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Laser Distance Measurement Photoelectric Sensors OPT25 Series

IO-Link

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Overview

The Wenglor triangulation laser distance sensors unleash their unique performance threefold, wherever complex shapes are measured, object surfaces and colors vary, maximum precision in the micrometer range or temperature-stable measured values are required.

Adaptive Autoexposure
- Intelligent exposure control for optimal detection of challenging surfaces with changing reflection

Active Temperature Control
- Several temperature sensors built into the housing guarantee optimal temperature monitoring

Aspheric Dual Lens
- Two aspheric glass lenses integrated in the sensor offer a clear advantage in terms of precision

Features

- Reliable detection of the smallest objects with reproducibility up to 0.8µm
- Highly accurate results due to a linearity deviation of just 0.08% from the measuring range
- Detection of very flat objects directly in front of the background
- Reliable measurements on dark, light or low reflecting objects
- Versatile use on different surfaces and shapes regardless of the degree of reflection
- Highly accurate switch points
- Small laser light spot measuring just 0.5 to 1.5mm in size and models available with either red or blue laser light
- Increased power for very dark objects and extremely high speeds available by selecting class 2 laser
- Suitable for measurement on polished metals, shiny plastic surfaces and dark paints
- Short-wave blue laser light for high accuracy and ideal for shiny, organic and red-hot surfaces

Applications

- Woodworking industry
- Rail industry
- Battery industry
- Machinery manufacturing
- Electronics industry
- Automotive industry

Working range up to 1,000 mm

Parametrization with an app via Bluetooth

Robust aluminum housing

Measuring rate up to 2,500/s

Red and blue laser

Linearity deviation of 0.08%

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Superior Laser Expertise

The laser distance sensors feature a small laser light spot measuring just 0.5 to 1.5mm in size and come with either red or blue laser light.

- Increased power for very dark objects and extremely high speeds by selecting models with class 2 laser
- Suitable for measurement on polished metals, shiny plastic surfaces and dark paints
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User-Friendly and Easy Operation

The various models can be configured directly via teach-in button actuation or OLED display. The weCon app also enables mobile setting and data transfer to the distance sensors. Parametrization can be carried out easily via the free Bluetooth app.

- Intuitive operating concept via two- or five-second button actuation
- Time savings thanks to easy initial start-up
- Display of distance value via the OLED display

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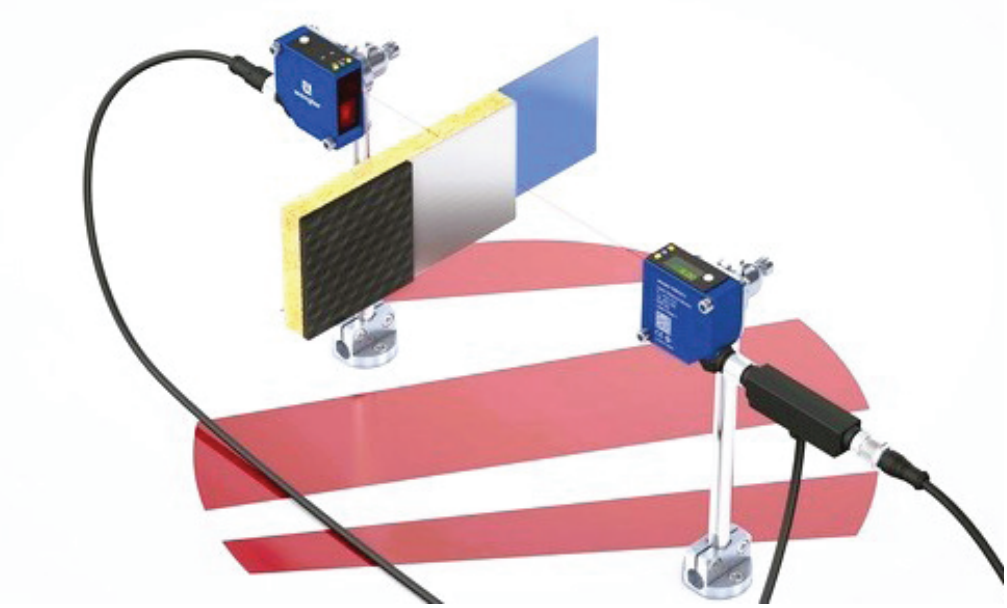
Download on the App Store

Download the weCon app now free of charge from the Apple App Store or Google Play Store.



Automatic thickness measurement using two OPT25xx series sensors and accessory T-splitter ZC4G004.

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Laser Distance Measurement Photoelectric Sensors OPT25 Series

OPT2500

OPT2518

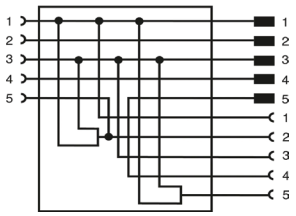
Laser Distance Measurement Photoelectric Sensors OPT25 Series Selection Chart

Part Number	Price	Sensing Range	Light Emission	Measuring Rate	Switching Frequency	Switching Output	Analog Output	Setting Method	Connection	Wiring	Drawing Link
Diffuse (50 x 50 x 20mm) Square											
OPT2500	$802.00	30-80mm [1.18-3.15in]	Class 1 red laser	—	650 Hz	(2) PNP	—	Teach-in	5-pin M12 quick-disconnect	Diagram 1	PDF
OPT2501	$1,317.00			2500/s		—	4-20 mA	OLED (Bluetooth menu)		Diagram 2	PDF
OPT2502	$1,368.00		Class 2 blue laser	2500/s		—	4-20 mA			Diagram 2	PDF
OPT2503	$802.00	40-240mm [1.57 - 9.44in]	Class 1 red laser	—	650 Hz	(2) PNP	—	Teach-in		Diagram 1	PDF
OPT2504	$1,317.00			2500/s		—	4-20 mA	OLED (Bluetooth menu)		Diagram 2	PDF
OPT2505	$1,368.00		Class 2 blue laser	2500/s		—	4-20 mA			Diagram 2	PDF
OPT2506	$802.00	50-350mm [1.97-13.80in]	Class 1 red laser	—	650 Hz	(2) PNP	—	Teach-in		Diagram 1	PDF
OPT2507	$1,317.00			2500/s		—	4-20 mA	OLED (Bluetooth menu)		Diagram 2	PDF
OPT2508	$1,368.00		Class 2 blue laser	2500/s		—	4-20 mA			Diagram 2	PDF
OPT2509	$802.00	60-660mm [2.36 - 25.98in]	Class 1 red laser	—	650 Hz	(2) PNP	—	Teach-in		Diagram 1	PDF
OPT2510	$1,317.00			2500/s		—	4-20 mA	OLED (Bluetooth menu)		Diagram 2	PDF
OPT2511	$1,368.00		Class 2 blue laser	2500/s		—	4-20 mA			Diagram 2	PDF
OPT2512	$802.00		Class 1 red laser	—	650 Hz	(2) NPN	—	Teach-in		Diagram 1	PDF
OPT2513	$905.00		Class 2 blue laser	—	650 Hz	(2) PNP	—	OLED (Bluetooth menu)		Diagram 1	PDF
OPT2514	$905.00			—	650 Hz	(2) NPN	—			Diagram 1	PDF
Diffuse (71 x 63 x 30mm) Rectangular											
OPT2515	$1,008.00	150-1000mm [5.90 - 39.37in]	Class 1 red laser	—	650 Hz	(2) PNP	—	Teach-in	5-pin M12 quick-disconnect	Diagram 1	PDF
OPT2516	$1,008.00			—	650 Hz	(2) NPN	—			Diagram 1	PDF
OPT2517	$1,522.00			2500/s		—	4-20 mA	OLED (Bluetooth menu)		Diagram 2	PDF
OPT2518	$1,574.00		Class 2 blue laser	2500/s		—	4-20 mA			Diagram 2	PDF

Mounting hardware included. Purchase cable separately.

Accessory

The ZC4G004 automatically creates thickness measurement output using two OPT25xx series sensors. One sensor must have OLED (Bluetooth menu).



T-splitter for OPT25 Series

Part Number	Price	Coding	Cable Length	Temperature Range	Cable Jacket Material	Sleeve Nut Material	Protection Rating	Connector Type	Weight
ZC4G004	$75.00	A-coded	0.6m [23.62in]	-10 to 105 °C [14 to 221 °F]	Plastic, PVC	Metal	IP67	5-pole male M12 barrel (2) 5-pole female M12 nuts	0.212 lb

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Laser Distance Measurement Photoelectric Sensors OPT25 Series

Wiring Diagrams

Diagram 1

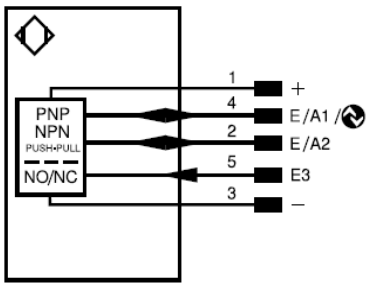
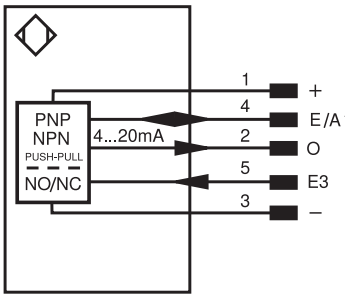
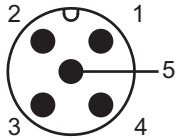


Diagram 2



M12 connector



Legend					
+	Supply Voltage +	nc	Not connected	EN_{RS422}	Encoder B/$\bar{B}$ (TL)
-	Supply Voltage 0 V	U	Test Input	EN_{A}	Encoder A
~	Supply Voltage (AC Voltage)	$\bar{U}$	Test Input Inverted	EN_{B}	Encoder B
A	Switching Output (N.O)	W	Trigger Input	A_{MIN}	Digital output MIN
$\bar{A}$	Switching Output (N.C.)	W-	Ground for the Trigger Input	A_{MAX}	Digital output MAX
V	Contamination/Error Output (N.O.)	O	Analog Output	A_{OK}	Digital output OK
$\bar{V}$	Contamination/Error Output (N.C.)	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 -	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	Power 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	Gray
Signal	Signal Output	Mag	Magnet Activation	WH	White
Bl_D+/_	Ethernet Gigabit bidirect. data line (A-D)	RES	Input Confirmation	PK	Pink
$EN_{0\ RS422}$	Encoder 0-pulse $\bar{0}$ / TTL	EDM	Contact Monitoring	GNYE	Green/Yellow
PT	Platinum measuring resistor	EN_{ARS422}	Encoder A/ $\bar{A}$ (TTL)		

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Specifications

Laser Distance Measurement Photoelectric Sensors OPT25 Series Specifications										
Part Number	*Reproducibility (maximum)*	*Linearity Deviation*	*Switching Hysteresis*	*Wavelength*	*Ambient Light (maximum)*	*Current Consumption (Ub = 24V)*	*Temperature Drift*	*Switching Output Voltage Drop*	*Switching Output Switching Current*	*Weight*
OPT2500	13µm	40µm	< 0.5 %	655nm	20,000 Lux	< 50mA	< 2.5 µm/K	< 1.5 V	100mA	0.158 lb
OPT2501	13µm	40µm	—	655nm	20,000 Lux	< 60mA	< 2.5 µm/K	—	—	
OPT2502	20µm	40µm	—	405nm	5,000 Lux	< 70mA	< 2.5 µm/K	—	—	
OPT2503	70µm	200µm	< 0.5 %	655nm	20,000 Lux	< 50mA	< 15 µm/K	< 1.5 V	100mA	
OPT2504	70µm	200µm	—	655nm	20,000 Lux	< 60mA	< 15 µm/K	—	—	
OPT2505	40µm	200µm	—	405nm	5,000 Lux	< 70mA	< 15 µm/K	—	—	
OPT2506	100µm	300µm	< 0.5 %	655nm	20,000 Lux	< 50mA	< 20 µm/K	< 1.5 V	100mA	
OPT2507	100µm	300µm	—	655nm	20,000 Lux	< 60mA	< 20 µm/K	—	—	
OPT2508	100µm	300µm	—	405nm	5,000 Lux	< 70mA	< 20 µm/K	—	—	
OPT2509	550µm	900µm	< 0.5 %	655nm	20,000 Lux	< 50mA	< 50 µm/K	< 1.5 V	100mA	
OPT2510	550µm	900µm	—	655nm	20,000 Lux	< 60mA	< 50 µm/K	—	—	
OPT2511	250µm	900µm	—	405nm	5,000 Lux	< 70mA	< 50 µm/K	—	—	
OPT2512	550µm	900µm	< 0.5 %	655nm	20,000 Lux	< 50mA	< 50 µm/K	< 1.5 V	100mA	
OPT2513	250µm	900µm	< 0.5 %	405nm	5,000 Lux	< 60mA	< 50 µm/K	< 1.5 V	100mA	
OPT2514	250µm	900µm	< 0.5 %	405nm	5,000 Lux	< 60mA	< 50 µm/K	< 1.5 V	100mA	
OPT2515	350µm	850µm	< 0.5 %	655nm	20,000 Lux	< 50mA	< 75 µm/K	< 1.5 V	100mA	0.418 lb
OPT2516	350µm	850µm	< 0.5 %	655nm	20,000 Lux	< 50mA	< 75 µm/K	< 1.5 V	100mA	
OPT2517	350µm	850µm	—	655nm	20,000 Lux	< 60mA	< 75 µm/K	—	—	
OPT2518	250µm	850µm	—	405nm	10,000 Lux	< 70mA	< 75 µm/K	—	—	

Laser Distance Measurement Photoelectric Sensors OPT25 Series General Specifications		
Supply Voltage		18 to 30 VDC
Response Time		< 0.5 ms
Temperature Range	*Red Lasers*	-30 to 60°C [-22 to 140°F]
	Blue lasers	0 to 60°C [0 to 140°F]
Short Circuit Protection		Yes
Reverse Polarity Protection		Yes
Overload Protection		Yes
Degree of Protection		IP67
Interface		IO-Link v1.1
Baud Rate		COM3
Housing Material		Plastic, ABS
Housing Material		Aluminum anodized
Optic Cover Material		Plastic, PMMA
Agency Approval		CE, cULus E189727

Laser Distance Measurement Photoelectric Sensors OPT25 Series Light Spot Diameter				
OPT2500 *OPT2501* *OPT2502*	Working Distance	30mm	55mm	80mm
	Light Spot Diameter	1.5mm	1.5mm	1.5mm
OPT2503 *OPT2504* *OPT2505*	Detection Range	40mm	140mm	240mm
	Light Spot Diameter	1.5mm	1mm	1mm
OPT2506 *OPT2507* *OPT2508*	Detection Range	50mm	200mm	350mm
	Light Spot Diameter	1.5mm	1mm	1mm
OPT2509 *OPT2510*	Working Distance	60mm	360mm	660mm
OPT2511 *OPT2512* *OPT2513* *OPT2514*	Light Spot Diameter	1.5mm	1mm	0.5mm
OPT2515 *OPT2516*	Working Distance	150mm	575mm	1000mm
OPT2517 *OPT2518*	Light Spot Diameter	1mm	1mm	1mm