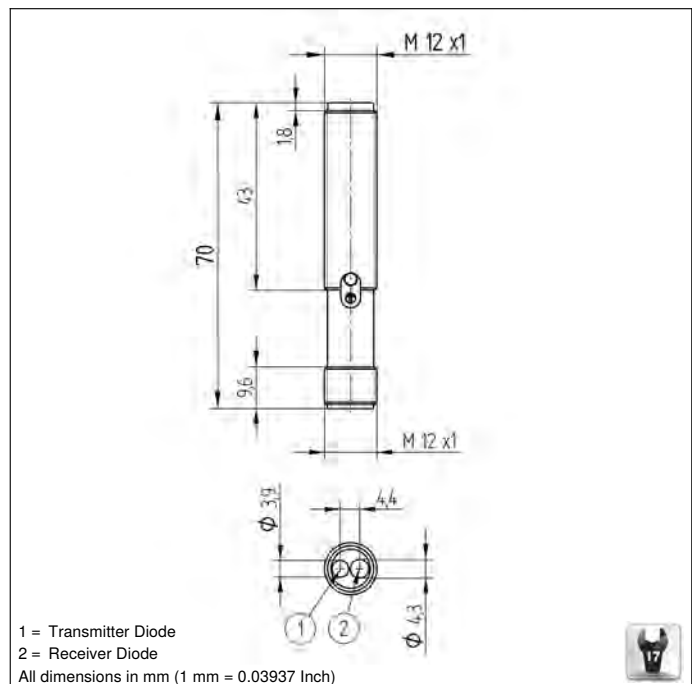
- Adjustable switching distance
- Excellent ambient light suppression
- High switching frequency
- Large detection range


These sensors detect distance by measuring angles. They are particularly good at recognizing objects in front of any background. The color, shape and surface characteristics of the object have practically no influence on sensor switching performance. Also these sensors don't influence each other if their light spots are pointed onto the same spot or against each other.



### Technical Data

Optical Data	
Range	80 mm
Adjustable Range	25...80 mm
Switching Hysteresis	see Table 1
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Light Spot Diameter	see Table 1
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 40 mA
Switching Frequency	1 kHz
Response Time	500 μs
Temperature Drift	< 5 %
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	CuZn, nickel-plated
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



Plug Version	
	<b>Part Number</b> <b>HO08PA3</b>
PNP NO/NC antivalent	●
Connection Diagram No.	<b>101</b>
Control Panel No.	<b>O3</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>170</b>

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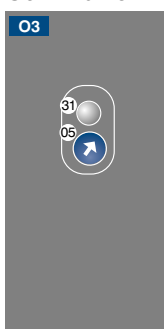
**Table 1**

<b>Detection Range</b>	40 mm	60 mm	80 mm
<b>Light Spot Diameter</b>	3 mm	5 mm	7 mm
<b>Switching Hysteresis</b>	< 2 mm	< 3 mm	< 8 mm

## Complementary Products

PNP-NPN Converter BG2V1P-N-2M

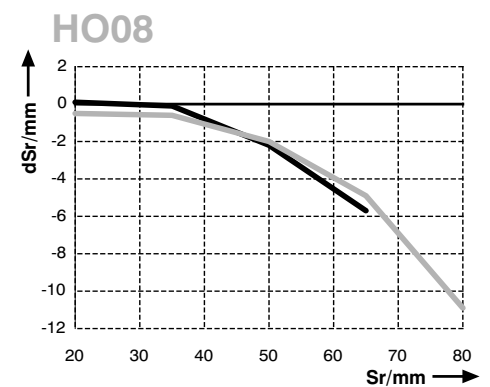
### Ctrl. Panel



05 = Switching Distance Adjuster  
 31 = Switching Status/Contamination-/Short Circuit Warning

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance  
 dSr = Switching Distance Change  
 — black 6 % remission  
 — grey 18 % remission

# Reflex Sensor

with Background Suppression

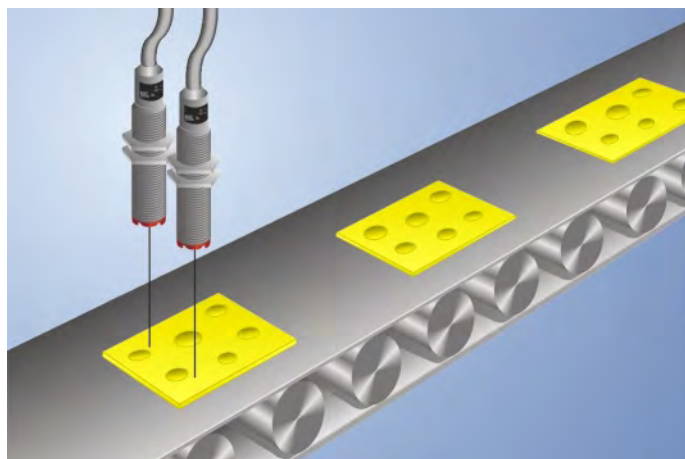
## 200 mm

Range



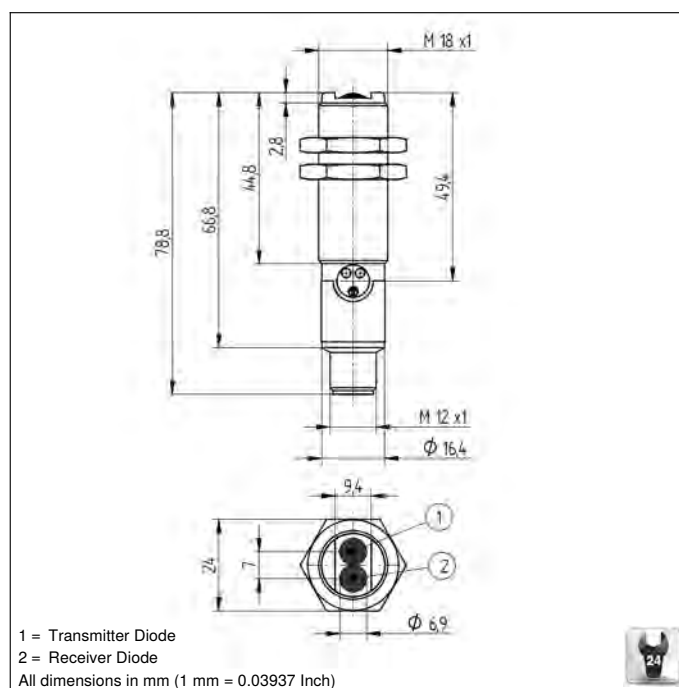
- Adjustable switching distance
- Electronic background suppression
- Red light
- Stainless steel housing

These sensors detect distance by measuring angles. They are particularly good at recognizing objects in front of any background. The color, shape and surface characteristics of the object have practically no influence on sensor switching performance.




### Technical Data

Optical Data	
Range	200 mm
Adjustable Range	35...200 mm
Switching Hysteresis	< 5 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Light Spot Diameter	see Table 1
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 30 mA
Switching Frequency	1000 Hz
Response Time	500 μs
Temperature Drift	< 5 %
Temperature Range	-25...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Stainless Steel
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin





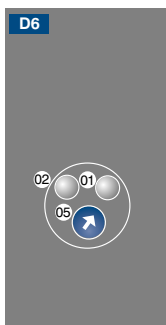
Plug Version	
	<b>Part Number</b> <b>OHD202A0103</b>
PNP NO/NC antivalent	●
Connection Diagram No.	<b>101</b>
Control Panel No.	<b>D6</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>

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## Complementary Products

Dust Extraction Tube STAUBTUBUS-01  
 PNP-NPN Converter BG2V1P-N-2M

## Ctrl. Panel



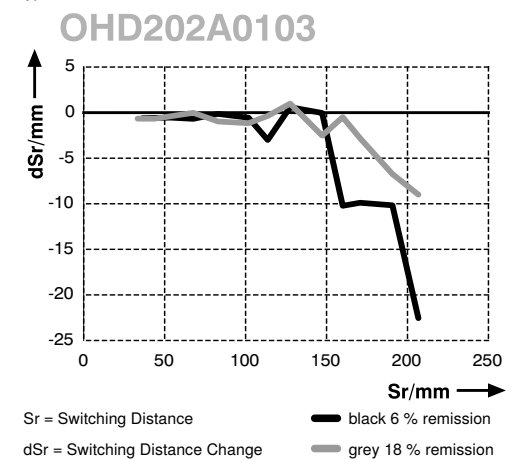
01 = Switching Status Indicator  
 02 = Contamination Warning  
 05 = Switching Distance Adjuster

**Table 1**

Detection Range	100 mm	200 mm
Light Spot Diameter	5 mm	12 mm

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



# Reflex Sensor with Background Suppression

## 300 mm

Range



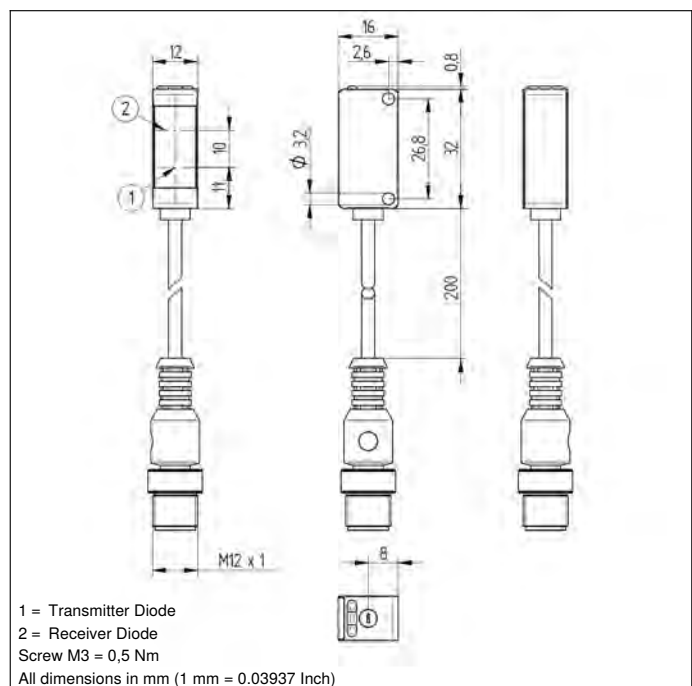
- Condition monitoring
- IO-Link 1.1
- Low switching distance deviation for black/white
- Reliably detect objects against any background

The reflex sensor with background suppression works with red 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. They can even reliably differentiate between bright and dark objects on the smallest of parts. This means that minimal height differences can be detected, for example, when differentiating various components from one another. The IO-Link interface can be used to configure the reflex sensors (PNP/NPN, NC/NO), as well as for reading out switching statuses.



### Technical Data

Optical Data	
Range	300 mm
Adjustable Range	30...300 mm
Switching Hysteresis	< 5 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
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 (U <sub>b</sub> = 24 V)	< 20 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 (0 °C < T <sub>u</sub> < 40 °C)	< 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	Multi-turn
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 x 1; 4-pin
Cable Length	20 cm
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2035,82 a



\* See operating instructions for further information



### Plug Version

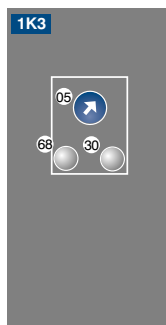
Part Number	P1KH011
PNP NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	215
Control Panel No.	1K3
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	400

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## Complementary Products

IO-Link Master  
Software

## Ctrl. Panel



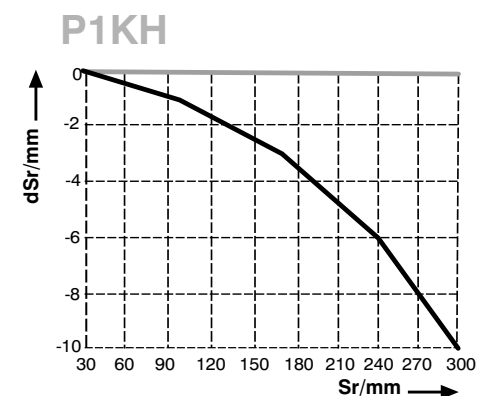
05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

Detection Range	30 mm	130 mm	300 mm
Light Spot Diameter	8 mm	7 mm	18 mm

## Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

- - - grey 18 % remission

# Reflex Sensor

with Background Suppression

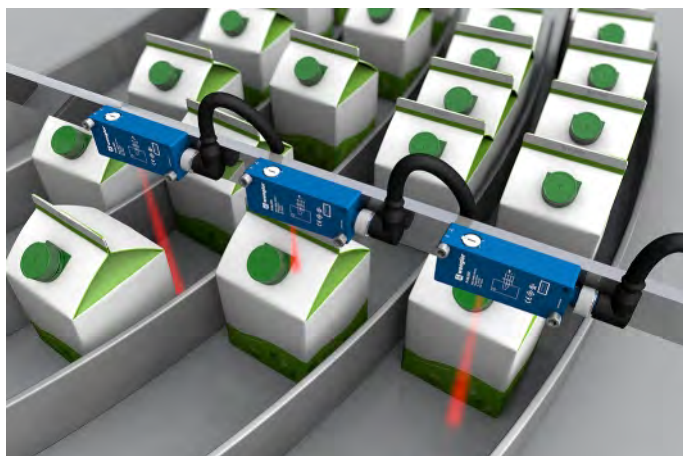
## 300 mm

Range



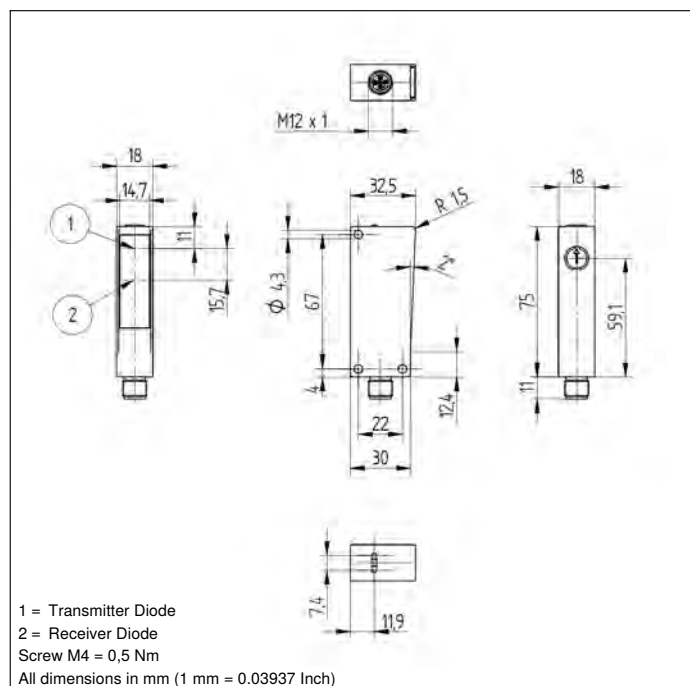
- Condition monitoring
- IO-Link 1.1
- Low switching distance deviation for black/white
- Reliably detect objects against any background


The reflex sensor with background suppression works with red 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. They can even reliably differentiate between bright and dark objects on the smallest of parts. This means that minimal height differences can be detected, for example, when differentiating various components from one another. The IO-Link interface can be used to configure the reflex sensors (PNP/NPN, NC/NO), as well as for reading out switching statuses.



### Technical Data

Optical Data	
Range	300 mm
Adjustable Range	50...300 mm
Switching Hysteresis	< 5 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
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 (U <sub>b</sub> = 24 V)	< 25 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...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
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Single-turn
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 x 1; 4-pin
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2069,6 a



Plug Version	
	Part Number <b>P1NH202</b>
PNP NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	<b>215</b>
Control Panel No.	<b>A28</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>350</b>

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### Complementary Products

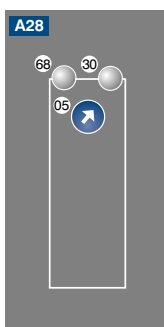
Dust Extraction Tube STAUBTUBUS-03

IO-Link Master

Set Protective Housing Z1NS001

Software

### Ctrl. Panel



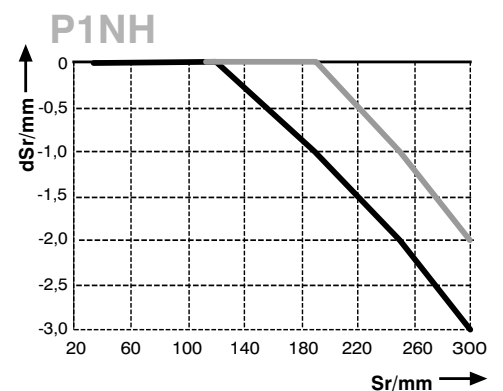
05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

Detection Range	50 mm	120 mm	300 mm
Light Spot Diameter	10 mm	10 mm	10 mm

### Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— grey 18 % remission

# Reflex Sensor

with Background Suppression

## 500 mm

Range



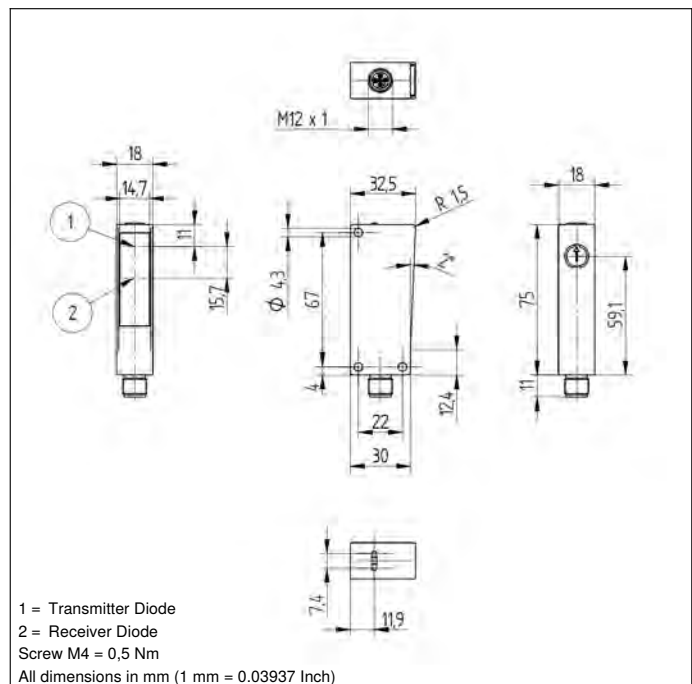
- Condition monitoring
- IO-Link 1.1
- Low switching distance deviation for black/white
- Reliably detect objects against any background


The reflex sensor with background suppression works with red 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. They can even reliably differentiate between bright and dark objects on the smallest of parts. This means that minimal height differences can be detected, for example, when differentiating various components from one another. The IO-Link interface can be used to configure the reflex sensors (PNP/NPN, NC/NO), as well as for reading out switching statuses.



### Technical Data

Optical Data	
Range	500 mm
Adjustable Range	60...500 mm
Switching Hysteresis	< 5 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
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 (U <sub>b</sub> = 24 V)	< 25 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...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
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Single-turn
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4-pin
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2069,6 a



Plug Version	
	Part Number <b>P1NH302</b>
PNP NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	<b>215</b>
Control Panel No.	<b>A28</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>350</b>

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### Complementary Products

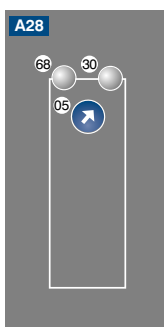
Dust Extraction Tube STAUBTUBUS-03

IO-Link Master

Set Protective Housing Z1NS001

Software

### Ctrl. Panel



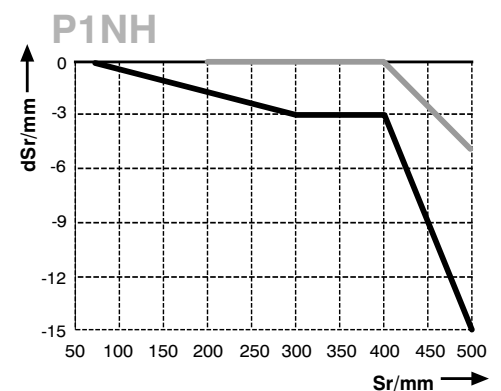
05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

Detection Range	60 mm	250 mm	500 mm
Light Spot Diameter	11 mm	13 mm	15 mm

### Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— grey 18 % remission

# Reflex Sensor

with Background Suppression

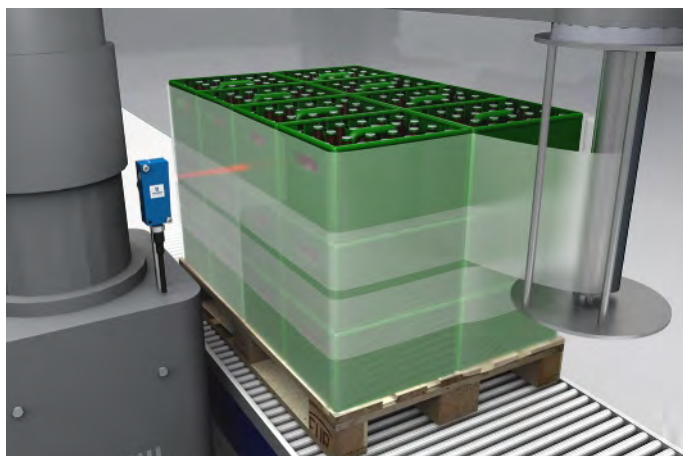
## 1200 mm

Range



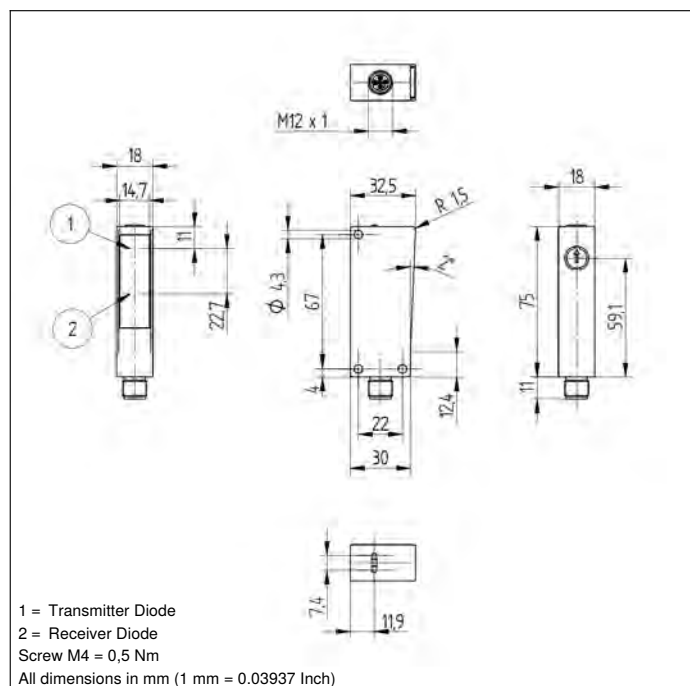
- Condition monitoring
- IO-Link 1.1
- Large detection range
- Reliably detect objects against any background

The reflex sensor with background suppression works with red 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. They can even reliably differentiate between bright and dark objects on the smallest of parts. This means that minimal height differences can be detected, for example, when differentiating various components from one another. The IO-Link interface can be used to configure the reflex sensors (PNP/NPN, NC/NO), as well as for reading out switching statuses.




### Technical Data

Optical Data	
Range	1200 mm
Adjustable Range	100...1200 mm
Switching Hysteresis	< 10 %
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
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 (U <sub>b</sub> = 24 V)	< 30 mA
Switching Frequency	500 Hz
Switching Frequency (interference-free mode)	250 Hz
Response Time	1 ms
Response time (interference-free mode)	2 ms
Temperature Drift	< 10 %
Temperature Range	-40...60 °C
Switching Output Voltage Drop	< 2 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Single-turn
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 x 1; 4-pin
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2028,3 a





Plug Version	
	Part Number <b>P1NH601</b>
PNP NO/NC antivalent	●
IO-Link	●
Connection Diagram No.	<b>215</b>
Control Panel No.	<b>A28</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>350</b>

Connection Diagrams page 128 / System Components page 124

### Complementary Products

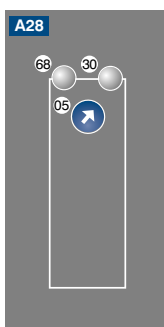
Dust Extraction Tube STAUBTUBUS-03

IO-Link Master

Set Protective Housing Z1NS001

Software

### Ctrl. Panel



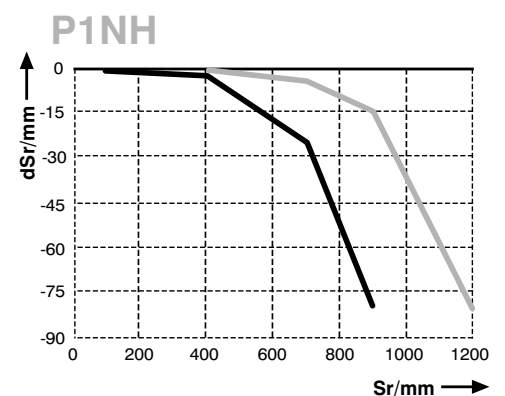
05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

Detection Range	100 mm	600 mm	1200 mm
Light Spot Diameter	14 mm	18 mm	30 mm

### Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

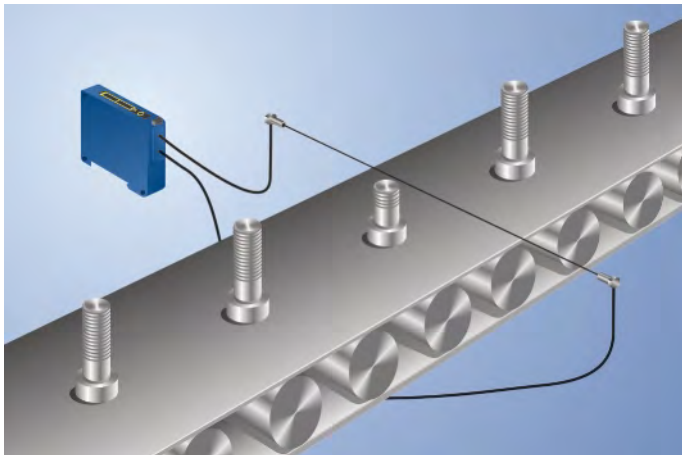
— grey 18 % remission

# Fiber-Optic Cable Sensor



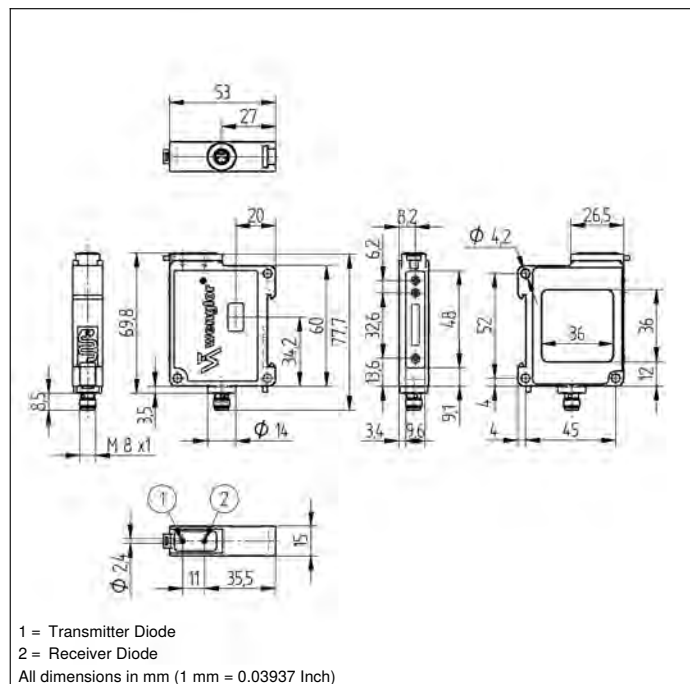
- External teach-in
- Menu-driven settings
- Recognition of transparent objects
- Reflex and through-beam operation mode are possible
- Teach-in

wenglor fiber-optic cables are connected to these sensors. The graphic display assures easy, menu-driven sensor setup. Signal strengths and the switching threshold can be read from the display as numeric values or as a bar graph. Convenient programming and quick diagnosis is possible via the IO-Link interface.



## Technical Data

Optical Data	
Switching Hysteresis	< 15 %
Light Source	Red Light
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 40 mA
Switching Frequency	4 kHz
Response Time	125 μs
On-/Off-Delay	0...10000 ms
Temperature Drift	< 10 %
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Teach Mode	NT, MT, ZT, DT, FT, HT, TP
Interface	IO-Link V1.0
IO-Link Parameter	> 12
Protection Class	III
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Plastic
Degree of Protection	IP65
Connection	M8 × 1; 4-pin
DIN-Rail mounting	35 mm
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	849,77 a



Display brightness may decrease with age. This does not result in any impairment of the sensor function.


**Plug Version**

Part Number	Plug Version
	ODX402P0007
Selectable menu language	●
Password Protection	●
Configurable as PNP/Push-Pull	●
Switchable to NC/NO	●
IO-Link	●
Connection Diagram No.	774
Control Panel No.	X4
Suitable Connection Equipment No.	7
Suitable Fiber-Optic Cable Adapter No.	03

Connection Diagrams page 128 / System Components page 124

### Complementary Products

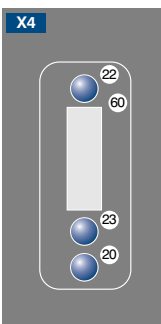
Glass Fiber-Optic Cable

IO-Link Master

Plastic Fiber-Optic Cable

Software

### Ctrl. Panel

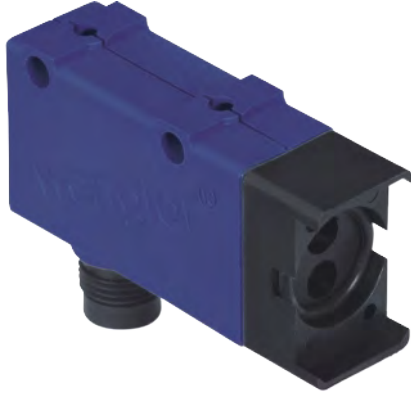


20 = Enter Button  
 22 = UP Button  
 23 = Down Button  
 60 = Display

# Fiber-Optic Cable Sensor

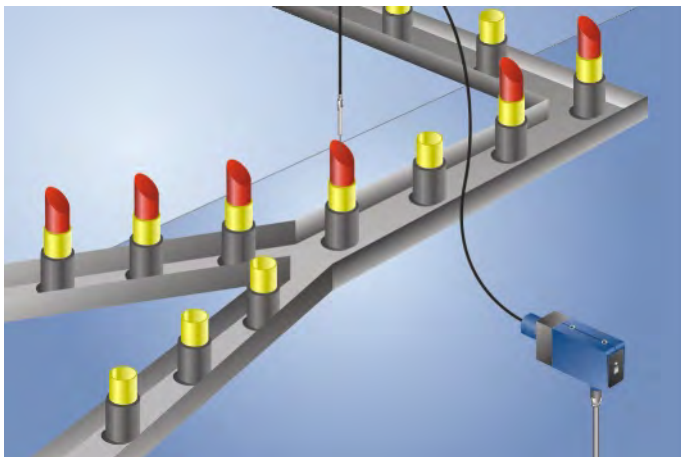
## 500 mm

Range



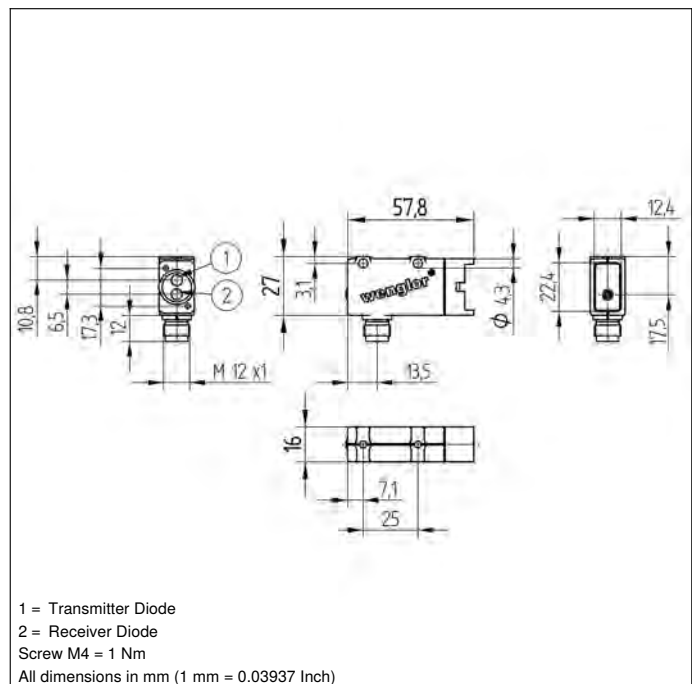
- Compact housing
- IO-Link interface
- Teach-in, external teach-in


These sensors are equipped for use with glass fiber optic cables but can be used with or without one. The transmitter and receiver are located in a single housing. The sensor evaluates transmitted light reflected back from the object and the output is switched as soon as an object passes the selected range. Bright objects reflect more light than dark objects, and can thus be recognized from greater distances.



### Technical Data

Optical Data	
Range	500 mm
Switching Hysteresis	< 10 %
Light Source	Infrared Light
Wavelength	875 nm
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Opening Angle	12 °
Electrical Data	
Supply Voltage	18...30 V
Current Consumption (U <sub>b</sub> = 24 V)	< 30 mA
Switching Frequency	2500 Hz
Response Time	200 μs
On-/Off-Delay	0..60 s
Temperature Drift	< 10 %
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2,5 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
Teach Mode	NT, MT
Interface	IO-Link V1.0
Protection Class	III
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



	Plug Version
	
<b>Part Number</b>	<b>OUM502C0002</b>
IO-Link	●
PNP NO/NC switchable	●
Connection Diagram No.	<b>179</b>
Control Panel No.	<b>M3</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>360</b>
Suitable Fiber-Optic Cable Adapter No.	<b>02</b>

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## Complementary Products

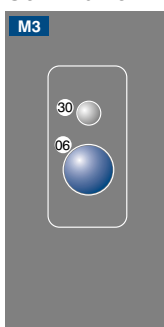
Glass Fiber-Optic Cable

IO-Link Master

PNP-NPN Converter BG2V1P-N-2M

Software

## Ctrl. Panel



06 = Teach Button

30 = Switching Status/Contamination Warning

# Fiber-Optic Cable Sensor

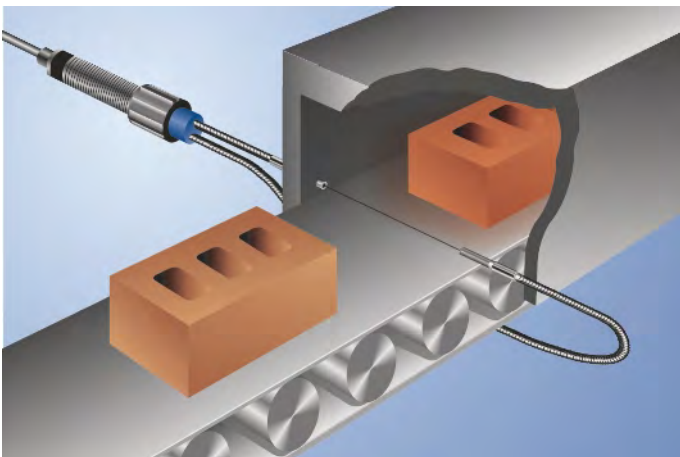
## 2000 mm

Range



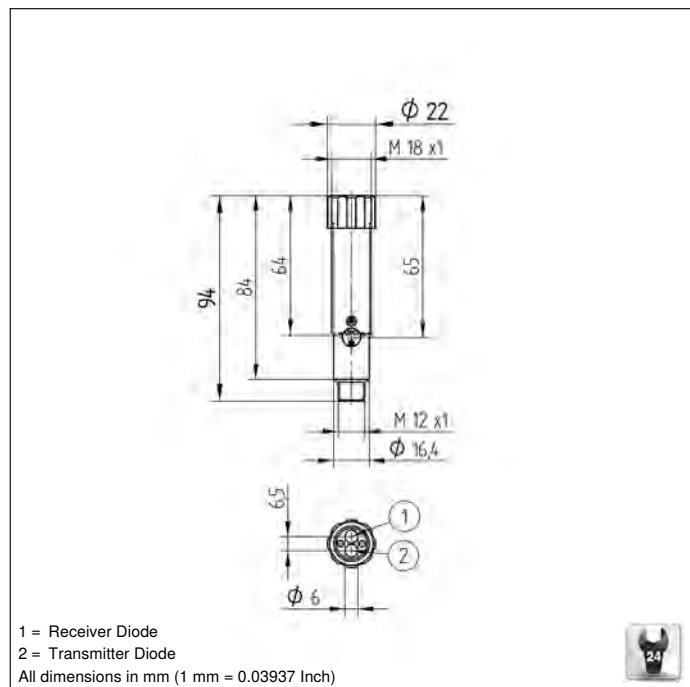
- Adaptable for glass fiber-optic cables: reflex and through-beam mode
- Adjustable detection range
- Stainless steel housing
- Very large detection range


These sensors are equipped for use with glass fiber optic cables but can be used with or without one. The transmitter and receiver are located in a single housing. The sensor evaluates transmitted light reflected back from the object and the output is switched as soon as an object passes the selected range. Bright objects reflect more light than dark objects, and can thus be recognized from greater distances.



### Technical Data

Optical Data	
Range	2000 mm
Switching Hysteresis	< 15 %
Light Source	Infrared Light
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Opening Angle	12 °
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 50 mA
Switching Frequency	500 Hz
Response Time	1 ms
Temperature Drift	< 10 %
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Residual Current Switching Output	< 50 μA
PNP Contamination Output/Switching Current	50 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Stainless Steel
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



Plug Version	
	<b>Part Number</b> <b>UC88PCV3</b>
Contamination Output	●
PNP NO/NC switchable	●
Connection Diagram No.	<b>105</b>
Control Panel No.	<b>D5</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>
Suitable Fiber-Optic Cable Adapter No.	<b>02</b>

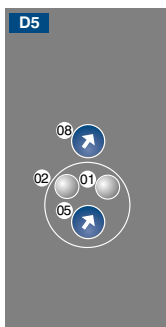
Connection Diagrams page 128 / System Components page 124

## Complementary Products

Glass Fiber-Optic Cable

PNP-NPN Converter BG2V1P-N-2M

## Ctrl. Panel



- 01 = Switching Status Indicator
- 02 = Contamination Warning
- 05 = Switching Distance Adjuster
- 08 = NO/NC Switch

# Color Sensor

## 30...40 mm

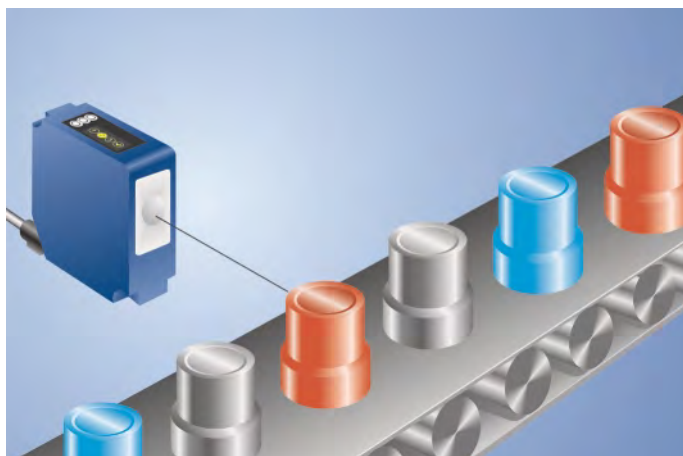
Range

True Color Sensor



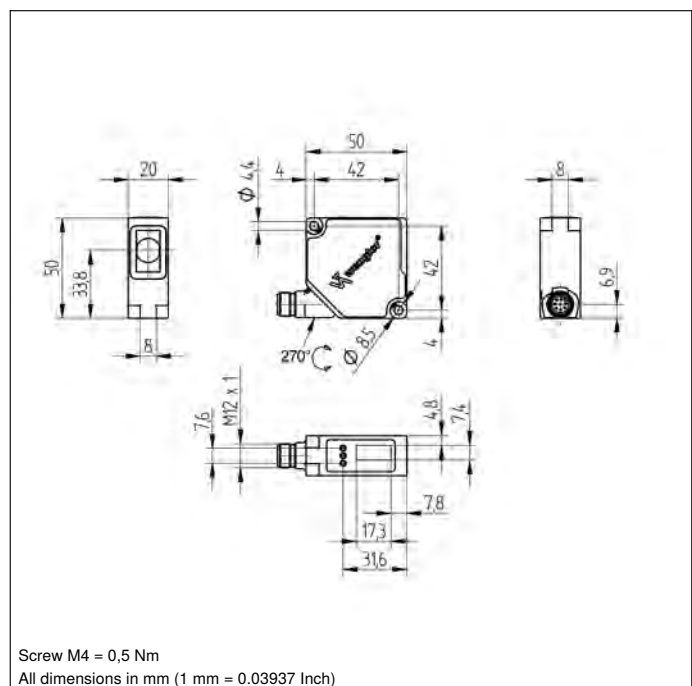
- Extremely fine color nuances can be recognized
- Reflex mode operation
- Teach-in, external teach-in

This color sensor is capable of evaluating up to three colors simultaneously. A small spot and a large working range are made possible thanks to single-lens optics. All sensor settings can be selected by means of teach-in, as well as via the RS-232 interface. Values generated by the sensor can be read out via the interface or digital switching outputs. The sensor has 3 switching outputs and supplies RGB, XYZ and HSL color values via the interface.



### Technical Data

Optical Data	
Working Range	30...40 mm
Working Distance	35 mm
Light Source	White Light
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Light Spot Diameter	3 mm
Electrical Data	
Supply Voltage	10...30 V
Current Consumption (U <sub>b</sub> = 24 V)	< 80 mA
Switching Frequency	1,8 kHz
Response Time	~( 1000 / 1,8 ) μs × filter
Temperature Range	-25...60 °C
Number of Switching Outputs	3
Switching Output Voltage Drop	1,5 V
PNP Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Teach Mode	FT
Interface	RS-232
Number of Digital Inputs	2
Protection Class	III
Mechanical Data	
Setting Method	Menu (OLED)
Housing Material	Plastic
Degree of Protection	IP68
Connection	M12 × 1; 8-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	425,77 a





Display brightness may decrease with age. This does not result in any impairment of the sensor function.



#### Plug Version

Part Number	Plug Version
	OFF401P0189
Switchable to NC/NO	●
Configurable as PNP/NPN/Push-Pull	●
RS-232 Interface	●
Error Output	●
Contamination Output	●
Connection Diagram No.	193
Control Panel No.	X2
Suitable Connection Equipment No.	89
Suitable Mounting Technology No.	380

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### Complementary Products

Fieldbus Gateway ZAGxxxN01, EPGG001

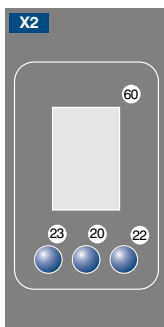
Interface Cable S232W3

Protective Housing ZSV-0x-01

Set Protective Housing ZSP-NN-02

Software

### Ctrl. Panel



20 = Enter Button

22 = UP Button

23 = Down Button

60 = Display

# Retro-Reflex Sensor

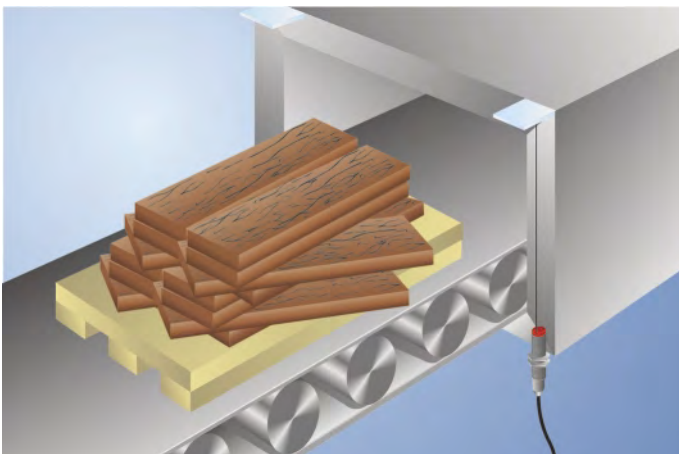
**10000 mm** LASER

Range



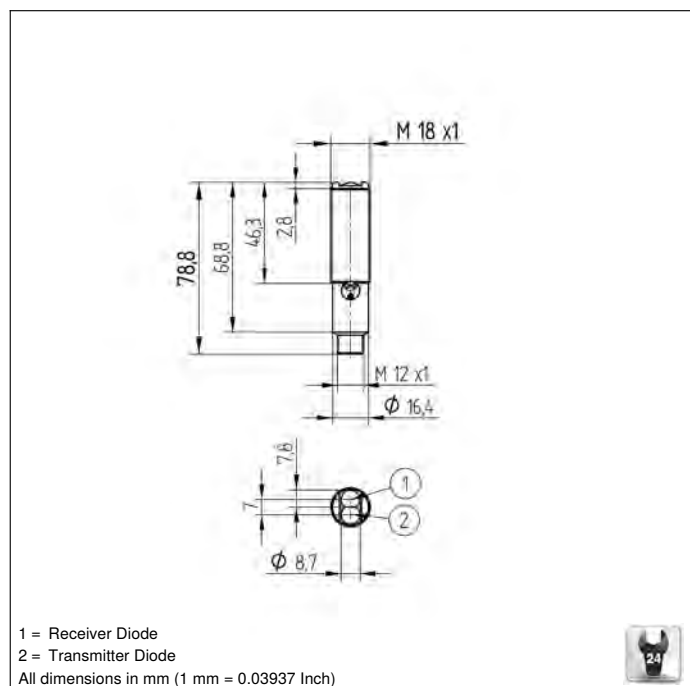
- Smallest recognizable part: 0,1 mm
- Special coated optics
- Stainless steel housing


A reflector must be used in combination with these sensors. They can be installed in all kinds of industrial environments thanks to ample functional reserve. Even reflective objects can be reliably recognized through the use of polarized light.



## Technical Data

Optical Data	
Range	10000 mm
Reference Reflector/Reflector Foil	RQ100BA
Smallest Recognizable Part	100 $\mu\text{m}$
Switching Hysteresis	< 15 %
Light Source	Laser (red)
Wavelength	655 nm
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Opening Angle	1 °
Beam Divergence	< 15 mrad
Light Spot Diameter	see Table 1
Focus Distance	350 mm
Two-Lens Optic	yes
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 30 mA
Switching Frequency	500 Hz
Response Time	1 ms
Temperature Drift	< 10 %
Temperature Range	-25...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
FDA Accession Number	1120739-000
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Stainless Steel
Coated Optics	yes
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



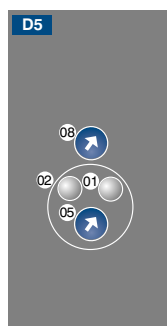
Plug Version	
	<b>Part Number</b> <b>OLD104C0003</b>
Contamination Output	●
PNP NO/NC switchable	●
Connection Diagram No.	<b>105</b>
Control Panel No.	<b>D5</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>

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## Complementary Products

Dust Extraction Tube STAUBTUBUS-01
PNP-NPN Converter BG2V1P-N-2M
Reflector, Reflector Foil

## Ctrl. Panel



- 01 = Switching Status Indicator
- 02 = Contamination Warning
- 05 = Switching Distance Adjuster
- 08 = NO/NC Switch

**Table 1**

Working Distance	0,2 m	5 m	10 m
Light Spot Diameter	2 mm	42,5 mm	85 mm

## Feasible reflector distance

Reflector type, mounting distance

<b>RQ100BA</b>	0,65...10 m	<b>RR25KP</b>	0,4...2 m
<b>RE18040BA</b>	0,65...6,5 m	<b>RR21_M</b>	0,5...2,3 m
<b>RQ84BA</b>	0,8...8,5 m	<b>ZRAE02B01</b>	0,8...4 m
<b>RR84BA</b>	0,7...9 m	<b>ZRME01B01</b>	0,5...1,5 m
<b>RE9538BA</b>	0,65...3,3 m	<b>ZRME03B01</b>	0,5...3,5 m
<b>RE6151BM</b>	0,55...8 m	<b>ZRMR02K01</b>	0,55...1,5 m
<b>RR50_A</b>	0,8...6,5 m	<b>ZRMS02_01</b>	0,85...2 m
<b>RE6040BA</b>	0,65...9 m	<b>RF505</b>	0,7...1,3 m
<b>RE8222BA</b>	0,75...4,5 m	<b>RF508</b>	0,55...1 m
<b>RR34_M</b>	0,65...4 m	<b>RF258</b>	0,55...1,5 m
<b>RE3220BM</b>	0,65...2,5 m	<b>ZRAF07K01</b>	0,7...1,3 m
<b>RE6210BM</b>	0,65...2,3 m	<b>ZRAF08K01</b>	0,7...1,3 m
<b>RR25_M</b>	0,5...3 m	<b>ZRDF__K01</b>	0,6...5 m

# Retro-Reflex Sensor

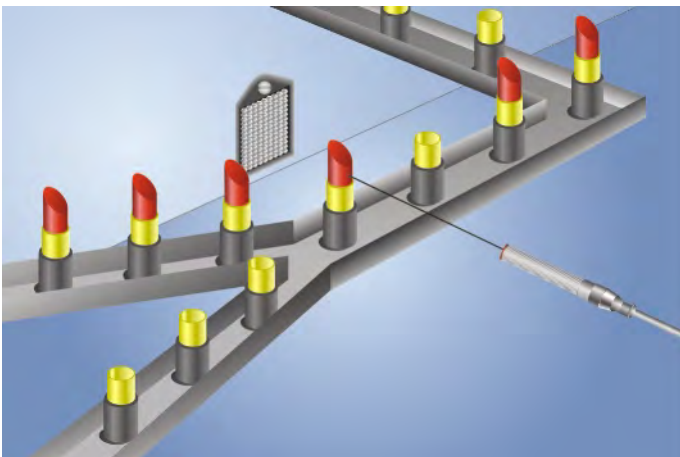
## 2500 mm

Range



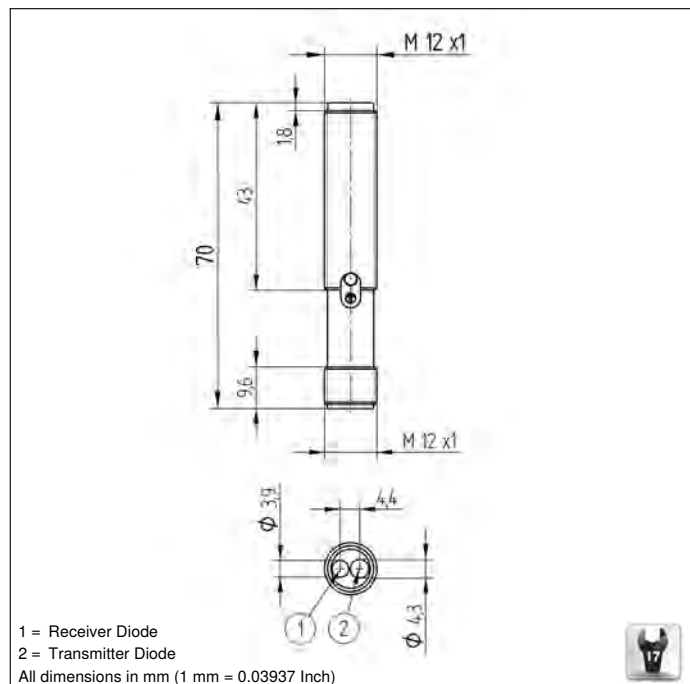
- Compact housing
- Red light


A reflector must be used in combination with these sensors. They can be installed in all kinds of industrial environments thanks to ample functional reserve.



### Technical Data

Optical Data	
Range	2500 mm
Reference Reflector/Reflector Foil	RQ100BA
Switching Hysteresis	< 15 %
Light Source	Red Light
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Opening Angle	8 °
Two-Lens Optic	yes
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 40 mA
Switching Frequency	500 Hz
Response Time	1 ms
Temperature Drift	< 10 %
Temperature Range	-10...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Residual Current Switching Output	< 50 μA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	CuZn, nickel-plated
Full Encapsulation	yes
Degree of Protection	IP65
Connection	M12 × 1; 4-pin



	Plug Version
	
Part Number	RO88PB3
PNP NO	●
Connection Diagram No.	1021
Control Panel No.	O2
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	170

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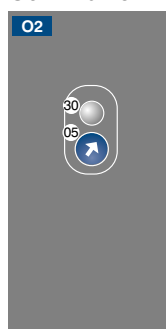
## Complementary Products

Path-Folding Mirror LA9

PNP-NPN Converter BG2V1P-N-2M

Reflector, Reflector Foil

## Ctrl. Panel



05 = Switching Distance Adjuster

30 = Switching Status/Contamination Warning

## Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0,02...2,5 m	RR25_M	0,05...0,7 m
RE18040BA	0,02...1,8 m	RR25KP	0,05...0,3 m
RQ84BA	0,02...2,2 m	RR21_M	0,05...0,6 m
RR84BA	0,02...2 m	ZRAE02B01	0,02...1 m
RE9538BA	0,02...0,9 m	ZRME01B01	0,05...0,3 m
RE6151BM	0,05...2 m	ZRME03B01	0,02...0,8 m
RR50_A	0,02...1,5 m	ZRMR02K01	0,02...0,4 m
RE6040BA	0,02...1,5 m	ZRMS02_01	0,02...0,4 m
RE8222BA	0,02...1 m	RF505	0,06...0,8 m
RR34_M	0,05...1 m	RF508	0,06...0,8 m
RE3220BM	0,05...0,7 m	RF258	0,06...0,6 m
RE6210BM	0,05...0,6 m	ZRDF_K01	0,06...1 m

# Retro-Reflex Sensor

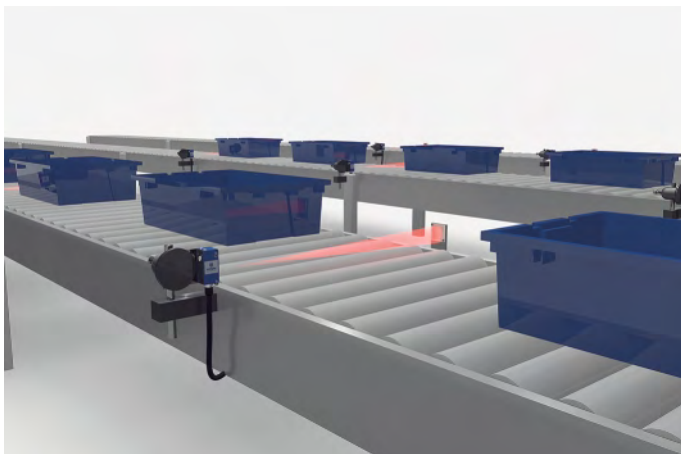
## 10...5000 mm

Range



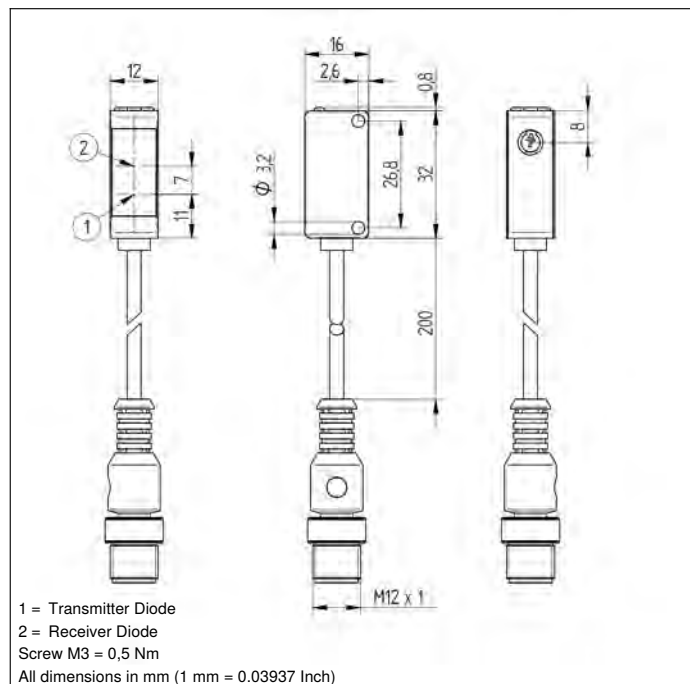
- Also suitable for glossy and reflective objects
- Condition monitoring
- High switching frequency
- IO-Link 1.1


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 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	Plastic
Degree of Protection	IP67/IP68
Connection	M12 x 1; 4-pin
Cable Length	20 cm
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2808,97 a



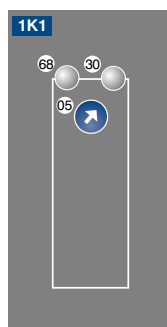
Plug Version	
	Part Number <b>P1KL003</b>
IO-Link	●
PNP NO/NC antivalent	●
Connection Diagram No.	<b>215</b>
Control Panel No.	<b>1K1</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>400</b>

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## Complementary Products

IO-Link Master
Reflector, Reflector Foil
Software

## Ctrl. Panel



05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

<b>Working Distance</b>	0,2 m	2 m	5 m
<b>Light Spot Diameter</b>	30 mm	180 mm	400 mm

**Table 2**

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

## Feasible reflector distance

Reflector type, mounting distance

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

# Retro-Reflex Sensor

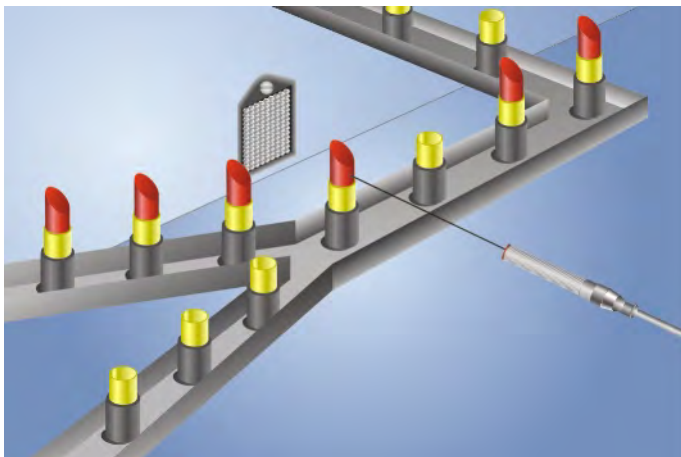
## 6000 mm

Range



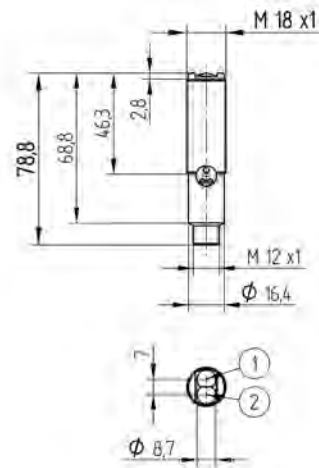
- Stainless steel housing
- Switching distance adjuster

A reflector must be used in combination with these sensors. They can be installed in all kinds of industrial environments thanks to ample functional reserve. Even reflective objects can be reliably recognized through the use of polarized light.



### Technical Data


Optical Data	
Range	6000 mm
Reference Reflector/Reflector Foil	RQ100BA
Switching Hysteresis	< 15 %
Light Source	Red Light
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Opening Angle	5 °
Two-Lens Optic	yes
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 40 mA
Switching Frequency	1 kHz
Response Time	500 μs
Temperature Drift	< 10 %
Temperature Range	-10...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Residual Current Switching Output	< 50 μA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Stainless Steel
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



1 = Receiver Diode  
 2 = Transmitter Diode  
 All dimensions in mm (1 mm = 0.03937 Inch)





Plug Version	
	<b>Part Number</b> <b>LD86PA3</b>
PNP NO/NC antivalent	●
Connection Diagram No.	<b>101</b>
Control Panel No.	<b>D6</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>

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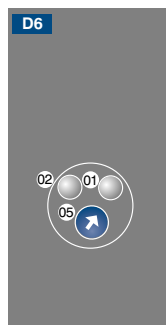
## Complementary Products

Dust Extraction Tube STAUBTUBUS-01

PNP-NPN Converter BG2V1P-N-2M

Reflector, Reflector Foil

## Ctrl. Panel



01 = Switching Status Indicator  
 02 = Contamination Warning  
 05 = Switching Distance Adjuster

## Feasible reflector distance

Reflector type, mounting distance

<b>RQ100BA</b>	0,02...6 m	<b>RR25_M</b>	0,02...1,6 m
<b>RE18040BA</b>	0,02...3,3 m	<b>RR25KP</b>	0,02...1,4 m
<b>RQ84BA</b>	0,01...4,5 m	<b>RR21_M</b>	0,01...1,6 m
<b>RR84BA</b>	0,02...4,5 m	<b>ZRAE02B01</b>	0,02...3 m
<b>RE9538BA</b>	0,02...1,5 m	<b>ZRME01B01</b>	0,02...1 m
<b>RE6151BM</b>	0,01...4,5 m	<b>ZRME03B01</b>	0,02...2,8 m
<b>RR50_A</b>	0,02...4 m	<b>ZRMR02K01</b>	0,02...1,1 m
<b>RE6040BA</b>	0,02...4 m	<b>ZRMS02_01</b>	0,01...1,5 m
<b>RE8222BA</b>	0,01...2 m	<b>RF505</b>	0,06...1,6 m
<b>RR34_M</b>	0,01...2,4 m	<b>RF508</b>	0,06...1,6 m
<b>RE3220BM</b>	0,01...1,6 m	<b>RF258</b>	0,06...1,2 m
<b>RE6210BM</b>	0,01...1,6 m	<b>ZRDF_K01</b>	0,06...4 m

# Retro-Reflex Sensor

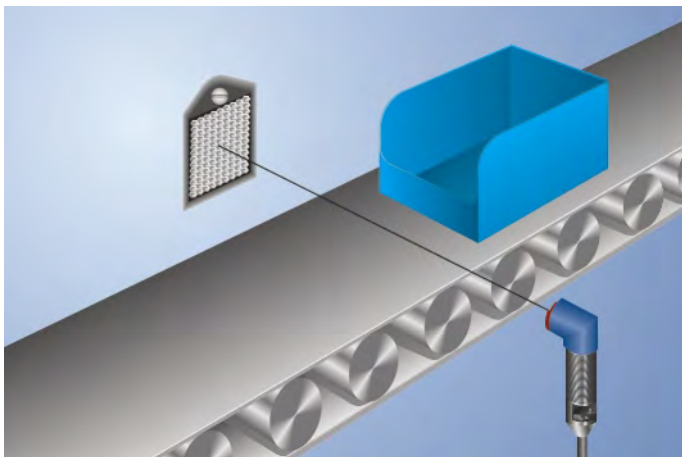
## 6000 mm

Range



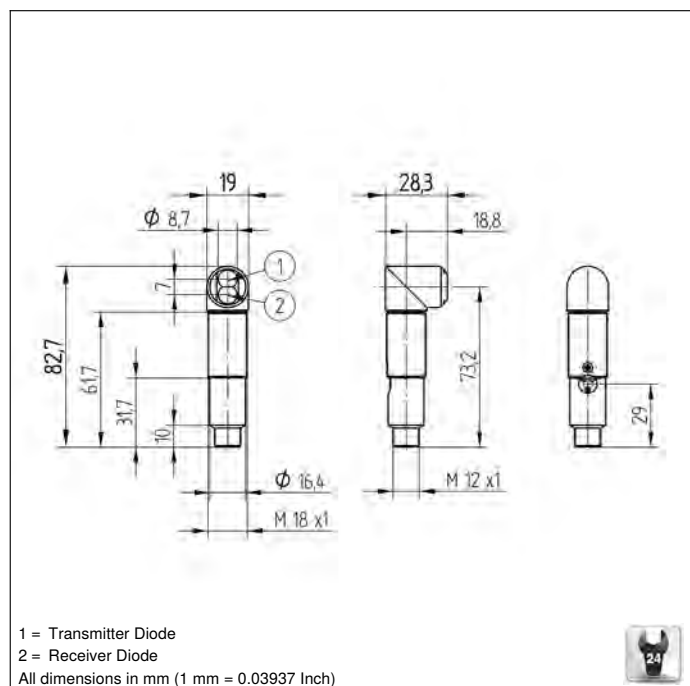
- Stainless steel housing
- Switching distance adjuster


A reflector must be used in combination with these sensors. They can be installed in all kinds of industrial environments thanks to ample functional reserve. Even reflective objects can be reliably recognized through the use of polarized light.



### Technical Data

Optical Data	
Range	6000 mm
Reference Reflector/Reflector Foil	RQ100BA
Switching Hysteresis	< 15 %
Light Source	Red Light
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Opening Angle	5 °
Two-Lens Optic	yes
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 40 mA
Switching Frequency	1 kHz
Response Time	500 μs
Temperature Drift	< 10 %
Temperature Range	-10...60 °C
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	200 mA
Residual Current Switching Output	< 50 μA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Stainless Steel
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



Plug Version	
	Part Number <b>LW86PA3</b>
PNP NO/NC antivalent	●
Connection Diagram No.	<b>101</b>
Control Panel No.	<b>D14</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>

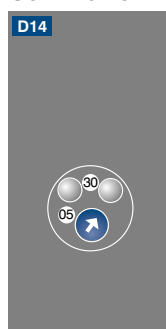
Connection Diagrams page 128 / System Components page 124

## Complementary Products

PNP-NPN Converter BG2V1P-N-2M

Reflector, Reflector Foil

### Ctrl. Panel



05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning

## Feasible reflector distance

Reflector type, mounting distance

<b>RQ100BA</b>	0,02...6 m	<b>RR25_M</b>	0,02...1,6 m
<b>RE18040BA</b>	0,02...3,3 m	<b>RR25KP</b>	0,02...1,4 m
<b>RQ84BA</b>	0,01...4,5 m	<b>RR21_M</b>	0,01...1,6 m
<b>RR84BA</b>	0,02...4,5 m	<b>ZRAE02B01</b>	0,02...3 m
<b>RE9538BA</b>	0,02...1,5 m	<b>ZRME01B01</b>	0,02...1 m
<b>RE6151BM</b>	0,01...4,5 m	<b>ZRME03B01</b>	0,02...2,8 m
<b>RR50_A</b>	0,02...4 m	<b>ZRMR02K01</b>	0,02...1,1 m
<b>RE6040BA</b>	0,02...4 m	<b>ZRMS02_01</b>	0,01...1,5 m
<b>RE8222BA</b>	0,01...2 m	<b>RF505</b>	0,06...1,6 m
<b>RR34_M</b>	0,01...2,4 m	<b>RF508</b>	0,06...1,6 m
<b>RE3220BM</b>	0,01...1,6 m	<b>RF258</b>	0,06...1,2 m
<b>RE6210BM</b>	0,01...1,6 m	<b>ZRDF_K01</b>	0,06...4 m

# Retro-Reflex Sensor

## 7000 mm

Range



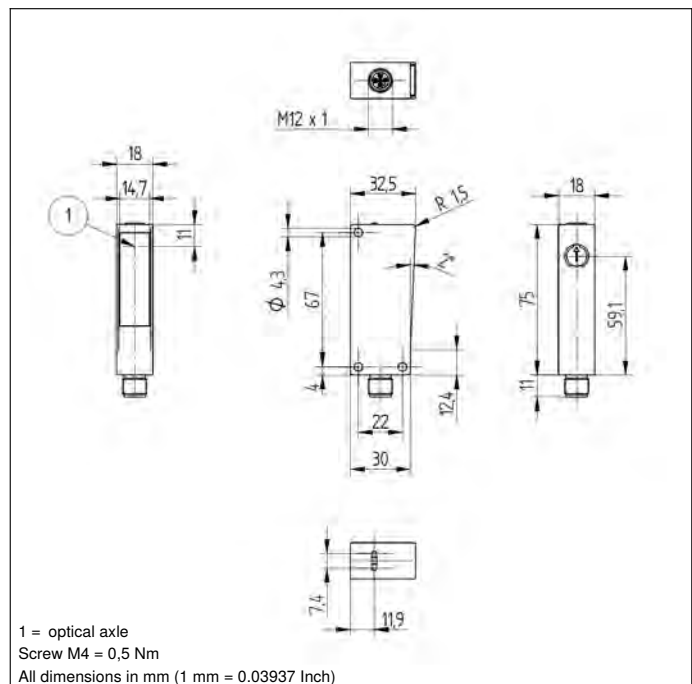
- Also suitable for glossy and reflective objects
- Condition monitoring
- High switching frequency
- IO-Link 1.1
- No blind spot from single-lens optics


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	7000 mm
Reference Reflector/Reflector Foil	RQ100BA
Min. Distance to Reflector	0 mm
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 15 %
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 (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
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 x 1; 4-pin
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2690,44 a



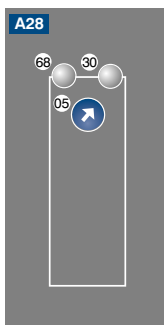
Plug Version	
	Part Number <b>P1NL101</b>
IO-Link	●
PNP NO/NC antivalent	●
Connection Diagram No.	<b>215</b>
Control Panel No.	<b>A28</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>350</b>

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## Complementary Products

Dust Extraction Tube STAUBTUBUS-03
IO-Link Master
Reflector, Reflector Foil
Set Protective Housing Z1NS001
Software

## Ctrl. Panel



05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

<b>Working Distance</b>	1,5 m	3,5 m	7 m
<b>Light Spot Diameter</b>	60 mm	120 mm	250 mm

**Table 2**

<b>Distance, Sensor to Reflector</b>	1,5 m	3,5 m	7 m
<b>Smallest Recognizable Part</b>	10 mm	6 mm	15 mm

## Feasible reflector distance

Reflector type, mounting distance

<b>RQ100BA</b>	0...7 m	<b>RR25_M</b>	0...2,2 m
<b>RE18040BA</b>	0...5 m	<b>RR25KP</b>	0...1,3 m
<b>RQ84BA</b>	0...5,8 m	<b>RR21_M</b>	0...1,4 m
<b>RR84BA</b>	0...7 m	<b>ZRAE02B01</b>	0...3,1 m
<b>RE9538BA</b>	0...2,5 m	<b>ZRME01B01</b>	0...0,9 m
<b>RE6151BM</b>	0...5,2 m	<b>ZRME03B01</b>	0...3,2 m
<b>RR50_A</b>	0...5 m	<b>ZRMR02K01</b>	0...1,1 m
<b>RE6040BA</b>	0...5,7 m	<b>RF505</b>	0...2,1 m
<b>RE8222BA</b>	0...3,4 m	<b>RF508</b>	0...2,1 m
<b>RR34_M</b>	0...3 m	<b>RF258</b>	0...1,8 m
<b>RE3220BM</b>	0...2,5 m	<b>ZRDF03K01</b>	0...4,5 m
<b>RE6210BM</b>	0...1,8 m	<b>ZRDF10K01</b>	0...5,5 m

# Retro-Reflex Sensor

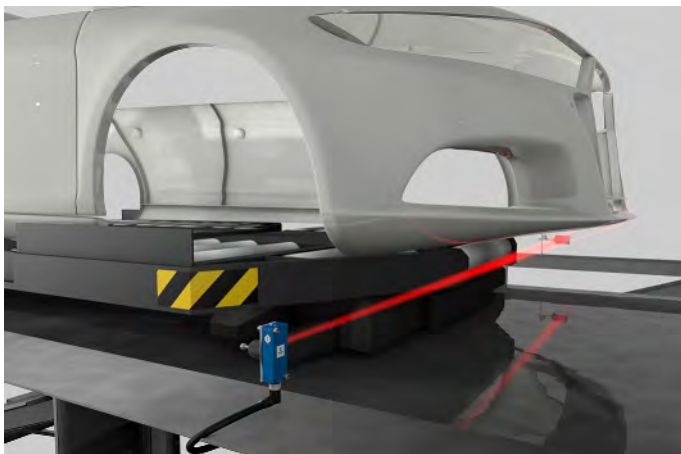
## 11000 mm

Range



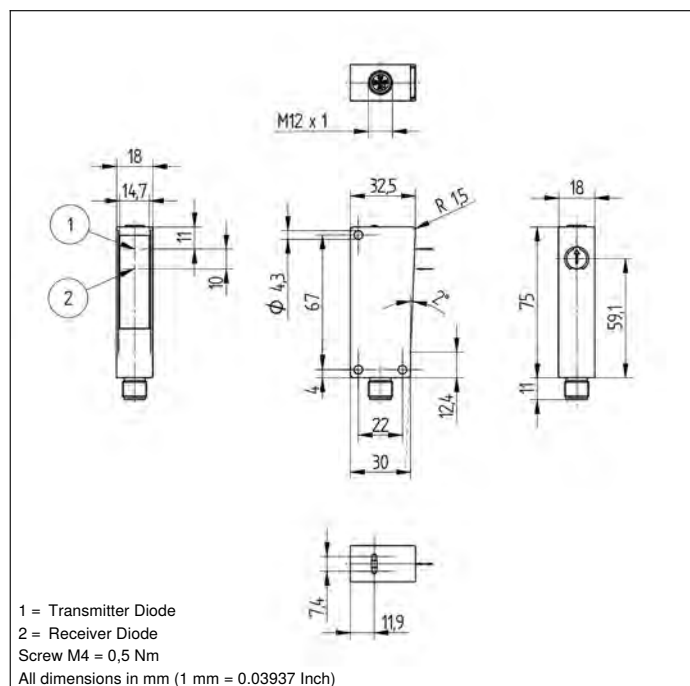
- Also suitable for glossy and reflective objects
- Condition monitoring
- High switching frequency
- IO-Link 1.1


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	11000 mm
Reference Reflector/Reflector Foil	RQ100BA
Smallest Recognizable Part	see Table 2
Switching Hysteresis	< 15 %
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
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic
Degree of Protection	IP67/IP68
Connection	M12 x 1; 4-pin
Optic Cover	PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2991,63 a



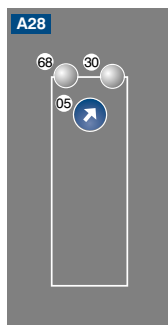
Plug Version	
	<b>Part Number</b> <b>P1NL302</b>
IO-Link	●
PNP NO/NC antivalent	●
Connection Diagram No.	<b>215</b>
Control Panel No.	<b>A28</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>350</b>

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## Complementary Products

Dust Extraction Tube STAUBTUBUS-03
IO-Link Master
Reflector, Reflector Foil
Set Protective Housing Z1NS001
Software

## Ctrl. Panel



05 = Switching Distance Adjuster  
 30 = Switching Status/Contamination Warning  
 68 = Supply Voltage Indicator

**Table 1**

<b>Working Distance</b>	2 m	5,5 m	11 m
<b>Light Spot Diameter</b>	120 mm	270 mm	500 mm

**Table 2**

<b>Distance, Sensor to Reflector</b>	2 m	5,5 m	11 m
<b>Smallest Recognizable Part</b>	40 mm	20 mm	30 mm

## Feasible reflector distance

Reflector type, mounting distance

<b>RQ100BA</b>	0,02...11 m	<b>RR25KP</b>	0,1...2 m
<b>RE18040BA</b>	0,02...7,6 m	<b>RR21_M</b>	0,1...2,8 m
<b>RQ84BA</b>	0,04...10 m	<b>ZRAE02B01</b>	0,02...4,5 m
<b>RE9538BA</b>	0,05...4,5 m	<b>ZRME01B01</b>	0,1...1,7 m
<b>RE6151BM</b>	0,07...7,5 m	<b>ZRME03B01</b>	0,1...5 m
<b>RR50_A</b>	0,02...7 m	<b>ZRMR02K01</b>	0,1...2 m
<b>RE6040BA</b>	0,15...7,5 m	<b>ZRMS02_01</b>	0,05...2,6 m
<b>RE8222BA</b>	0,02...5 m	<b>RF505</b>	0,1...3,3 m
<b>RR34_M</b>	0,1...5 m	<b>RF508</b>	0,1...3,1 m
<b>RE3220BM</b>	0,1...3,4 m	<b>RF258</b>	0,1...3 m
<b>RE6210BM</b>	0,1...2,5 m	<b>ZRAF08K01</b>	0,1...3,3 m
<b>RR25_M</b>	0,1...2,6 m	<b>ZRDF03K01</b>	0,1...7 m

# Through-Beam Sensor

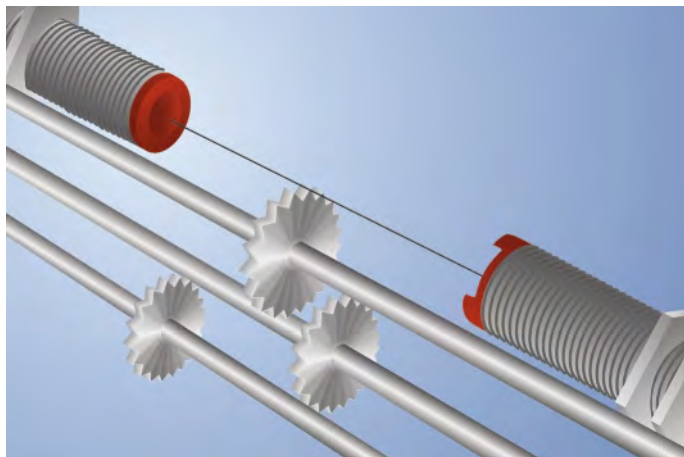
## 12000 mm LASER

Range



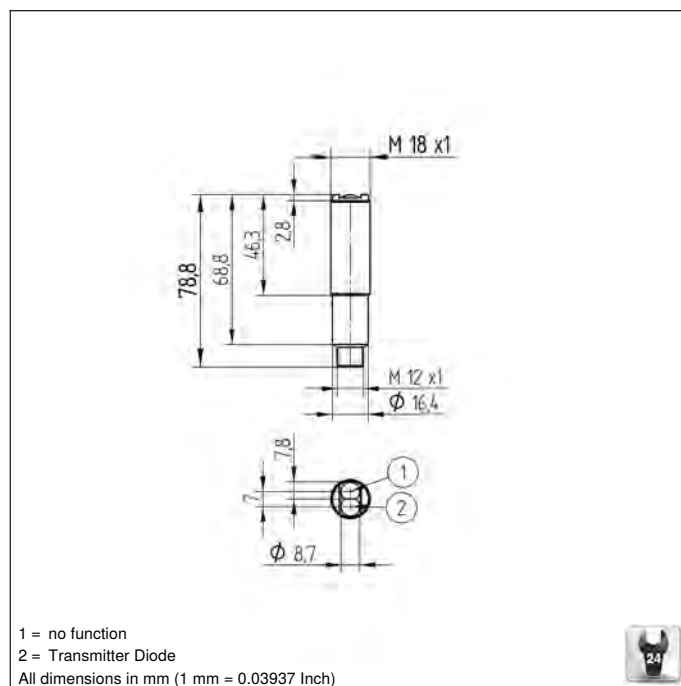
- Smallest recognizable part: 0,25 mm
- Special coated optics
- Teach-in
- Time delay

These through-beam sensors are best suited for use in industrial environments. Thanks to their large working range, the devices demonstrate excellent functional reliability in highly contaminated environments. The sensors can be checked for correct functioning via the test input.




### Technical Data

Optical Data	
Light Source	Laser (red)
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 15 mA
Temperature Drift	< 10 %
Temperature Range	-25...60 °C
Reverse Polarity Protection	yes
Protection Class	III
Mechanical Data	
Housing Material	Stainless Steel
Coated Optics	yes
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin





	Plug Version	
	OSD124Z0003	OED000C0003
	Part Number	
Contamination Output		●
PNP NO/NC switchable		●
Range	12000 mm	
Smallest Recognizable Part		250 $\mu\text{m}$
Switching Hysteresis		< 15 %
Wavelength	655 nm	
Max. Ambient Light		10000 Lux
Opening Angle		12 °
Beam Divergence	10 mrad	
Sensor Type	Emitter	Receiver
Switching Frequency		3 kHz
Response Time		166 $\mu\text{s}$
Switching Output Voltage Drop		< 2,5 V
Switching Output/Switching Current		200 mA
Short Circuit and Overload Protection		yes
Teach Mode		NT, MT
FDA Accession Number	1120741-000	
Setting Method		Teach-In
MTTFd (EN ISO 13849-1)	3715,77 a	2409,91 a
Connection Diagram No.	<b>1018</b>	<b>154</b>
Control Panel No.		<b>D7</b>
Suitable Connection Equipment No.	<b>2</b>	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>	<b>150</b>

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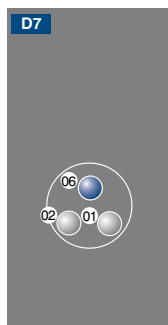
## Complementary Products

Dust Extraction Tube STAUBTUBUS-01

Lens LA7

PNP-NPN Converter BG2V1P-N-2M

## Ctrl. Panel



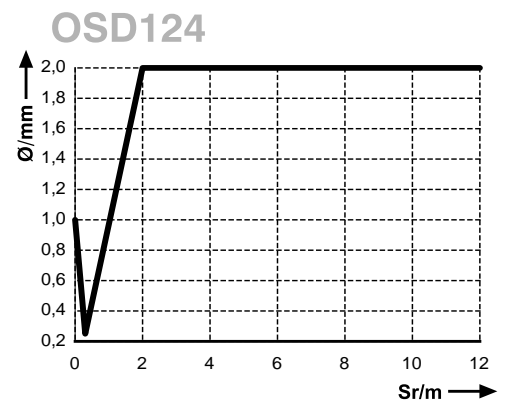
01 = Switching Status Indicator

02 = Contamination Warning

06 = Teach Button

## Smallest Recognizable Part

Based on the Distance between Emitter and Receiver



Sr = Switching Distance

Ø = Diameter, Smallest Recognizable Part

# Through-Beam Sensor

## 12000...40000 mm LASER

Range

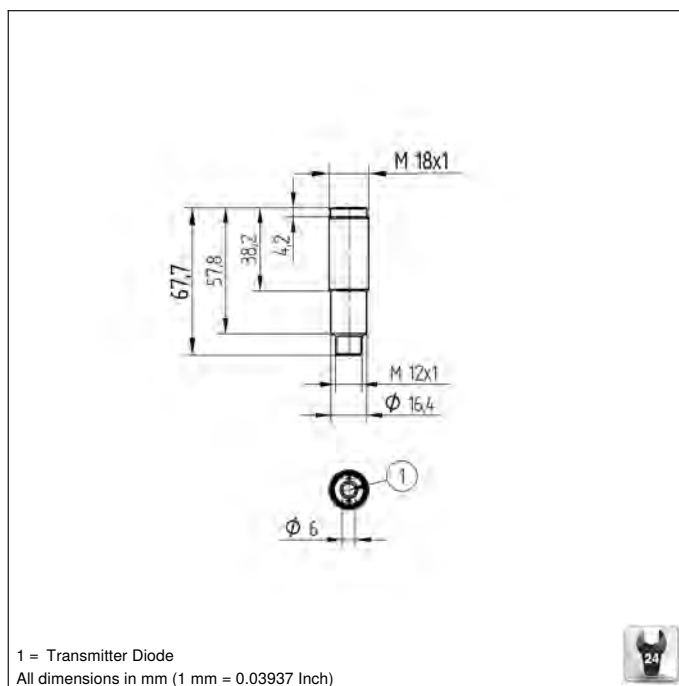
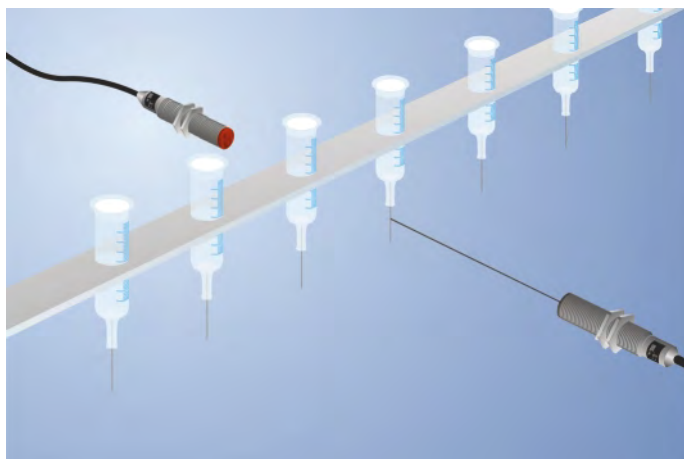



- Adjustable focus
- Range: 40 m

### Technical Data

Optical Data	
Range	40000 mm
Light Source	Laser (red)
Wavelength	655 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Beam Divergence	0,5 mrad
Electrical Data	
Sensor Type	Emitter
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 15 mA
Temperature Drift	< 10 %
Temperature Range	-25...60 °C
Reverse Polarity Protection	yes
Protection Class	III
FDA Accession Number	1120742-000
Mechanical Data	
Housing Material	Stainless Steel
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 x 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	3715,77 a

These through-beam sensors are best suited for use in industrial environments. Thanks to their large working range, the devices demonstrate excellent functional reliability in highly contaminated environments. The sensors can be checked for correct functioning via the test input.

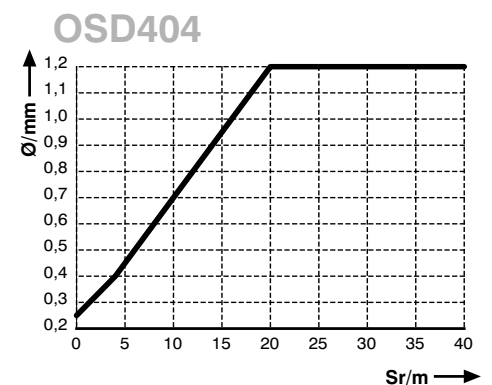


Plug Version	
	<b>Part Number</b> OSD404Z0003
Connection Diagram No.	<b>1018</b>
Suitable Connection Equipment No.	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>

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### Smallest Recognizable Part

Based on the Distance between Emitter and Receiver



Sr = Switching Distance

Ø = Diameter, Smallest Recognizable Part

### Complementary Products

Dust Extraction Tube STAUBTUBUS-01

# Through-Beam Sensor

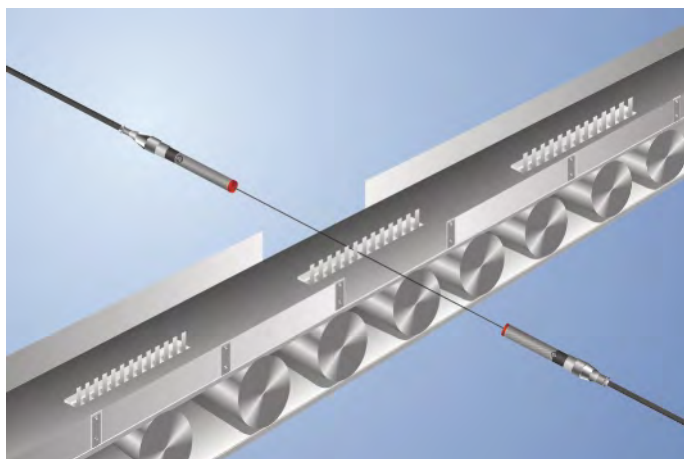
## 5000 mm

Range



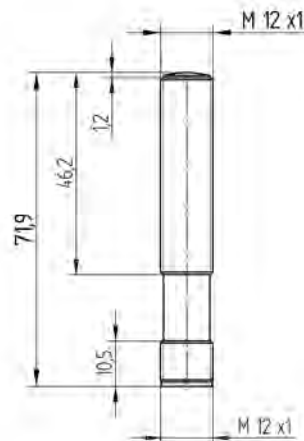
- Adjustable range
- Red light
- Test input

These through-beam sensors are best suited for use in industrial environments. Thanks to their large working range, the devices demonstrate excellent functional reliability in highly contaminated environments. The sensors can be checked for correct functioning via the test input.



### Technical Data

Optical Data	
Range	5000 mm
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
Opening Angle	8 °
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 40 mA
Temperature Drift	< 10 %
Temperature Range	-10...60 °C
Reverse Polarity Protection	yes
Protection Class	III
Mechanical Data	
Housing Material	CuZn, nickel-plated
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin



All dimensions in mm (1 mm = 0.03937 Inch)



	Plug Version	
	SO953N	EO95VD3N
PNP NC		●
Switching Hysteresis		< 15 %
Max. Ambient Light		10000 Lux
Sensor Type	Emitter	Receiver
Switching Frequency		500 Hz
Response Time		1 ms
Switching Output Voltage Drop		< 2,5 V
Switching Output/Switching Current		200 mA
Residual Current Switching Output		< 50 $\mu$ A
Short Circuit and Overload Protection		yes
Setting Method		Potentiometer
MTTFd (EN ISO 13849-1)		4259,66 a
Connection Diagram No.	<b>1018</b>	<b>113</b>
Control Panel No.		<b>O1</b>
Suitable Connection Equipment No.	<b>2</b>	<b>2</b>
Suitable Mounting Technology No.	<b>170</b>	<b>170</b>

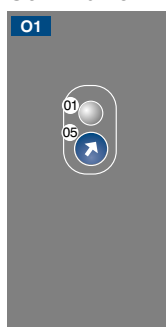
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## Complementary Products

Path-Folding Mirror LA9

PNP-NPN Converter BG2V1P-N-2M

## Ctrl. Panel



01 = Switching Status Indicator  
 05 = Switching Distance Adjuster

# Through-Beam Sensor

## 10000 mm

Range

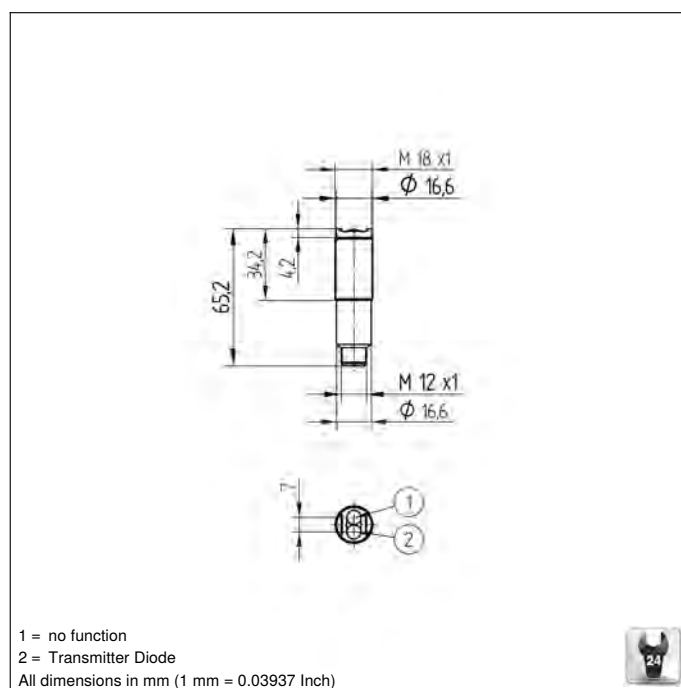
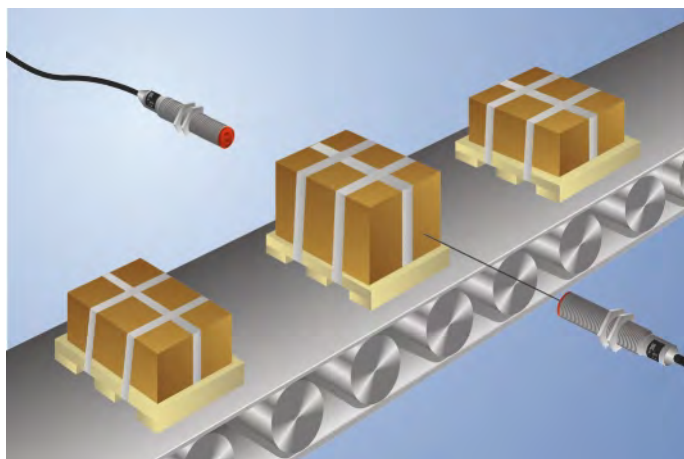


### Technical Data

Optical Data	
Range	10000 mm
Light Source	Red Light
Service Life (T = +25 °C)	100000 h
Opening Angle	6 °
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 40 mA
Temperature Drift	< 10 %
Temperature Range	-10...60 °C
Reverse Polarity Protection	yes
Protection Class	III
Mechanical Data	
Housing Material	Stainless Steel
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin

- Simple adjustment with special alignment optic
- Test input

These through-beam sensors are best suited for use in industrial environments. Thanks to their large working range, the devices demonstrate excellent functional reliability in highly contaminated environments. The sensors can be checked for correct functioning via the test input.



	Plug Version	
	SD983	ED98PCV3
Contamination Output		●
PNP NO/NC switchable		●
Switching Hysteresis		< 15 %
Max. Ambient Light		10000 Lux
Sensor Type	Emitter	Receiver
Switching Frequency		150 Hz
Response Time		3300 $\mu$ s
Switching Output Voltage Drop		< 2,5 V
PNP Switching Output/Switching Current		200 mA
Residual Current Switching Output		< 50 $\mu$ A
PNP Contamination Output/Switching Current		200 mA
Short Circuit and Overload Protection		yes
Setting Method		Potentiometer
MTTFd (EN ISO 13849-1)	5959,11 a	
Connection Diagram No.	<b>1018</b>	<b>105</b>
Control Panel No.		<b>D5</b>
Suitable Connection Equipment No.	<b>2</b>	<b>2</b>
Suitable Mounting Technology No.	<b>150</b>	<b>150</b>

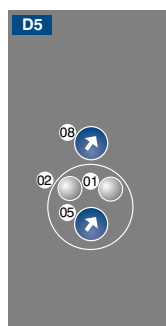
Connection Diagrams page 128 / System Components page 124

## Complementary Products

Dust Extraction Tube STAUBTUBUS-01

PNP-NPN Converter BG2V1P-N-2M

## Ctrl. Panel



- 01 = Switching Status Indicator
- 02 = Contamination Warning
- 05 = Switching Distance Adjuster
- 08 = NO/NC Switch





# Inductive Sensors

wenglor inductive sensors are suitable for a wide variety of applications thanks to the variety of designs, housing materials and operating principles in the range. They are characterized by their high switching distances. This allows various standard applications to be covered by just one design.

Thanks to the lack of moving parts, these sensors are maintenance-free, wear-free, waterproof and resistant to dirt and shocks. They are short-circuit proof and can also be installed in any position. The service life of the sensors is not dependent on the switching frequency or number of measurement cycles.

An LC resonant circuit is arranged under the active surface of the inductive sensors. The electromagnetic field generated by this is affected when metals approach it (e.g. steel, aluminum, or brass). The output switches as soon as the metal reaches the set switching distance.

On the following pages you will find:

Inductive Sensors with Standard Switching Distances	90-93
Inductive Sensors with Increased Switching Distances	94-96
Inductive Sensors Welding Field Resistant with Correction Factor 1	97-101

# Inductive Sensor

## with Standard Switching Distances

# 2 mm

M12 x 1

Range  
flush

weproTec



### Technical Data

#### Inductive Data

Switching Distance	2 mm
Correction Factors Stainless Steel V2A/CuZn/Al	1,13/0,64/0,57
Mounting	flush
Mounting A/B/C/D in mm	0/8/6/0
Mounting B1 in mm	0...1
Switching Hysteresis	< 10 %

#### Electrical Data

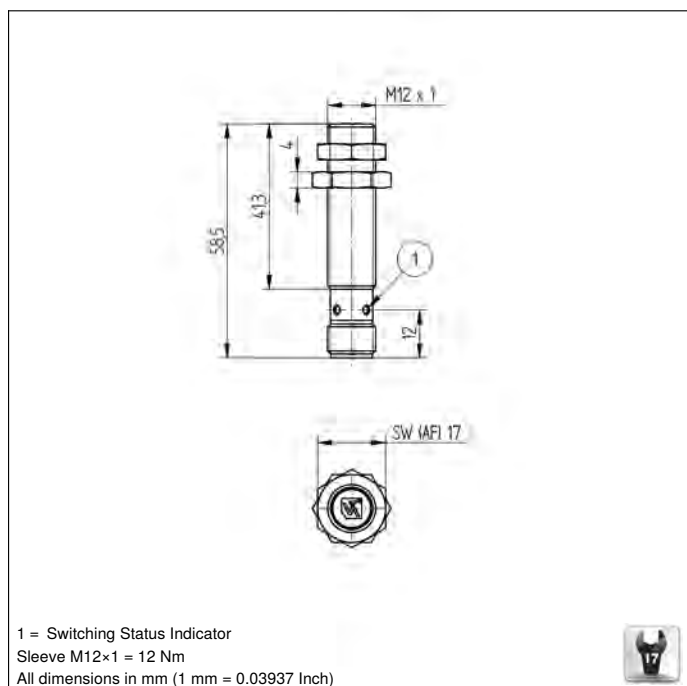
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 6 mA
Switching Frequency	1180 Hz
Temperature Drift	< 10 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 1 V
Switching Output/Switching Current	150 mA
Residual Current Switching Output	< 100 µA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III

#### Mechanical Data

Housing Material	CuZn, nickel-plated
Degree of Protection	IP67
Connection	M12 x 1; 3-pin

#### Safety-relevant Data

MTTFd (EN ISO 13849-1)	3706,54 a
------------------------	-----------



#### Plug Version

	Part Number	112N001
PNP NO		●
Connection Diagram No.		102
Suitable Connection Equipment No.		2
Suitable Mounting Technology No.		170 171
Error Indicator		yes

Connection Diagrams page 128 / System Components page 124

### Complementary Products

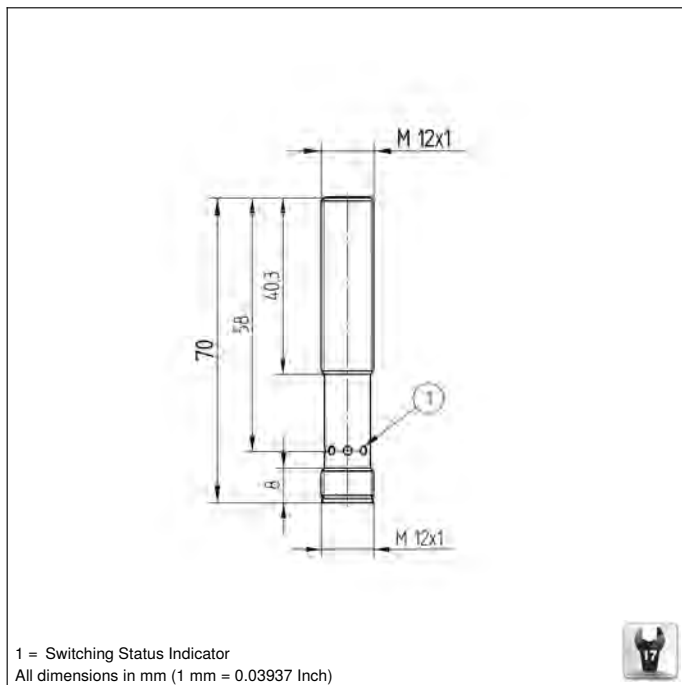
PNP-NPN Converter BG2V1P-N-2M



# Inductive Sensor with Standard Switching Distances

**4 mm** M12 × 1

Range  
flush



## Technical Data

Inductive Data	
Switching Distance	4 mm
Correction Factors Stainless Steel V2A/CuZn/Al	0,77/0,50/0,48
Mounting	flush
Mounting A/B/C/D in mm	0/12/12/0
Switching Hysteresis	< 15 %
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 6 mA
Switching Frequency	700 Hz
Temperature Drift	< 10 %
Temperature Range	-25...80 °C
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Residual Current Switching Output	< 100 µA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III
Mechanical Data	
Housing Material	CuZn, nickel-plated
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	5346,4 a

### Plug Version

Part Number	IB040BM70VA3
PNP NO/NC antivalent	●
Connection Diagram No.	101
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	170 171

Connection Diagrams page 128 / System Components page 124

## Complementary Products

PNP-NPN Converter BG2V1P-N-2M



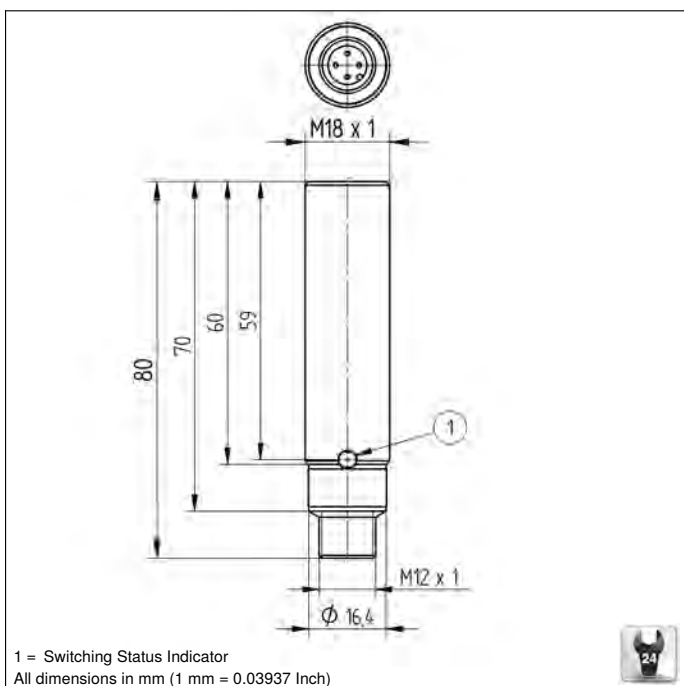
# Inductive Sensor

with Standard Switching Distances

## 5 mm

M18 x 1

Range  
flush



### Technical Data

Inductive Data	
Switching Distance	5 mm
Correction Factors Stainless Steel V2A/CuZn/Al	0,79/0,49/0,44
Mounting	flush
Mounting A/B/C/D in mm	0/18/24/0
Switching Hysteresis	< 15 %
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 6 mA
Switching Frequency	400 Hz
Temperature Drift	< 10 %
Temperature Range	-25...80 °C
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Residual Current Switching Output	< 100 µA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III
Mechanical Data	
Housing Material	CuZn, nickel-plated
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 x 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	3768,8 a



#### Plug Version

Part Number	IW050BM80VA3
PNP NO/NC antivalent	●
Connection Diagram No.	101
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	150 151

Connection Diagrams page 128 / System Components page 124

### Complementary Products

PNP-NPN Converter BG2V1P-N-2M

# Inductive Sensor with Standard Switching Distances

## 10 mm

M30 × 1,5

Range  
flush

weproTec



### Technical Data

#### Inductive Data

Switching Distance	10 mm
Correction Factors Stainless Steel V2A/CuZn/Al	1,18/0,5/0,46
Mounting	flush
Mounting A/B/C/D in mm	0/20/30/0
Mounting B1 in mm	0...10
Switching Hysteresis	< 10 %

#### Electrical Data

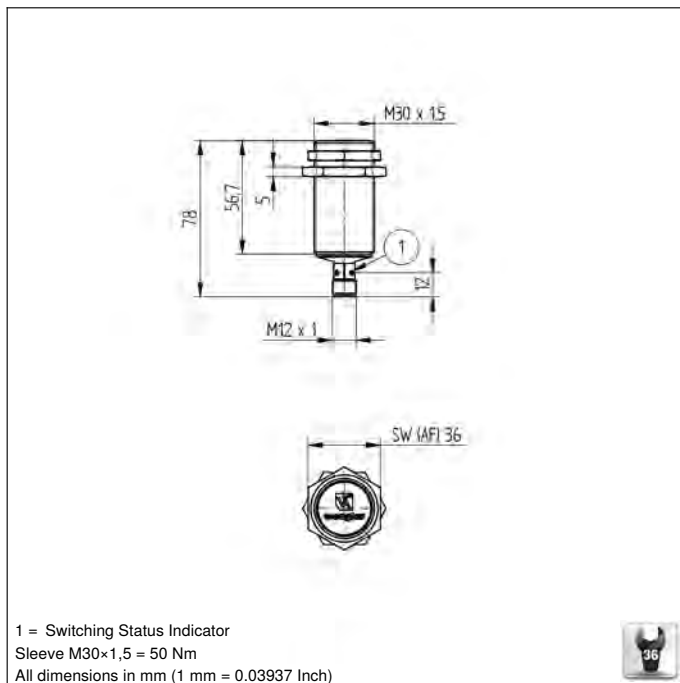
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 10 mA
Switching Frequency	580 Hz
Temperature Drift	< 10 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 1 V
Switching Output/Switching Current	150 mA
Residual Current Switching Output	< 100 µA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III

#### Mechanical Data

Housing Material	CuZn, nickel-plated
Degree of Protection	IP67
Connection	M12 × 1; 4-pin

#### Safety-relevant Data

MTTFd (EN ISO 13849-1)	3706,54 a
------------------------	-----------



#### Plug Version

Part Number	I30N004
PNP NO/NC antivalent	●
Connection Diagram No.	101
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	130 131
Error Indicator	yes

Connection Diagrams page 128 / System Components page 124

### Complementary Products

PNP-NPN Converter BG2V1P-N-2M



# Inductive Sensor

with Increased Switching Distance

## 2 mm

M8 x 1

Range  
flush

weproTec



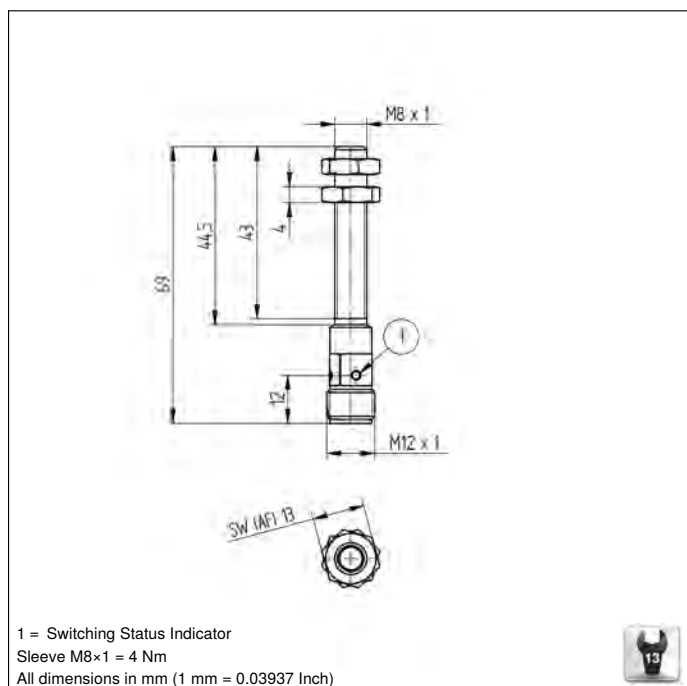
### Technical Data

Inductive Data	
Switching Distance	2 mm
Correction Factors Stainless Steel V2A/CuZn/Al	0,81/0,39/0,42
Mounting	flush
Mounting A/B/C/D in mm	0/8/6/0
Mounting B1 in mm	0...1
Switching Hysteresis	< 10 %

Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 9 mA
Switching Frequency	1070 Hz
Temperature Drift	< 10 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 1 V
Switching Output/Switching Current	150 mA
Residual Current Switching Output	< 100 µA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III

Mechanical Data	
Housing Material	CuZn, nickel-plated
Degree of Protection	IP67
Connection	M12 x 1; 4-pin

Safety-relevant Data	
MTTFd (EN ISO 13849-1)	3706,54 a



### Plug Version

Part Number	108H007
PNP NO	●
Connection Diagram No.	1021
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	200 201
Error Indicator	yes

Connection Diagrams page 128 / System Components page 124

### Complementary Products

PNP-NPN Converter BG2V1P-N-2M

# Inductive Sensor with Increased Switching Distance

**8 mm**

M18 x 1

Range  
flush

weproTec



## Technical Data

### Inductive Data

Switching Distance	8 mm
Correction Factors Stainless Steel V2A/CuZn/Al	0,91/0,45/0,43
Mounting	flush
Mounting A/B/C/D in mm	0/24/24/0
Mounting B1 in mm	0...15
Switching Hysteresis	< 10 %

### Electrical Data

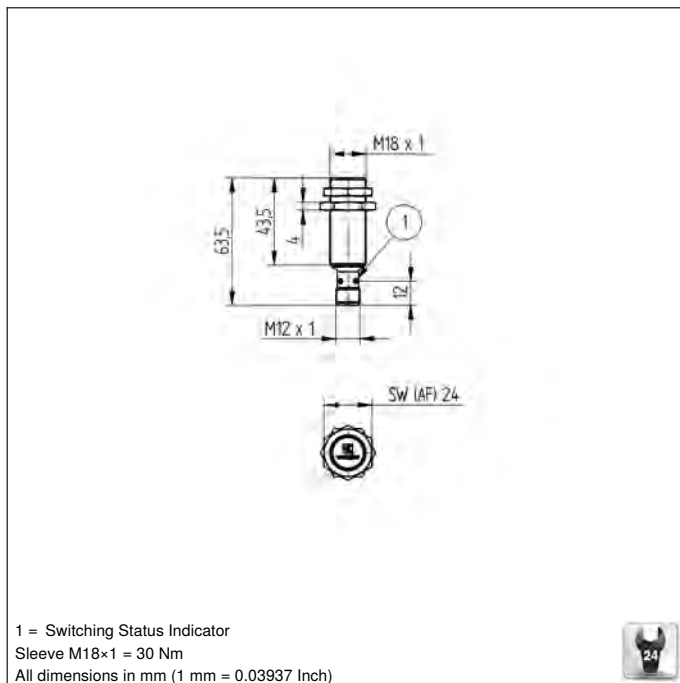
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 6 mA
Switching Frequency	590 Hz
Temperature Drift	< 10 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 1 V
Switching Output/Switching Current	150 mA
Residual Current Switching Output	< 100 µA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III

### Mechanical Data

Housing Material	CuZn, nickel-plated
Degree of Protection	IP67
Connection	M12 x 1; 3-pin

### Safety-relevant Data

MTTFd (EN ISO 13849-1)	3706,54 a
------------------------	-----------



### Plug Version

Part Number	118H003
PNP NO	●
Connection Diagram No.	102
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	150   151
Error Indicator	yes

Connection Diagrams page 128 / System Components page 124

## Complementary Products

PNP-NPN Converter BG2V1P-N-2M



# Inductive Sensor with Increased Switching Distance

## 22 mm

M30 × 1,5

weproTec

Range  
semi-flush



### Technical Data

#### Inductive Data

Switching Distance	22 mm
Correction Factors Stainless Steel V2A/CuZn/Al	0,85/0,35/0,34
Mounting	semi-flush
Mounting A/B/C/D in mm	35/49/66/7
Mounting B1 in mm	0...40
Switching Hysteresis	< 10 %

#### Electrical Data

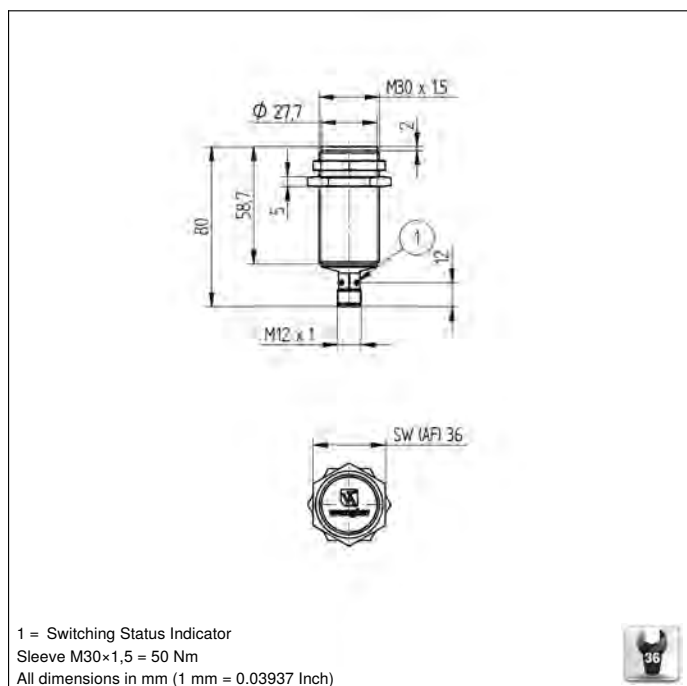
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 12 mA
Switching Frequency	320 Hz
Temperature Drift	< 10 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 1 V
Switching Output/Switching Current	150 mA
Residual Current Switching Output	< 100 µA
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	III

#### Mechanical Data

Housing Material	CuZn, nickel-plated
Degree of Protection	IP67

#### Safety-relevant Data

MTTFd (EN ISO 13849-1)	3706,54 a
------------------------	-----------



#### Plug Version

Part Number	Plug Version	
	130H007	130H008
PNP NO	●	
PNP NO/NC antivalent		●
Connection	M12 × 1; 3-pin	M12 × 1; 4-pin
Connection Diagram No.	102	101
Suitable Connection Equipment No.	2	2
Suitable Mounting Technology No.	130   132	130   132
Error Indicator	yes	yes

Connection Diagrams page 128 / System Components page 124

### Complementary Products

PNP-NPN Converter BG2V1P-N-2M



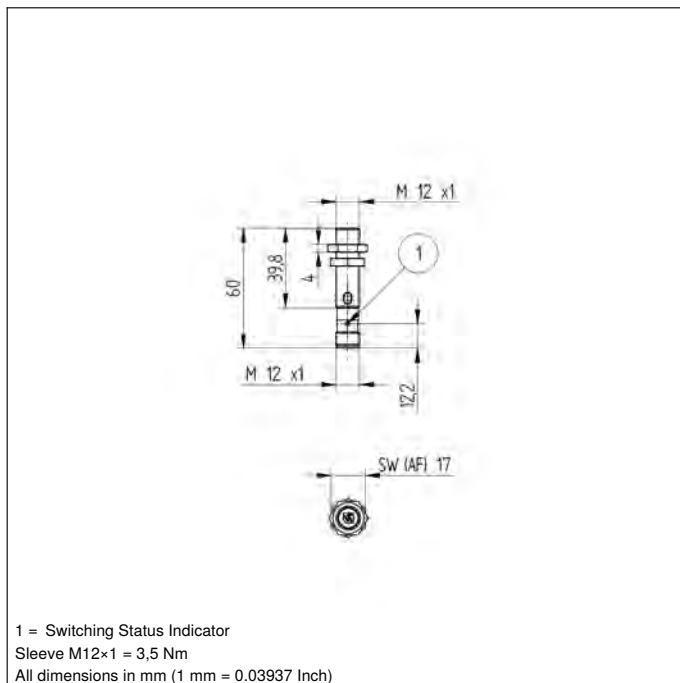


# Inductive Sensor with Correction Factor 1

## 4 mm

M12 x 1

Range  
flush



### Technical Data

Inductive Data	
Switching Distance	4 mm
Correction Factors Stainless Steel V2A/CuZn/Al	1,2/1,21/1,22
Mounting	flush
Mounting A/B/C/D in mm	0/5/12/0
Switching Hysteresis	< 15 %
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 15 mA
Switching Frequency	4200 Hz
Temperature Drift (-25 °C < T <sub>u</sub> < 60 °C)	10 %
Temperature Drift (T <sub>u</sub> < -25 °C, T <sub>u</sub> > 60 °C)	20 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Resistant to Magnetic Fields	200 mT
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	II
Protective Insulation, Rated Voltage	50 V
Mechanical Data	
Housing Material	CuZn; Teflon
Welding Field Resistant	yes
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 x 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2193,68 a

Plug Version	
Part Number	112A001
PNP NO/NC antivalent	●
Connection Diagram No.	101
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	170
Error Indicator	yes

Connection Diagrams page 128 / System Components page 124

# Inductive Sensor with Correction Factor 1

## 8 mm

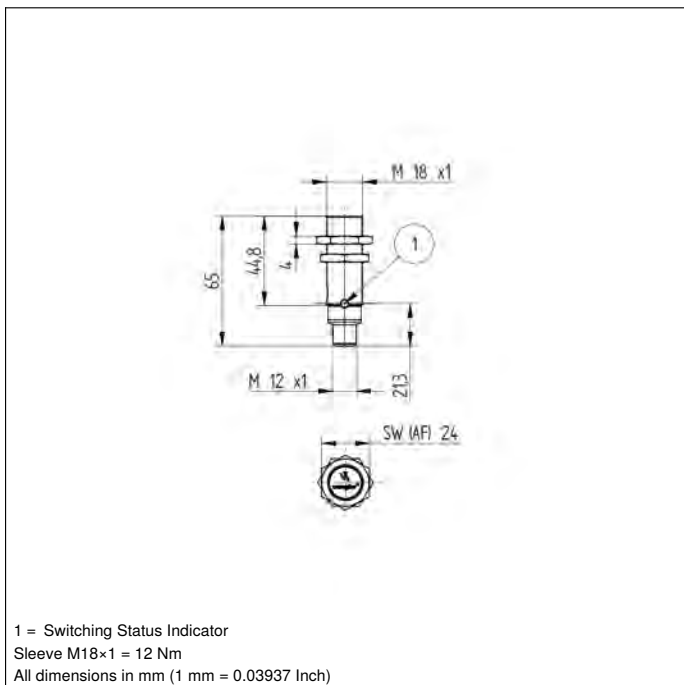
M18 × 1

Range  
flush



### Technical Data

Inductive Data	
Switching Distance	8 mm
Correction Factors Stainless Steel V2A/CuZn/Al	1,06/1,07/1,07
Mounting	flush
Mounting A/B/C/D in mm	0/5/24/0
Switching Hysteresis	< 15 %
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 15 mA
Switching Frequency	3500 Hz
Temperature Drift (-25 °C < T <sub>u</sub> < 60 °C)	10 %
Temperature Drift (T <sub>u</sub> < -25 °C, T <sub>u</sub> > 60 °C)	20 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Resistant to Magnetic Fields	200 mT
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	II
Protective Insulation, Rated Voltage	100 V
Mechanical Data	
Housing Material	CuZn; Teflon
Welding Field Resistant	yes
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2169,26 a



Plug Version	
Part Number	118A001
PNP NO/NC antivalent	●
Connection Diagram No.	101
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	150 151
Error Indicator	yes

Connection Diagrams page 128 / System Components page 124

### Complementary Products

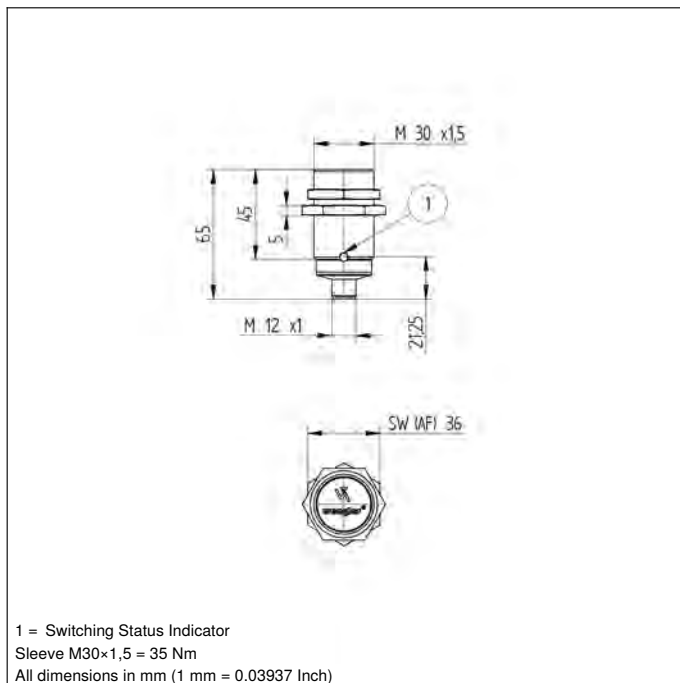
PNP-NPN Converter BG2V1P-N-2M

# Inductive Sensor with Correction Factor 1

## 15 mm

M30 × 1,5

Range  
flush



### Technical Data

Inductive Data	
Switching Distance	15 mm
Correction Factors Stainless Steel V2A/CuZn/Al	1,06/1,06/1,07
Mounting	flush
Mounting A/B/C/D in mm	0/15/45/0
Switching Hysteresis	< 15 %
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 15 mA
Switching Frequency	2000 Hz
Temperature Drift (-25 °C < T <sub>u</sub> < 60 °C)	10 %
Temperature Drift (T <sub>u</sub> < -25 °C, T <sub>u</sub> > 60 °C)	20 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Resistant to Magnetic Fields	200 mT
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	II
Protective Insulation, Rated Voltage	150 V
Mechanical Data	
Housing Material	CuZn; Teflon
Welding Field Resistant	yes
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2157,87 a

#### Plug Version

Part Number	I30A001
PNP NO/NC antivalent	●
Connection Diagram No.	101
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	130
Error Indicator	yes

Connection Diagrams page 128 / System Components page 124

### Complementary Products

PNP-NPN Converter BG2V1P-N-2M



# Inductive Sensor with Correction Factor 1

## 20 mm

40 × 40 × 55 mm (1Q)

Range  
flush

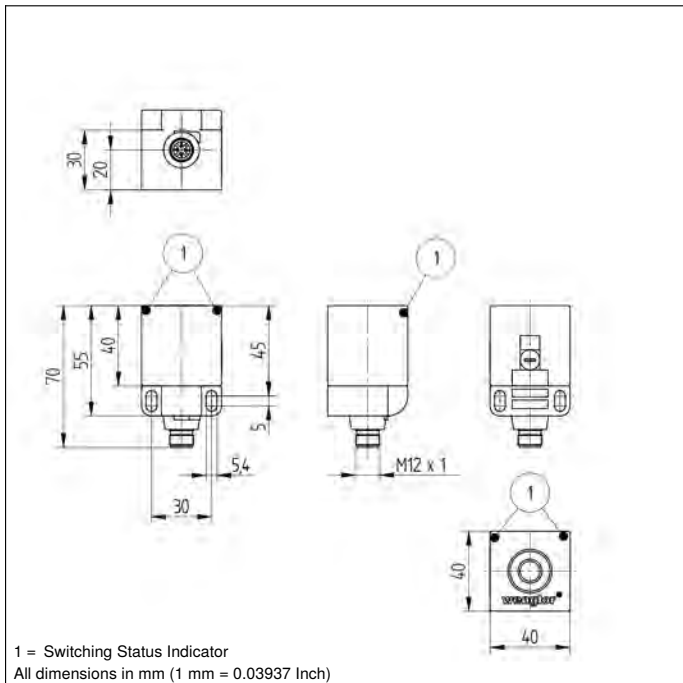


### Technical Data

Inductive Data	
Switching Distance	20 mm
Correction Factors Stainless Steel V2A/CuZn/Al	1,04/1,04/1,04
Mounting	flush
Mounting A/B/C/D in mm	0/15/60/0
Switching Hysteresis	< 15 %
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 15 mA
Switching Frequency	1500 Hz
Temperature Drift (-25 °C < Tu < 60 °C)	10 %
Temperature Drift (Tu < -25 °C, Tu > 60 °C)	20 %
Temperature Range	-40...80 °C
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	200 mA
Resistant to Magnetic Fields	200 mT
Short Circuit Protection	yes
Reverse Polarity and Overload Protection	yes
Protection Class	II

Mechanical Data	
Housing Material	Plastic
Sensor Cap	Teflon coated
Welding Field Resistant	yes
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4-pin

Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2099,41 a



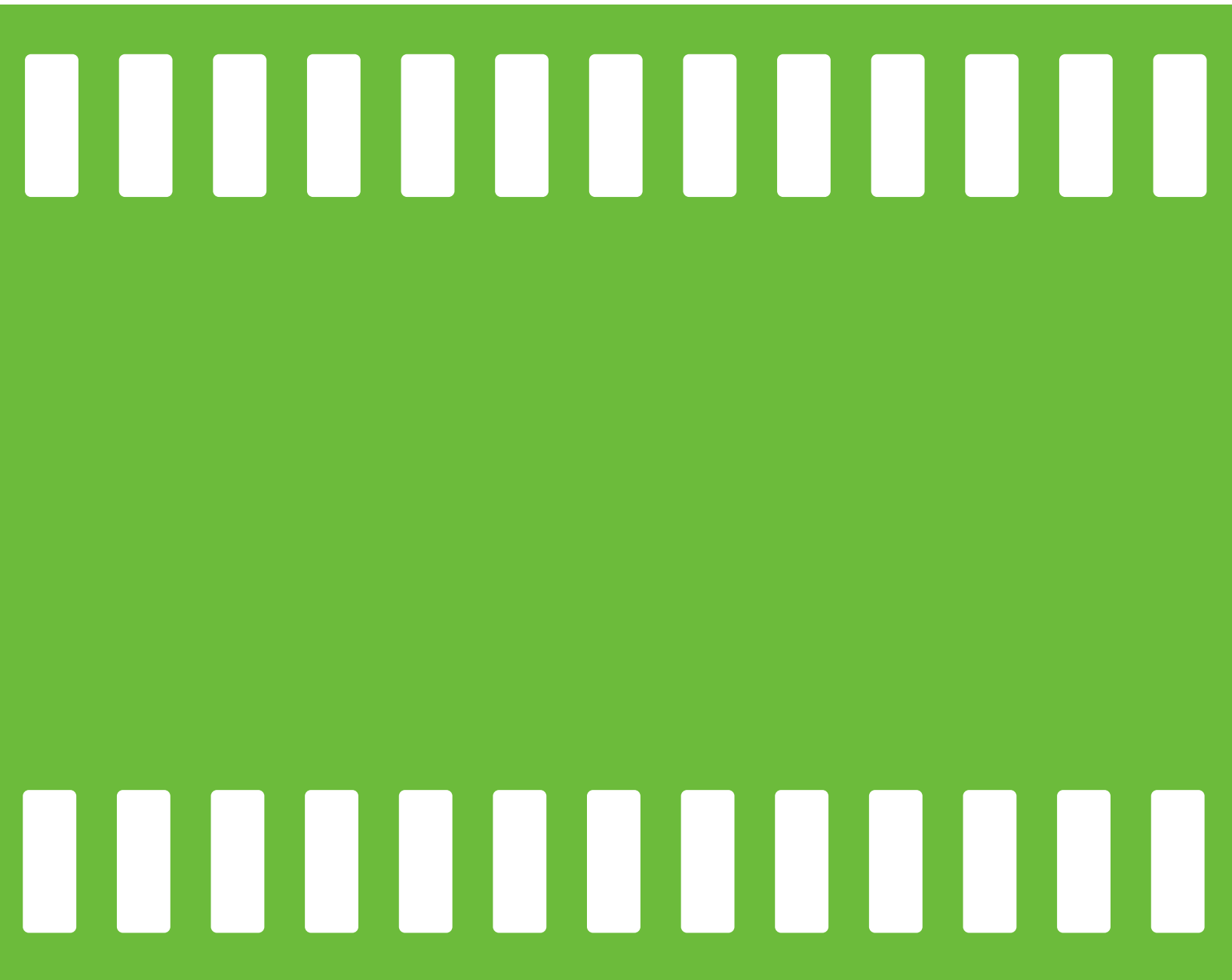
Plug Version	
Part Number	
	11QA001
PNP NO/NC antivalent	●
Connection Diagram No.	101
Suitable Connection Equipment No.	2
Error Indicator	yes

Connection Diagrams page 128 / System Components page 124

### Complementary Products

PNP-NPN Converter BG2V1P-N-2M





## Image Processing and Smart Cameras

In addition to OCR Readers and the comprehensive VisionSystem<sup>+</sup>, the wenglor portfolio of image processing products also comprises the unrivaled weQube as Smart Camera or Vision Sensor.

The Smart Camera **weQube** and the Vision Sensor **weQubeVision** are based on the innovative wenglor MultiCore technology, which connects five high-performance processors with a novel software concept. The result is a unique product enabling ideal interaction of numerous functions and summarizing several process steps.

With MultiCore you will use Industrial Ethernet for the first time without losing time – the sensor continues to work with the same performance and speed during data communication via Industrial Ethernet as before.

With innovative 3D Tracking MultiCore provides optimal object detection. Within the visible area, objects can be moved in any direction or vary in height while still being securely detected. In case of project or batch changes additional adjustment of the focal point is possible, this ensures maximum flexibility with utmost reliability.

MultiCore integrates Teach<sup>+</sup>, which offers rapid and site-independent optimization of system settings and adjustment to changing conditions.

On the following pages you will find:

Vision Sensors	104-105
Smart Cameras	106-107

# Vision Sensor

> 20 mm

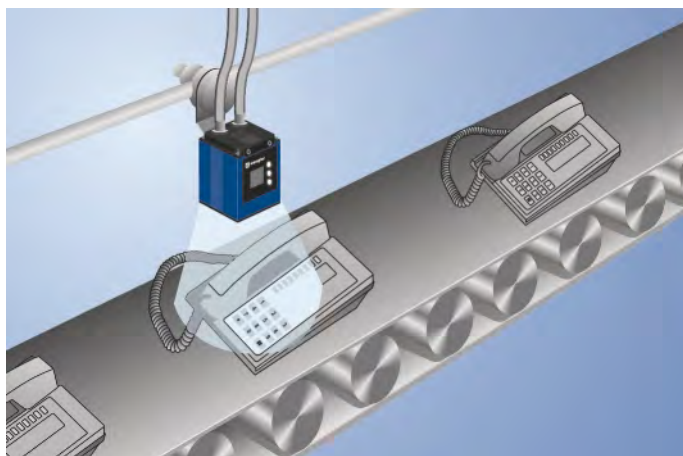
Range

weQubeVision



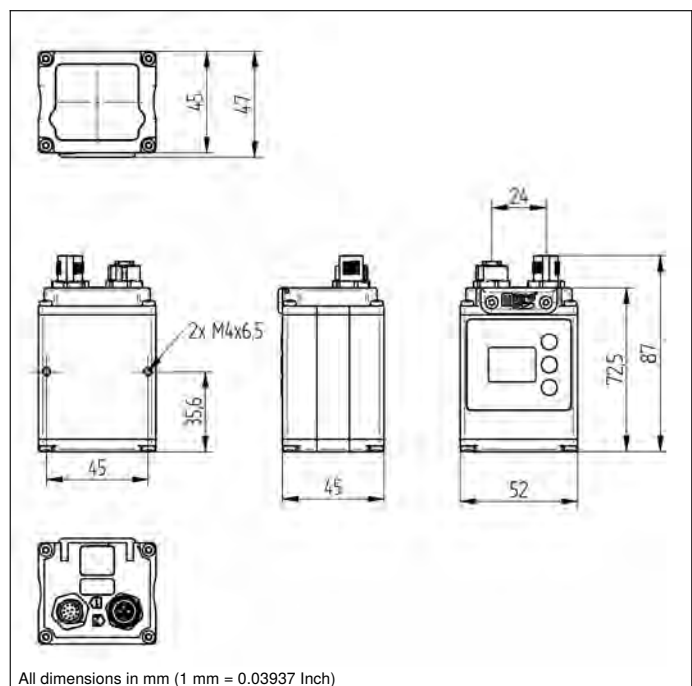
- Image processing functions
- MultiCore technology

The vision sensor weQubeVision is based on the wenglor MultiCore technology. The functions autofocus, region of interest and tracking ensure optimal object detection. The following image processing modules are available: Dimensional accuracy check, sorting procedures, presence control, object counting, position output, pixel counting, filter options, and statistics evaluation. Thanks to the integrated color image chip, all image processing functions are also available for remote applications.



## Technical Data

Optical Data	
Working Range	≥ 20 mm
Resolution	736 × 480 Pixel
Image Chip	color
Light Source	White Light
Service Life (T = +25 °C)	100000 h
Visual Field	see Table 1
Frame Rate	15 Hz
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 200 mA
Response Time	66 ms
Temperature Range	-25...55 °C*
Inputs/Outputs	6
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Interface	RS-232/Ethernet
Protection Class	III
Mechanical Data	
Setting Method	Ethernet
Housing Material	Aluminum
Degree of Protection	IP67
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin, X-cod.
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	227,7 a





Display brightness may decrease with age. This does not result in any impairment of the sensor function.

\* -25° C: Ambient conditions should not result in condensation; avoid the formation of ice on the front panel!

55° C: Continuous illumination at max. 1% or flash mode at 100% brightness with an exposure time of ≤ 5 ms; may affect the service life of the product.

55° C: Continuous illumination at max. 1% or flash mode at 100% brightness with an exposure time of ≤ 5 ms; may affect the service life of the product.



### Plug Version

Part Number	Plug Version	
	B50S001	B50S100
Web server	yes	yes
Configurable as PNP/NPN/Push-Pull	●	●
Switchable to NC/NO	●	●
Illumination Output	●	●
RS-232 Interface	●	●
Ethernet	●	●
PROFINET		●
EtherNet/IP™		●
Connection Diagram No.	002   1008	002   1008
Control Panel No.	X2	X2
Suitable Connection Equipment No.	50   87	50   87
Suitable Mounting Technology No.	560	560
Presence Check	yes	yes
Pixel Comparison	yes	yes
Reference Image Comparison	yes	yes
Tracking	yes	yes
Object detection	yes	yes
Dimensional accuracy check	yes	yes

Connection Diagrams page 128 / System Components page 124

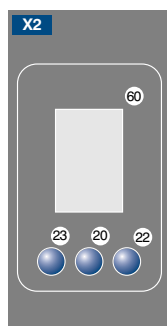
## Complementary Products

Disk with Polarization Filter ZNNG004
Illumination Technology
License Upgrade, weQube Pattern Matching DNNL006
Protective Housing ZNNS001, ZNNS002
Software
weQubeDecode License Upgrade DNNL002
weQubeOCR License Upgrade DNNL003

**Table 1**

Working Distance	20 mm	200 mm	1000 mm
Visual Field	16 × 12 mm	120 × 90 mm	600 × 450 mm

## Ctrl. Panel



20 = Enter Button  
 22 = UP Button  
 23 = Down Button  
 60 = Display

# Smart Camera

> 20 mm

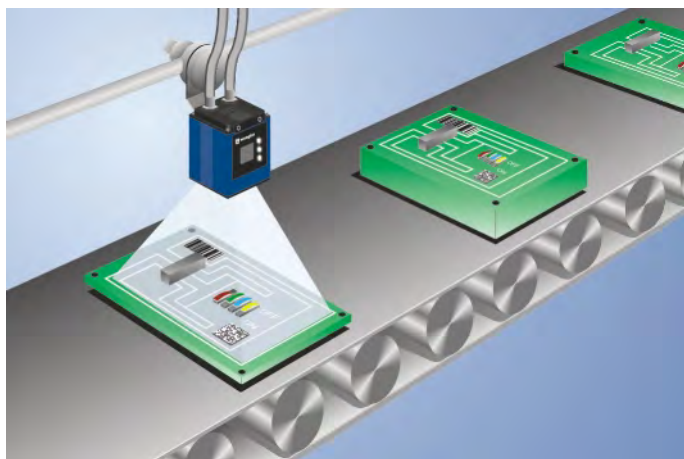
Range

weQube



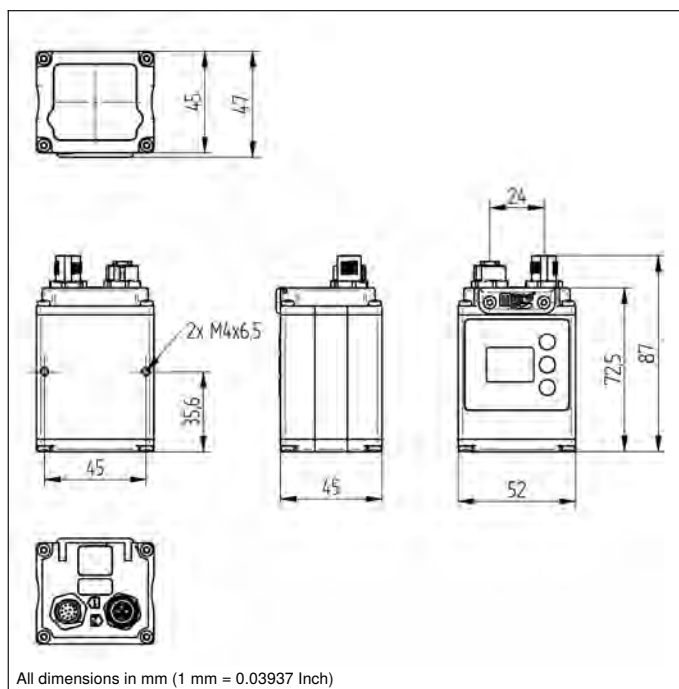
- Image processing functions
- MultiCore technology
- OCR reading
- Pattern matching
- Reading of printed and directly marked 1D and 2D codes

The smart camera weQube is based on the wenglor MultiCore technology and combines the function of the scanner and the vision sensors. Therefore, this product allows to capture all established 1D codes and various 2D code types. Autofocus, region of interest and tracking ensure reliable and stable image recording. The following image processing modules are available: Dimensional accuracy check, sorting procedures, presence control, object counting, position output, pixel counting, optical character recognition, pattern matching, filter options, and statistics evaluation.



## Technical Data

Optical Data	
Working Range	≥ 20 mm
Resolution	736 × 480 Pixel
Image Chip	color
Light Source	White Light
Service Life (T = +25 °C)	100000 h
Visual Field	see Table 1
Frame Rate	15 Hz
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 200 mA
Response Time	66 ms
Temperature Range	-25...55 °C*
Inputs/Outputs	6
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Interface	RS-232/Ethernet
Protection Class	III
Mechanical Data	
Setting Method	Ethernet
Housing Material	Aluminum
Degree of Protection	IP67
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin, X-cod.
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	227,7 a



Display brightness may decrease with age. This does not result in any impairment of the sensor function.

\* -25° C: Ambient conditions should not result in condensation; avoid the formation of ice on the front panel!

55° C: Continuous illumination at max. 1% or flash mode at 100% brightness with an exposure time of ≤ 5 ms; may affect the service life of the product.

55° C: Continuous illumination at max. 1% or flash mode at 100% brightness with an exposure time of ≤ 5 ms; may affect the service life of the product.



### Plug Version

Part Number	Plug Version	
	B50M001	B50M100
Web server	yes	yes
Configurable as PNP/NPN/Push-Pull	●	●
Switchable to NC/NO	●	●
Illumination Output	●	●
RS-232 Interface	●	●
Ethernet	●	●
PROFINET		●
EtherNet/IP™		●
Connection Diagram No.	002   1008	002   1008
Control Panel No.	X2	X2
Suitable Connection Equipment No.	50   87	50   87
Suitable Mounting Technology No.	560	560
Presence Check	yes	yes
Pixel Comparison	yes	yes
Reference Image Comparison	yes	yes
Tracking	yes	yes
OCR	yes	yes
Object detection	yes	yes
Dimensional accuracy check	yes	yes
1D and 2D code reading	yes	yes
Pattern matching	yes	yes

Connection Diagrams page 128 / System Components page 124

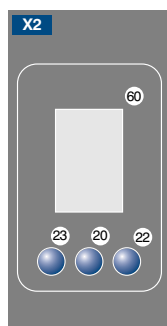
## Complementary Products

Disk with Polarization Filter ZNNG004
Illumination Technology
Protective Housing ZNNS001, ZNNS002
Software

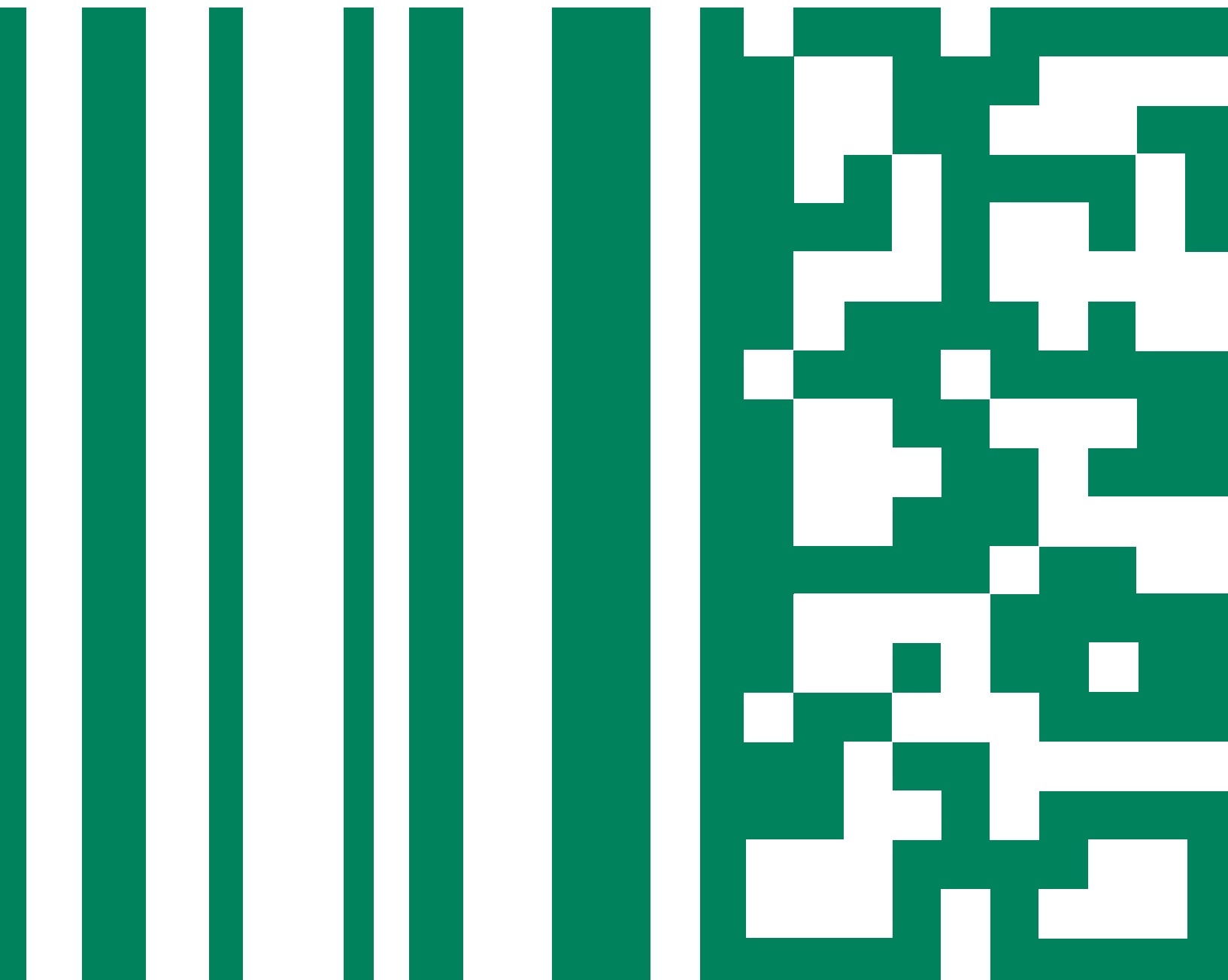
**Table 1**

Working Distance	20 mm	200 mm	1000 mm
Visual Field	16 × 12 mm	120 × 90 mm	600 × 450 mm

## Ctrl. Panel



20 = Enter Button  
 22 = UP Button  
 23 = Down Button  
 60 = Display



## 1D/2D and Barcode Scanners

wenglor 1D/2D and barcode scanners use different types of light to read each code. The light is reflected from the code elements onto a picture element in varying degrees and the image of the code that this produces is evaluated electronically using a decoder. The scanner can be adjusted by pressing on the Auto button function, or externally via the interface.

With **weQubeDecode** wenglor now also offers 1D-/2D code scanner based on the wenglor MultiCore technology: This connects five high-performance processors with a novel software concept. The result is a unique product enabling ideal interaction of numerous functions and summarizing several process steps.

For the first time, MultiCore enables use of Industrial Ethernet for industrial data communication of the scanners, without losing time, innovative 3D tracking ensures optimal object detection, and Teach<sup>+</sup> allows rapid, location-independent optimization of the system settings thus preventing machine downtimes.

On the following pages you will find:

Barcode Line Scanners	110-111
Barcode Raster Scanners	112-113
Barcode Sweep Raster Scanners	114-117
1D/2D Handheld Scanners	118-119
1D/2D Code Scanners	120-123

# Barcode Line Scanner

CCD Array

## 10...320 mm

Range

Ethernet

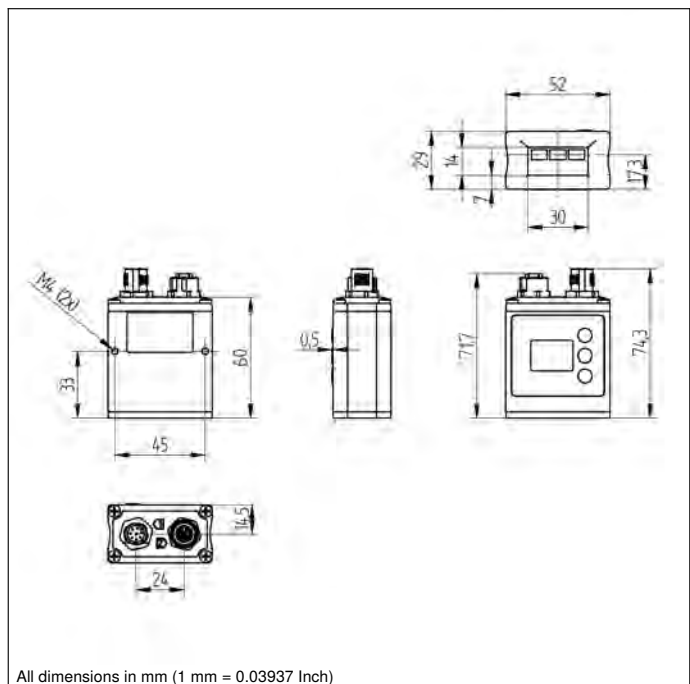
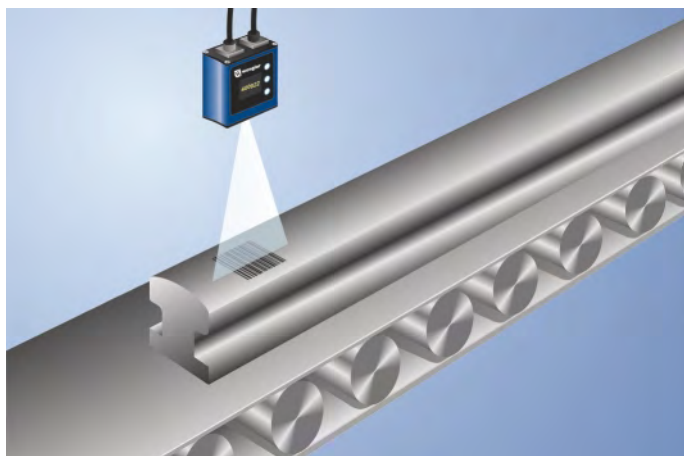
### Technical Data

Optical Data	
Barcode Density	Low density
Read Range	35...320 mm
Resolution	0,101 mm
Light Source	Red Light
Wavelength	660 nm
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	7000 Lux
Opening Angle	35 °
Barcode Printing Contrast	> 45 %
Electrical Data	
Supply Voltage	18...30 V DC
Port Type	100BASE-TX
Current Consumption (U <sub>b</sub> = 24 V)	< 100 mA
Scan Rate	530 scans/sec
Temperature Range	-20...50 °C
Inputs/Outputs	4
Switching Output Voltage Drop	< 2,5 V
PNP Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Network Possibilities	Ethernet
Interface	RS-232/Ethernet
Protection Class	III
Mechanical Data	
Housing Material	Aluminum
Weight	130 g
Degree of Protection	IP67
Connection	M12 × 1; 8-pin
Type of Connection Ethernet	M12 × 1; 8-pin, X-cod.



- Compact housing
- Ethernet TCP/IP
- LED display indicates "good read"
- Red light
- Web server and graphic display for simple operation

This barcode scanner is suitable for reading 1D codes, which are printed or lasered on glossy materials. Even with slight contrast differences and poor code quality this scanner operates reliably. Readable code types: Standard Code39, Full ASCII Code39, Interleaved 2 of 5, China Postal Code, Codabar, Code32, MSI Plessey Code, Code11, Industrial 2 of 5, Matrix 2 of 5, Telepen Code, UK Plessey Code, IATA Code, Code93, EAN13, EAN8, UPC-A, UPC-E, Code128, UCC/EAN-128, RSS-14, RSSLimited.



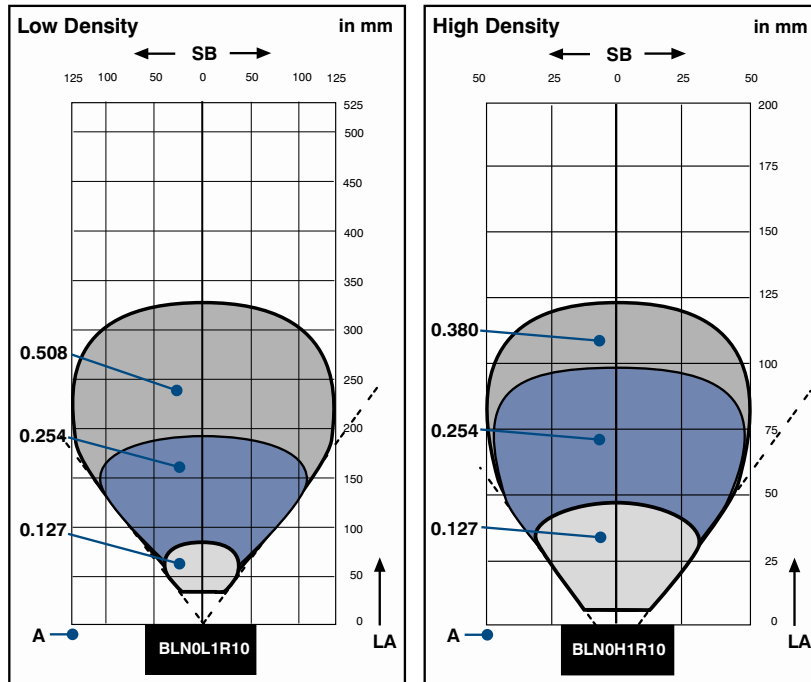
Display brightness may decrease with age. This does not result in any impairment of the sensor function.



### Plug Version

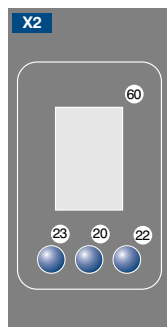
Part Number	BLN0L1R10
Web server	yes
Configurable as PNP/NPN/Push-Pull	●
Switchable to NC/NO	●
Connection Diagram No.	002   786
Control Panel No.	X2
Suitable Connection Equipment No.	50   89
Suitable Mounting Technology No.	560

Connection Tables page 132 / System Components page 124



A = Resolution LA = Read Range SB = Scan Width

### Ctrl. Panel



20 = Enter Button  
 22 = UP Button  
 23 = Down Button  
 60 = Display

### Complementary Products

Fieldbus Gateway ZAGxxxN01, EPGG001

Protective Housing ZNNS001, ZNNS002

# Barcode Raster Scanner

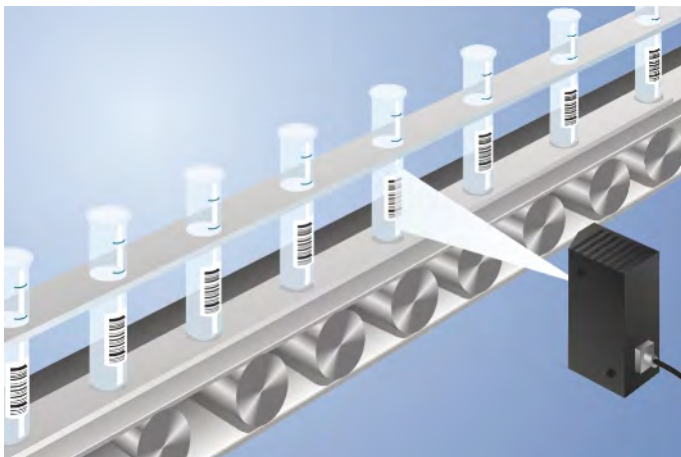
**51...762 mm** LASER

Range



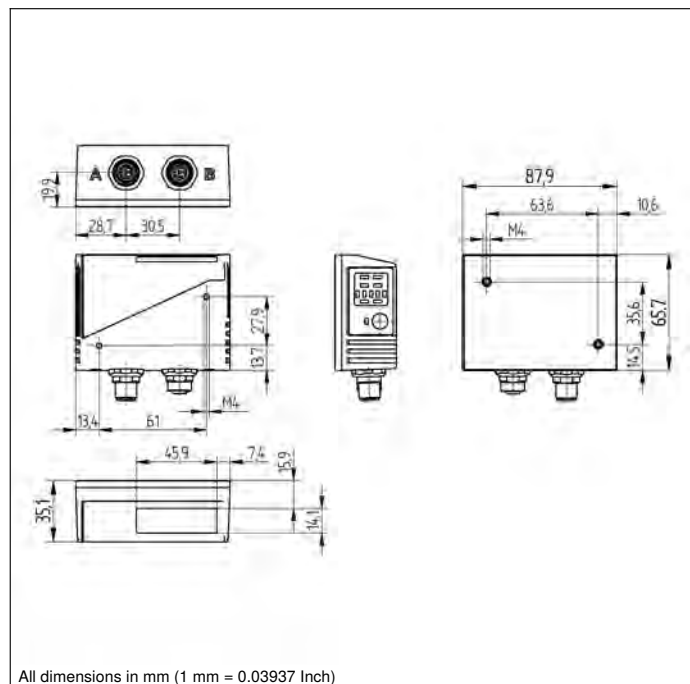
- Adaptable 90° mirror
- Adjustable scanning width
- Diagnosis functions
- Ethernet TCP/IP and EtherNet/IP™
- Integrated code reconstruction

This barcode scanner is suitable for reading very high density barcodes. The adjustable scanning width allows for ideal adaptation to your application. The following code types can be processed: Code39, Code93, Interleaved 2 of 5, Code128, Codabar, UPC, PDF417, Micro PDF417, UCC/EAN-128, AIAG, GS1 Databar, Pharmacode.









## Technical Data

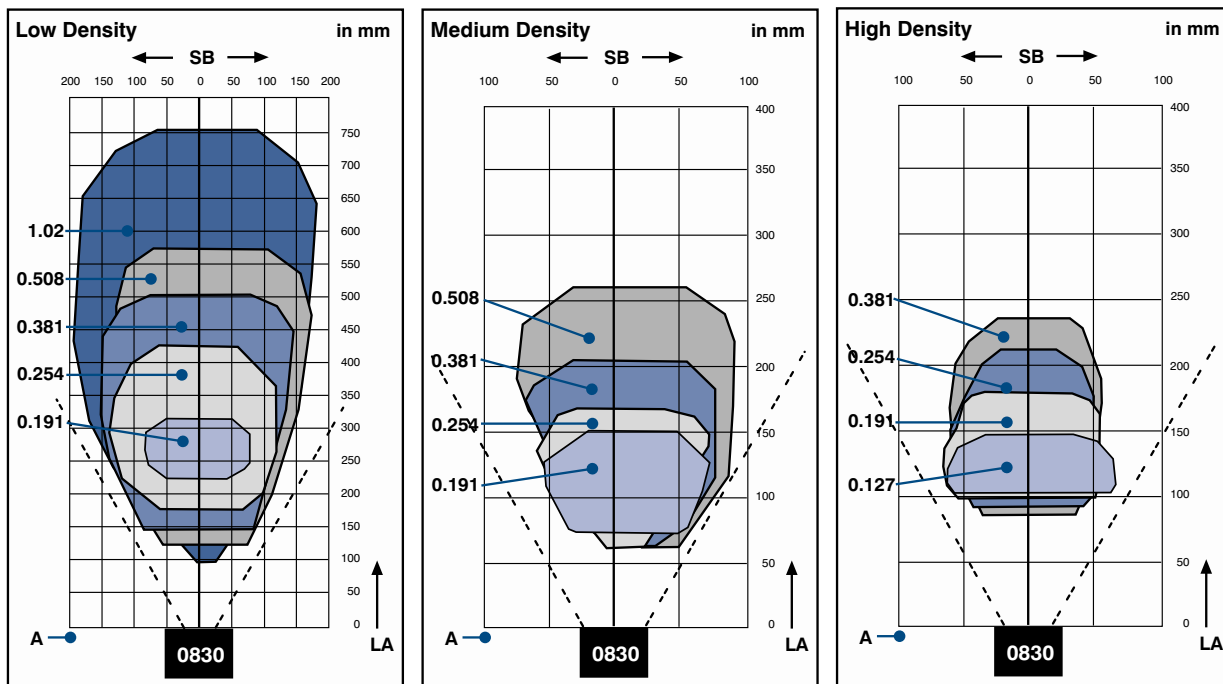
Optical Data	
Deflection Angle	2 °
Number of Raster Scan Lines	10
Light Source	Laser (red)
Wavelength	655 nm
Service Life (T = +25 °C)	50000 h
Laser Class (EN 60825-1)	2
Max. Ambient Light	4840 Lux
Opening Angle	60 °
Adjustable Scan Width	yes
Barcode Printing Contrast	> 25 %
Electrical Data	
Supply Voltage	10...28 V DC
Power Consumption	4320 mW
Scan Rate	300...1400 scans/sec
On-/Off-Delay (RS-232)	0...2,55 s
Temperature Range	0...50 °C
Switching Output	Optoisolator
Number of Switching Outputs	3
Switching Output/Switching Current	100 mA
Reverse Polarity Protection	yes
Network Possibilities	Ethernet
Interface	RS-232
Baud Rate	< 100 MBd
Trigger Input	Optoisolator
Signal Input	Optoisolator
Number of Signal Inputs	2
Acoustic signal	yes
Protection Class	III
FDA Accession Number	8310057-012
Mechanical Data	
Housing Material	Aluminum
Weight	212 g
Degree of Protection	IP64
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin





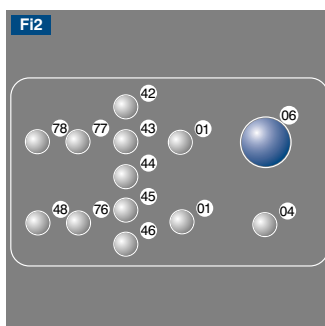
	Plug Version			
	Part Number	FIS-0830-1100	FIS-0830-1101	FIS-0830-1102
   				
 				
PNP NO/NC switchable	●	●	●	
NPN NO/NC switchable	●	●	●	
Barcode Density	Low density	Medium density	High density	
Read Range	102...762 mm	51...254 mm	82...228 mm	
Connection Table No.	<b>39</b>	<b>39</b>	<b>39</b>	
Control Panel No.	<b>Fi2</b>	<b>Fi2</b>	<b>Fi2</b>	
Suitable Connection Equipment No.	<b>12   13</b>	<b>12   13</b>	<b>12   13</b>	
Suitable Mounting Technology No.	<b>440</b>	<b>440</b>	<b>440</b>	

Connection Tables page 132 / System Components page 124



A = Resolution LA = Read Range SB = Scan Width

### Ctrl. Panel



01 = Switching Status Indicator

04 = Function Indicator

06 = Teach Button

42 = Reading Performance 100%/Good Read

43 = Reading Performance 80%/Status/Trigger

44 = Reading Performance 60%

45 = Reading Performance 40%

46 = Reading Performance 20%

48 = Network Status

76 = Network Tx enabled

77 = Network Rx enabled

78 = Module status

### Complementary Products

Connection Box ZAA12NN01

Connection Cable ZAV88Rx01

Connection Cable ZCYV00x

Fieldbus Gateway ZAGxxxN01, EPGG001

Path-Folding Mirror LA19

Power Supply Unit NT10

Software

# Barcode Sweep Raster Scanner

**25...762 mm** LASER

Range



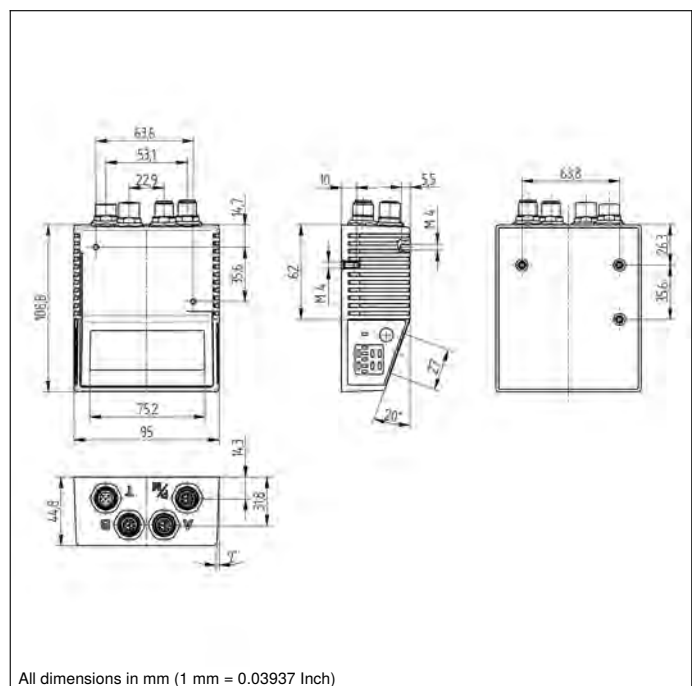
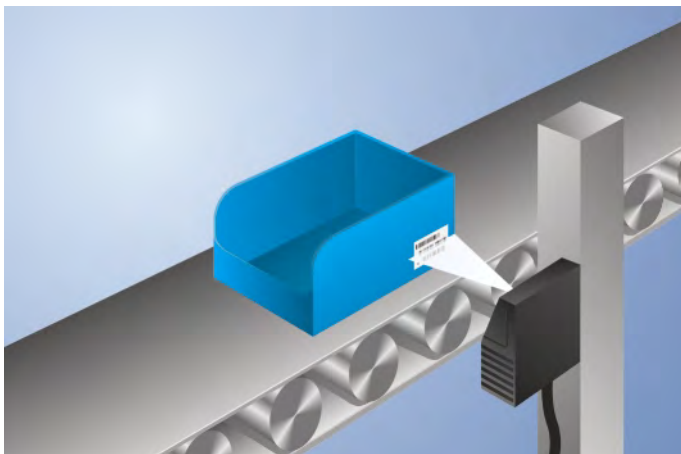
- **Diagnosis functions**
- **Integrated code reconstruction**
- **LED scanning rate indicator**
- **Maximum oscillation rate: 80 oscillations/second**
- **Teach-in**

## Technical Data

Optical Data	
Light Source	Laser (red)
Wavelength	655 nm
Service Life (T = +25 °C)	50000 h
Laser Class (EN 60825-1)	2
Max. Ambient Light	4840 Lux
Opening Angle	60 °
Adjustable Scan Width	yes
Barcode Printing Contrast	> 25 %
Electrical Data	
Supply Voltage	10...28 V DC
Power Consumption	6480 mW
Scan Rate	300...1400 scans/sec
Temperature Range	0...50 °C
Switching Output	Optoisolator
Number of Switching Outputs	3
Switching Output/Switching Current	100 mA
Reverse Polarity Protection	yes
Network Possibilities	Daisy Chain, Multidrop
Interface	RS-232/422/485
Baud Rate	< 115200 Bd
Trigger Input	Optoisolator
Signal Input	Optoisolator
Number of Signal Inputs	3
Acoustic signal	yes
Protection Class	III
FDA Accession Number	8310057-012
Mechanical Data	
Housing Material	Aluminum
Weight	453 g
Degree of Protection	IP65
Connection	M12 × 1; 12-pin

This sweep raster scanner is suitable for scanning surface areas. The adjustable path-folding angle of the oscillating mirror allows for ideal adaptation to your application.

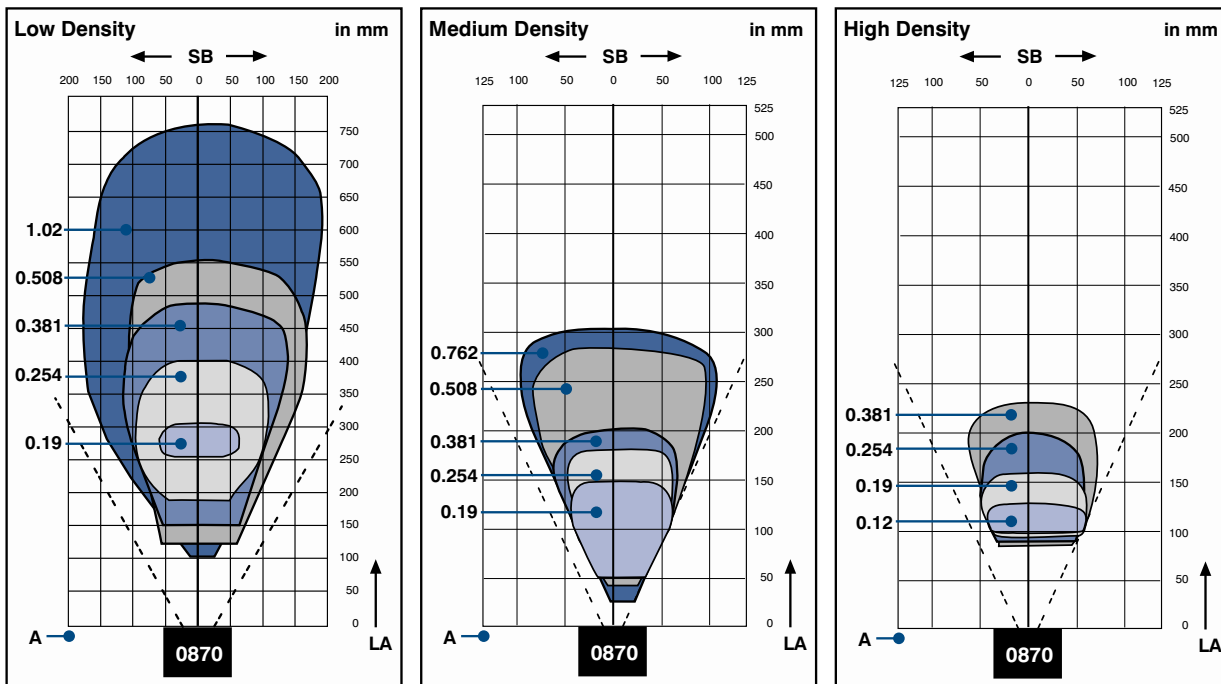
The following code types can be processed:  
Code39, Interleaved 2 of 5, Code128, Codabar, UPC, PDF417, Code93, AIAG, UCC/EAN-128, Micro PDF, Pharmacode, GS1 Databar.



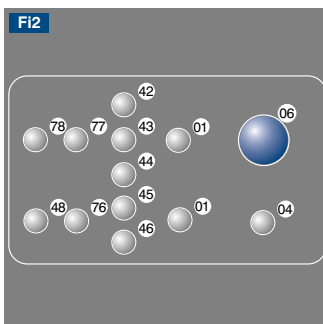
**Plug Version**


	Part Number		
	FIS-0870-0107	FIS-0870-0108	FIS-0870-0109
PNP NO/NC switchable	●	●	●
NPN NO/NC switchable	●	●	●
Barcode Density	Low density	Medium density	High density
Read Range	102...762 mm	25...304 mm	82...228 mm
Connection Table No.	<b>46</b>	<b>46</b>	<b>46</b>
Control Panel No.	<b>Fi2</b>	<b>Fi2</b>	<b>Fi2</b>
Suitable Connection Equipment No.	<b>12   13</b>	<b>12   13</b>	<b>12   13</b>
Suitable Mounting Technology No.	<b>440</b>	<b>440</b>	<b>440</b>

Connection Tables page 132 / System Components page 124



SB = Scan Width A = Resolution LA = Read Range

**Ctrl. Panel**


01 = Switching Status Indicator

04 = Function Indicator

06 = Teach Button

42 = Reading Performance 100%/Good Read

43 = Reading Performance 80%/Status/Trigger

44 = Reading Performance 60%

45 = Reading Performance 40%

46 = Reading Performance 20%

48 = Network Status

76 = Network Tx enabled

77 = Network Rx enabled

78 = Module status

**Complementary Products**

Connection Box ZAA12NN01

Fieldbus Gateway ZAGxxxN01, EPGG001

Power Supply Unit NT10

Software

**Raster Configuration**

Raster Sweep Angle	0°...10°	11°...20°	21°...34°
Sweeps/sec	80	60	40

# Barcode Sweep Raster Scanner

**25...762 mm** LASER

Range



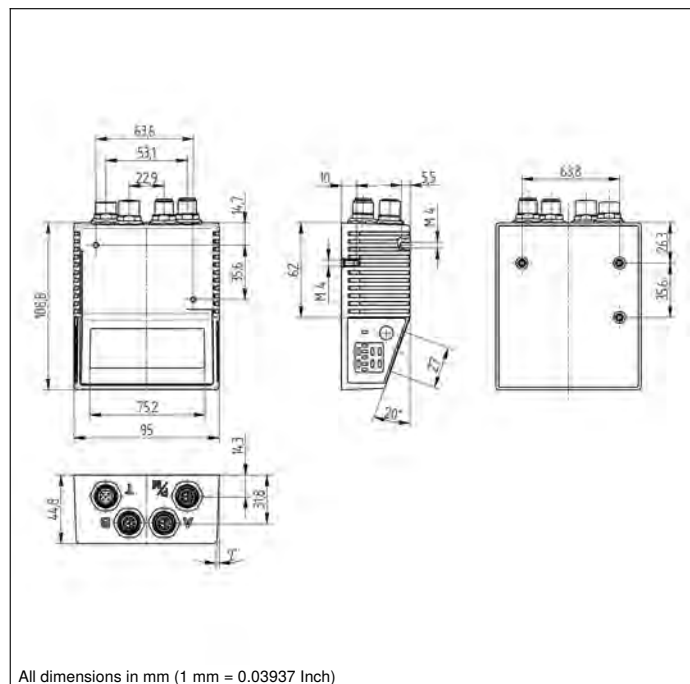
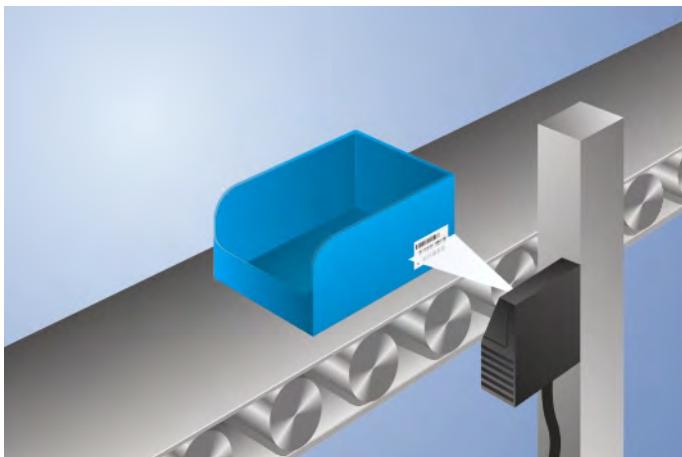
- Ethernet TCP/IP and EtherNet/IP™
- Integrated code reconstruction
- LED scanning rate indicator
- Maximum oscillation rate: 80 oscillations/second
- Teach-in

## Technical Data

Optical Data	
Light Source	Laser (red)
Wavelength	655 nm
Service Life (T = +25 °C)	50000 h
Laser Class (EN 60825-1)	2
Max. Ambient Light	4840 Lux
Opening Angle	60 °
Adjustable Scan Width	yes
Barcode Printing Contrast	> 25 %
Electrical Data	
Supply Voltage	10...28 V DC
Power Consumption	6480 mW
Scan Rate	300...1400 scans/sec
Temperature Range	0...50 °C
Switching Output	Optoisolator
Number of Switching Outputs	3
Switching Output/Switching Current	100 mA
Reverse Polarity Protection	yes
Network Possibilities	Ethernet
Interface	RS-232/422/485
Baud Rate	< 100 MBd
Trigger Input	Optoisolator
Signal Input	Optoisolator
Number of Signal Inputs	3
Acoustic signal	yes
Protection Class	III
FDA Accession Number	8310057-012
Mechanical Data	
Housing Material	Aluminum
Weight	453 g
Degree of Protection	IP65
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin

This sweep raster scanner is suitable for scanning surface areas. The adjustable path-folding angle of the oscillating mirror allows for ideal adaptation to your application.

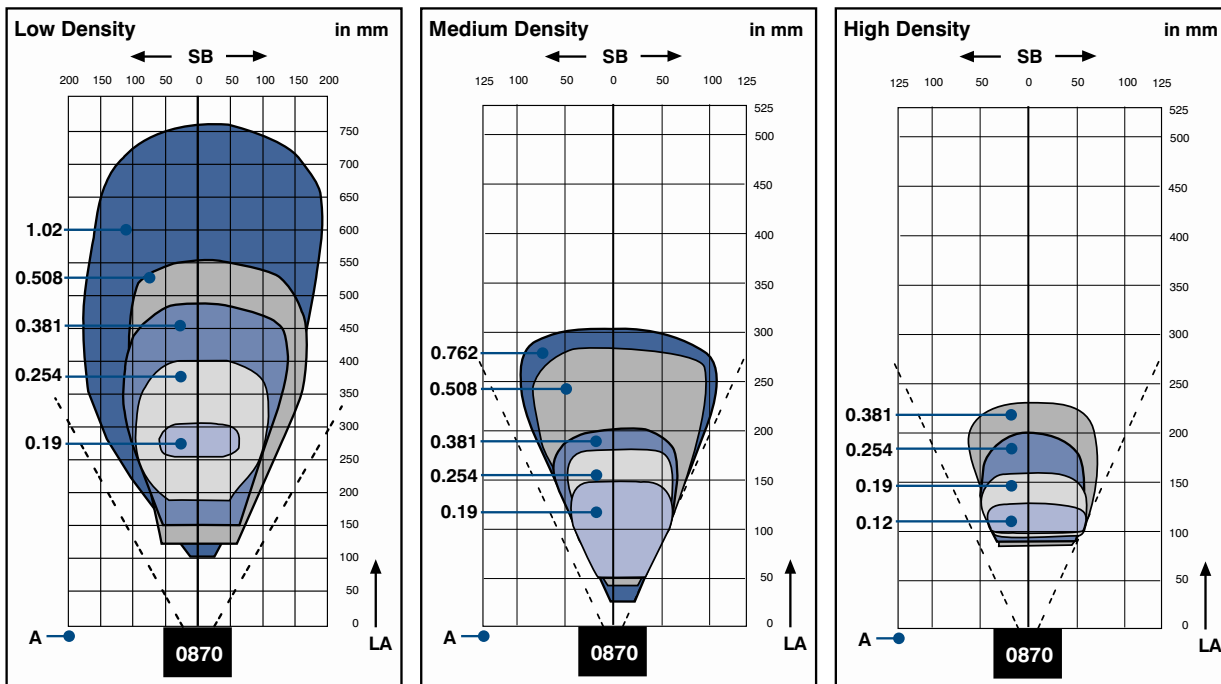
The following code types can be processed:  
Code39, Interleaved 2 of 5, Code128, Codabar, UPC, PDF417, Code93, AIAG, UCC/EAN-128, Micro PDF, Pharmacode, GS1 Databar.



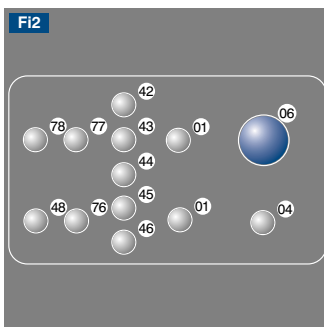
**Plug Version**


	Plug Version		
	Part Number	FIS-0870-1105	FIS-0870-1106
PNP NO/NC switchable	●	●	●
NPN NO/NC switchable	●	●	●
Barcode Density	Low density	Medium density	High density
Read Range	102...762 mm	25...304 mm	82...228 mm
Connection Table No.	<b>47</b>	<b>47</b>	<b>47</b>
Control Panel No.	<b>Fi2</b>	<b>Fi2</b>	<b>Fi2</b>
Suitable Connection Equipment No.	<b>12   13</b>	<b>12   13</b>	<b>12   13</b>
Suitable Mounting Technology No.	<b>440</b>	<b>440</b>	<b>440</b>

Connection Tables page 132 / System Components page 124



SB = Scan Width    A = Resolution    LA = Read Range

**Ctrl. Panel**


01 = Switching Status Indicator

04 = Function Indicator

06 = Teach Button

42 = Reading Performance 100%/Good Read

43 = Reading Performance 80%/Status/Trigger

44 = Reading Performance 60%

45 = Reading Performance 40%

46 = Reading Performance 20%

**Complementary Products**

Connection Box ZAA12NN01

Connection Cable ZCYV00x

Fieldbus Gateway ZAGxxxN01, EPGG001

Power Supply Unit NT10

Software

**Raster Configuration**

Raster Sweep Angle	0°...10°	11°...20°	21°...34°
Sweeps/sec	80	60	40

48 = Network Status

76 = Network Tx enabled

77 = Network Rx enabled

78 = Module status

# 1D/2D Handheld Scanner

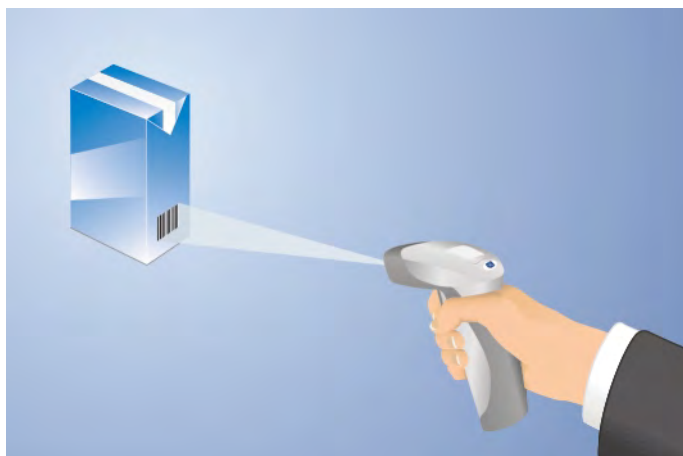
## 38...394 mm

Range



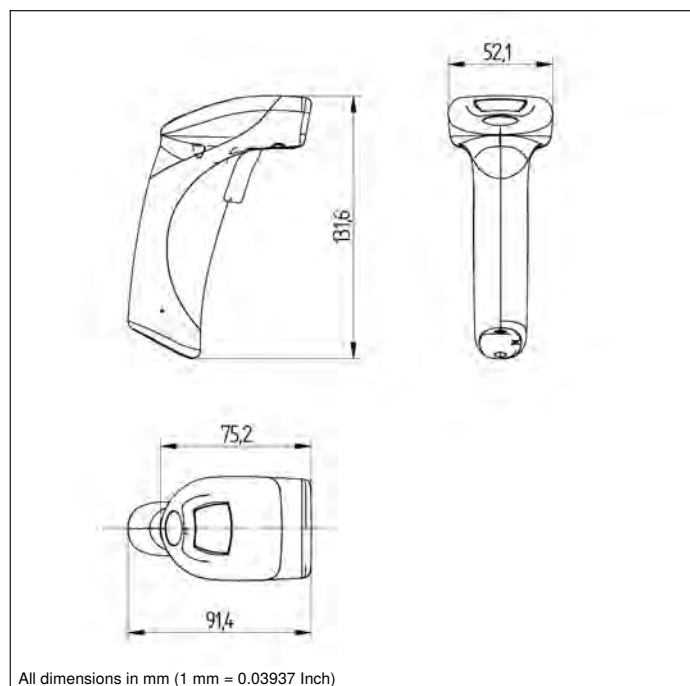
- Decoding of DPM codes (e.g. needle-punched, etched or embossed codes)
- Direct feedback after decoding (vibration, visual/acoustic signal)
- Quick alignment and capture of 1D/2D codes
- Resistant to cleaning agents

These wenglor handheld scanners are suitable for mobile reading of 1D and 2D codes on a wide variety of different materials. Good scanning results are even obtained with poor code quality. Readable code types: DataMatrix, DataMatrix rectangle extension, QR codes, micro QR codes, QR model 1, Aztec code, PDF417, composite, Grid Matrix, Maxicode, micro PDF417, PDF417, code 11, code 32, code 39, code 49, code 128, interleaved 2 of 5, Telepen, MSI Plessey, Plessey, Pharmacode, UPC/EAN/JAN, Codabar, Codablock F, GS1 Databar, GS1 composite, Planet, Code93, BC412, Postal Codes, Trioptic.



### Technical Data

Optical Data	
Read Range	38...394 mm
Resolution	1280 × 960 Pixel
Light Source	Red Light
Max. Ambient Light	97000 Lux
Barcode Printing Contrast	> 15 %
Electrical Data	
Supply Voltage	5 V DC
Power Consumption	< 2250 mW
Temperature Range	-20...55 °C
Acoustic signal	yes
Vibration signal	yes
Visual signal	yes
Mechanical Data	
Housing Material	Plastic
Weight	110 g
Degree of Protection	IP54
Connection	Prewired




**Prewired Version**

	Part Number			
	CSMH001	CSMH002	CSMH003	CSMH004
DPM codes			yes	yes
USB Interface	●		●	
RS-232 Interface		●		●
Interface	USB	RS-232	USB	RS-232
Baud Rate		< 115200 Bd		< 115200 Bd
Cable Length	180 cm	240 cm	180 cm	240 cm
Suitable Mounting Technology No.	431	431	431	431

Connection Tables page 132 / System Components page 124

Min. Resolution		Read Range 1D	Read Range 2D
1D	2D		
<b>Density</b>			
0,127 mm	0,127 mm	92 to 127 mm	94 to 117 mm
0,191 mm	0,191 mm	56 to 165 mm	38 to 152 mm
0,254 mm	0,254 mm	38 to 203 mm	41 to 196 mm
0,508 mm	0,508 mm	58 to 394 mm	41 to 239 mm

**Complementary Products**

- Connection Line ZCLL001
- Fieldbus Gateway ZAGxxxN01, EPGG001
- Interface Cable ZDNNV001
- Interface Cable ZDNNV002
- Software

# 1D/2D Code Scanner

> 20 mm

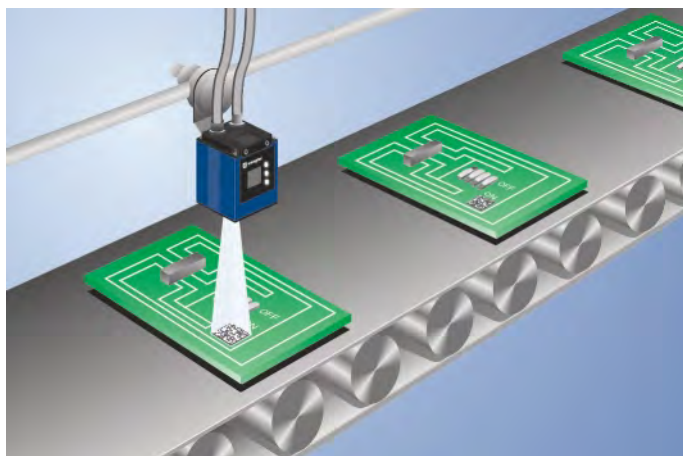
Range

weQubeDecode



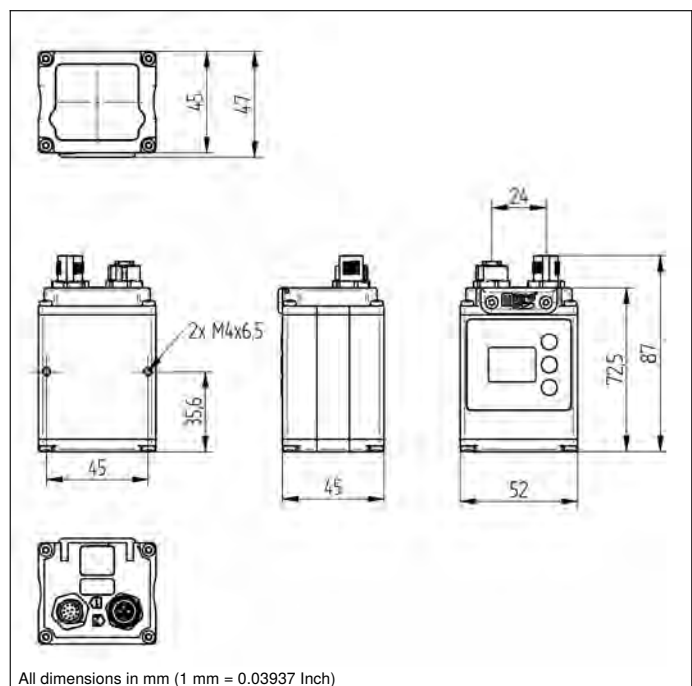
- MultiCore technology
- Reading of printed and directly marked 1D and 2D codes

The scanner weQubeDecode is based on the wenglor MultiCore technology. Omnidirectional scanning enables decoding of printed, needle-punched, laser-engraved or etched codes on various materials in any orientation. Good scanning results are even obtained with poor code quality. In addition to the established 1D codes it is also suitable for scanning various 2D codes. A list of readable code types is found in the operating instructions.



## Technical Data

Optical Data	
Working Range	≥ 20 mm
Resolution	736 × 480 Pixel
Image Chip	monochrome
Service Life (T = +25 °C)	100000 h
Visual Field	see Table 1
min. Resolution	0,1 mm
Barcode Printing Contrast	> 15 %
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (Ub = 24 V)	< 200 mA
Scan Rate	20 scans/sec
Temperature Range	-25...55 °C*
Inputs/Outputs	6
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Interface	RS-232/Ethernet
Protection Class	III
Mechanical Data	
Setting Method	Ethernet
Housing Material	Aluminum
Degree of Protection	IP67
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin, X-cod.



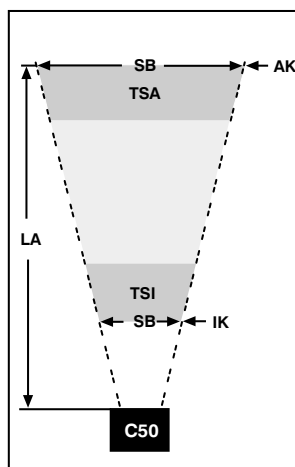


Display brightness may decrease with age. This does not result in any impairment of the sensor function.  
 \* -25° C: Ambient conditions should not result in condensation; avoid the formation of ice on the front panel!  
 55° C: Continuous illumination at max. 1% or flash mode at 100% brightness with an exposure time of ≤ 5 ms; may affect the service life of the product.


**Plug Version**

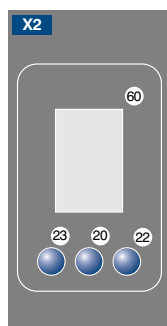
Part Number	Plug Version					
	C50C001	C50C002	C50C003	C50C100	C50C101	C50C102
Web server	yes	yes	yes	yes	yes	yes
Configurable as PNP/NPN/Push-Pull	●	●	●	●	●	●
Switchable to NC/NO	●	●	●	●	●	●
Illumination Output	●	●	●	●	●	●
RS-232 Interface	●	●	●	●	●	●
Ethernet	●	●	●	●	●	●
PROFINET				●	●	●
EtherNet/IP™				●	●	●
Light Source	White Light	Infrared Light	Red Light	White Light	Infrared Light	Red Light
MTTFd (EN ISO 13849-1)	227,7 a	230,41 a	227,7 a	227,7 a	230,41 a	227,7 a
Connection Diagram No.	002   1008	002   1008	002   1008	002   1008	002   1008	002   1008
Control Panel No.	X2	X2	X2	X2	X2	X2
Suitable Connection Equipment No.	50   87	50   87	50   87	50   87	50   87	50   87
Suitable Mounting Technology No.	560	560	560	560	560	560
1D and 2D code reading	yes	yes	yes	yes	yes	yes

Connection Tables page 132 / System Components page 124



Min. Resolution		Max. Visual Field		Depth of Focus		Read Range
1D	2D	IK	AK	TSI	TSA	
0,1 mm	—	22×14 mm	29×19 mm	1 mm	2 mm	20 mm to 30 mm
0,13 mm	—	22×14 mm	54×36 mm	4 mm	8 mm	20 mm to 65 mm
0,19 mm	—	22×14 mm	85×55 mm	6 mm	12 mm	20 mm to 115 mm
0,38 mm	—	40×26 mm	177×115 mm	18 mm	60 mm	47 mm to 251 mm
0,76 mm	—	78×51 mm	361×235 mm	80 mm	250 mm	105 mm to 500 mm
—	0,15 mm	22×14 mm	29×19 mm	1 mm	2 mm	20 mm to 30 mm
—	0,27 mm	22×14 mm	66×43 mm	7 mm	16 mm	20 mm to 85 mm
—	0,49 mm	22×14 mm	131×85 mm	12 mm	58 mm	20 mm to 180 mm
—	1,25 mm	24×15 mm	358×233 mm	35 mm	385 mm	27 mm to 500 mm

AK = Outer Edge IK = Inner Edge LA = Read Range SB = Scan Width TSA = Depth of Focus Outer Edge TSI = Depth of Focus Inner Edge

**Ctrl. Panel**


20 = Enter Button  
 22 = UP Button  
 23 = Down Button  
 60 = Display

**Complementary Products**

- Disk with Polarization Filter ZNNG004
- Illumination Technology
- Protective Housing ZNNS001, ZNNS002
- Software
- weQubeOCR License Upgrade DNNL003
- weQubeVision License Upgrade DNNL001

**Table 1**

Working Distance	20 mm	200 mm	1000 mm
Visual Field	16 × 12 mm	120 × 90 mm	600 × 450 mm

# 1D/2D Code Scanner

weQubeDecode

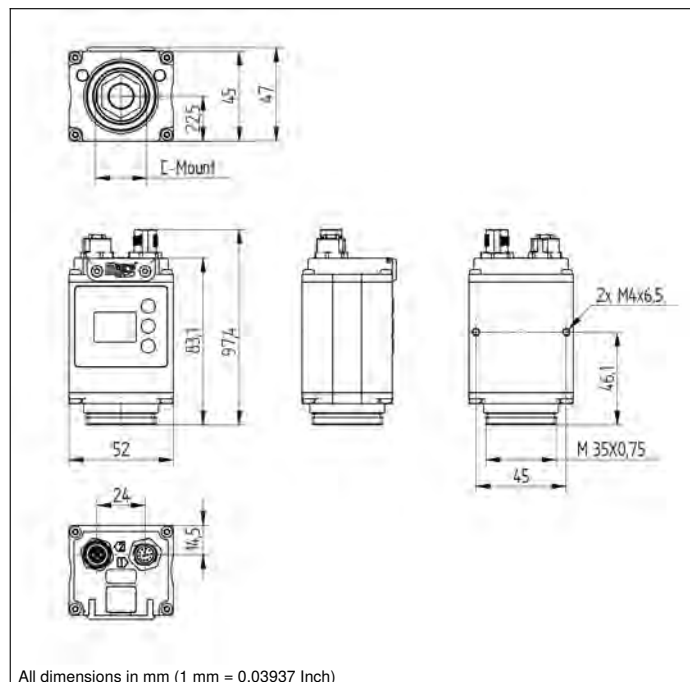


- MultiCore technology
- Reading of printed and directly marked 1D and 2D codes

## Technical Data

Optical Data	
Lens thread	C-Mount
Resolution	736 × 480 Pixel
Image Chip	monochrome
Image chip size	1/3"
Pixel Size	6 × 6 μm
Service Life (T = +25 °C)	100000 h
min. Resolution	0,1 mm
Barcode Printing Contrast	> 15 %
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (Ub = 24 V)	< 200 mA
Scan Rate	20 scans/sec
Temperature Range	-25...55 °C*
Inputs/Outputs	6
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Interface	RS-232/Ethernet
Protection Class	III
Mechanical Data	
Setting Method	Ethernet
Housing Material	Aluminum
Degree of Protection	IP67
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin, X-cod.
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	263,03 a

The scanner weQubeDecode is based on the wenglor MultiCore technology. Omnidirectional scanning enables decoding of printed, needle-punched, laser-engraved or etched codes on various materials in any orientation. Good scanning results are even obtained with poor code quality. In addition to the established 1D codes it is also suitable for scanning various 2D codes. A list of readable code types is found in the operating instructions.



Display brightness may decrease with age. This does not result in any impairment of the sensor function.

\* -25° C: Ambient conditions should not result in condensation; avoid the formation of ice on the front panel!

55° C: Continuous illumination at max. 1% or flash mode at 100% brightness with an exposure time of ≤ 5 ms; may affect the service life of the product.

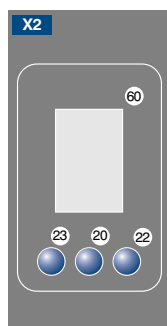


### Plug Version

Part Number	Plug Version	
	C50C011	C50C110
Web server	yes	yes
Configurable as PNP/NPN/Push-Pull	●	●
Switchable to NC/NO	●	●
Illumination Output	●	●
RS-232 Interface	●	●
Ethernet	●	●
PROFINET		●
EtherNet/IP™		●
Connection Diagram No.	002   1008	002   1008
Control Panel No.	X2	X2
Suitable Connection Equipment No.	50   87	50   87
Suitable Mounting Technology No.	560	560
1D and 2D code reading	yes	yes

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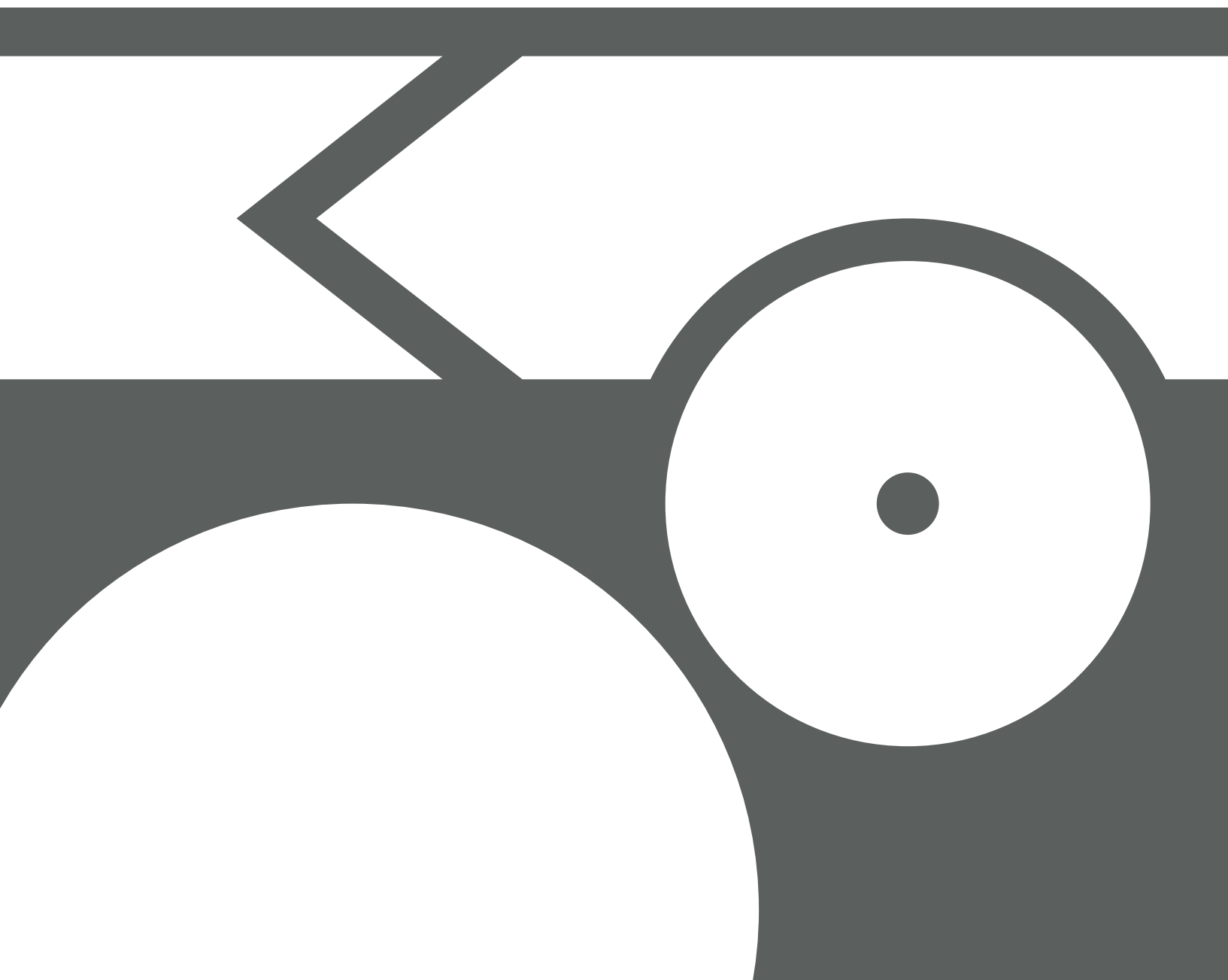
### Ctrl. Panel



20 = Enter Button  
 22 = UP Button  
 23 = Down Button  
 60 = Display

### Complementary Products

- Illumination Technology
- Lens
- Protective Housing ZSZ-0x-01
- Software
- weQubeOCR License Upgrade DNNL003
- weQubeVision License Upgrade DNNL001



# System Components

In this chapter you will find the correct components not only to mount and connect wenglor products but to also integrate them into automation processes.

On the following pages you will find:

Mounting Technology

126-127

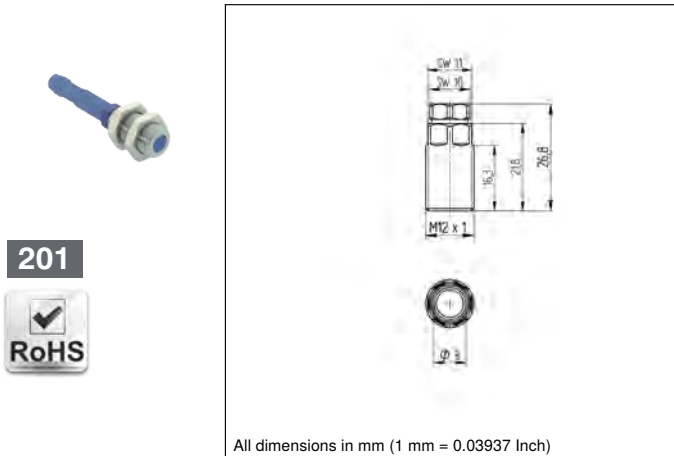
# Mounting Console with Fixed Limit Stop

## Mounting Console with Fixed Limit Stop for M8 × 1; Flush Mounting

Part Number Z08M001

### Mechanical Data

Material	Stainless Steel; Plastic
Threaded sleeve tightening torque	max. 2 Nm
Clamp retainer tightening torque	0,3 Nm
Packaging unit	1 Piece

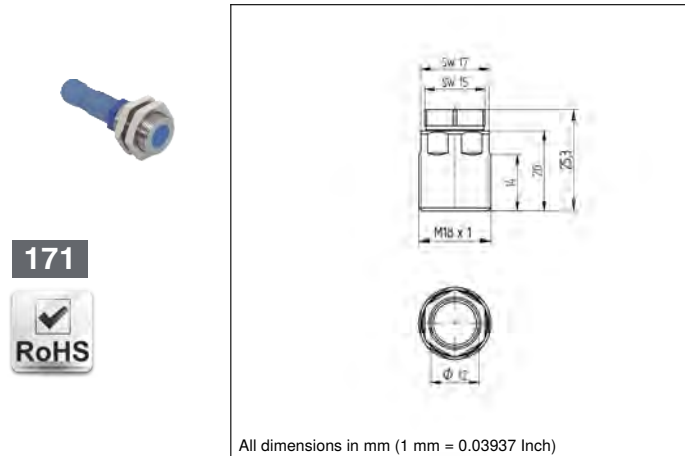


## Mounting Console with Fixed Limit Stop for M12 × 1; Flush Mounting

Part Number Z12M001

### Mechanical Data

Material	Stainless Steel; Plastic
Threaded sleeve tightening torque	max. 3 Nm
Clamp retainer tightening torque	1,5 Nm
Packaging unit	1 Piece

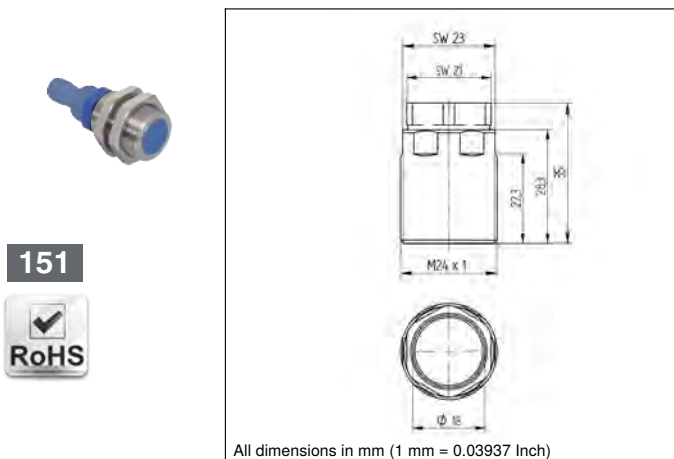


## Mounting Console with Fixed Limit Stop for M18 × 1; Flush Mounting

Part Number Z18M001

### Mechanical Data

Material	Stainless Steel; Plastic
Threaded sleeve tightening torque	max. 4 Nm
Clamp retainer tightening torque	3 Nm
Packaging unit	1 Piece

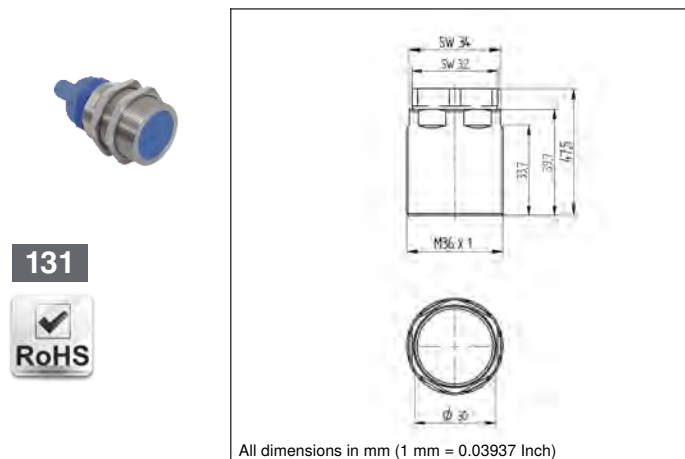


## Mounting Console with Fixed Limit Stop for M30 × 1,5; Flush Mounting

Part Number Z30M001

### Mechanical Data

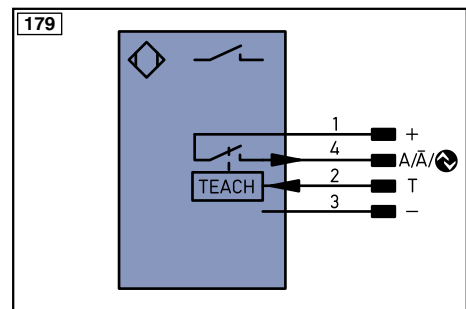
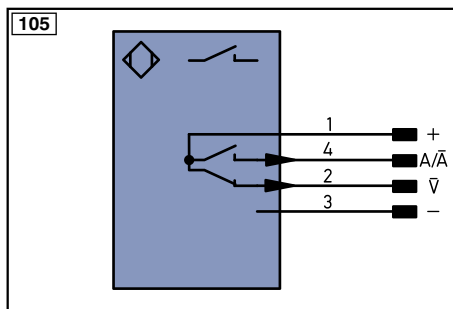
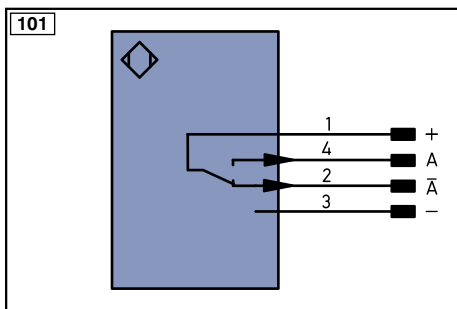
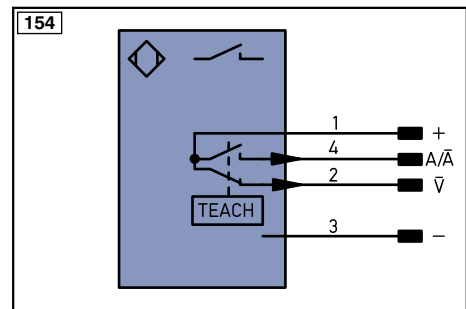
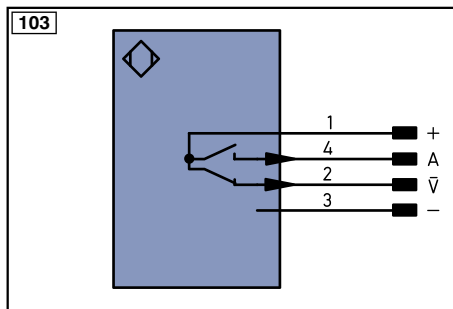
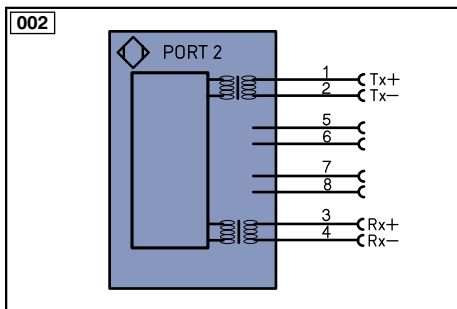
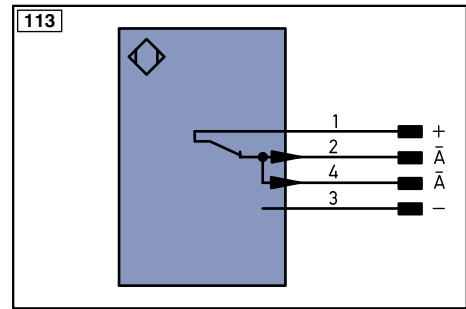
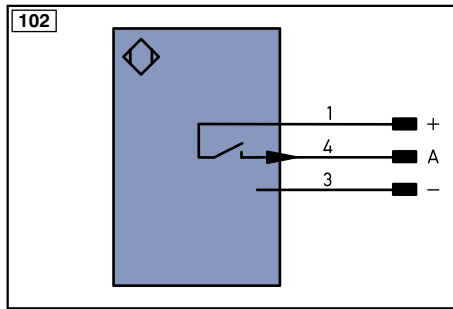
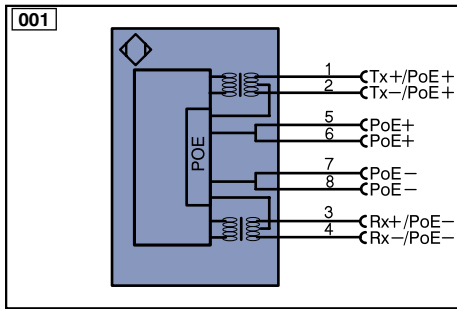
Material	Stainless Steel; Plastic
Threaded sleeve tightening torque	max. 6 Nm
Clamp retainer tightening torque	4 Nm
Packaging unit	1 Piece



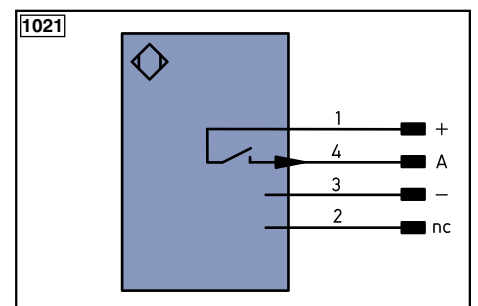
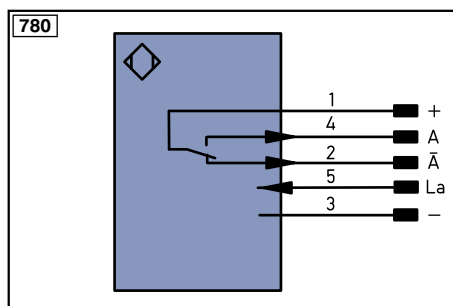
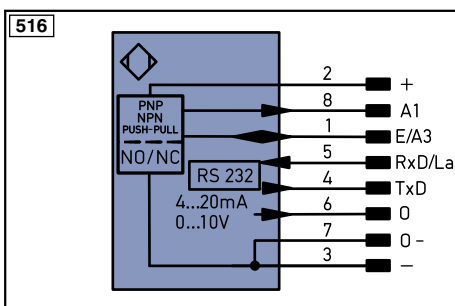
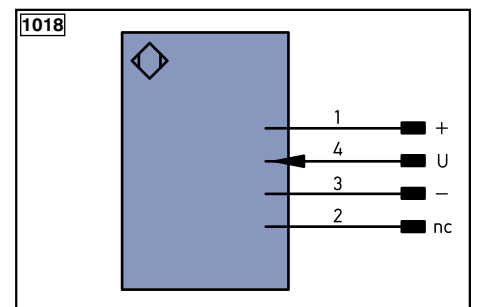
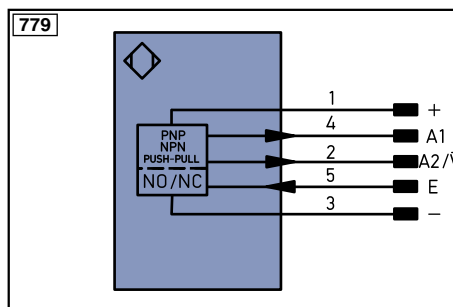
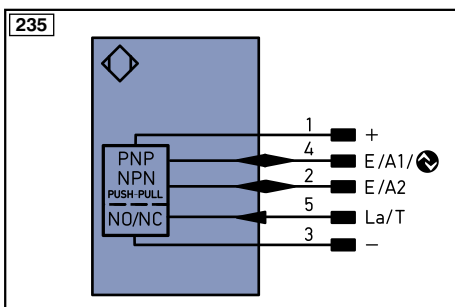
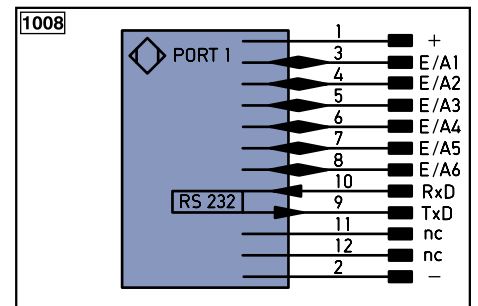
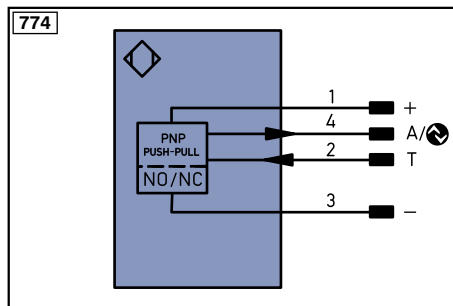
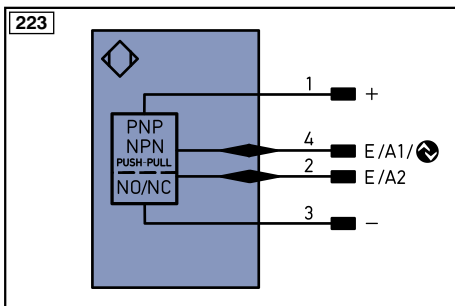
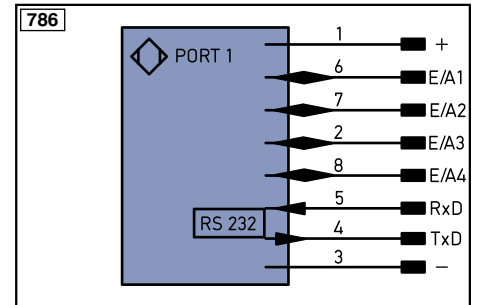
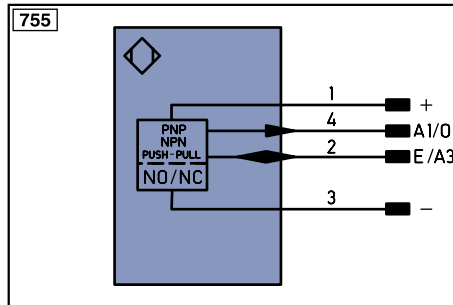
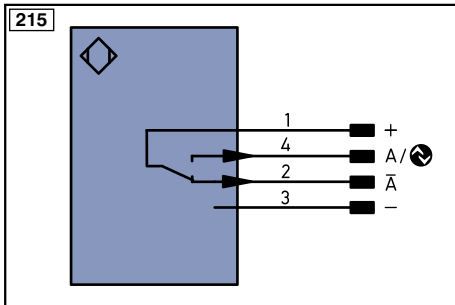
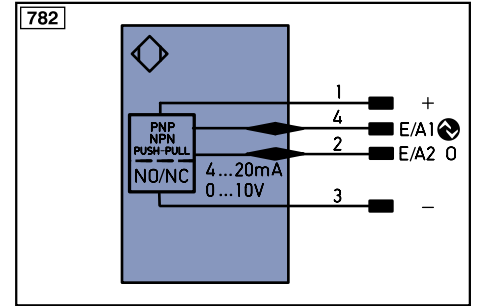
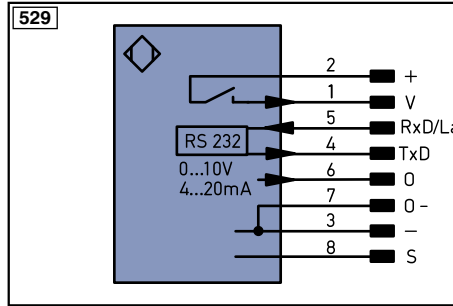
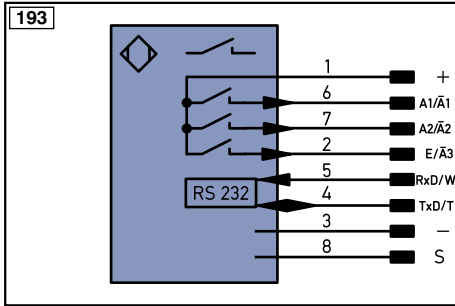


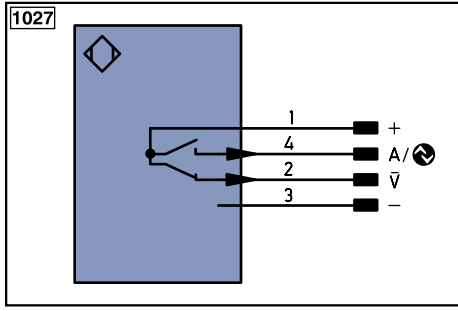
# Connection Diagrams

Legend					
+	Supply Voltage +	PT	Platinum measuring resistor	EN <sub>A</sub> R5422	Encoder A/ $\bar{A}$ (TTL)
-	Supply Voltage 0 V	nc	not connected	EN <sub>B</sub> R5422	Encoder B/ $\bar{B}$ (TTL)
~	Supply Voltage (AC Voltage)	U	Test Input	EN <sub>A</sub>	Encoder A
A	Switching Output (NO)	$\bar{U}$	Test Input inverted	EN <sub>B</sub>	Encoder B
$\bar{A}$	Switching Output (NC)	W	Trigger Input	AMIN	Digital output MIN
V	Contamination/Error Output (NO)	W-	Ground for the Trigger Input	AMAX	Digital output MAX
$\bar{V}$	Contamination/Error Output (NC)	O	Analog Output	AOK	Digital output OK
E	Input (analog or digital)	O-	Ground for the Analog Output	SY In	Synchronization In
T	Teach Input	BZ	Block Discharge	SY OUT	Synchronization OUT
Z	Time Delay (activation)	AW	Valve Output	OLT	Brightness output
S	Shielding	a	Valve Control Output +	M	Maintenance
RxD	Interface Receive Path	b	Valve Control Output 0 V	rsv	reserved
TxD	Interface Send Path	SY	Synchronization	Wire Colors according to IEC 60757	
RDY	Ready	SY-	Ground for the Synchronization	BK	Black
GND	Ground	E+	Receiver-Line	BN	Brown
CL	Clock	S+	Emitter-Line	RD	Red
E/A	Output/Input programmable	$\pm$	Grounding	OG	Orange
	IO-Link	S <sub>n</sub> R	Switching Distance Reduction	YE	Yellow
PoE	Power over Ethernet	Rx +/-	Ethernet Receive Path	GN	Green
IN	Safety Input	Tx +/-	Ethernet Send Path	BU	Blue
OSSD	Safety Output	Bus	Interfaces-Bus A(+)/B(-)	VT	Violet
Signal	Signal Output	La	Emitted Light disengageable	GY	Grey
BL <sub>D</sub> +/-	Ethernet Gigabit bidirect. data line (A-D)	Mag	Magnet activation	WH	White
EN <sub>D</sub> R5422	Encoder 0-pulse 0-0 (TTL)	RES	Input confirmation	PK	Pink
		EDM	Contacting Monitoring	GNYE	Green/Yellow











# Connection Tables

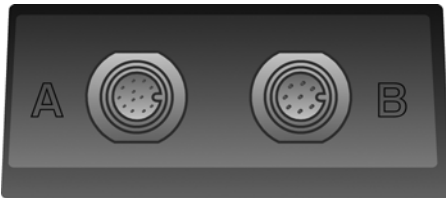
39

Connector A

Pin	Signal	In/Out
1	Trigger	In
2	Power	
3	Default	
4	New Master	
5	Output 1	Out
6	Output 3	Out
7	Ground	
8	Input Common	
9	Receive Data (RS-232)	In
10	Transmit Data (RS-232)	Out
11	Output 2	Out
12	Output Common	Out

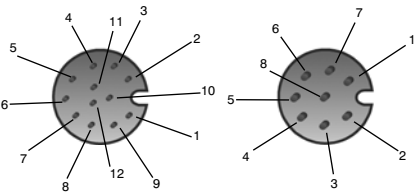
Connector B

Pin	Signal
1	
2	
3	
4	Ethernet Tx (-)
5	Ethernet Rx (+)
6	Ethernet Tx (+)
7	
8	Ethernet Rx (-)



Connector A (Serial)  
M12×1, 12-pin Plug

Connector B (Ethernet)  
M12×1, 8-pin Plug



46

Connector A

Pin	Signal	In/Out
1	Trigger	In
2	Power	
3	Default	
4	New Master	
5	Output 1	Out
6	Output 3	Out
7	Ground	
8	Input Common	
9	Receive Data (RS-232)	In
10	Transmit Data (RS-232)	Out
11	Output 2	Out
12	Output Common	Out

Connector B

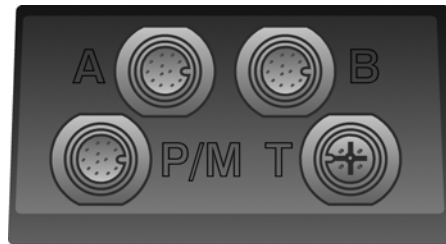
Pin	Signal
1	Trigger
2	Power
3	
4	Input 1
5	RS-422/RS-485 TxD (+)
6	RS-422/RS-485 RxD (+)
7	Ground
8	Input Common
9	Receive Data (RS-232)/RTS
10	Transmit Data (RS-232)/CTS
11	RS-422/RS-485 TxD (-)
12	RS-422/RS-485 RxD (-)

Connector P/M

Pin	Signal
1	NC
2	Power
3	NC
4	NC
5	RS-422/RS-485 TxD (+)
6	RS-422/RS-485 RxD (+)
7	Ground
8	NC
9	NC
10	NC
11	RS-422/RS-485 TxD (-)
12	RS-422/RS-485 RxD (-)

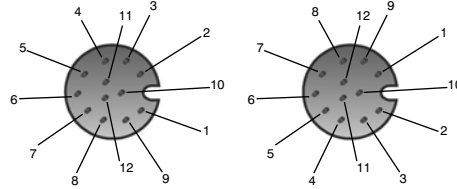
Connector T

Pin	Signal
1	Power +10...28 V DC
2	Trigger/New Master/Input 1 Common
3	Ground
4	Trigger



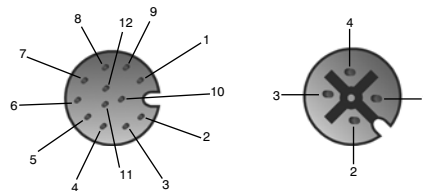
Connector A (Serial)  
M12×1, 12-pin Plug

B (Serial)  
M12×1, 12-pin Socket



P/M (Serial)  
M12×1, 12-pin Plug

T



**47**

Connector A

Pin	Signal	In/Out
1	Trigger	In
2	Power	
3	Default	
4	New Master	
5	Output 1	Out
6	Output 3	Out
7	Ground	
8	Input Common	
9	Receive Data (RS-232)	In
10	Transmit Data (RS-232)	Out
11	Output 2	Out
12	Output Common	Out

Connector B

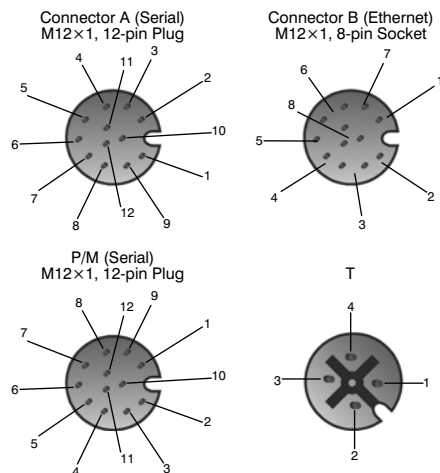
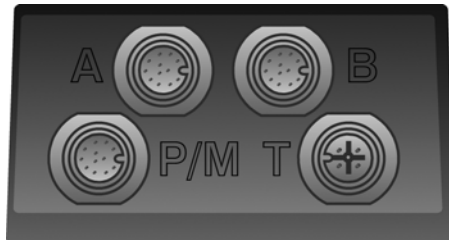
Pin	Signal
1	NC
2	NC
3	NC
4	Ethernet Tx (-)
5	Ethernet Rx (+)
6	Ethernet Tx (+)
7	NC
8	Ethernet Rx (-)

Connector P/M

Pin	Signal
1	NC
2	Power
3	NC
4	NC
5	RS-422/RS-485 TxD (+)
6	RS-422/RS-485 RxD (+)
7	Ground
8	NC
9	NC
10	NC
11	RS-422/RS-485 TxD (-)
12	RS-422/RS-485 RxD (-)

Connector T

Pin	Signal
1	Power +10...28 V DC
2	Trigger/New Master/Input 1 Common
3	Ground
4	Trigger



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