

# LASER DISTANCE, LEVEL and SPEED SENSOR

## LD90-3



- *Industrial distance and speed sensing*
- *Collision avoidance for cranes and vehicles*
- *Level measurement in silos*
- *Laser altimeter*
- *Sensor for ship docking*

### **Key features**

- Accurate & dynamic measurement of distance and speed
- Excellent performance and reliability; lightweight and stable metal housing
- Short high-energy infrared light pulses provide excellent interference immunity
- Measurements are fast offering update rates as high as 200 Hz / 2 kHz / 12 kHz
- Measurements can be taken through glass windows into sealed containers
- Narrow measurement beam with very low divergence provides excellent spatial resolution
- Measurements can be taken to almost any surface regardless of the incident beam angle or surface characteristics
- Measurements are unaffected by the temperature of the material surface and of temperature gradients in the medium between the sensor and the target surface

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**RIEGL**  
LASER MEASUREMENT SYSTEMS

# RIEGL LD90-3 standard models

Application	Instrument type	Range reflectorless	Range with retroreflector	Accuracy, typically	Update rate (selectable)	RS232 & RS422	ECP	4 - 20 mA current output *	0 - 10 V voltage output *	2xPNP switching output *	data interface
General purpose distance meter	LD90-3100HS	150 m	>1000 m	±15 mm	1, 200 Hz	•	•	•	•	•	•
High Range ship docking sensor, Laser altimeter	LD90-3300	400 m	>1000 m	±50 mm	0.5, 100 Hz	•	•	•	•	•	•
	LD90-3300HR	500 m	>1000 m	±50 mm	0.5, 100 Hz	•	•	•	•	•	•
	LD90-31K-HiP	1500 m	2500 m	±50 mm	0.5, 3 Hz	•	•	•	•	•	•
Very High-Speed distance meter	LD90-3100VHS-FLP	200 m	350 m	±25 mm	2000 Hz	•	•	•	•	•	•
	LD90-3300VHS-FLP	400 m	700 m	±50 mm	2000 Hz	•	•	•	•	•	•
Extremely High-Speed scanner applications	LD90-3100EHS-FLP	200 m	350 m	±25 mm	12 000 Hz	•	•	•	•	•	•
	LD90-3300EHS-FLP	400 m	700 m	±50 mm	12 000 Hz	•	•	•	•	•	•
"High Penetration" level meter	LD90-3200HiP	400 m	2000 m	±25 mm	0.5, 3 Hz	•	•	•	•	•	•
Laser altimeter	LD90-3800VHS-FLP	750 m	1000 m	±50 mm	2000 Hz	•	•	•	•	•	•
	LD90-3800EHS-FLP	750 m	1000 m	±50 mm	12 000 Hz	•	•	•	•	•	•
Distance sensor for High-Temperature targets	LD90-3100HS-HT	3-7 m (at 1450 °C)		±15 mm	1, 20 Hz	•	•	•	•	•	•

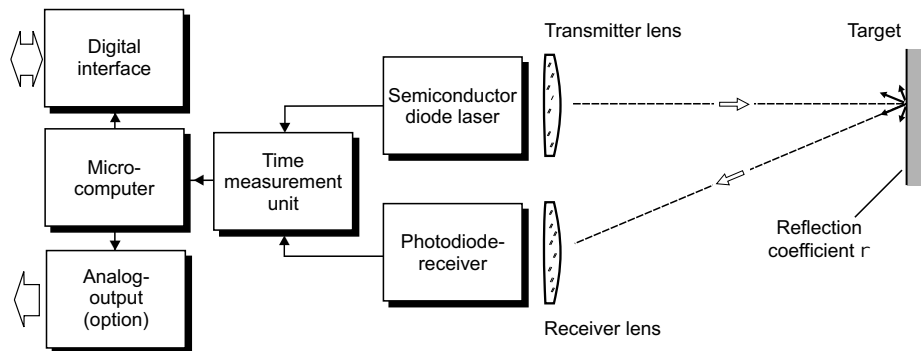
\* optional

For more information, see the detailed data sheets. Further customer specified models available on request.

## Principle of operation

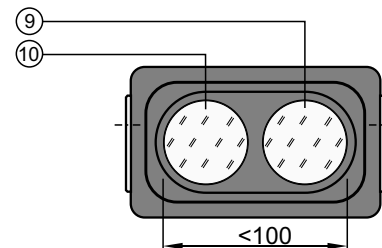
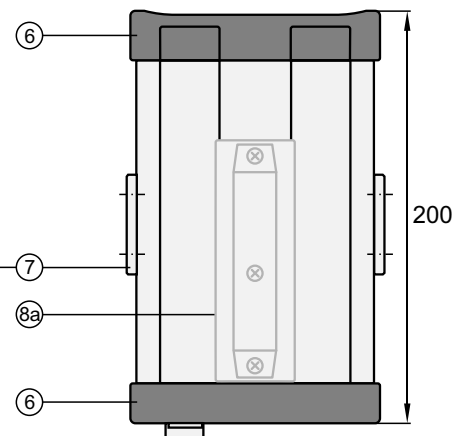
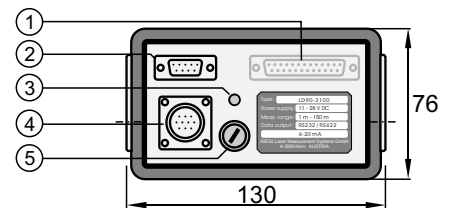
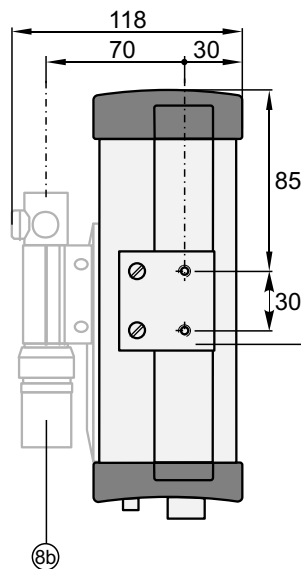
An electrical pulse generator periodically drives a semiconductor laser diode sending out infrared light pulses, which are collimated and emitted by the transmitter lens. Via the receiver lens, part of the echo signal reflected by the target hits a photodiode which generates an electrical receiver signal.

The time interval between the transmitted and received pulses is counted by means of a quartz-stabilised clock frequency. The result is fed into the internal microcomputer which processes the measured data and prepares it for the various data outputs.



## Elements of operation and dimensional drawings

- (1) 25pole socket for ECP interface (EHS types only)
- (2) 9pole socket for RS232/RS422 data interface
- (3) LED "POWER ON"
- (4) 10pole socket for power supply, optional analog outputs, and switching output
- (5) Fuse holder



- (6) Rubber-armoured front and rear panel
- (7) Mounting plates with 2xM6 threads on both sides of the instrument
- (8a) Mounting for aiming device (optional)
- (8b) Telescope (optional)
- (9) Receiver lens
- (10) Transmitter lens

## General technical data *RIEGL* LD90-3

### Data interfaces

RS232 & RS422 (selectable, standard for all types)	Baud rate selectable between 150 Bd and 19200 Bd, further 38.4 kBd and 115.2 kBd
RS422 high speed (available for VHS types only)	115.2 kBd, asynchronous
ECP (available for EHS types only)	Parallel interface (extended capabilities port)

### Available data output options (not for all types)

Analog current	4-20 mA <sup>1)</sup> , not galvanically isolated, resolution 16 Bit, linearity 1 ‰ of full scale
Analog voltage	0-10 V <sup>1)</sup> , not galvanically isolated, resolution 12 Bit
Switching output	2 x PNP transistor driver <sup>2)</sup> built-in thermal and short-circuit protection switching current 200 mA max. switching voltage = supply voltage

### Power supply

Standard	11-28 Volts DC, approx. 10 Watt built-in protecting circuitry for over-voltage and reverse polarity
Option 220 V AC	external power supply module VNG95

### Temperature range

Operation	-10° C to +50° C
Storage	-20° C to +60° C

### Physical data

Dimensions	200 x 130 x 76 mm (L x W x H)
Weight	approx. 1.5 kg
Protection class	IP64

### Aiming device (optional)

Telescope or red semiconductor-laser beampointer to be mounted on top of the instrument

- 1) Operating range selectable via serial interface
- 2) Switching points adjustable via serial interface

Information contained herein is believed to be accurate and reliable. However, no responsibility is assumed by *RIEGL* for its use. Technical data are subject to change without notice. Data sheet *RIEGL* LD90-3, 08/06/2006



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