

Industrial Laser Distance Sensor

LD 90 – 450



The LD90-450 is an economically priced, high-reliability distance sensor for industrial use "reflectorless" or with retroreflecting targets. The implemented "High Penetration" technology allows its use even under conditions of bad visibility, e.g. rain, dust, fog, etc.

Two switching outputs can be used as limit switches for anti-collision protection.

- ***Industrial distance sensing***
- ***Measurement on cranes***
- ***Anti-collision sensing on cranes***
- ***Level measurement in silos***
- **'High-Penetration' Technology**
- **Internal Fault-Detection**
- **Analog and serial data outputs**
- **PNP Transistor switching outputs**
- **Low power consumption**

Specifications

Measuring range ¹⁾

depending on the reflection coefficient ρ of the target
 good, diffusely reflecting targets, $\rho \geq 80\%$
 bad, diffusely reflecting targets, $\rho \geq 10\%$
 Reflecting foil ²⁾

LD90-450 up
 to 150 m up to
 50 m
 1000 m
 1 m

Minimum distance ³⁾

Accuracy ⁴⁾⁵⁾ Measuring
 time ⁶⁾ Reproducibility
 (mm) ⁷⁾

typically ± 25 mm

150ms	300ms	500ms	1s	2s
± 50	± 30	± 20	± 15	± 10

Resolution of digital data output

5 mm

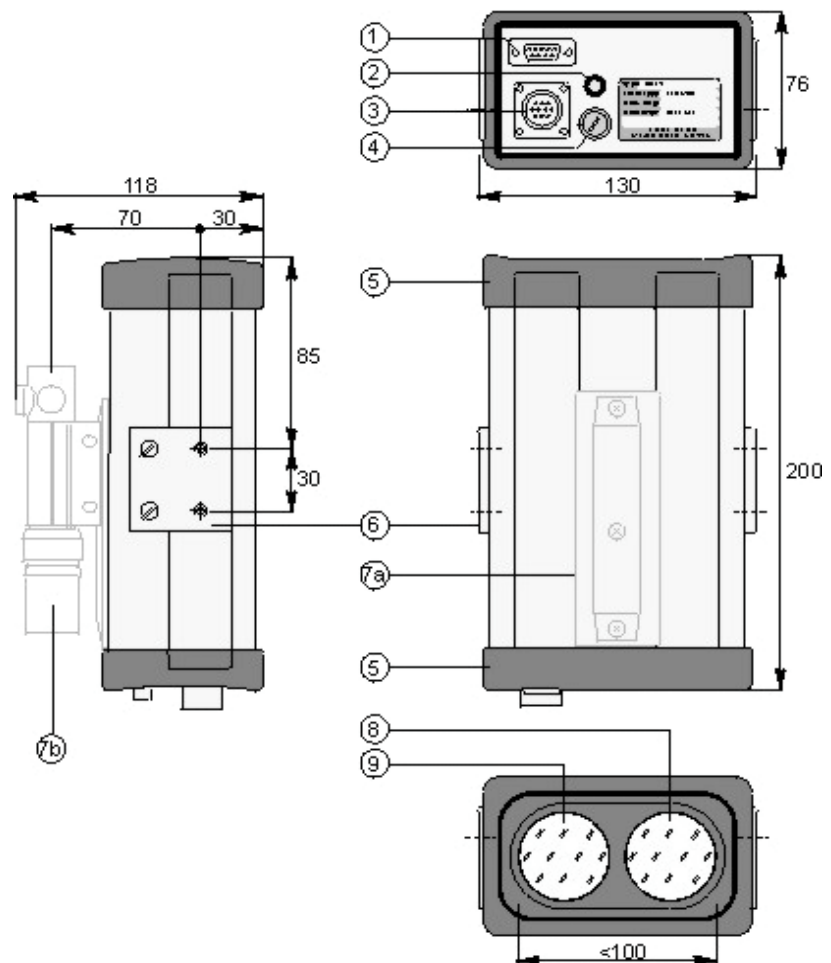
Divergence of the infrared measuring beam ⁸⁾

2 mrad

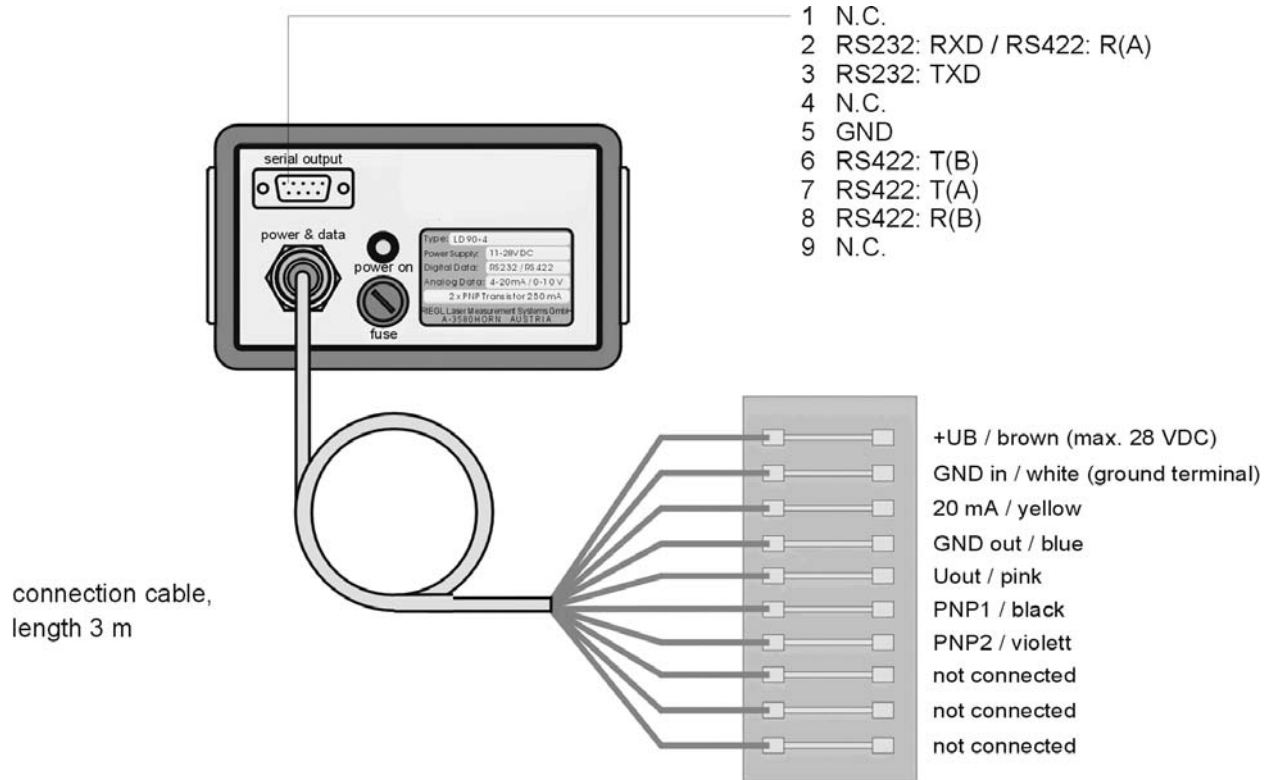
- 1) for measuring time 1 s; for shorter measuring time, the maximum range is slightly lower
- 2) reflecting foil 3M 2000X or equivalent, dimensions $\geq 0.45\text{m} \times 0.45\text{m}$
- 3) minimum distance 5 m for full accuracy with retroreflecting targets
- 4) standard deviation, plus distance depending error ≤ 20 ppm
- 5) ≥ 10 min after power up
- 6) adjustable via RS232
- 7) depending on measuring time
- 8) 1 mrad corresponds to 100 mm beamwidth per 100 m of distance

Elements of operation and dimensional drawings

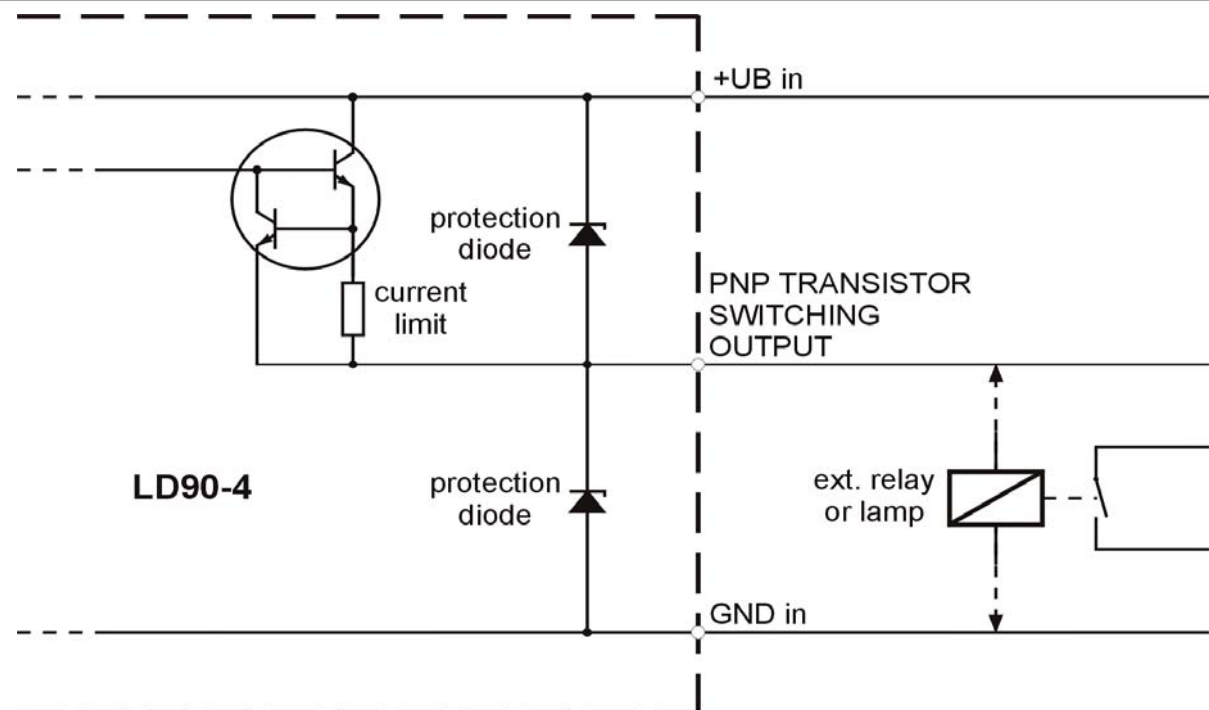
- (1) 9 pole socket for RS232/
RS422 data interface
- (2) LED "POWER ON"
- (3) Cable duct for shielded
connection cable
- (4) Fuse holder
- (5) Rubber-armored front
and rear panel
- (6) Mounting plates with
2xM6 threads on both
sides of the instrument
- (7a) Mounting for telescope
(optional)
- (7b) Telescope (optional)
- (8) Receiver lens
- (9) Transmitter lens



Pinning of the connection cable



2 x PNP Transistor switching output



General technical data LD90-4

Data interface

Serial interface	RS232 or RS422 ¹⁾ Baud rate 300 Bd ... 19200 Bd ¹⁾
Data protocol	ASCII (optional 3964R for Siemens PLC)
Analog current	4-20 mA ²⁾ , not galvanically isolated resolution 16 Bit, linearity 0.5 ‰ of full scale
Analog voltage	0-10 V ²⁾ , source resistance 1 kOhm resolution 12 Bit, linearity 2 ‰ of full scale
Switching output	2 x PNP transistor driver ³⁾ built-in thermal and short-circuit protection switching current 250 mA max. switching voltage = supply voltage

Power supply

voltage range 11 - 28 Volts DC
voltage ripple ≤ 1 Vpp
built-in protecting circuitry against
over and under voltage and reverse
polarity power consumption approx. 4
Watts

Temperature range

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

Physical data

Case	Aluminum, colorless anodized
Dimensions	front and rear side rubber armored
Weight	200 x 120 x 70 mm (L x W x H)
Protection class	approx. 1.6 kg IP64

Eye safety class

according to CENELEC EN 60825-1:2001

Class 1
Laser Product



This device conforms to the Council Directive 89/336/EEC concerning electromagnetic compatibility and is therefore marked with the CE sign.

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

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Data sheet : M-FE-40-PDF-4

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