

# DIGITAL LASER DISTANCE METER **LD05e-A10**

The *RIEGL* LD05e-A10 is a **multi-purpose laser distance meter** based on precise time-of-flight laser range measurement. It uses state-of-the-art **digital signal processing** enabling precise distance measurement for complex multi-target situations even under bad visibility conditions. Digitizing the echo signal and subsequent analyzing allows multi-target distance measurements. Five target distances can be detected and provided for each laser shot.

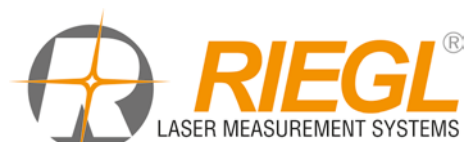


The LD05e-A10 can be configured for various application modes:

- **High Penetration Mode** for complex target situations, based on a sequence of laser shots, self-adapting (rather low) data update rate  
Significant enhancement of the maximum range based on Pre-Detection-Averaging
- **Fast Mode** with an update rate between High Penetration Mode and High Speed and Mode
- **High Speed Mode** for simple target situations, high data update rate

- Short infrared laser pulses providing **excellent interference immunity**
- Narrow measurement beam with low divergence for **excellent spatial resolution**
- **Measurement to almost any surface** regardless of the angle of incidence of the beam and the surface characteristics
- Lightweight, stable aluminium housing, ready **to be used in harsh industrial environments**.
- Different basic instrument types with pre-configured measurement modes, but also **individually programmable for customer specific applications**

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# Technical Data LD05e-A10



## Performance Examples

High Penetration Mode	
<b>Measurement range</b> <sup>1)</sup> for natural targets, $\rho \geq 80\%$ for natural targets, $\rho \geq 10\%$ reflector foil <sup>2)</sup> & plastic cat's-eye reflector	up to 300 m up to 90 m up to 1300 m
<b>Minimum range</b> <sup>3)</sup>	2 m
<b>Measurement accuracy</b> <sup>4) 5)</sup>	typ. $\pm 20$ mm
<b>Measurement rate</b> <sup>6)</sup>	typ. 10 Hz
<b>Max. number of targets</b>	4

Fast Mode	
<b>Measurement range</b> <sup>1)</sup> for natural targets, $\rho \geq 80\%$ for natural targets, $\rho \geq 10\%$ reflector foil <sup>2)</sup> & plastic cat's-eye reflector	up to 150 m up to 50 m up to 700 m
<b>Minimum range</b> <sup>3)</sup>	2 m
<b>Measurement accuracy</b> <sup>4) 5)</sup>	typ. $\pm 20$ mm
<b>Measurement rate</b>	100 Hz
<b>Max. number of targets</b>	3


High Speed Mode	
<b>Measurement range</b> <sup>1)</sup> for natural targets, $\rho \geq 80\%$ for natural targets, $\rho \geq 10\%$ reflector foil <sup>2)</sup> & plastic cat's-eye reflector	up to 120 m up to 40 m up to 600 m
<b>Minimum range</b> <sup>3)</sup>	2 m
<b>Measurement accuracy</b> <sup>4) 5)</sup>	typ. $\pm 20$ mm
<b>Measurement rate</b>	2000 Hz
<b>Max. number of targets</b>	3

- 1) The following conditions are assumed
  - target is larger than footprint of laser beam, • perpendicular angle of incidence, • visibility 10 km
  - typical values for average ambient brightness conditions. In bright sunlight, the operational range is considerably shorter than under an overcast sky. At dawn or at night the range is even higher.
- 2) Reflecting foil 3M DG4090 or equivalent, dimensions  $\geq 0.45 \times 0.45 \text{ m}^2$ .
- 3) Minimum distance 3 m for full accuracy with reflecting foil and minimum distance 5 m for full accuracy with plastic cat's-eye reflector.
- 4) One sigma standard deviation @ 50 m range under RIEGL test conditions.
- 5) Plus distance depending error  $\leq \pm 20$  ppm.
- 6) With self-adapting measurement time selected, the effective data update rate depends on the number of targets and their reflectivity and distance.

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## Laser Specifications

<b>Wavelength</b>	near infrared
<b>Beam divergence</b> <sup>1)</sup>	2.0 x 2.6 mrad
<b>Laser product classification</b> according to IEC 60825-1:2007  The following clause applies for instruments delivered into the United States: Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.	<b>Laser Class 1M</b>    Viewing the laser output with certain optical instruments (for example telescopes and binoculars) may pose an eye hazard.

1) Measured at the 1/e<sup>2</sup> points. 1mrad corresponds to 10 cm beam width per 100 m distance.

## General Technical Data

<b>Data interfaces</b>	
Data port	RS232/RS422
Configuration port	RS232/RS422
<b>Power supply</b>	11 – 28 V DC, 24 VDC nominal
<b>Power consumption</b>	16 W
<b>Main dimensions</b> (L x W x H) mm	238x133x84
<b>Weight</b>	approx. 2.0 kg
<b>Protection class</b>	IP64
<b>Temperature range</b>	
Operation	-10°C up to +50°C <sup>1)</sup>
Storage	-20°C up to +60°C <sup>1)</sup>
<b>Mounting</b>	Flanges on both sides
<b>Analog Output</b>	4 – 20 mA <sup>2)</sup> , not galvanically isolated, resolution 16 Bit, linearity 1 ‰ of full scale
<b>Voltage Output</b>	0 – 10 V <sup>2)</sup> , not galvanically isolated, source resistance 100 Ohm, resolution 16 Bit, linearity 4 ‰ of full scale
<b>Switching Output</b>	2 x PNP transistor driver <sup>3)</sup> , built-in thermal and short-circuit protection, switching current 200 mA max., switching voltage = supply voltage

1) The life expectancy (MTBF) of the instrument is reduced in case of operation and/or storage at high temperatures.

2) Operating range selectable via serial interface.

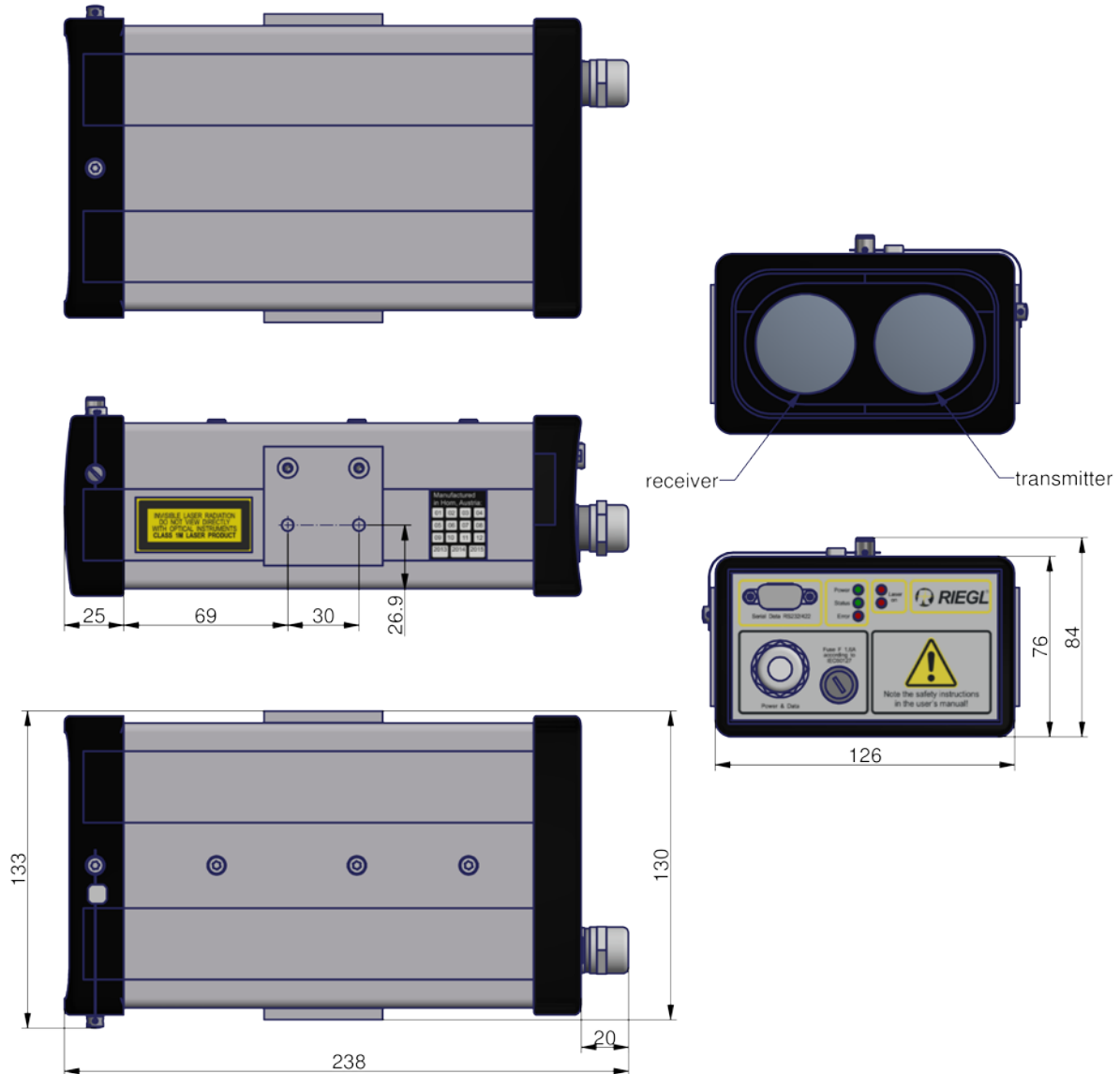
3) Switching points adjustable via serial interface.

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## Dimensional Drawings

All dimensions in mm



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