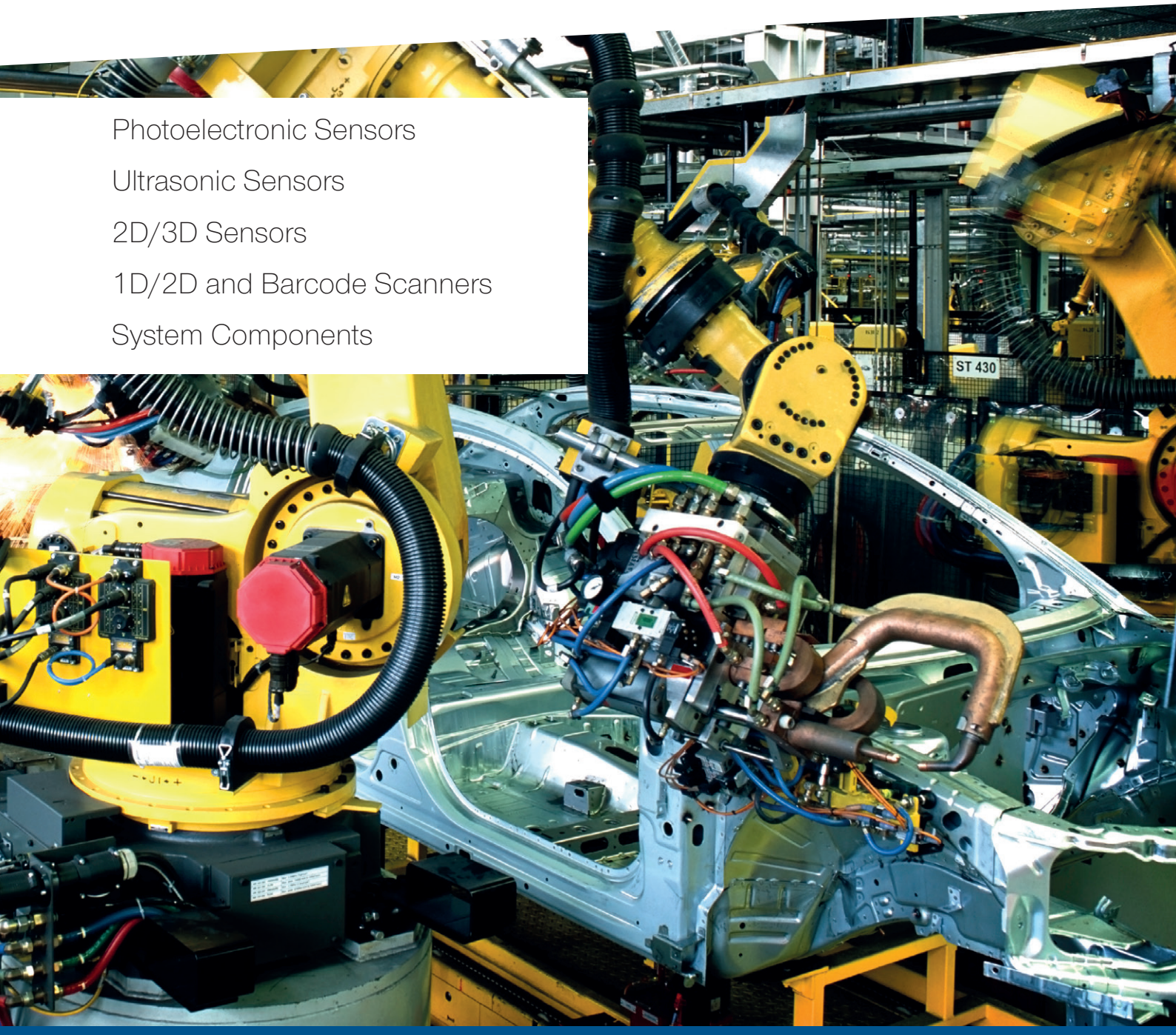
wenglor
the innovative family

brose
Excellence in Mechatronics

Brose Fahrzeugteile SE & Co. KG

Released Components
List Electrics BN569001 2024



Photoelectronic Sensors

Ultrasonic Sensors

2D/3D Sensors

1D/2D and Barcode Scanners

System Components

Version: 3
Status: 2024
Dateiname: Materialfreigabe_Brose_EN_2024

Contact Persons

Contact person at Brose Fahrzeugteile SE & Co. KG, Coburg:

Frank Gräbert
Control technology/production technology
Brose Gruppe
Otto-Hahn-Straße 34
42369 Wuppertal
Germany
Phone +49 202 4667 385
Fax +49 202 4667 77385
Mobilee +49 15112247130
E-mail frank.graebert@brose.com
Internet www.brose.com

Contact person at wenglor sensoric GmbH

Patrick Junker
Key Account Management
wenglor sensoric GmbH
wenglor Str. 3
DE-88069 Tettnang
Phone +49 (0)7542 5399-257
Fax +49 (0)7542 5399 958
Mobilee +49 (0)16095664768
E-mail patrick.junker@wenglor.com
Internet www.wenglor.com

Further contact persons at wenglor sensoric GmbH

DE – Coburg

David Hoffmann
Area Sales Expert SensorTec
Phone +49 (0)7542 5399-191
Mobile +49 (0)170 8553 163
E-mail david.hoffmann@wenglor.com

Tim Spengler
Area Sales Manager CamTec
Phone +49 (0)7542 5399-190
Mobile +49 (0)160 9088 9661
E-mail tim.spengler@wenglor.com

DE – Würzburg

Dominik Jeßberger
Senior Area Sales Manager SensorTec
Phone +49 (0)7542 5399-186
Mobile +49 (0)171 1546 058
E-mail dominik.jessberger@wenglor.com

Tim Spengler
Area Sales Manager CamTec
Phone +49 (0)7542 5399-190
Mobile +49 (0)160 9088 9661
E-mail tim.spengler@wenglor.com

DE – Bamberg/Hallstadt

David Hoffmann
Area Sales Expert SensorTec
Phone +49 (0)7542 5399-191
Mobile +49 (0)170 8553 163
E-mail david.hoffmann@wenglor.com

Tim Spengler
Area Sales Manager CamTec
Phone +49 (0)7542 5399-190
Mobile +49 (0)160 9088 9661
E-mail tim.spengler@wenglor.com

DE – Wuppertal

Sebastian Zumdick
Executive Area Sales Expert SensorTec
Phone +49 (0)7542 5399-163
Mobile +49 (0)170 8553 169
E-mail sebastian.zumdick@wenglor.com

Matthias Klein
Area Sales Manager CamTec
Phone +49 (0)7542 5399-180
Mobile +49 (0)160 9051 7133
E-mail matthias.klein@wenglor.com

USA

Thomas Wagner
General Manager USA
Phone +1 93 7320 0011
Mobile +1 93 7668 1300
E-mail thomas.wagner@wenglor.com

China

Carl Wang
Country Leader China
Phone +86 21 6855 4890
Mobile +86 138 1613 3871
E-mail carl.wang@wenglor.com

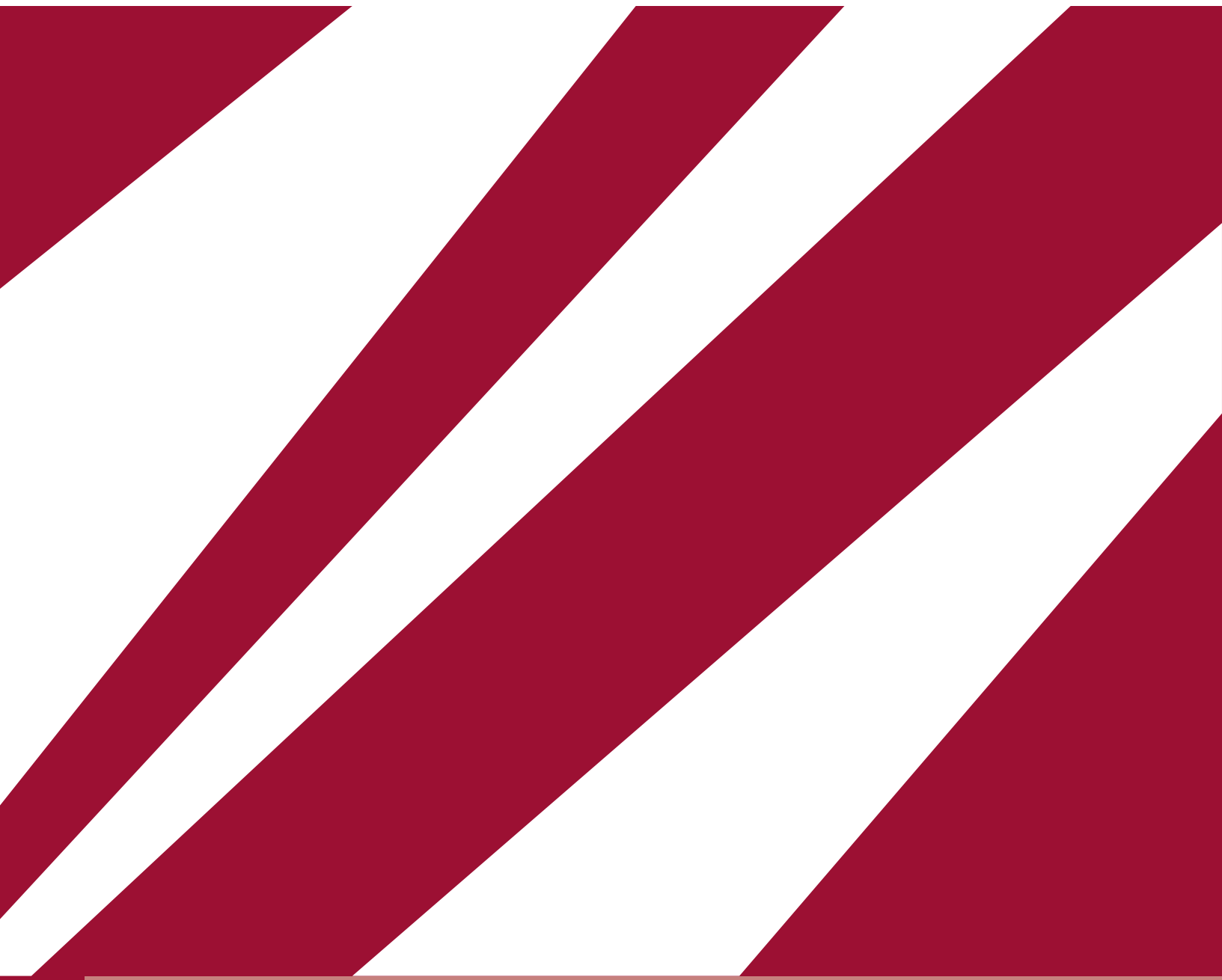
Dear Ladies and Gentlemen,

In these official regulations of Brose Fahrzeugteile SE & Co. KG you will find the approved sensors of the company wenglor sensoric GmbH.
This approved material list contains all the necessary technical data and drawings.
It will help to find the right sensor for your application.
You can download all our drawings in 2D and 3D format from the Internet
at www.wenglor.com. We will be happy to answer any further questions you may have.

Best regards,

Patrick Junker
Key Account Manager
wenglor sensoric GmbH

Content



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:

Laser Distance Sensor
Triangulation

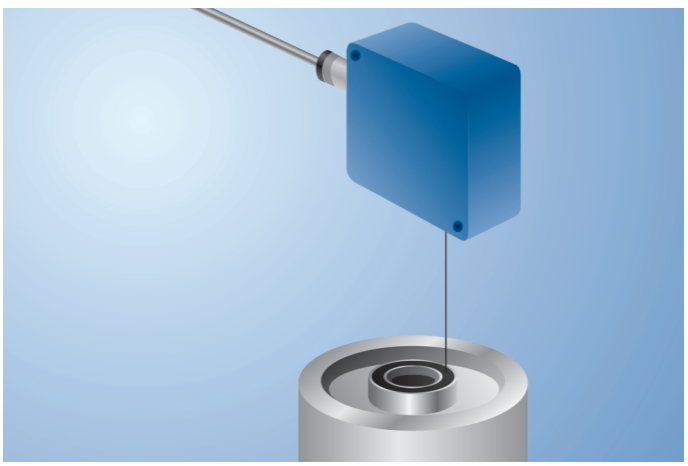
660 mm LASER
Range

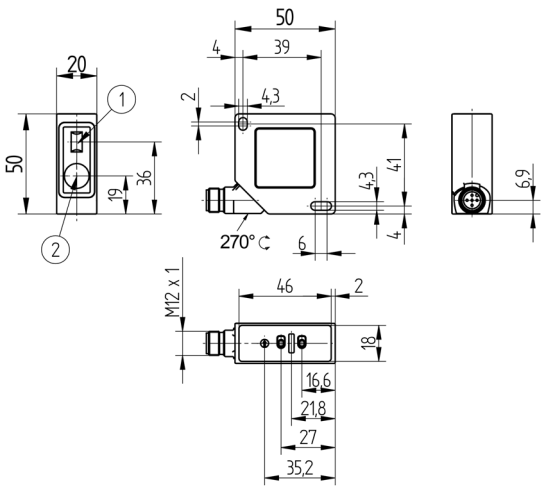
- **CMOS line array**
- **Highly accurate switching distance**
- **Minimal switching hysteresis**
- **Switching point independent of material, color and brightness**

Technical Data

Optical Data	
Range	660 mm
Setting 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 (Ub = 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
Degree of Protection	IP67
Connection	M12 × 1; 4/5-pin
Optic Cover	Plastic, PMMA

These sensors work with a high resolution CMOS line and DSP technology and calculate the distance via an angle measurement. This virtually eliminates switching point differences caused by material, color and brightness.
Two independent switching outputs are available, at which two switching thresholds and one on-delay or off-delay time can be set in 10 ms increments.
Sensor functions can be activated and values can be output via the RS-232 interface.





1 = Transmitter Diode
2 = Receiver Diode
Screw M4 = 0.5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version
Part Number	OCP662X0135
Error Output	●
PNP NO	●
RS-232 with Adapterbox	●
External teach-in input	●
Housing Material	Plastic, ABS
Housing Material	Plastic, PC
Connection Diagram No.	779
Control Panel No.	P8
Suitable Connection Equipment No.	2 35
Suitable Mounting Technology No.	380

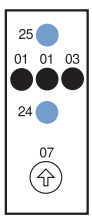
Connection Diagrams page 58 / System Components page 48

Complementary Products

Adapterbox A232
Protective Housing ZSV-0x-01
Set Protective Housing ZSP-NN-02
Software

Ctrl. Panel

P8



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

Laser Distance Sensor

Time of Flight

0...1000 mm LASER

Range

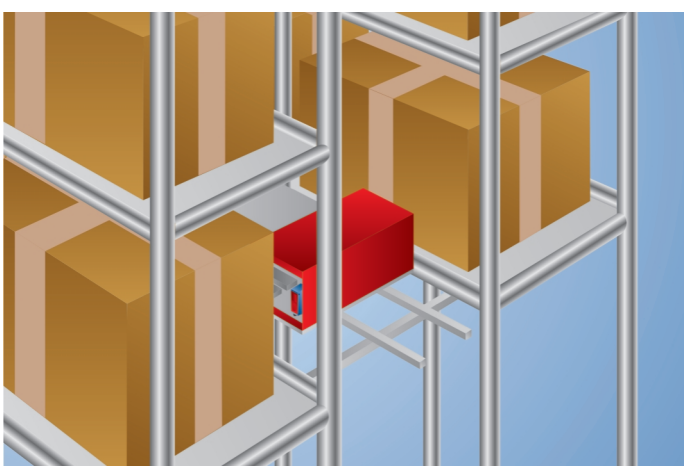
der wintec.

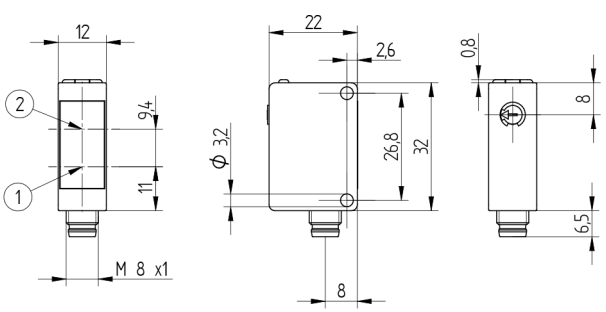
- **Interference-free towards gloss in the background with wintec**
- **Miniature design**
- **No mutual interference with wintec**
- **Reliable in case of glossy objects with wintec**
- **Secure detection of black objects also in extremely inclined positions with wintec**

Technical Data

Optical Data	
Working Range	0...1000 mm
Setting 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
Reflector required	no
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (Ub = 24 V)	< 30 mA
Switching Frequency	1000 Hz
Response Time	0,5 ms
Temperature Drift	< 2,5 %
Temperature Range	-40...50 °C
Number of Switching Outputs	2
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
Protection Class	III
FDA Accession Number	1620293-001
Mechanical Data	
Setting Method	Potentiometer
Optic Cover	Plastic, PMMA
Degree of Protection	IP67
Connection	M8 × 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	996,97 a

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.





1 = Transmitter Diode
2 = Receiver Diode
Screw M3 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version
Part Number	P1KY001
PNP NC, PNP NO	●
Housing Material	Plastic, ABS/PC
Housing Material	Plastic, PC
Connection Diagram No.	101
Control Panel No.	1K1
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

Connection Diagrams page 58 / System Components page 48

Table 1

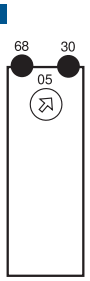
Working Distance	100 mm	500 mm	1000 mm
Light Spot Diameter	4 mm	7 mm	15 mm

Complementary Products

PNP-NPN Converter BG7V1P-N-2M

Ctrl. Panel

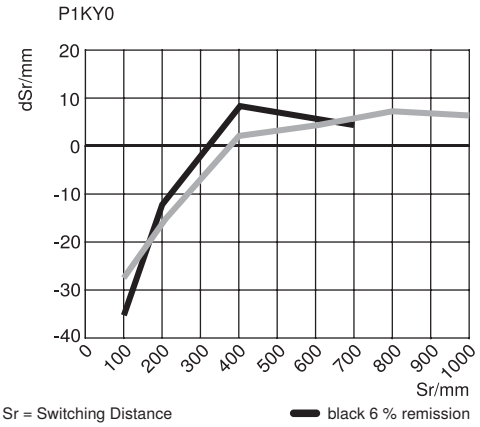
1K1



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

Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



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

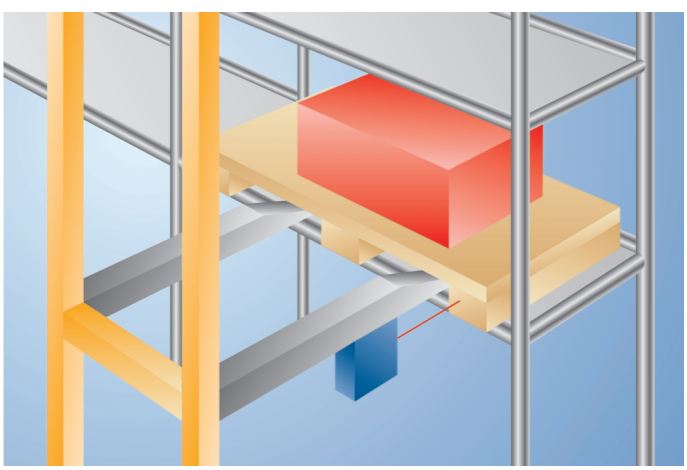
Laser Distance Sensor
Time of Flight

0...3000 mm LASER
Range

der wintec.

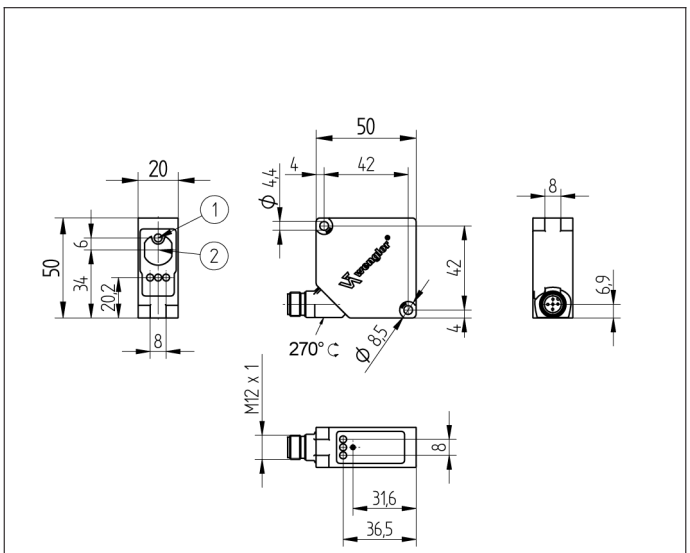
- **Interference-free towards gloss in the background with wintec**
- **No mutual interference with wintec**
- **Reliable in case of glossy objects with wintec**
- **Secure detection of black objects also in extremely inclined positions with wintec**

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
Setting 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
Reflector required	no
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (Ub = 24 V)	< 50 mA
Switching Frequency	1000 Hz
Response Time	0,5 ms
Temperature Drift (-10 °C < Tu < 50 °C)	< 1 %
Temperature Drift (Tu < -10 °C, Tu > 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
Optic Cover	Plastic, PMMA
Degree of Protection	IP68
Connection	M12 × 1; 4/5-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	771,39 a



1 = Transmitter Diode
2 = Receiver Diode
Screw M4 = 0.5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version
Part Number	OY2P303A0135
PNP NC, PNP NO	●
Housing Material	Plastic, ABS
Housing Material	Plastic, PC
Connection Diagram No.	780
Control Panel No.	P10
Suitable Connection Equipment No.	2 35
Suitable Mounting Technology No.	380

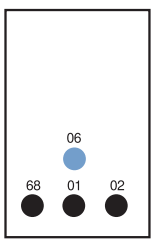
Connection Diagrams page 58 / System Components page 48

Complementary Products

- PNP-NPN Converter BG2V1P-N-2M
- Protective Housing ZSV-0x-01
- Set Protective Housing ZSP-NN-02

Ctrl. Panel

P10



01 = Switching Status Indicator
02 = Contamination Warning
06 = Teach Button
68 = supply voltage indicator

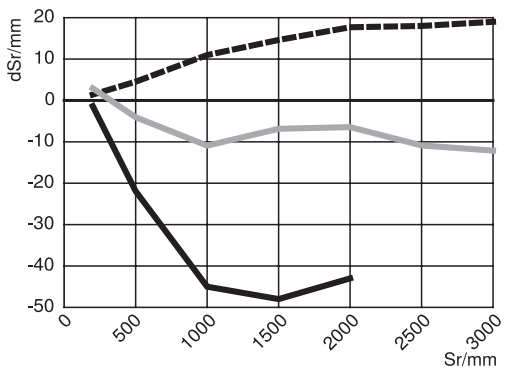
Table 1

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

Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission

OY2P303



Sr = Switching Distance
dSr = Switching Distance Change

black 6 % remission
grey 18 % remission
Aluminum

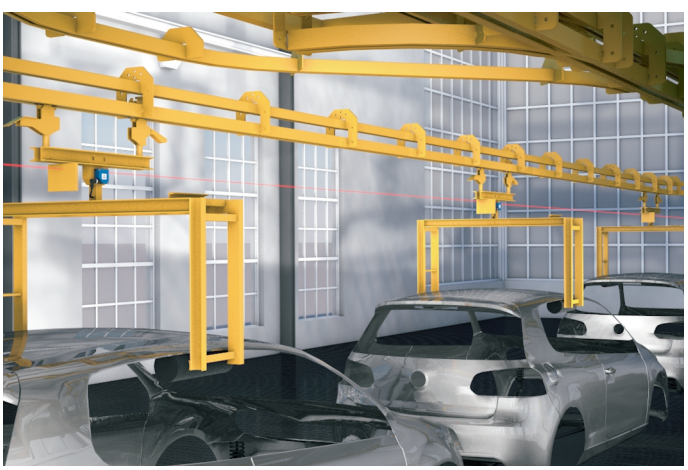
Laser Distance Sensor
Time of Flight

10.000 mm LASER
Range

der wintec.

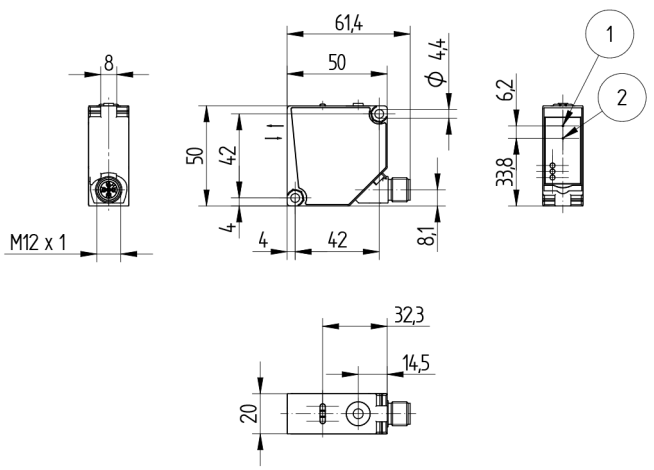
- **2 mutually independent switching outputs**
- **Intuitive operating concept**
- **No interactive influence**
- **Wide working range and precise detection thanks to DS technology**

The sensors function in accordance with the principle of transit time measurement with laser class 1. wintec with Dynamic Sensitivity technology (DS) enables previously unattainable reception sensitivity even with very weak signals. As a result, the sensors have a large working range of up to 10 m and can reliably detect dark or shiny objects even at extreme angles. wintec also works very reliably in adverse ambient conditions, such as those caused by ambient light or contamination. Extensive condition monitoring functions also enable predictive maintenance and trouble-free operation.



Technical Data

Optical Data	
Working Range	0...10000 mm
Setting Range	50...10000 mm
Reproducibility maximum	3 mm*
Linearity Deviation	10 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	100000 Lux
Light Spot Diameter	see Table 1
Reflector required	no
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (Ub = 24 V)	< 35 mA
Switching Frequency	50 Hz*
Switching Frequency (max.)	250 Hz*
Response Time	15 ms *
Response Time (min.)	4,7 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
Reverse Polarity and Overload Protection	yes
Short Circuit Protection	yes
Interface	IO-Link V1.1
Baud Rate	COM3
Protection Class	III
FDA Accession Number	2110079-001
Mechanical Data	
Setting Method	Teach-In
Housing Material	Plastic, ABS
Optic Cover	Plastic, PMMA
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4/5-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	547,59 a



1 = Transmitter Diode
2 = Receiver Diode
Screw M4 = 0.5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

* Depends on mode, see table 2

	Plug Version
Part Number	P1PY101
PNP NO	●
IO-Link	●
Connection Diagram No.	243
Control Panel No.	A43
Suitable Connection Equipment No.	2 35
Suitable Mounting Technology No.	380

Connection Diagrams page 58 / System Components page 48

Mode	White working range	Gray working range	Black working range	Switching frequency	Response time	Maximum reproducibility	Linearity deviation	Low signal detection
Speed	0...10000 mm	0...9000 mm	0...7000 mm	250 Hz	4.7 ms	5 mm	15 mm	+
Precision (default)	0...10000 mm	0...10000 mm	0...8000 mm	50 Hz	15 ms	3 mm	10 mm	+ +
Precision Plus	0...10000 mm	0...10000 mm	0...8000 mm	25 Hz	28.7 ms	3 mm	10 mm	+ + +

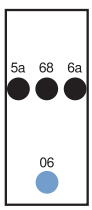
Complementary Products

IO-Link Master

Software

Ctrl. Panel

A 43



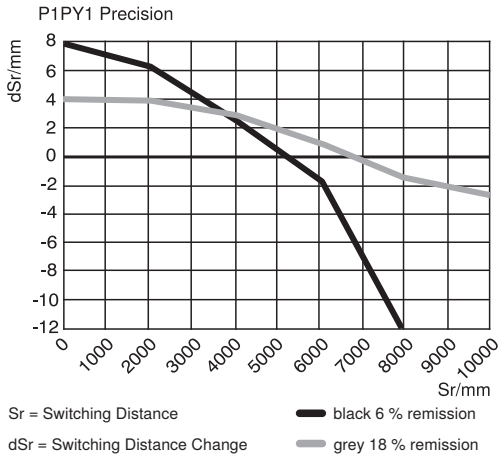
06 = Teach Button
5a = Switching Status Indicator, A1
68 = supply voltage indicator
6a = Switching Status Indicator, A2

Table 1

Working Distance	0 m	5 m	10 m
Light Spot Diameter	5 mm	10 mm	15 mm

Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



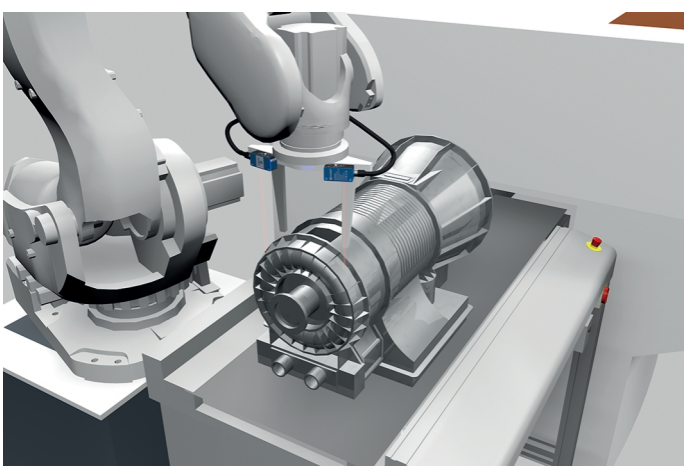
Reflex Sensor
with Background Suppression

120 mm LASER
Range

PNG smart

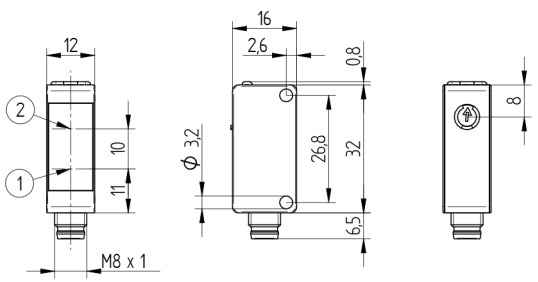
- **Condition monitoring**
- **Detect extremely small parts starting at 0.1 mm**
- **IO-Link 1.1**
- **Laser class 1**

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
Setting Range	30...120 mm
Switching Hysteresis	< 10 %
Light Source	Laser (red)
Wavelength	680 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 (Ub = 24 V)	< 15 mA
Switching Frequency	1000 Hz
Switching Frequency (interference-free mode)	500 Hz
Response time (interference-free mode)	1 ms
Response Time	0,5 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
Lockable	yes
Interface	IO-Link V1.1
Protection Class	III
FDA Accession Number	1710976-001
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic, ABS/PC
Degree of Protection	IP67/IP68
Connection	M8 × 1; 4-pin
Optic Cover	Plastic, PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1641,23 a



1 = Transmitter Diode
2 = Receiver Diode
Screw M3 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version
Part Number	P1KH006
PNP NC, PNP NO	●
IO-Link	●
Connection Diagram No.	215
Control Panel No.	1K1
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

Connection Diagrams page 58 / System Components page 48

Table 1

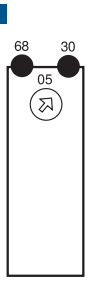
Detection Range	40 mm	80 mm	120 mm
Light Spot Diameter	2,5 mm	1,5 mm	1 mm

Complementary Products

IO-Link Master
Software

Ctrl. Panel

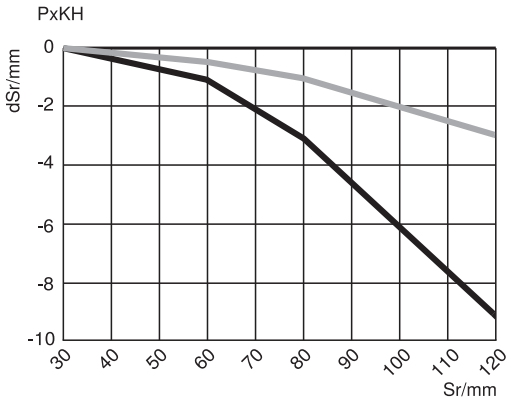
1K1



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

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

150 mm
Range

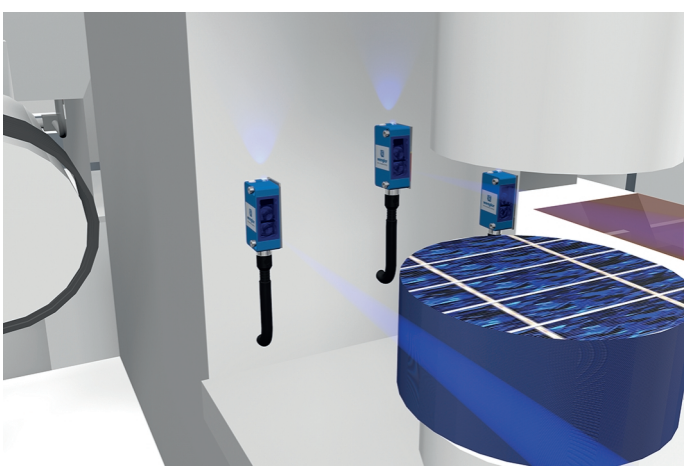
PNG smart

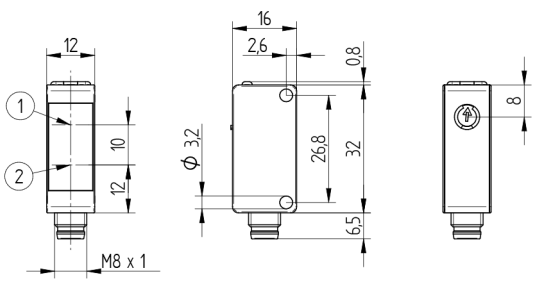
- **Blue light for dark, shiny objects**
- **Condition monitoring**
- **IO-Link 1.1**
- **Low switching distance deviation for black/white**
- **Reliably detect objects against any background**

Technical Data

Optical Data	
Range	150 mm
Setting Range	30...150 mm
Switching Hysteresis	< 10 %
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 (Ub = 24 V)	< 20 mA
Switching Frequency	1000 Hz
Switching Frequency (interference-free mode)	500 Hz
Response time (interference-free mode)	1 ms
Response Time	0,5 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
Lockable	yes
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Potentiometer
Housing Material	Plastic, ABS/PC
Degree of Protection	IP67/IP68
Optic Cover	Plastic, PMMA

The reflex sensor with background suppression works with blue 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 reflect sensor with blue light is specially designed for applications with dark shiny objects, such as when manufacturing solar wafers. 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.





1 = Transmitter Diode
2 = Receiver Diode
Screw M3 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version	
Part Number	P1KH019	P1KH004
PNP NO		●
PNP NC, PNP NO	●	
IO-Link	●	●
Light Source	Blue Light	Red Light
Risk Group (EN 62471)	1	
Connection	M8 × 1; 4-pin	M8 × 1; 3-pin
MTTFd (EN ISO 13849-1)	1717,03 a	1725,77 a
Connection Diagram No.	215	216
Control Panel No.	1K1	1K1
Suitable Connection Equipment No.	7	8
Suitable Mounting Technology No.	400	400

Connection Diagrams page 58 / System Components page 48

Table 1

Detection Range	50 mm	100 mm	150 mm
Light Spot Diameter	4 mm	6 mm	10 mm

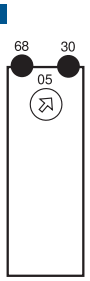
Complementary Products

IO-Link Master

Software

Ctrl. Panel

1K1

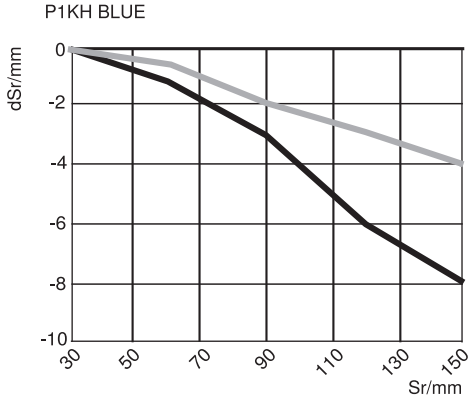


05 = Switching Distance Adjuster
30 = Switching Status/Contamination Warning
68 = supply voltage indicator

Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission

P1KH BLUE



Sr = Switching Distance

dSr = Switching Distance Change

black 6 % remission

grey 18 % remission

Reflex Sensor
with Background Suppression

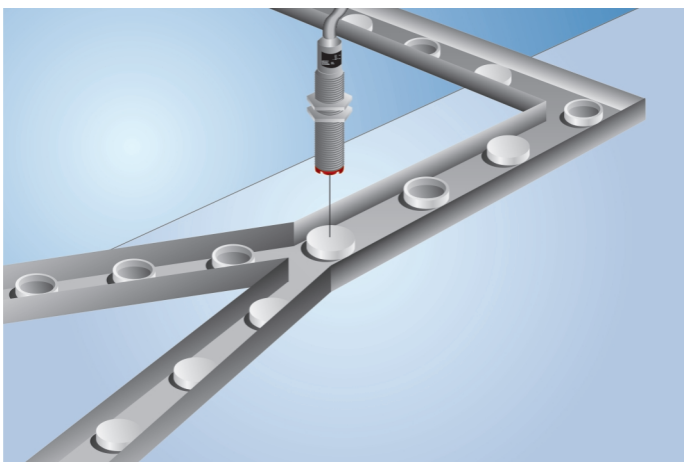
80 mm
Range

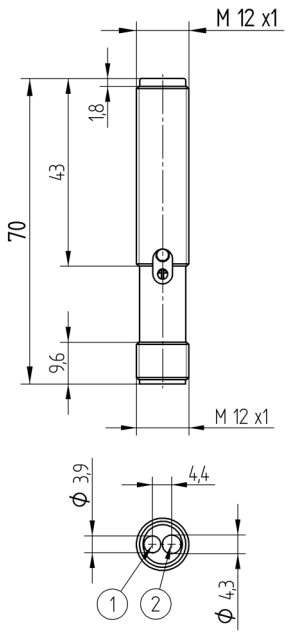
- **Adjustable switching distance**
- **Excellent ambient light suppression**
- **High switching frequency**
- **Large detection range**

Technical Data

Optical Data	
Range	80 mm
Setting 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 (Ub = 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	Brass, nickel-plated
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. Also these sensors don't influence each other if their light spots are pointed onto the same spot or against each other.





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

17

	Plug Version
Part Number	HO08PA3
PNP NC, PNP NO	●
Connection Diagram No.	101
Control Panel No.	O3
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	170

Connection Diagrams page 58 / System Components page 48

Table 1

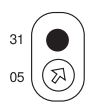
Detection Range	40 mm	60 mm	80 mm
Light Spot Diameter	3 mm	5 mm	7 mm
Switching Hysteresis	< 2 mm	< 3 mm	< 8 mm

Complementary Products

PNP-NPN Converter BG2V1P-N-2M

Ctrl. Panel

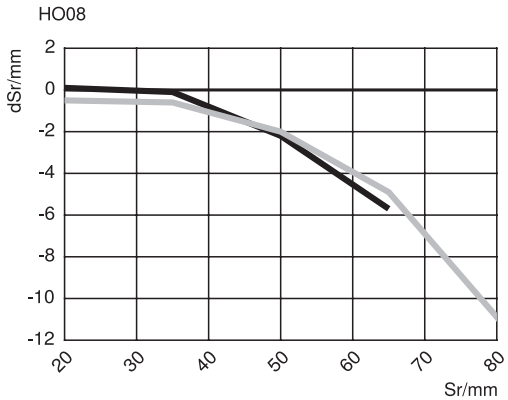
O3



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

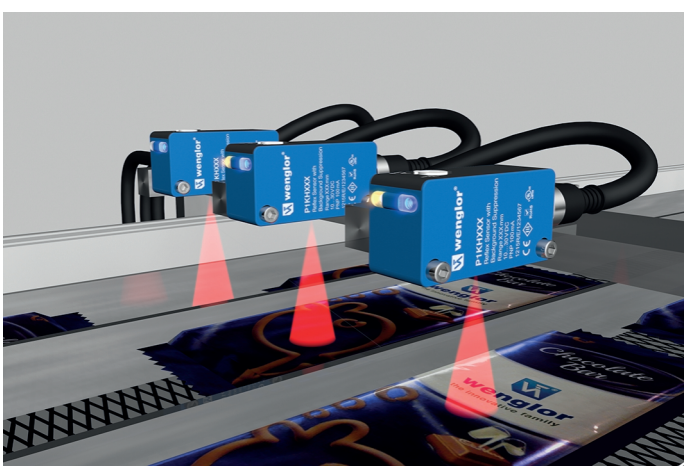
Reflex Sensor
with Background Suppression

300 mm
Range

PNG smart

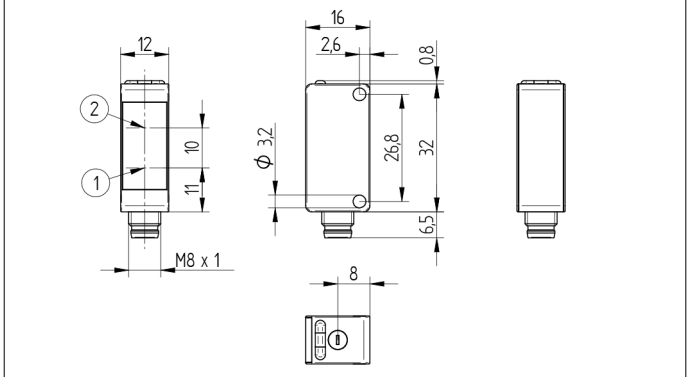
- **Condition monitoring**
- **IO-Link 1.1**
- **Low switching distance deviation for black/white**
- **Reliably detect objects against any background**

The reflex sensor with background suppression works with red light according to the angle measurement principle and is suitable for the detection of objects against any background. The sensor always has the same switching distance, regardless of the color, shape and surface of the objects. Minimal height differences can be detected with the sensors and, for example, various parts can be reliably differentiated from each other. The IO-Link interface can be used to configure reflex sensors (PNP/NPN, NC/NO) and to output switching statuses.



Technical Data

Optical Data	
Range	300 mm
Setting 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 (Ub = 24 V)	< 20 mA
Switching Frequency	1000 Hz
Switching Frequency (interference-free mode)	500 Hz
Response time (interference-free mode)	1 ms
Response Time	0,5 ms
Temperature Drift (0 °C < Tu < 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 Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Lockable	yes
Interface	IO-Link V1.1
Protection Class	III
Mechanical Data	
Setting Method	Multi-turn
Housing Material	Plastic, ABS/PC
Degree of Protection	IP67/IP68
Connection	M8 × 1; 3-pin
Optic Cover	Plastic, PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2045,4 a



1 = Transmitter Diode
2 = Receiver Diode
Screw M3 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

* See operating instructions for further information

	Plug Version
Part Number	P1KH012
PNP NO	●
IO-Link	●
Connection Diagram No.	216
Control Panel No.	1K3
Suitable Connection Equipment No.	8
Suitable Mounting Technology No.	400

Connection Diagrams page 58 / System Components page 48

Table 1

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

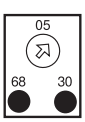
Complementary Products

IO-Link Master

Software

Ctrl. Panel

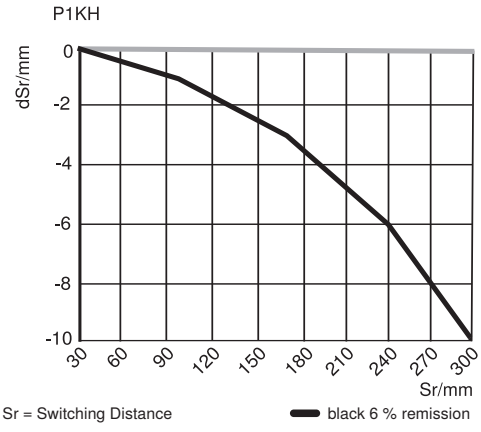
1K3



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

Switching Distance Deviation

Typical characteristic curve based on white, 90 % remission



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

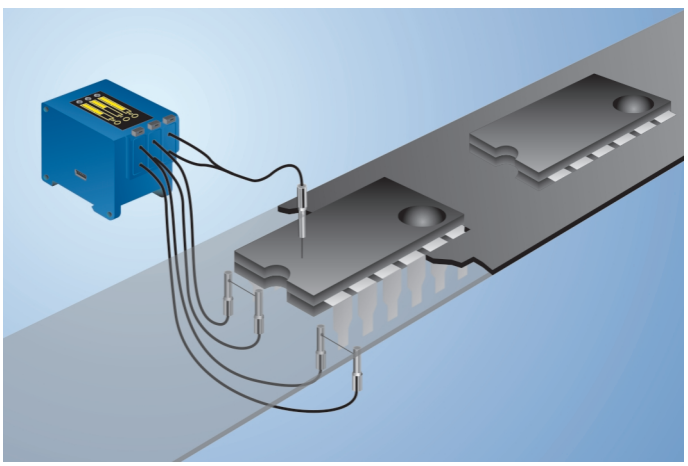
Fiber-optic amplifier

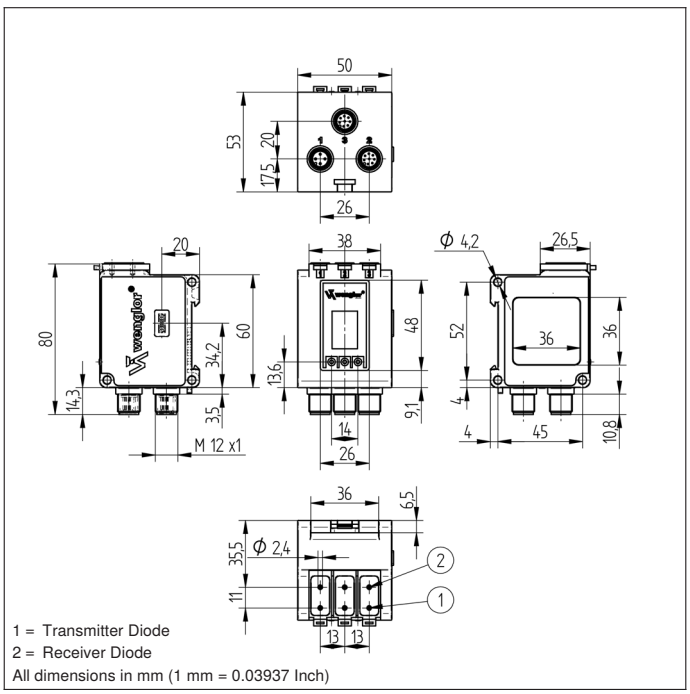
- **Basic module**
- **Menu-driven settings**
- **Modular system – 12 add-on modules can be connected, ODX402P0099**
- **Mount for fiber optic cable adapter 3**
- **Recognition of transparent objects**

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 (Ub = 24 V)	< 70 mA
Switching Frequency	2 kHz
Response Time	250 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)
Degree of Protection	IP50
Connection	M12 × 1; 4+8-pin
DIN-Rail mounting	35 mm
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	347,83 a

Three wenglor fiber-optic cables are connected to these sensors. Up to 12 add-on modules can be connected to this basic module, making 15 fiber-optic cables available.
The graphic display guarantees 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.





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

	Plug Version
Part Number	ODX402P0088
Speed Measurement	●
Selectable menu language	●
Password Protection	●
Logic Output	AND / OR
Contamination Output	●
IO-Link	●
PNP NO	●
Housing Material	Plastic, ABS
Housing Material	Plastic, PC
Connection Diagram No.	773 / 775 / 776
Control Panel No.	X2
Suitable Connection Equipment No.	2 / 89
Suitable Fiber-Optic Cable Adapter No.	003

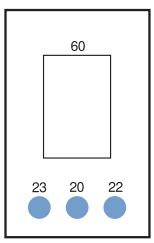
Connection Diagrams page 58 / System Components page 48

Complementary Products

- Add-on Module ODX402P0099
- Glass Fiber-Optic Cable
- IO-Link Master
- Plastic Fiber-Optic Cable
- Software

Ctrl. Panel

X2



20 = Enter key
22 = Up key
23 = Down key
60 = display

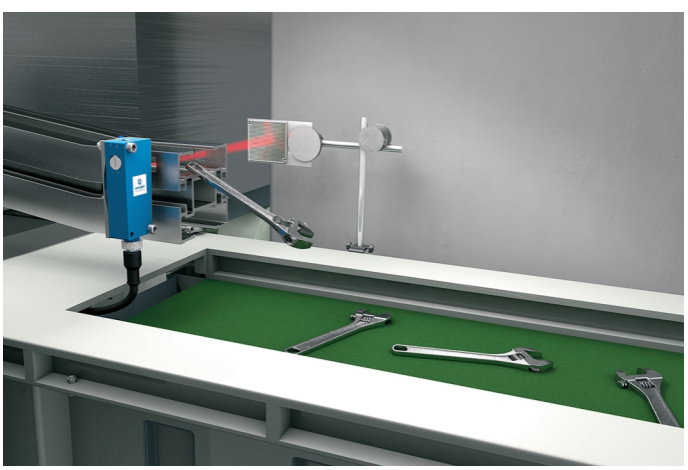
Retro-Reflex Sensor
Universal

7000 mm
Range

PNG smart

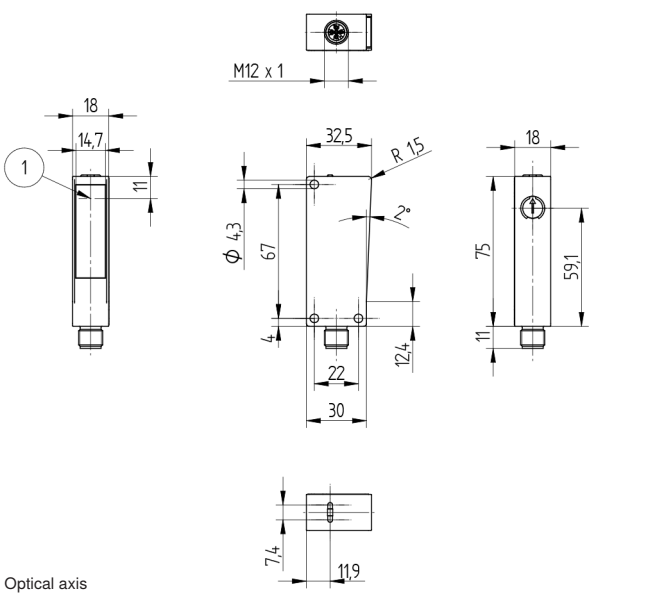
- **Also suitable for glossy and reflective objects**
- **Condition monitoring**
- **High switching frequency**
- **IO-Link 1.1**
- **No blind spot from single-lens optics**

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 (Ub = 24 V)	< 20 mA
Switching Frequency	2000 Hz
Switching frequency (speed mode)	3500 Hz
Response Time	0,25 ms
Response time (speed mode)	0,14 ms
Temperature Drift	< 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, ABS/PC
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4-pin
Optic Cover	Plastic, PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	2690,44 a



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

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

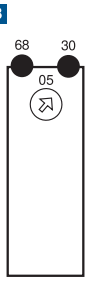
Connection Diagrams page 58 / System Components page 48

Complementary Products

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

Ctrl. Panel

A28



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

Table 1

Working Distance	1,5 m	3,5 m	7 m
Light Spot Diameter	60 mm	120 mm	250 mm

Table 2

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

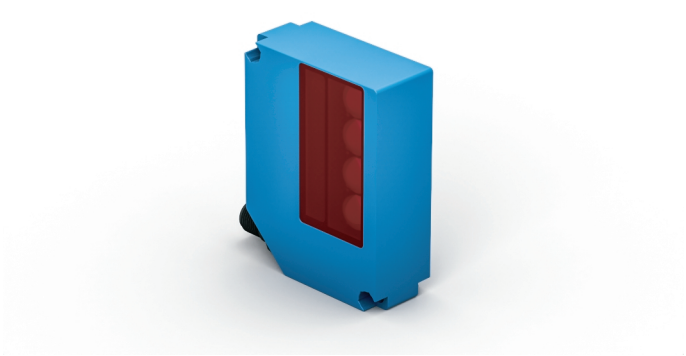
Feasible reflector distance

Reflector type, mounting distance

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

Retro-Reflex Sensor
with light band

1600 mm LASER
Range

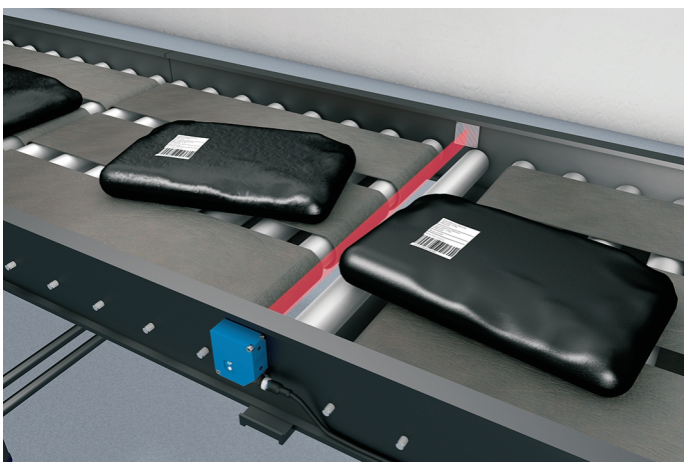


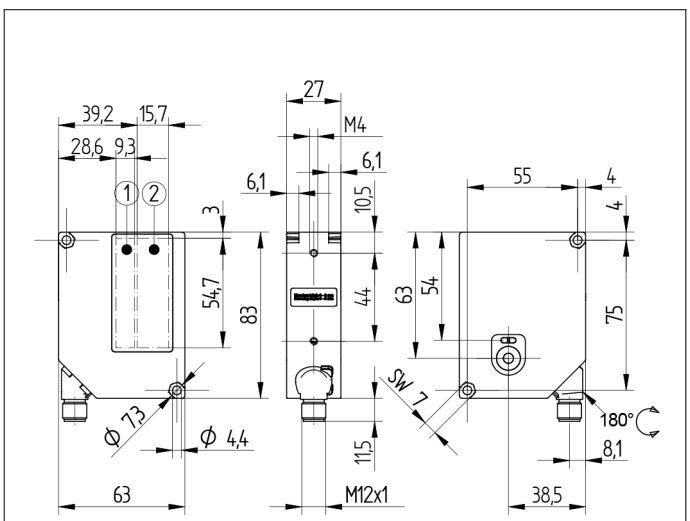
- **Compensation of uneven conveyor belt areas with dynamic teach-in**
- **Dynamic readjustment of the switching threshold**
- **Flexible mounting options thanks to 180° rotatable plug**
- **Precise front edge detection with non-uniform objects**

Technical Data

Optical Data	
Range	2500 mm
Reference Reflector/Reflector Foil	Z90R009
Smallest Recognizable Part	see Table
Light Source	Laser (red)
Wavelength	650 nm
Service Life (T = +25 °C)	100000 h
Laser Class (EN 60825-1)	1
Max. Ambient Light	10000 Lux
Light Strip Height	54 mm
Electrical Data	
Supply Voltage	12...30 V DC
Current Consumption (Ub = 24 V)	< 30 mA
Switching Frequency	125 Hz
Response Time	4 ms
Temperature Range	-30...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
Protection Class	III
Mechanical Data	
Setting Method	Teach-In
Degree of Protection	IP67/IP68
Connection	M12 × 1; 4-pin
Optic Cover	Plastic, PMMA
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1599,51 a

The Retro-Reflex Sensor with Light Band scans a significantly larger range than a retro-reflex sensor with a dot-shaped light spot. This makes it ideally suitable for reliably detecting the front edges of objects with irregular shapes or variable sizes. The sensor's collimated laser light band is absolutely homogeneous and can thus be precisely aligned to the conveyor belt's level. The sensor detects objects as small as just four millimeters. The compact format can be integrated into the smallest of spaces, for example in the side panels of conveyor systems.





1 = Emitter
2 = Receiver
Screw M4 = 0.5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version
Part Number	P1EL300
PNP NO	●
Housing Material	Plastic, ABS/GF
Housing Material	Plastic, PC
Connection Diagram No.	150
Control Panel No.	1E1
Suitable Connection Equipment No.	2
Suitable Mounting Technology No.	112

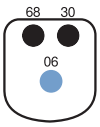
Connection Diagrams page 58 / System Components page 48

Complementary Products

PNP-NPN Converter BG2V1P-N-2M

Ctrl. Panel

1E1



06 = Teach Button
30 = Switching Status/Contamination Warning
68 = supply voltage indicator

Table 1

Distance, Sensor to Reflector	0,40 ... 1,60 m	1,60 ... 2,50 m
Smallest Recognizable Part	4 mm	10 mm

Feasible reflector distance

Reflector type, mounting distance

Z90R009	0,4...2,5 m	**ZRDF10K01**	0,4...1,6 m
ZRDF03K01	0,4...1,6 m		

Retro-Reflex Sensor
for Transparent Objects

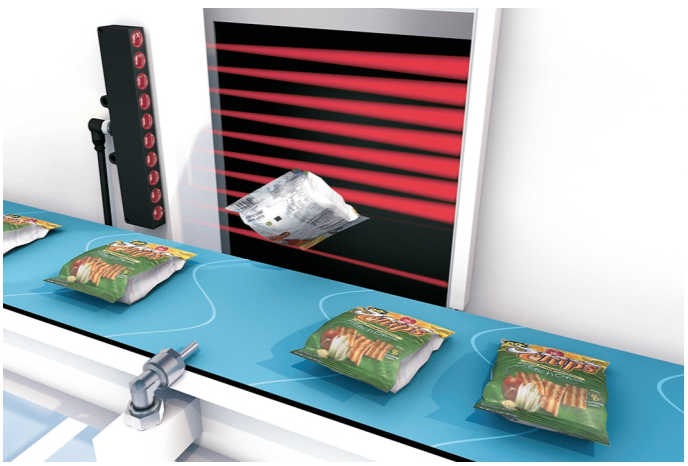
4000 mm
Range

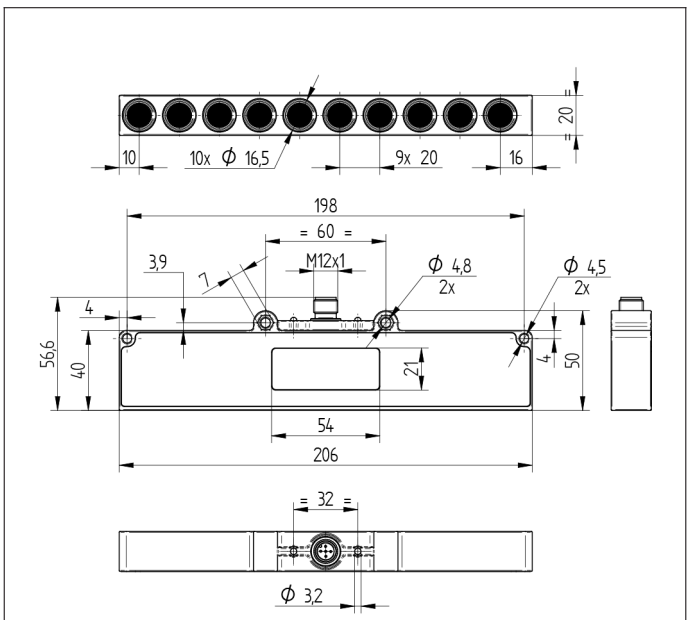
- **External teach-in**
- **Recognition of clear glass**
- **Red light**
- **Single-lens optic**
- **Stainless steel plug (V2A)**

Technical Data

Optical Data	
Range	4000 mm
Reference Reflector/Reflector Foil	3 × RQ100BA
Clear Glass Recognition	yes
Switching Hysteresis	< 15 %
Light Source	Red Light
Polarization Filter	yes
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Single-Lens Optic	yes
Electrical Data	
Supply Voltage	10...30 V DC
Current Consumption (Ub = 24 V)	< 70 mA
Switching Frequency	400 Hz
Response Time	1,25 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
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Protection Class	III
Mechanical Data	
Setting Method	Teach-in input
Housing Material	Plastic, ABS/GF
Full Encapsulation	yes
Degree of Protection	IP67
Connection	M12 × 1; 4/5-pin

A reflector is required for the operation of retro-reflex sensors. Ten sensors are accommodated in a single housing and are OR-linked to each other. The output is switched as soon as any of the light beams is interrupted, making it possible to monitor a broader field. Even crystal-clear objects, films and sheet products are reliably detected.





All dimensions in mm (1 mm = 0.03937 Inch)

	Plug Version
Part Number	OPT1009
PNP NO	●
Connection Diagram No.	150
Control Panel No.	A37
Suitable Connection Equipment No.	2

Connection Diagrams page 58 / System Components page 48

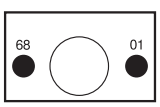
Complementary Products

PNP-NPN Converter BG2V1P-N-2M

Reflector, Reflector Foil

Ctrl. Panel

A37



01 = Switching Status Indicator
68 = supply voltage indicator

Feasible reflector distance

Reflector type, mounting distance

RQ100BA	0...4 m	**ZRME03B01**	0...1 m
RE6151BM	0...3 m	**RF505**	0...0,8 m
RE6040BA	0...3,7 m	**ZRAF08K01**	0...0,8 m
Z90R006	0...1,4 m	**ZRDF10K01**	0...1,5 m
ZRAE02B01	0...0,5 m		

Ultrasonic Sensors

wenglor ultrasonic sensors are almost completely insensitive to interfering factors (such as extraneous light, dust, smoke, mist, vapor, lint, oily air, etc.). They are best suited for the detection of transparent and dark objects, reflective surfaces, shiny objects and of bulk materials and liquids. Ultrasonic sensors allow for the reliable detection and measurement of objects, independent of their material, color, transparency and texture.
wenglor ultrasonic sensors are characterized by their ease of use and excellent technical properties.

They send pulsed ultrasonic waves of a certain frequency and determine the objects distance from the duration of the ultrasound that it reflects. The output switches if the specified switching point is reached. The measured value is output as a voltage value (0...10 V/4...20 mA) or in digital form (IO-Link).

On the following pages you will find:

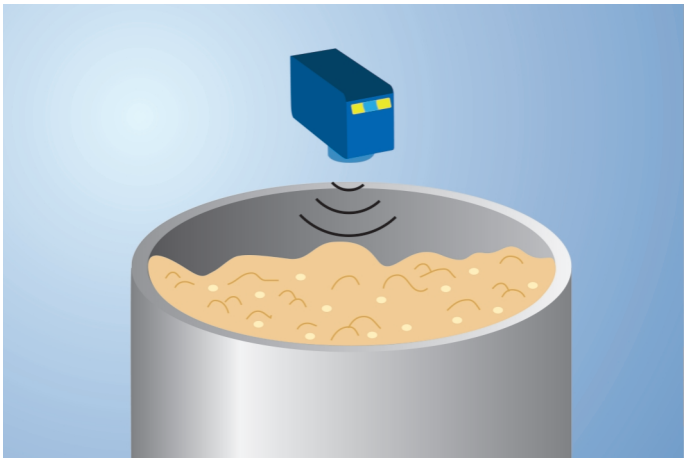
Distance Sensor

30...400 mm

Range

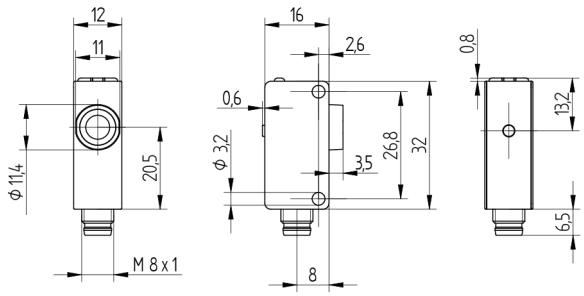
- **2 mutually independent switching outputs**
- **Miniature design**
- **Ready for Industrie 4.0 with IO-Link version 1.1**
- **Reflex and through-beam operation mode are possible**

These ultrasonic sensors evaluate the sound reflected from the object. They are capable of detecting almost any object, regardless of material and condition. As such, they are especially well suited for monitoring fill levels of liquids and bulk goods and for detecting transparent objects. The measured value can be read out via IO-Link, and the sensor can be adapted as needed to the application. The sensor can be used in reflex mode operation and as an ultrasonic through-beam sensor.



Technical Data

Ultrasonic Data	
Working range, reflex sensor	30...400 mm
Working range, through-beam sensor	30...800 mm
Setting Range	30...400 mm
Reproducibility maximum	4 mm
Linearity Deviation	4 mm
Resolution	0,5 mm
Ultrasonic Frequency	325 kHz
Opening Angle	< 12 °
Service Life (T = +25 °C)	100000 h
Switching Hysteresis	1 % *
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (Ub = 24 V)	< 20 mA
Switching frequency, reflex sensor	30 Hz
Switching frequency, through-beam sensor	70 Hz
Response time, reflex sensor	17 ms
Response time, through-beam sensor	8 ms
Temperature Range	-30...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	< 2,5 V
Switching Output/Switching Current	100 mA
Synchronous Mode	up to 40 sensors
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Lockable	yes
Interface	IO-Link V1.1
Data Storage	yes
Protection Class	III
Mechanical Data	
Setting Method	Teach-In
Degree of Protection	IP68
Connection	M8 × 1; 4-pin
Safety-relevant Data	
MTTFd (EN ISO 13849-1)	1106,71 a



1 = Sensing Face
Screw M3 = 0,5 Nm
All dimensions in mm (1 mm = 0.03937 Inch)

* Referring to the switching distance, at least 2 mm.

	Plug Version
Part Number	U1KT001
PNP NO	●
Programmable error output	●
IO-Link	●
Housing Material	Plastic, PC
Housing Material	Plastic, PC+ABS
Sensing face	Epoxy resin/glass bubble mixture
Sensing face	Plastic, PC+ABS
Sensing face	Plastic, PU
Connection Diagram No.	373
Control Panel No.	A23
Suitable Connection Equipment No.	7
Suitable Mounting Technology No.	400

Connection Diagrams page 58 / System Components page 48

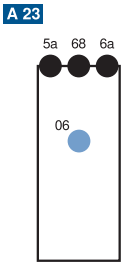
Complementary Products

IO-Link Master

Software

Ctrl. Panel

A 23

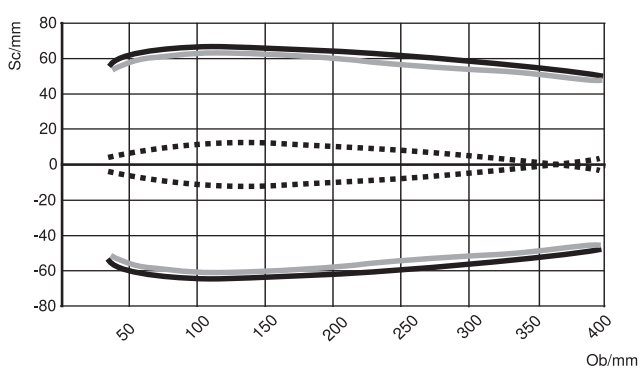


06 = Teach Button
5a = Switching Status Indicator, A1
68 = supply voltage indicator
6a = Switching Status Indicator, A2

Characteristic response curve

Characteristic curves show the position of the center or the front edge of the measured object (100 × 100 mm plate) at the time of switching.

U1KT



Ob = Object
Sc = Sonic cone width

Standard sonic cone
Narrow sonic cone
Standard sonic cone

2D/3D Sensors

The 2D and 3D sensors by the wenglor subsidiary wenglor MEL GmbH are designed for two- and three-dimensional object detection. The company based in Eching near Munich is mainly known for its expertise in the field of 2D/3D profile sensors and for more than 35 years of experience in the field of measurement electronics as a successful supplier of high-tech products. wenglor MEL GmbH has been part of wenglor sensoric as an independent brand since 2013.

On the following pages you will find:

2D/3D Profile Sensor

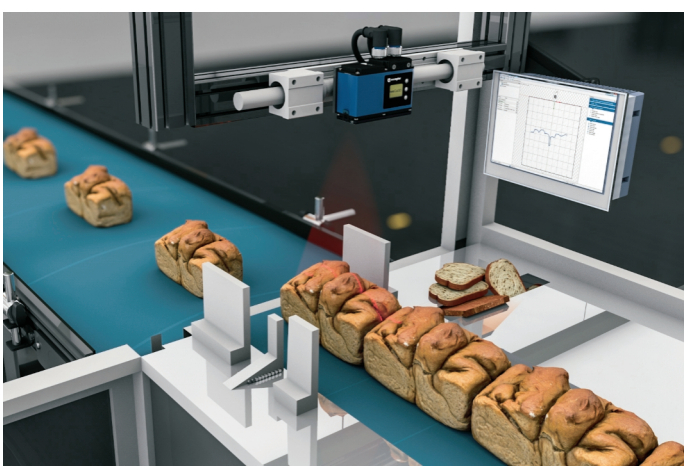
90...280 mm LASER

Range

weCat3D

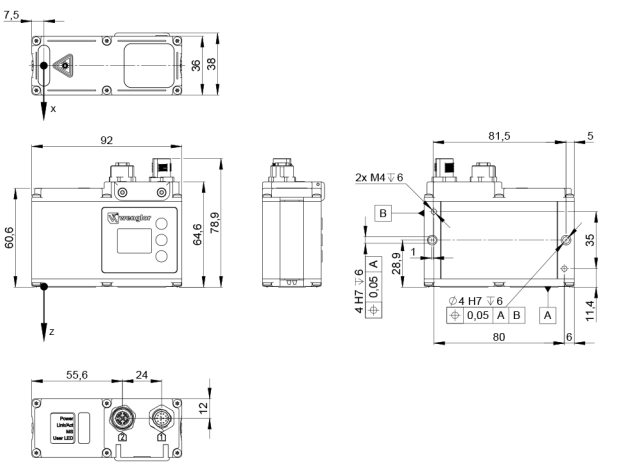
- **Compact, lightweight design – even suitable for robot applications**
- **Precise measuring range resolution X (> 1200 measuring points)**
- **Up to 3.6 million measuring points per second**

2D/3D Profile Sensors project a laser line onto the object to be detected and generate an accurate, linearized height profile with an internal camera which is set up at a triangulation angle. Thanks to its uniform, open interface, the weCat3D series can be incorporated by means of the DLL program library or the GigE Vision standard without an additional control unit. Alternatively, wenglor offers its own software packages for implementing your application.



Technical Data

Optical Data	
Working range Z	90...280 mm
Measuring range Z	190 mm
Measuring range X	62...145 mm
Linearity Deviation	95 µm
Resolution Z	9,4...49 µm
Resolution X	54...123 µm
Light Source	Laser (red)
Wavelength	660 nm
Service Life (T = +25 °C)	20000 h
Laser Class (EN 60825-1)	2M
Environmental conditions	
Ambient temperature	0...45 °C
Storage temperature	-20...70 °C
Max. Ambient Light	5000 Lux
EMC	DIN EN 61000-6-2; 61000-6-4
Shock resistance per DIN IEC 68-2-27	30 g / 11 ms
Vibration resistance per DIN IEC 60068-2-6	6 g (10...55 Hz)
Atmospheric humidity	5...95%, non-condensing
Electrical Data	
Supply Voltage	18...30 V DC
Current Consumption (Ub = 24 V)	300 mA
Measuring Rate	200...4000 /s
Subsampling	800...4000 /s
Inputs/Outputs	4
Switching Output Voltage Drop	< 1,5 V
Switching Output/Switching Current	100 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Overload Protection	yes
Interface	Ethernet TCP/IP
Baud Rate	100/1000 Mbit/s
Protection Class	III
FDA Accession Number	1610450-003
Mechanical Data	
Degree of Protection	IP67
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin, X-cod.



All dimensions in mm (1 mm = 0.03937 Inch)

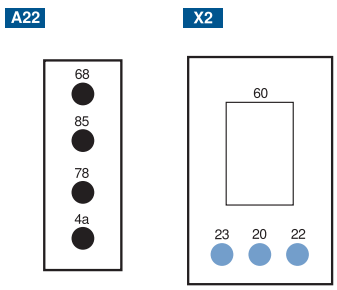
	Plug Version
Part Number	MLSL123
Web server	yes
Push-Pull	●
Housing Material	Aluminum, powder-coated
Housing Material	Plastic, ABS
Connection Diagram No.	1022 | 1034
Control Panel No.	X2 | A22
Suitable Connection Equipment No.	50 | 87
Suitable Mounting Technology No.	343

Connection Diagrams page 58 / System Components page 48

Complementary Products

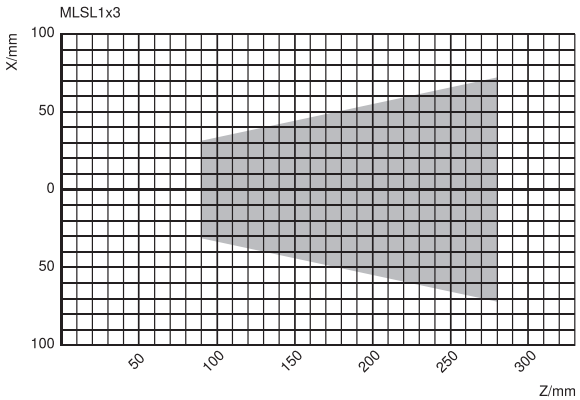
- Connection cables
- Control Unit
- Cooling Unit ZLSK001
- Protective Housing ZLSS003
- Protective Screen Retainer ZLSS001
- Software
- Switch EHSS001

Ctrl. Panel

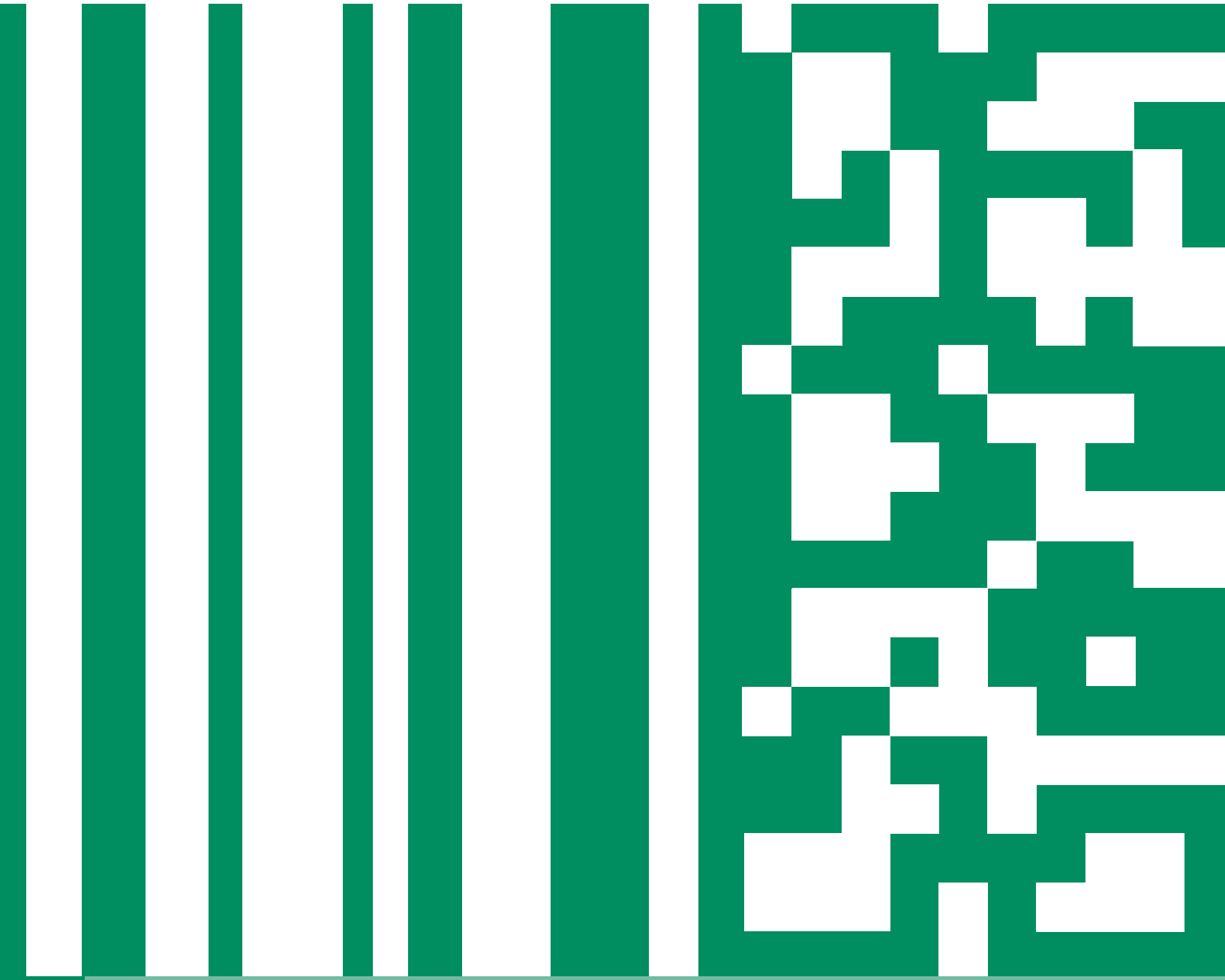


20 = Enter key
22 = Up key
23 = Down key
4a = User LED
60 = display
68 = supply voltage indicator
78 = Module status
85 = Link/Act LED

Measuring field X, Z



Z = Working distance
X = Measuring Range



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^{+} allows rapid, location-independent optimization of the system settings thus preventing machine downtimes.

On the following pages you will find:

1D/2D Code Scanner

50...300 mm

Range

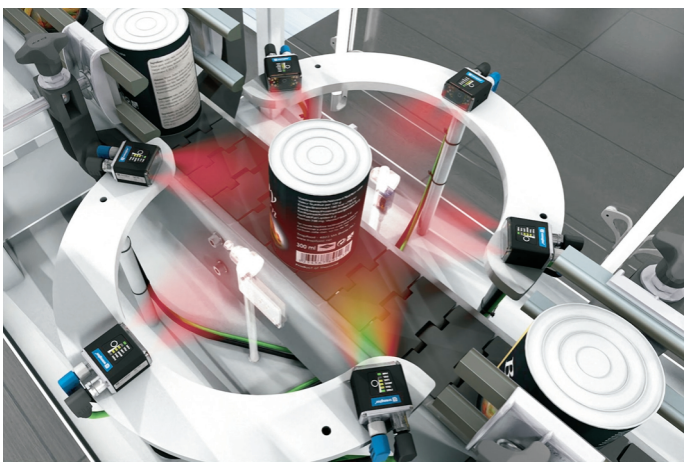
IndustrialEthernet

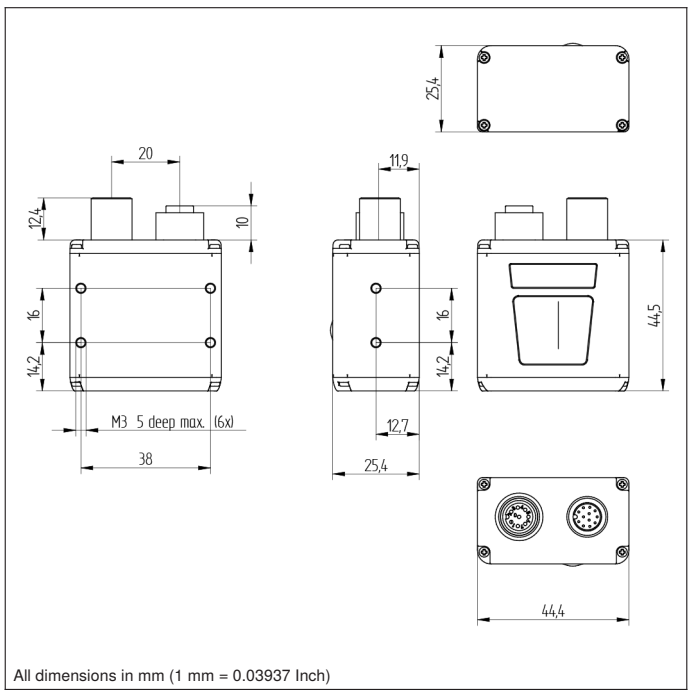
- **Auto-button function**
- **DPM**
- **Integrated code reconstruction**
- **Integrated LED illumination**
- **PROFINET and EtherNet/IP™**
- **Web link**

Technical Data

Optical Data	
Read Range	50...300 mm
Light Source	Red Light
Wavelength	617 nm
Focus	Autofocus
Environmental conditions	
Temperature Range	0...45 °C
Atmospheric humidity	5...95%, non-condensing
Electrical Data	
Supply Voltage	5...30 V DC
Current Consumption (Ub = 24 V)	180 mA
Switching Output	Optoisolator
Number of Switching Outputs	3
Switching Output/Switching Current	< 100 mA
Reverse Polarity Protection	yes
Interface	RS-232/Ethernet
Trigger Input	Optoisolator
Signal Input	Optoisolator
Number of Signal Inputs	3
Mechanical Data	
Setting Method	Ethernet
Housing Material	Aluminum, anodised
Optic Cover	Plastic, PMMA
Degree of Protection	IP65/IP67
Connection	M12 × 1; 12-pin
Type of Connection Ethernet	M12 × 1; 8-pin

These 2D code scanners are suitable for omnidirectional scanning of 1D and 2D codes.
The following code types can be processed:
1D codes: Code39, Code93, Code128, UPC/EAN, BC412, Interleaved 2 of 5, Codabar, Postal Codes, Pharmacode
2D codes: DataMatrix ECC 0...200, PDF417, Micro PDF417, QR-Code, Micro QR-Code, Aztec Code, GS1 Databar, Dot code
Additional code types upon request.





All dimensions in mm (1 mm = 0.03937 Inch)

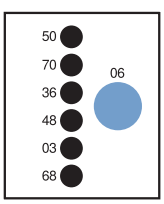
	Plug Version	
Part Number	C5PC103	C5PC211
PNP NO/NC switchable	●	●
NPN NO/NC switchable	●	●
Ethernet	●	●
PROFINET-I/O, CC-B	●	●
EtherNet/IP™	●	●
Barcode Density	Standard density	High density
Resolution	752 × 480 Pixel	1280 × 960 Pixel
min. Resolution	> 0,191 mm	> 0,064 mm
Scan Rate	60 scans/sec	42 scans/sec
Connection Table No.	39	39
Control Panel No.	A24	A24
Suitable Connection Equipment No.	87	87
Suitable Mounting Technology No.	430	430

System Components page 48

Distance	Max.Field of View	Min.Resolution	Read Range	
			1D	2D
50 mm	51 × 33 mm	0,191 mm	50...64 mm	50 mm
100 mm	97 × 62 mm	0,254 mm	50...81 mm	50...64 mm
150 mm	142 × 90 mm	0,381 mm	50...133 mm	50...102 mm
200 mm	187 × 119 mm	0,508 mm	50...190 mm	50...133 mm
250 mm	232 × 148 mm	0,762 mm	50...300 mm	50...190 mm
300 mm	277 × 177 mm	1,016 mm	50...400 mm	50...300 mm

Ctrl. Panel

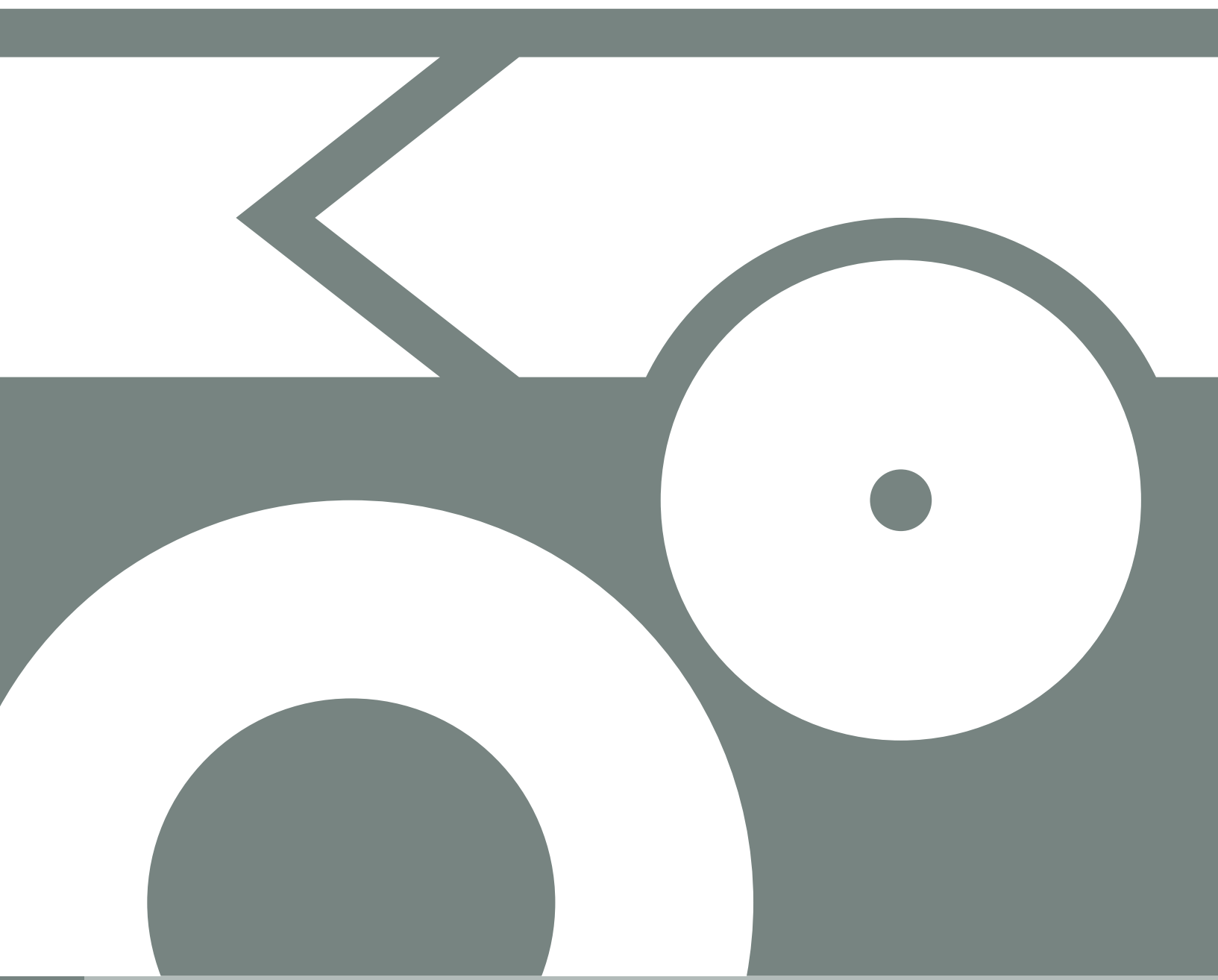
A24



03 = Error Indicator
06 = Teach Button
36 = Mode Indicator
48 = Network Status
50 = Good Read
68 = supply voltage indicator
70 = Run/Trigger

Complementary Products

- Connection Cable ZCYV00x
- Path-Folding Mirror ZNNG028
- Protective Housing ZSV-0x-01
- Software
- ZDCG005 connection cable
- ZNNG053 Replacement disc
- ZNNG054 Optical diffuser
- ZNNG055 Polarization filter
- ZNNG056 ESD protective screen
- ZNNG057 YAG filter



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:

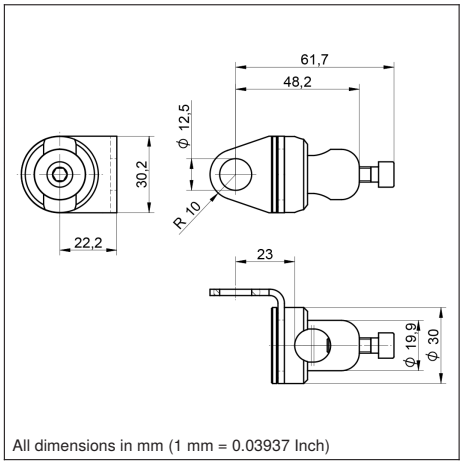
Mounting
for 32 × 16 × 12 mm (1K)/reflector foil

Mounting for M12 × 1
Part Number W12S12AL

Mechanical Data	
Mounting type, device-side	Clampable to mounting plate
Mounting type, system-side	Mounting bar
Material Mounting Head	Aluminum, anodised
Material Mounting Plate	Stainless steel, V2A (1.4301 / 304)
for Round Profile Diameter	8...13 mm
Scope of delivery	1 × mounting head, 1 × mounting plate, 1 × screw
Packaging unit	1 Piece
Suitable Mounting Technology No.	550

170

RoHS



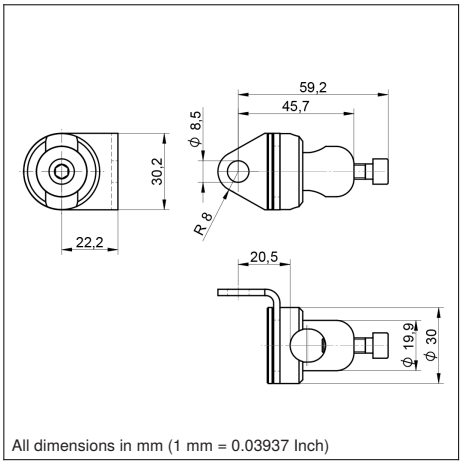
All dimensions in mm (1 mm = 0.03937 Inch)

Mounting for M8 × 1
Part Number W8S12AL

Mechanical Data	
Mounting type, device-side	Screwable to mounting plate
Mounting type, system-side	Mounting bar
Material Mounting Head	Aluminum, anodised
Material Mounting Plate	Stainless steel, V2A (1.4301 / 304)
for Round Profile Diameter	8...13 mm
Scope of delivery	1 × mounting head, 1 × mounting plate, 1 × screw
Packaging unit	1 Piece
Suitable Mounting Technology No.	550

200

RoHS



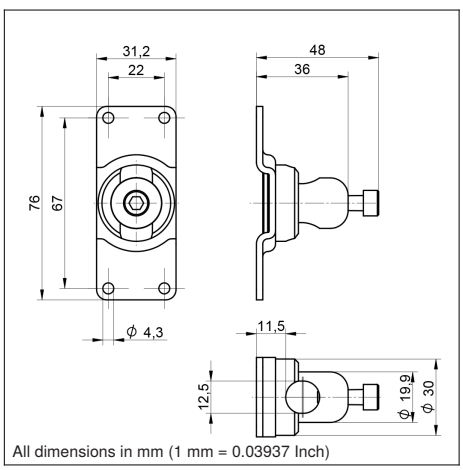
All dimensions in mm (1 mm = 0.03937 Inch)

Mounting for 76 × 32,5 × 18 mm (N)
Part Number WNS12AL

Mechanical Data	
Mounting type, device-side	Screwable to mounting plate
Mounting type, system-side	Mounting bar
Material Mounting Head	Aluminum, anodised
Material Mounting Plate	Stainless steel, V2A (1.4301 / 304)
for Round Profile Diameter	8...12,5 mm
Scope of delivery	1 × mounting head, 1 × mounting plate, 1 × screw
Packaging unit	1 Piece
Suitable Mounting Technology No.	550

350

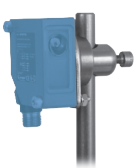
RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

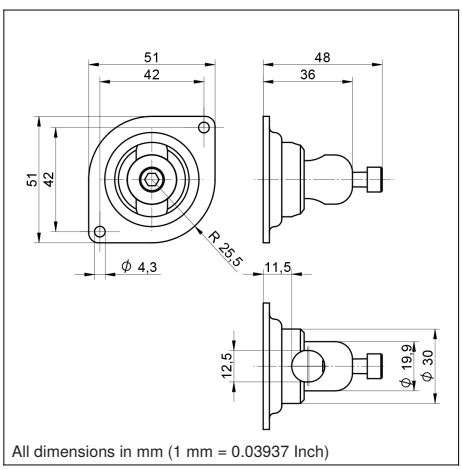
Mounting for 50 × 50 × 20...30 mm (P)
Part Number WPS12AL

Mechanical Data	
Mounting type, device-side	Screwable to mounting plate
Mounting type, system-side	Mounting bar
Material Mounting Head	Aluminum, anodised
Material Mounting Plate	Stainless steel, V2A (1.4301 / 304)
for Round Profile Diameter	8...12,5 mm
Scope of delivery	1 × mounting head, 1 × mounting plate, 1 × screw
Packaging unit	1 Piece
Suitable Mounting Technology No.	550



380

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

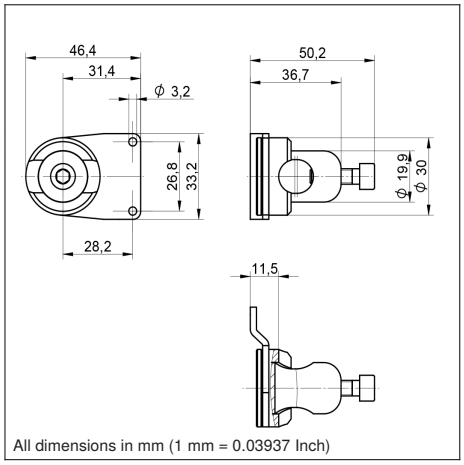
Mounting for 32 × 16/22 × 12 mm (K/1K)

Part Number WKS12AL

Mechanical Data	
Mounting type, device-side	Screwable to mounting plate
Mounting type, system-side	Mounting bar
Material Mounting Head	Aluminum, anodised
Material Mounting Plate	Stainless steel, V2A (1.4301 / 304)
for Round Profile Diameter	8...13 mm
Scope of delivery	1 × mounting head, 1 × mounting plate, 1 × screw
Packaging unit	1 Piece
Suitable Mounting Technology No.	550

400

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

Mounting Bracket

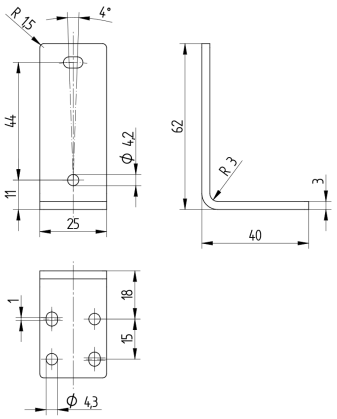
Mounting Bracket for 83 × 63 × 27 mm (1E)

Part Number Z1EX003

Mechanical Data	
Material	Stainless steel, V2A (1.4301 / 1.4303)
Scope of delivery	BEF-SET-21
Packaging unit	1 Piece

112

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

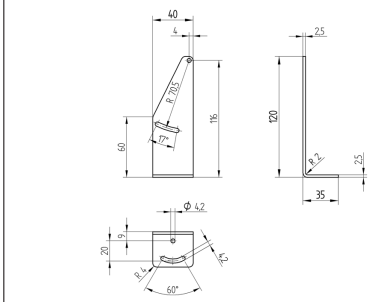
Mounting Bracket for 76 × 32,5 × 18 mm (N)

Part Number WN

Mechanical Data	
Material	Steel, nickel-plated
Scope of delivery	1 × mounting bracket
Packaging unit	1 Piece

350

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

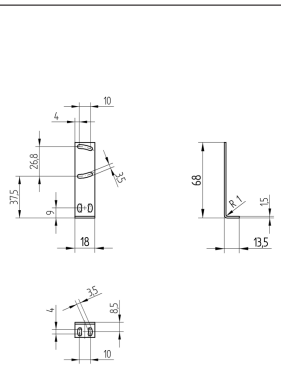
Mounting Bracket for 32 × 16/22 × 12 mm (K/1K)

Part Number WK

Mechanical Data	
Material	Steel, nickel-plated
Scope of delivery	1 × mounting bracket
Packaging unit	1 Piece

400

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

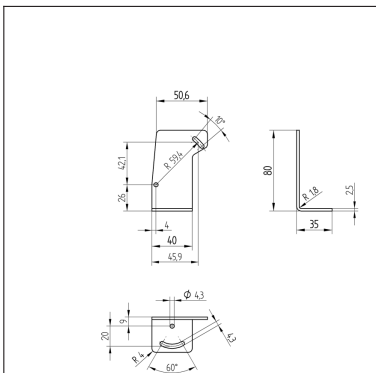
Mounting Bracket for 50 × 50 × 20...30 mm (P)

Part Number WP

Mechanical Data	
Material	Steel, nickel-plated
Scope of delivery	1 × mounting bracket
Packaging unit	1 Piece

380

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

Mounting Clamp for M12 × 1

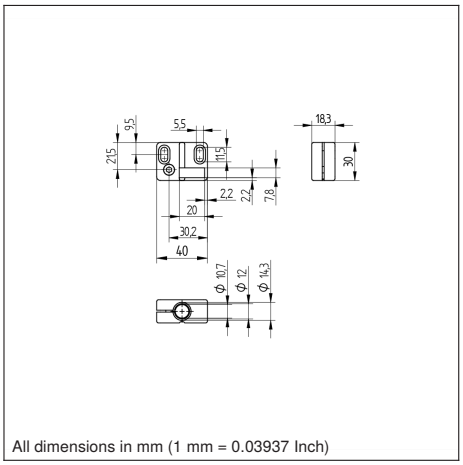
Part Number BSM12B

Mechanical Data

Material	Plastic
Mounting	Flush
Packaging unit	1 Piece

170

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

Mounting Clamp for M12 × 1

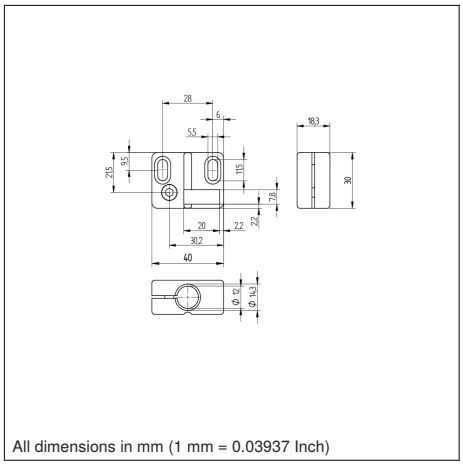
Part Number BSM12NB

Mechanical Data

Material	Plastic
Mounting	Non-flush
Packaging unit	1 Piece

170

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

Mounting Clamp for M8 × 1

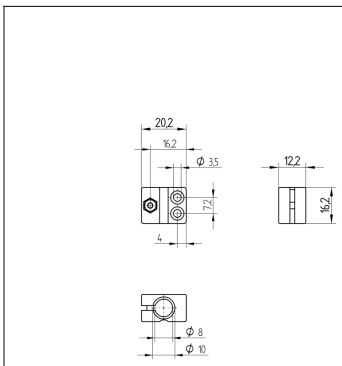
Part Number BSM8NB

Mechanical Data

Material	Plastic, PA
Mounting	Non-flush
Packaging unit	1 Piece

200

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

Mounting Clamp for M5 × 0,5

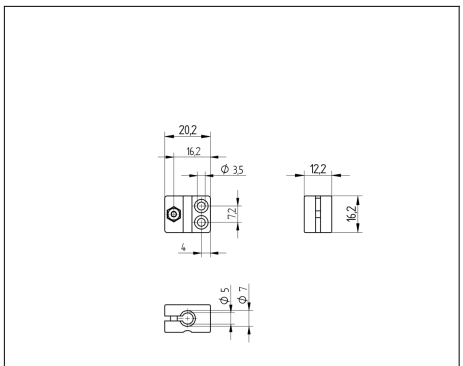
Part Number BSM5NB

Mechanical Data

Material	Plastic
Mounting	Non-flush
Packaging unit	1 Piece

260

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

Mounting Console with Fixed Limit Stop

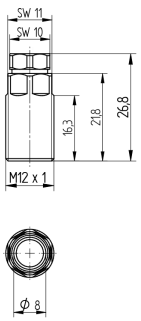
Mounting Console with Fixed Limit Stop for M8 × 1; Flush Mounting

Part Number Z08M001

Mechanical Data	
Material	Plastic, PBT
Material	Stainless steel, V2A (1.4305 / 303)
Mounting	Flush
Threaded sleeve tightening torque	max. 2 Nm
Clamp retainer tightening torque	0,3 Nm
Packaging unit	1 Piece

201

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

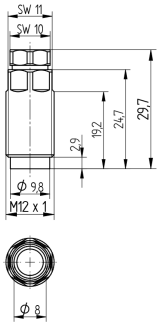
Mounting Console with Fixed Limit Stop for M8 × 1; Semi-Flush Mounting

Part Number Z08M002

Mechanical Data	
Material	Plastic, PBT
Material	Stainless steel, V2A (1.4305 / 303)
Mounting	semi-flush
Threaded sleeve tightening torque	max. 2 Nm
Clamp retainer tightening torque	0,3 Nm
Packaging unit	1 Piece

202

RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

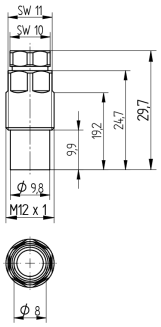
Mounting Console with Fixed Limit Stop for M8 × 1; Non-Flush Mounting

Part Number Z08M003

Mechanical Data	
Material	Plastic, PBT
Material	Stainless steel, V2A (1.4305 / 303)
Mounting	Non-flush
Threaded sleeve tightening torque	max. 2 Nm
Clamp retainer tightening torque	0,3 Nm
Packaging unit	1 Piece

203

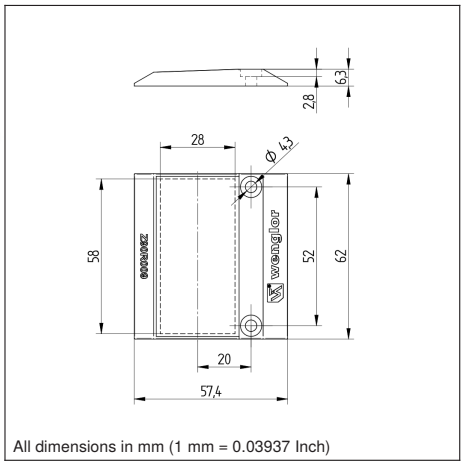
RoHS



All dimensions in mm (1 mm = 0.03937 Inch)

Reflector
Part Number Z90R009

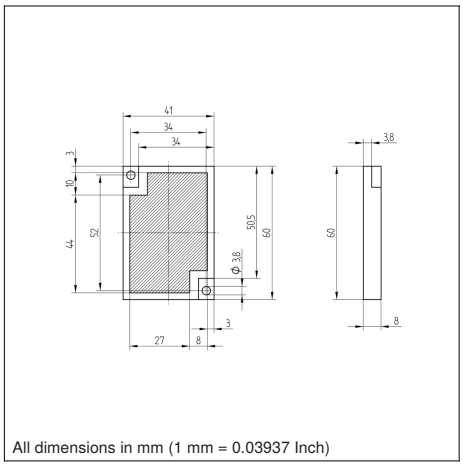
Mechanical Data	
Structure	Continuous Structure
Mounting type, device-side	Fixing Holes
Orientation with respect to the sensor	vertical
Material	Plastic, ABS
Material	Plastic, PMMA
Temperature Range	-30...60 °C
Packaging unit	1 Piece



All dimensions in mm (1 mm = 0.03937 Inch)

Reflector 60 × 41 × 8 mm
Part Number RE6040BA

Mechanical Data	
Structure	Macro Structure
Mounting type, device-side	Fixing Holes
Material	Plastic, PMMA
Degree of Protection	IP67
Temperature Range	-40...65 °C
Packaging unit	1 Piece
Suitable Mounting Technology No.	390



All dimensions in mm (1 mm = 0.03937 Inch)

Connection Line

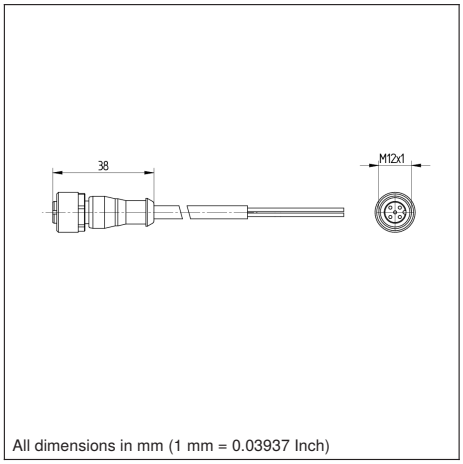
Connection Line M12 × 1; 4-pin

Part Number S23-2M

Electrical Data	
Supply Voltage	≤ 250 V AC/DC
Mechanical Data	
Connection 1	Socket, straight
Connection mode 1	M12 × 1, 4-pin
Connection 2	stripped
Torque	M12: 0,6 Nm
Coding	A-coding
Cable Length	2 m
Outer diameter (d)	5 mm
Wire cross-section	0,34 mm²
Degree of Protection	IP67
Temperature range (fixed installation)	-30...80 °C
Temperature range (moving application)	-5...80 °C
Cable Jacket Material	Plastic, PVC
Material Wire Insulation	Plastic, PVC
Material Sleeve Nut	Brass, nickel-plated
Packaging unit	1 Piece

* Per terminal

2



All dimensions in mm (1 mm = 0.03937 Inch)

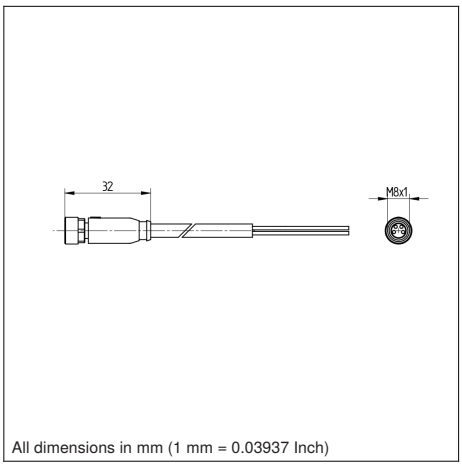
Connection Line M8 × 1; 4-pin

Part Number S61-2M

Electrical Data	
Supply Voltage	≤ 50 V AC/DC
Mechanical Data	
Connection 1	Socket, straight
Connection mode 1	M8 × 1, 4-pin
Connection 2	stripped
Torque	M8: 0,4 Nm
Cable Length	2 m
Outer diameter (d)	4,8 mm
Wire cross-section	0,25 mm²
Degree of Protection	IP67
Temperature range (fixed installation)	-25...80 °C
Temperature range (moving application)	-5...80 °C
Cable Jacket Material	Plastic, PVC
Material Wire Insulation	Plastic, PVC
Material Sleeve Nut	Brass, nickel-plated
Packaging unit	1 Piece

* Per terminal

7



All dimensions in mm (1 mm = 0.03937 Inch)

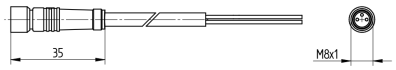
Connection Line M8 × 1; 3-pin

Part Number S49-2M

Electrical Data	
Supply Voltage	≤ 63 V AC/DC
Mechanical Data	
Connection 1	Socket, straight
Connection mode 1	M8 × 1, 3-pin
Connection 2	stripped
Torque	M8: 0,3 Nm
Cable Length	2 m
Outer diameter (d)	5 mm
Wire cross-section	0,34 mm²
Degree of Protection	IP67
Temperature Range	-25...80 °C
Cable Jacket Material	Plastic, PVC
Material Wire Insulation	Plastic, PVC
Material Sleeve Nut	Brass, nickel-plated
Packaging unit	1 Piece

* Per terminal

8



All dimensions in mm (1 mm = 0.03937 Inch)

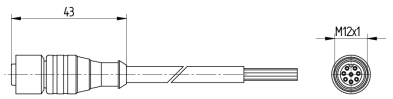
Connection Line M12 × 1; 8-pin

Part Number S80-2M

Electrical Data	
Supply Voltage	≤ 36 V AC/DC
Mechanical Data	
Connection 1	Socket, straight
Connection mode 1	M12 × 1, 8-pin
Connection 2	stripped
Torque	M12: 0,5 Nm
Coding	A-coding
Cable Length	2 m
Outer diameter (d)	6 mm
Wire cross-section	0,25 mm²
Degree of Protection	IP67
Temperature Range	-25...80 °C
Cable Jacket Material	Plastic, PUR
Material Wire Insulation	Plastic, PP
Material Sleeve Nut	Brass, nickel-plated
Screened	yes
Halogen-free	yes
Drag Chain Suitable	yes
Bending radius (fixed installation)	> 5 × d
Bending radius (used in motion)	> 10 × d
Travel speed (with 5 m horizontal travel distance)	≤ 3,3 m/s
Acceleration	≤ 5 m/s²
Bending cycles	> 2000000
Packaging unit	1 Piece

* Per terminal

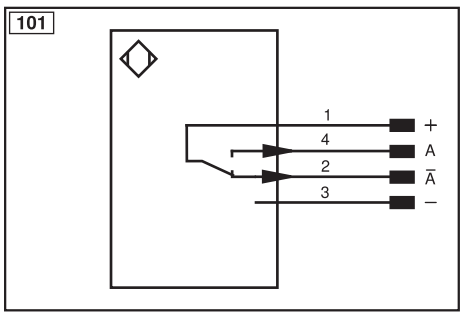
80

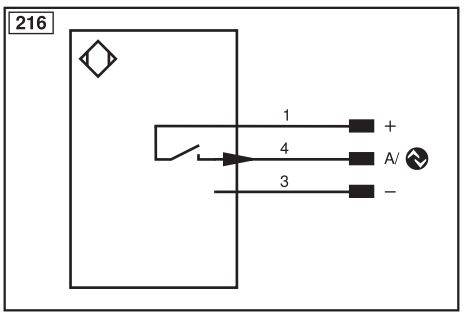


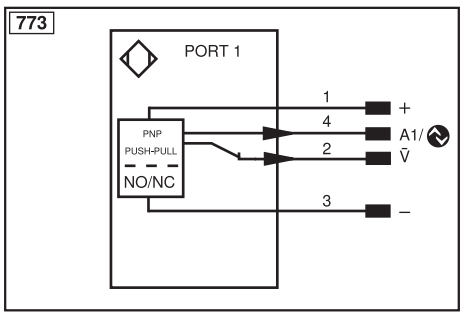
All dimensions in mm (1 mm = 0.03937 Inch)

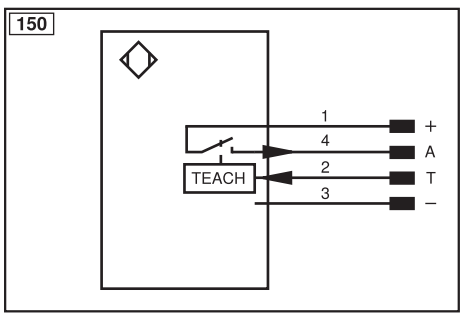
Connection Diagrams

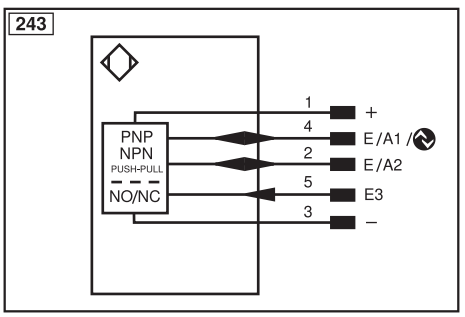
Legend					
+	Supply Voltage +	nc	Not connected	ENBRS422	Encoder B/B̄ (TTL)
–	Supply Voltage 0 V	U	Test Input	ENA	Encoder A
~	Supply Voltage (AC Voltage)	Ū	Test Input inverted	ENB	Encoder B
A	Switching Output (NO)	W	Trigger Input	AMIN	Digital output MIN
Ā	Switching Output (NC)	W–	Ground for the Trigger Input	AMAX	Digital output MAX
V	Contamination/Error Output (NO)	O	Analog Output	AOK	Digital output OK
V̄	Contamination/Error Output (NC)	O–	Ground for the Analog Output	SY In	Synchronization In
E	Input (analog or digital)	BZ	Block Discharge	SY OUT	Synchronization OUT
T	Teach Input	AMV	Valve Output	OLT	Brightness output
Z	Time Delay (activation)	a	Valve Control Output +	M	Maintenance
S	Shielding	b	Valve Control Output 0 V	rsv	Reserved
RxD	Interface Receive Path	SY	Synchronization	Wire Colors according to DIN IEC 60757	
TxD	Interface Send Path	SY–	Ground for the Synchronization	BK	Black
RDY	Ready	E+	Receiver-Line	BN	Brown
GND	Ground	S+	Emitter-Line	RD	Red
CL	Clock	⏚	Grounding	OG	Orange
E/A	Output/Input programmable	SnR	Switching Distance Reduction	YE	Yellow
	IO-Link	Rx+/–	Ethernet Receive Path	GN	Green
PoE	ower over Ethernet	Tx+/–	Ethernet Send Path	BU	Blue
IN	Safety Input	Bus	Interfaces-Bus A(+)/B(–)	VT	Violet
OSSD	Safety Output	La	Emitted Light disengageable	GY	Grey
Signal	Signal Output	Mag	Magnet activation	WH	White
BI_D+/–	Ethernet Gigabit bidirect. data line (A-D)	RES	Input confirmation	PK	Pink
EN0 RS422	Encoder 0-pulse 0/0̄ (TTL)	EDM	Contactor Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	ENARS422	Encoder A/Ā (TTL)		

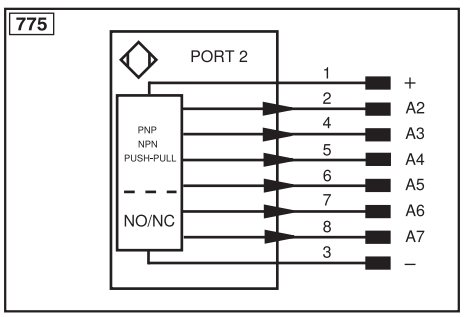


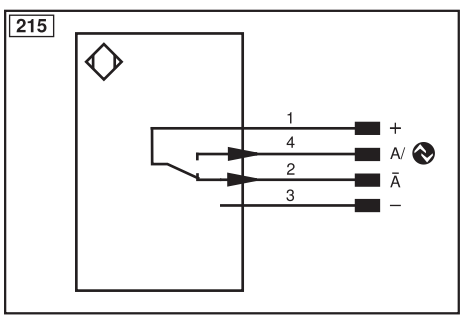


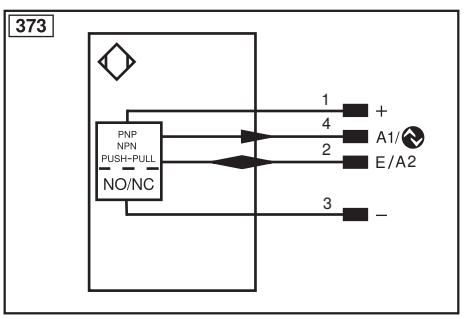


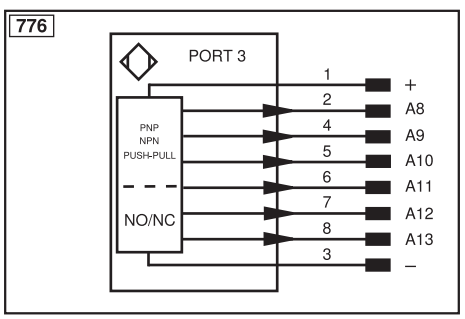


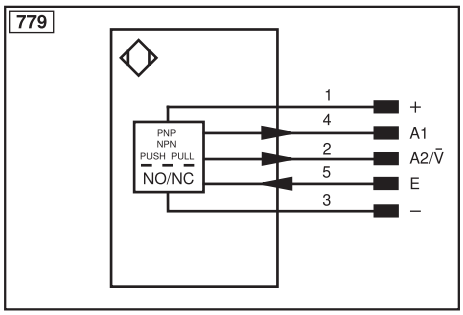


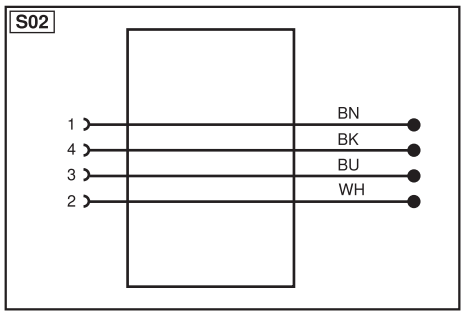


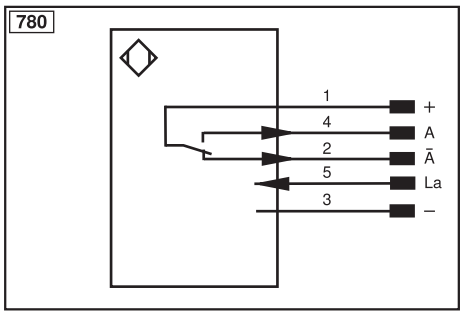


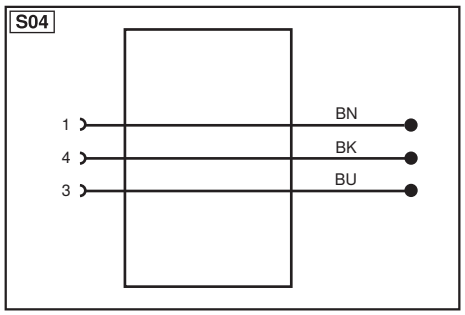


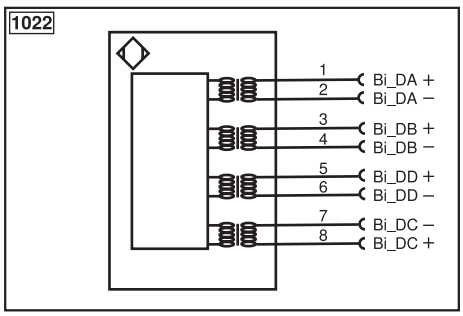


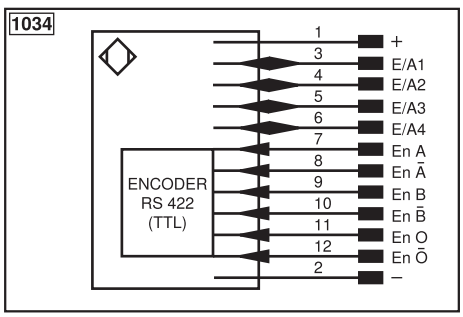

779
PNP
NPN
PUSH PULL
NO/NC
1
4
2
5
3
+
A1
A2/V̄
E
–

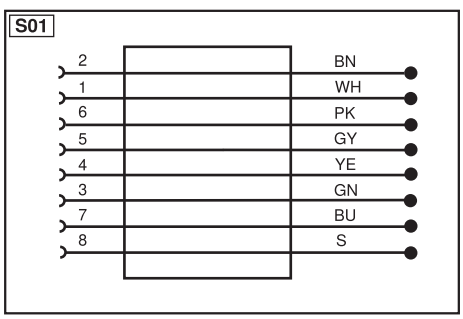

S02
1
4
3
2
BN
BK
BU
WH


780
1
4
2
5
3
+
A
Ā
La
–


S04
1
4
3
BN
BK
BU


1022
1
2
3
4
5
6
7
8
Bi_DA +
Bi_DA –
Bi_DB +
Bi_DB –
Bi_DD +
Bi_DD –
Bi_DC –
Bi_DC +


1034
ENCODER
RS 422
(TTL)
1
3
4
5
6
7
8
9
10
11
12
2
+
E/A1
E/A2
E/A3
E/A4
En A
En Ā
En B
En B̄
En O
En Ō
–


S01
2
1
6
5
4
3
7
8
BN
WH
PK
GY
YE
GN
BU
S

Index
alphabetical

Change History

Year	Added			Removed	Notice
2021	HO08PA3	I12A001	P1EL300		New admission wenglor
	I08H001	I12H001	P1KH006		
	I08H002	I12H002	P1KH019		
	I08H003	I12H003	P1KY001		
	I08H004	I12H004	P1NL101		
	I08H005	I12H005	U1KT001		
	I08H006	I12H006	S49-2M		
	I08H007	I12H007	S61-2M		
	I08H008	I12H008	S23-2M		
	I08H009	I12H009	S80-2M		
	I08H010	I12H010	Z90R009		
	I08H011	I12H011	RE6040BA		
	I08H012	I12H012	Z08M001		
	I08H013	I12H013	Z08M002		
	I08H014	I12H014	Z08M003		
	I08H015	I12H015	WN		
	I08H016	I12H016	WP		
	I08H017	I12H017	WK		
	I08H018	I12H018	Z1EX003		
	I08H019	I12H019	WPS12AL		
	I08H020	I12H020	WKS12AL		
	I08H021	I12H022	WNS12AL		
	I08H022	I12H023	W8S12AL		
	I08H023	I12H024	W12S12AL		
	I08H024	I12H025	BSM5NB		
	I08H025	I12H026	BSM12B		
	I08H026	I12H027	BSM12NB		
	I08H027	I12H028	BSM8NB		
	I08H028	I12H029			
	I08H029	I12H032			
	I08H030	I12H040			
	I08H031	I12H043			
	I08H032	I12H044			
	I08H034	I12H045			
	I08H035	I12H046			
	I08H037	I12H047			
	I08H047	I12H048			
	I08H048	I12H049			
	I08H049	I12H050			
	I08H051	I12H051			
	I08H052	I12H052			
	I08H053	I12H053			
	I08H054	I12H054			
	I08H055	I12H055			
	I08H056	I12H056			
	I08H057	I12H057			
	I08H058	I12H058			
	I08H059	I12H059			
	I08H060	I12H060			
	I08H061	I12H062			
	I08H062	I12N001			
	I08H063	I12N002			
	I08H064	MLSL123			
	I08H065	OCP662X0135			
	I08H066	ODX402P0088			
	I08H067	OY2P303A0135			

Year	Added			Removed		Notice
2022	C5PC103 C5PC211					
2023	P1KH004			I08H001 I08H002 I08H003 I08H004 I08H005 I08H006 I08H007 I08H008 I08H009 I08H010 I08H011 I08H012 I08H013 I08H014 I08H015 I08H016 I08H017 I08H018 I08H019 I08H020 I08H021 I08H022 I08H023 I08H024 I08H025 I08H026 I08H027 I08H028 I08H029 I08H030 I08H031 I08H032 I08H034 I08H035 I08H037 I08H047 I08H048 I08H049 I08H051 I08H052 I08H053 I08H054 I08H055 I08H056 I08H057 I08H058 I08H059 I08H060 I08H061 I08H062 I08H063 I08H064 I08H065 I08H066 I08H067	I12A001 I12H001 I12H002 I12H003 I12H004 I12H005 I12H006 I12H007 I12H008 I12H009 I12H010 I12H011 I12H012 I12H013 I12H014 I12H015 I12H016 I12H017 I12H018 I12H019 I12H020 I12H022 I12H023 I12H024 I12H025 I12H026 I12H027 I12H028 I12H029 I12H032 I12H040 I12H043 I12H044 I12H045 I12H046 I12H047 I12H048 I12H049 I12H050 I12H051 I12H052 I12H053 I12H054 I12H055 I12H056 I12H057 I12H058 I12H059 I12H060 I12H062 I12N001 I12N002	
2024	P1KH012 P1PY101 OPT1009			P1PY001		