

# INSTALLATION GUIDE

## Laser Displacement Sensor Series LAS

For further information please see the data sheet at [www.waycon.biz/products/laser-sensors/](http://www.waycon.biz/products/laser-sensors/)

### FIRST STEPS

WayCon Positionsmesstechnik GmbH would like to thank you for the trust you have placed in us and our products. This manual will make you familiar with the installation and operation of our laser sensors. Please read this manual carefully before initial operation!

Unpacking and checking:

Lift the device out of the box by grabbing the housing. Please pay attention not to touch the laser window. After unpacking the device, check it for any visible damage as a result of rough handling during the shipment. Check the delivery for completeness.

If necessary consult the transportation company, or contact WayCon directly for further assistance.

### SAFETY INSTRUCTIONS LASER CLASS 2

- The irradiation can lead to irritation especially in a dark environment. Do not point at people!
- Caution: Do not look into the beam!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Attach the device so that the warning is clearly visible and readable.
- Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

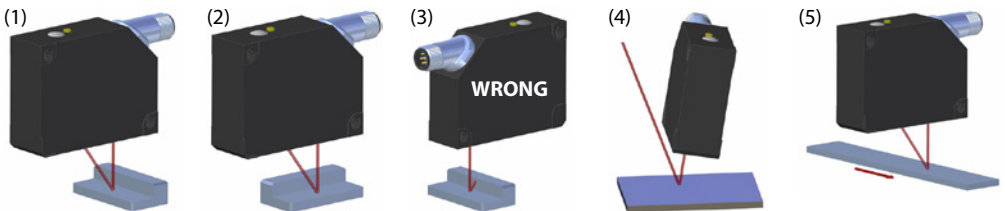
### INSTALLATION

For triangulation sensors like the LAS, there is a simple rule, that the distance between sensor and target should be as small as possible. The smaller this range the better the linearity and accuracy of the sensor.

The receiver optics must be able to detect the light spot directly (figures 1 and 2). The light path must not be blocked, as shown in figure 3.

For highly polished or mirror-like objects it is important to keep the direct reflection away from the detector. In these cases, it is recommended to slightly tilt the sensor (figure 4).

Optimum results are obtained by transverse installation of the sensor with respect to the target movement (figure 5).



# ELECTRICAL CONNECTION

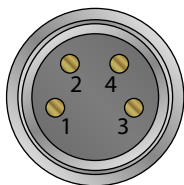
## General information

- If external Teach-In option is not used, the Teach-In wire must be attached to GND. More information about the Teach-In function can be found in the [teaching guide](#).
- The max. accuracy will be reached >15 minutes after power on.
- Electromagnetic compatibility: The sensor must be grounded correctly; a shielded cable is highly recommended.

### LAS-TM, LAS-TB, LAS2-TM:

#### Connector output M8, male, 4 pins

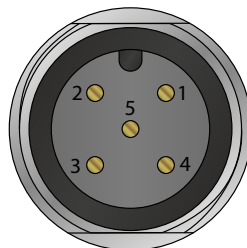
Pin	Function
1	+V
2	Teach-In
3	GND
4	Signal



### LAS-T5:

#### Connector output M12, male, 5 pins

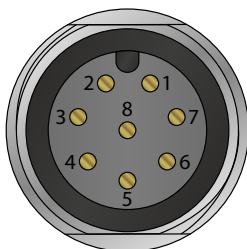
Pin	Function
1	+V
2	Signal
3	GND
4	n. c.
5	Teach-In



### LAS-T, LAS-TL:

#### Connector output M12, male, 8 pins

Pin	Function
1	n. c.
2	+V
3	4...20 mA
4	Teach-In
5	Alarm
6	0...10 V
7	GND
8	Synchro-In



## Alarm output

The alarm output is activated, as soon as the object is outside of the measurement range, or if the received signals are useless for a distance measurement (too low, or too high). In both cases the analog output signal is 4 mA / 0 V.

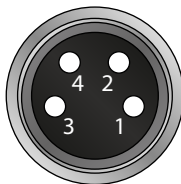
The sensor has no internal hold function to bridge missing measurement signals. Therefore, it may happen in critical applications (extremely bright surfaces) that the output shortly drops to 4 mA / 0 V, when the measurement signal gets lost. By checking the status of the alarm output before making a measurement, this false output signal can be identified.

# ACCESSORY CABLE

### LAS-TM, LAS-TB, LAS2-TM:

#### Cable with mating connector M8, female, 4 pins

K4PXM-S-M8	X m, straight connector, shielded
K4PXM-SW-M8	X m, angular connector, shielded



Pin	Cable colour
1	BN
2	WH
3	BU
4	BK

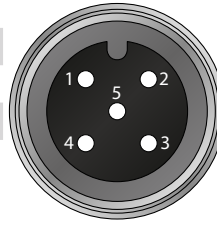
## ACCESSORY CABLE

### LAS-T5:

#### Cable with mating connector M12, female, 5 pins

K5PXM-S-M12 X m, straight connector, shielded

K5PXM-SW-M12 X m, angular connector, shielded



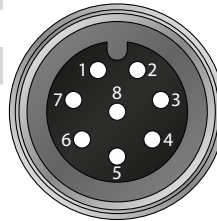
Pin	Cable colour
1	BN
2	WH
3	BU
4	BK
5	GY

### LAS-T, LAS-TL:

#### Cable with mating connector M12, female, 8 pins

K8PXM-S-M12 X m, straight connector, shielded

K8PXM-SW-M12 X m, angular connector, shielded



Pin	Cable colour
1	WH
2	BN
3	GN
4	YE
5	GY
6	PK
7	BU
8	RD

## TROUBLESHOOTING

Error	Possible cause	Correction
The sensor does not measure	The sync. input or the teach-in wire is connected to +V.	Connect the sync. Input or the teach-in wire to 0V.
	The receiving beam is covered by an object / edge / step.	Make sure that no object blocks the laser beam. Is the laser spot visible for the sensor?
	No receiving signal (transparent or highly reflective object).	See figure 4 (above). If possible, use a diffuse reflecting surface (e. g. white paint).
The sensor has incorrect measuring values	Mutual optical interferences between two or more sensors.	Switch off close sensors that might influence the receiving unit of the sensor.
	Strong ambient light (e. g. direct sun light).	Prevent ambient light with a shield.
	Semi-transparent, transparent, or highly reflective objects.	Make sure that the laser spot falls on a diffuse reflecting target.
The sensor does not reach the specified accuracy	Rough surface	A sensor with a laser line will work better.
	Colour edges	Mount the sensor the correct way.



## MAINTENANCE

The window of a laser sensor should be clean, in order to get the best possible measurement results. Dust, dirt or drops of liquid can impair the measurement result and in the worst case cause a wrong measurement result.

The following cleaning methods are suitable:

1. dry cleaning using a soft brush.
2. with a dry, soft, antistatic cloth.
3. wet cleaning with clear water, about 30 °C, if necessary add a bit of mild soap.

Do **not** use glass cleaner!

## DECLARATION OF EU-CONFORMITY

WayCon Positionsmesstechnik GmbH  
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82024 Taufkirchen / Germany

We declare that the products to which the present declaration relates comply with the essential requirements of the given directive(s) and have been evaluated on the basis of the listed standard(s).

Classification	Laser Sensors
Series	LAS-TM, LAS-T5, LAS-T, LAS-TL, LAS-TB
Directive(s)	2014/30/EU, 2011/65/EU
Standard(s)	EN 60947-5-2:2007+A1:2012, Abs/Sec. 8.6, EN 60947-5-7:2003, Abs/Sec. 8.6 ( <i>not LAS-TB</i> ), EN 55011:2016+A1:2017 (Group I, Class B) IEC/EN 60825-1:2014, EN 50581:2012 EN 61131-9:2013 ( <i>only LAS2-TM</i> )

The declaration of conformity loses its validity if the product is misused or modified without proper authorisation.

Taufkirchen, 14.04.2021

Andreas Träger  
CEO