

# LASER DISPLACEMENT

Links to further documents for this series:

[Installation guide](#)

[EtherNet Protocol](#)

[Simatic Manager S7 und TIA Portal](#)



## LAW SERIES

### Key-Features:

- Measurement ranges from 20...24 mm
- Linearity up to 2  $\mu\text{m}$
- Resolution up to 0.06  $\mu\text{m}$
- Analog output: 0...10 V, 4...20 mA
- Switching output: PNP/NPN push-pull, NO/NC
- Digital interface: Ethernet
- Protection class IP67
- Temperature range -10...+40 °C

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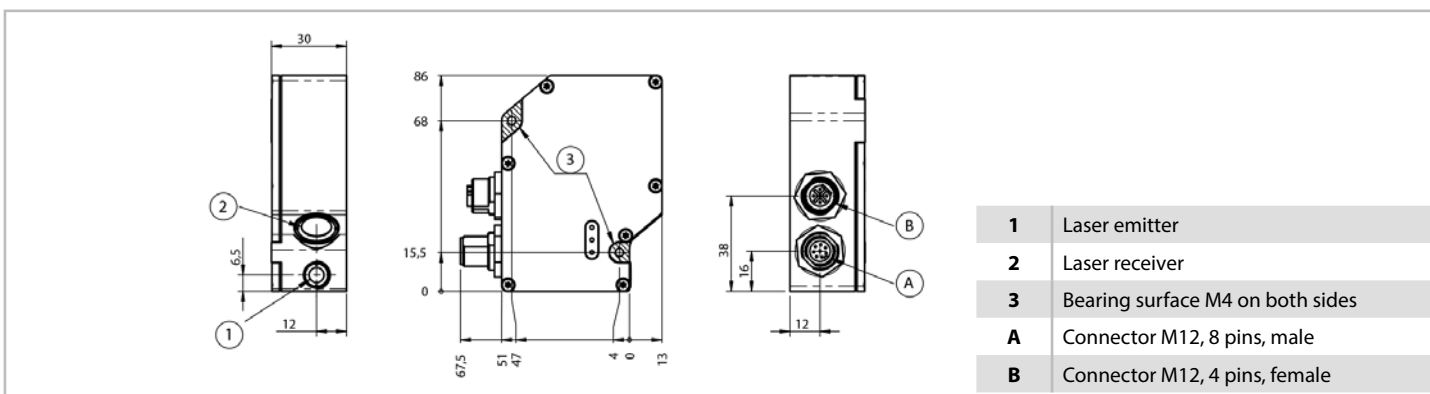
## TECHNICAL DATA

Measurement range	[mm]	20...24
Linearity	[ $\mu\text{m}$ ]	2
Resolution	[ $\mu\text{m}$ ]	0.06
Light source		Laser (red)
Laser class (EN 60825-1)		Class 2
Beam diameter	[mm]	<0.15
Wave length	[nm]	658
Response time	[ $\mu\text{s}$ ]	<33
Output rate	[ $\text{s}^{-1}$ ]	10...30000
Analog output		0...10 V / 4...20 mA
Switching output		PNP/NPN push-pull, NC/NO switchable
Number of switching output		4
Voltage drop	[V]	<1.5
Switching current	[mA]	100
Switching frequency	[kHz]	15
Interface		Ethernet TCP/IP
Transmission rate	[Mbit/s]	100
Supply	[VDC]	10...30
Current consumption (at 24 VDC)	[mA]	280
Protection class		IP67
Operating temperature	[°C]	-10...+40
Storage temperature	[°C]	-20...+70
Temperature drift	[ $\mu\text{m}/\text{K}$ ]	0.2
Ambient illuminance max.	[lx]	10000
Short-circuit proof		Yes
Inverse-polarity protection		Yes
Overload protection		Yes
Life cycle (at 25 °C)	[h]	100000
Teach-In modes		Window teach-in and foreground teach-in
Connection		Connector M12, 8 pins and connector M12, 4 pins (Ethernet)
Housing		Aluminium, lens cover: glass
Weight	[g]	230

## MEASUREMENT RATE

Object colour	Measurement rate
White (Degree of reflection 90 %)	30 kHz
Grey (Degree of reflection 18 %)	30 kHz
Black (Degree of reflection 6 %)	1 kHz

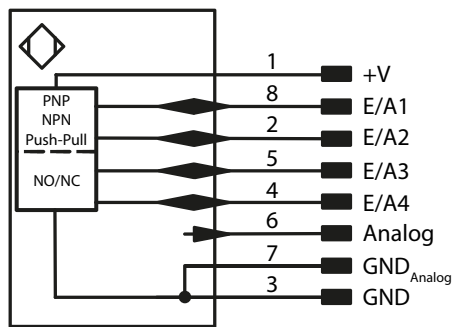
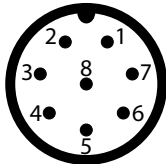
## TECHNICAL DRAWING



## ELECTRICAL CONNECTION

### Connector M12, 8 pins, male

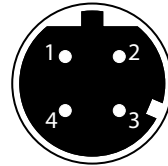
Function	Sensor connector	Connection cable K8P
+V	Pin 1	WH
Input/switching output 2	Pin 2	BN
GND	Pin 3	GN
Input/switching output 4	Pin 4	YE
Input/switching output 3	Pin 5	GY
Analog output	Pin 6	PK
GND <sub>Analog</sub>	Pin 7	BU
Input/switching output 1	Pin 8	RD



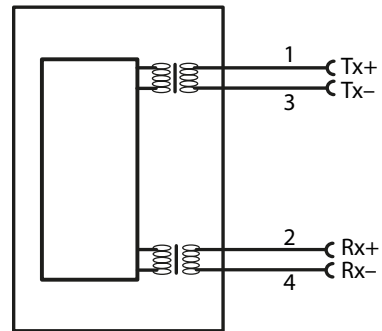
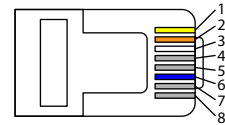
### Connector M12, 4 pins, female, d-coded

Function	Sensor connector	Connection cable
Tx+	Pin 1	Pin 1
Rx+	Pin 2	Pin 3
Tx-	Pin 3	Pin 2
Rx-	Pin 4	Pin 6

Sensor connector



RJ45 connector connection cable



## ORDER CODE

LAW -

Measurement range [mm]

20...24

4

## ACCESSORIES

### Cable with mating connector M12 (female), 8 poles, shielded

K8P2M-S-M12	2 m, straight connector
K8P5M-S-M12	5 m, straight connector
K8P10M-S-M12	10 m, straight connector
K8P2M-SW-M12	2 m, angular connector
K8P5M-SW-M12	5 m, angular connector
K8P10M-SW-M12	10 m, angular connector

### Digital displays for sensors with analog output, 2 channel

WAY-AX-S <sup>1)</sup>	touch screen, supply: 18...30 VDC
WAY-AX-AC <sup>1)</sup>	touch screen, supply: 115...230 VAC

For more information and options please refer to the [WAY-AX data sheet](#).

<sup>1)</sup>The power supply of the sensor is not provided by the display.

### Cable with mating connector M12 (male) to RJ45, 4 poles, shielded

K4P2M-M-M12-RJ45	2 m, straight connector
K4P5M-M-M12-RJ45	5 m, straight connector
K4P10M-M-M12-RJ45	10 m, straight connector

Subject to change without prior notice.

WayCon Positionsmesstechnik GmbH

Email: [info@waycon.de](mailto:info@waycon.de)

Internet: [www.waycon.biz](http://www.waycon.biz)

**WayCon**

Positionsmesstechnik

Headquarters Munich

Mehlbeerstr. 4

82024 Taufkirchen

Tel. +49 (0)89 67 97 13-0

Fax +49 (0)89 67 97 13-250

Office Cologne

Auf der Pehle 1

50321 Brühl

Tel. +49 (0)2232 56 79 44

Fax +49 (0)2232 56 79 45