

LDM51 Lumos

Laser distance measurement

The brand new measurement gauge LDM51 Lumos measures contactless the distance between itself and nearly every surface and material. Up to a distance of 100 m no additional reflectors are required for measuring. The maximum distance exceeds the range of 500 m. Due to the high measuring frequency of 100 Hz also fast movements of the target can be captured.

The LDM51 Lumos operates with a modulated visible laser with low beam divergence. Newly developed algorithms and most modern technologies of the opto-electronic signal processing allow a save, highly precise and fast distance measurements that can be applied in almost all areas of machinery and plant engineering.

Other application examples are level measurement, detection of geometric dimensions like length, width or thickness and position measurement.

While developing the LDM51 Lumos there was paid particular attention to the operation in outdoor areas with high influence of constant light by solar radiation and high temperatures. By its robust aluminum housing and the optional heating the LDM51 Lumos is prepared for safe use in harsh surrounding conditions.



Key Features

- **Contactless laser distance measurement on nearly every type of surface**
- **Reliable operation in outdoor applications under high common light influence**
- **Measuring even on extremely bad reflecting targets (coal, rubber, rust)**
- **Riskless usage due to eye-safe visible laser beam (Laser class 2, EN 60825-1:2007)**
- **3 programmable digital output lines**
- **Freely programmable and scalable analogue interface (4 ... 20 mA)**

Options and accessories

- PROFIBUS DP and SSI Interface
- Integrated, temperature controlled heating
- Protection tube with purging air connection
- Greyfilter window for signal attenuation
- Software tool for parameterization and measurement data acquisition with graphical visualization

Applications

- Plant automation and process technology
- Positioning applications in transportation and logistic
- Distance measurement in mining, building, forestry and material-handling technology
- Machine-observation and –positioning in metal industry e.g. rolling-mills, de-coiler
- Long term observation of buildings and technical installations, e.g. churches, tide gates, docks
- Position and height detection in crane applications
- Level measurement in silos and heaps on materials like sand, earth, feed, cereals, cement
- Thickness, length and width detection
- Volume and area calculation
- Diameter of steel coils
- Distance measurement on hot glowing steel with temperatures over 1300 °C

Technical Data

General measurement range	0.15 m ... 500 m
Typical measurement ranges	
Special Reflective target (Oralite 5200)	50 m ... 500 m
Reflecting foil (3M 3279)	0.15 m ... 100 m
Natural surfaces, 80% remission ¹⁾	0.15 m ... 100 m
Natural surfaces, 6% remission ¹⁾	0.15 m ... 65 m
Accuracy (1 σ)	± 1 mm (Measurement frequency ≤ 20 Hz) ≤ 2.5 mm (Measurement frequency 20 Hz ... 100 Hz)
Resolution	Standard 0.1 mm, user scalable
Measuring frequency maximum	100 Hz
Laser class	Laser class 2, EN 60825-1:2007, ≤ 1 mW
Laser wavelength	635 nm
Laser beam divergence	< 0.35 mrad
Interfaces	RS232, RS422, RS485 (selectable) Optional: Profibus DP-V0 Slave, 12 MBaud, IEC 61158 IEC 61784 Optional: SSI (50 kHz ... 1 MHz)
Digital switching output lines	3 \times High-Side-Switch, max. 0,2 A
Analog interface	4 mA ... 20 mA
Trigger line	1 \times Trigger IN / OUT, 3 VDC ... 30 VDC
Connectors	1 \times 12-pin M16 Optional: 1 \times 8-pin M12 for SSI-Interface Optional: 2 \times 5-pin M12 for Profibus DP-V0
Display and control elements	OLED Matrix-Display, 2 \times status-LED, 4 membrane buttons
Power supply	10 VDC ... 30 VDC
Power consumption	< 10 W (without integrated heating) < 42 W (with integrated heating at VDC = 24 V)
Operating temperature ²⁾	-10 $^{\circ}$ C ... 50 $^{\circ}$ C -40 $^{\circ}$ C ... 50 $^{\circ}$ C (with integrated heating, option -h)
Humidity	15 % ... 95 %, not condensing
Protection class	IP 67
Shock resistance	30g / 6ms (ISO 9022-3-30-03-2) – persistence shock 10g / 6ms (ISO 9022-3-31-01-1(2)) – continuous shock 1g / 10 Hz ... 2000 Hz (ISO 9022-3-36-02-1(2)) – sine-shaped swing
EMV	EN 61326-1
MTBF	35,435 h (MIL HDBK 217 F)
Dimensions	120 mm \times 76,5 mm \times 40 mm (l \times w \times h, incl. connectors)
Weight	ca. 700 g

¹⁾ Measurement range for natural, diffuse reflecting surfaces, depending on target surface type, stray light influences and atmospheric conditions.

²⁾ Operating temperature is about 10 K higher than environmental temperature

