

RF51

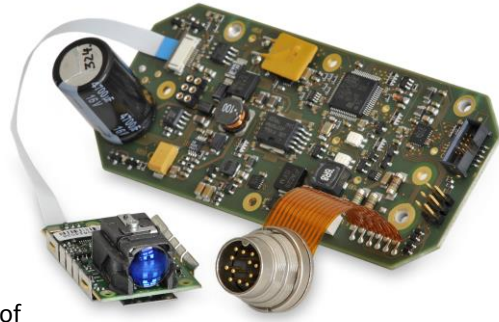
OEM laser module for distance measurement

The RF51 is an OEM laser module to integrate laser distance measurement capabilities into existing measurement equipment. It consists of the laser measuring module and an interface board. Compared to the industrial laser distance measurement gauge LDM51, the housing and the control elements are omitted.

The gauges of the Lumos series measure contactless the distance between themselves 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 200 m. Due to the high measuring frequency of 100 Hz also fast movements of the target can be captured.

The RF51 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.



Key Features

- **OEM laser module**
- **Contactless laser distance measurement on nearly every type of surface**
- **Measuring even on extremely bad reflecting targets (coal, rubber, rust)**
- **Riskless usage due to eye-safe visible laser beam (Laser class 2, EN 60825-1:2014)**
- **3 programmable digital output lines**
- **Freely programmable and scalable analogue interface (4 ... 20 mA)**

Options and accessories

- PROFIBUS DP Interface
- Software tool for parameterization and measurement data acquisition with graphical visualization

Applications

- Additional distance measurement for image processing or camera applications
- Positioning applications in transportation and logistic
- Obstacle detection for autonomous vehicles
- Distance measurement in mining, building, forestry and material-handling technology
- Machine-observation and –positioning in metal industry e.g. rolling-mills, de-coiler
- 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
- Diameter of steel coils
- Distance measurement on hot glowing steel with temperatures over 1300 °C

Technical Data

General measurement range	0.15 m ... 200 m
Typical measurement ranges	
Special Reflective target (Oralite 5200)	50 m ... 200 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 ... 85 m
Accuracy, absolute, (1 σ) ¹⁾	$\leq \pm 3.9$ mm
Repeatability, max., (standard deviation)	± 0.6 mm
Resolution	Standard 0.1 mm, user scalable
Measuring period, minimum	10 ms
Laser class	Laser class 2, EN 60825-1:2014, ≤ 1 mW
Laser wavelength	655 nm
Laser beam divergence	< 0.2 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: 2 \times 5-pin M12 for Profibus DP-V0 Optional: 1 \times 8-pin M12 for SSI
Power supply	10 VDC ... 30 VDC
Power consumption	< 5 W
Operating temperature	-10 °C ... 50 °C
Humidity	15 % ... 90 %, not condensing
Protection class	-
Shock resistance	-
EMV	-
MTBF	35,435 hours (MIL HDBK 217 F)
Dimensions	108 mm \times 45,5 mm \times 35 mm (l \times w \times h, incl. connectors)
Weight	ca. 100 g

¹⁾ Depending on target reflectivity, stray light influences and environmental conditions, as well as measurement frequency and mode.

