

DIGITAL LASER DISTANCE METER LD05e-HT

The *RIEGL* LD05e-HT 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. It is additionally optimized for **very high target temperatures**.

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-HT 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

- 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-HT



Performance Examples

High Penetration Mode	
Measurement range ¹⁾ for natural targets, $\rho \geq 80\%$ for natural targets, $\rho \geq 10\%$ reflector foil ²⁾	up to 260 m up to 80 m up to 1100 m
Measurement range for targets with high surface temperature Liquid steel, temperature up to 1450°C	up to 50m
Minimum range ³⁾	1 m
Measurement accuracy ^{4) 5) 6)}	typ. ± 20 mm
Measurement precision ^{4) 7)}	typ. ± 15 mm
Measurement rate ⁸⁾	typ. 10 Hz
Max. number of targets	4


Fast Mode	
Measurement range ¹⁾ for natural targets, $\rho \geq 80\%$ for natural targets, $\rho \geq 10\%$ reflector foil ²⁾	up to 130 m up to 40 m up to 600 m
Measurement range for targets with high surface temperature Liquid steel, temperature up to 1450°C	up to 25m
Minimum range ³⁾	1 m
Measurement accuracy ^{4) 5) 6)}	typ. ± 20 mm
Measurement precision ^{4) 7)}	typ. ± 18 mm
Measurement rate	100 Hz
Max. number of targets	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 3m for full accuracy with reflecting foil
- 4) One sigma standard deviation @ 50 m range under *RIEGL* test conditions.
- 5) Accuracy is the degree of conformity of a measured quantity to its actual (true) value.
- 6) Plus distance depending error $\leq \pm 20$ ppm.
- 7) Precision, also called reproducibility or repeatability, is the degree to which further measurements show the same result.
- 8) 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

Wavelength	near infrared
Beam divergence ¹⁾	2.0 x 2.6 mrad
Laser product classification 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.	Laser Class 1M  Viewing the laser output with certain optical instruments (for example telescopes and binoculars) may pose an eye hazard.

1) Measured at the 1/e² points. 1mrad corresponds to 10 cm beam width per 100 m distance.

General Technical Data

Data interfaces Data port Configuration port	 RS232/RS422 RS232/RS422
Power supply	11 – 28 V DC, 24 VDC nominal
Power consumption	16 W
Main dimensions (L x W x H) mm	243x133x84
Weight	approx. 2.0 kg
Protection class	IP64
Temperature range Operation Storage	-10°C up to +50°C ¹⁾ -20°C up to +60°C ¹⁾
Mounting	Flanges on both sides
Analog Output	4 – 20 mA ²⁾ , not galvanically isolated, resolution 16 Bit, linearity 1 ‰ of full scale
Voltage Output	0 – 10 V ²⁾ , not galvanically isolated, source resistance 100 Ohm, resolution 16 Bit, linearity 4 ‰ of full scale
Switching Output	2 x PNP transistor driver ³⁾ , 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.

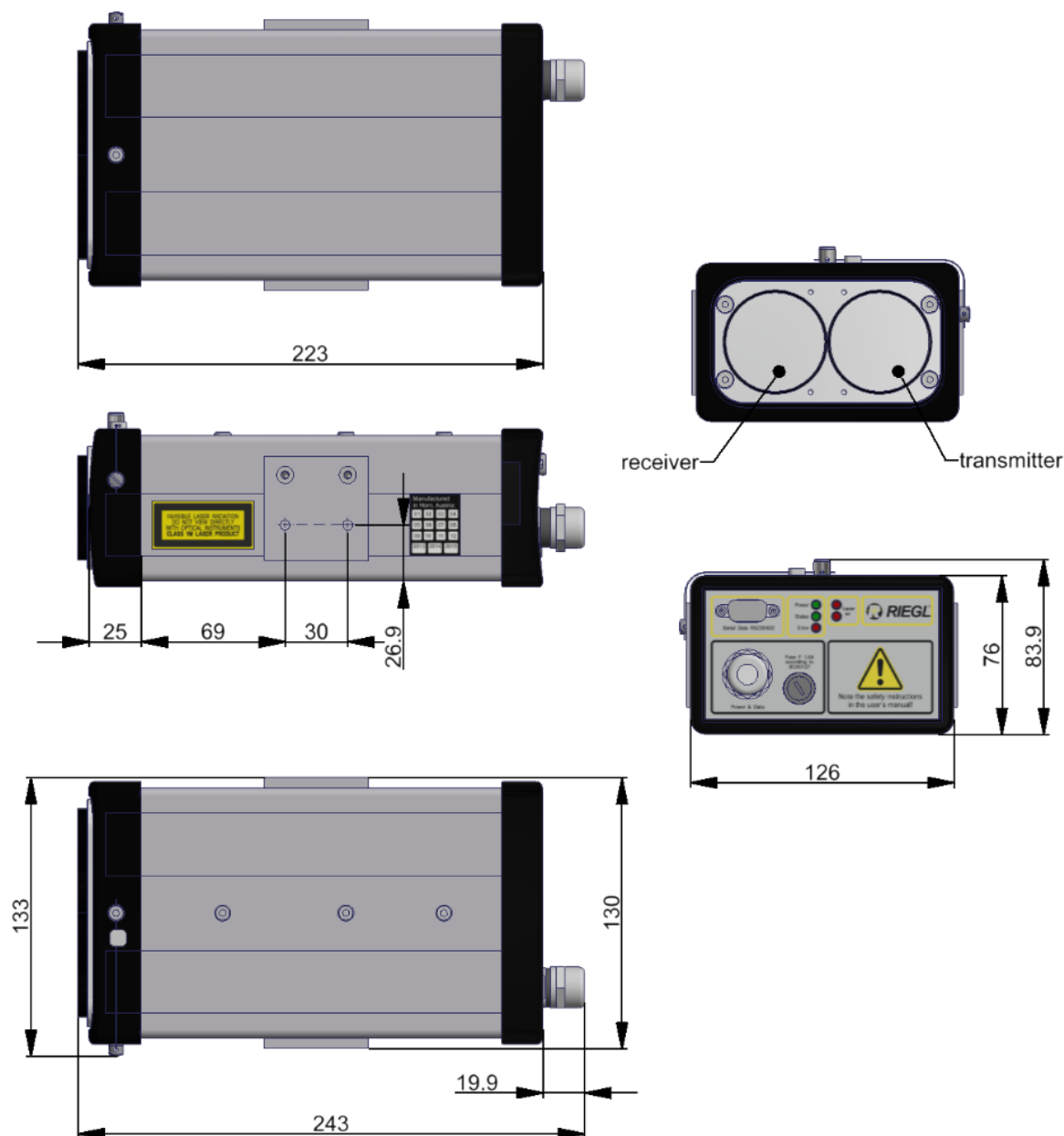
3) Switching points adjustable via serial interface.

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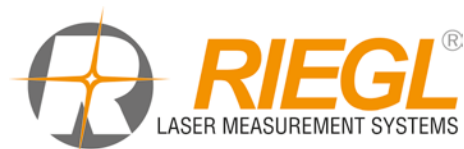
Dimensional Drawings

All dimensions in mm



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