

# LDM 301

## Laser Distance Measurement Sensor



### Product Description

The new LDM 301 Laser distance sensor measures distance and speed of natural targets without a reflector. A reflector can be used for increasing the measuring range. The sensor needs only a very short time to measure; it facilitates distance measurement to or from moving objects. The laser pulse's time-of-flight measurement principle which it uses is specifically suitable where great distances have to be measured and for applications in harsh industrial environments.

With the compact design shape, simple setup and configured with standard interfacing facilities, the LDM 301 can easily be installed. For interfacing an analogue output, 2 digital outputs and a serial interface RS232 or RS422 are available.

Standard LDM 301 delivery includes integral heating, a status display and a red Laser pointer. A modular setup allows for easy complementation with accessories or special models as may be required in particular applications.

### Applications

Equipment and performance features of the LDM 301 warrant multiple possibilities of application in industrial environments:

- Process monitoring in steel works and rolling mills
- Fill-level measurement
- Positioning of cranes, loading and handling equipment
- Measurement of points that cannot be accessed, for example, inside of cavities, tubes or containers
- Position monitoring of vehicles or ships

### Advantage

- Broad working range
- Great reach, also without reflectors
- Very short times to measure
- Programmable serial, digital and analogue outputs
- Allows synchronisation with external devices
- Compact design shape, IP67 protection
- Integrated red Pilot Laser, optionally telescope sign for alignment
- Easy to install and operate

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## Laser Distance Measurement Sensor



### Technical Data

<b>Application</b>	<b>Distance-measurement for solid surfaces without reflector</b>
<b>Measuring range</b> <sup>1</sup>	<b>0.5 m ... 300 m</b> for natural surfaces <sup>2</sup> <b>0.5 m ... 3000 m</b> with target board
<b>Measuring accuracy</b>	$\pm 20$ mm (at 2 kHz measuring rate and at 100 Hz output rate) $\pm 60$ mm (at 2 kHz measuring and output rate)
<b>Resolution</b>	<b>1 mm</b>
<b>Measuring time</b>	<b>0.5 ms</b> (Standard models), Option 0.1 ms
Measuring range for speed <sup>3</sup>	0 m/s ... 100 m/s (Time to measure 0.1 s ... 0.5 s)
Measuring Laser <sup>4</sup>	905 nm (infrared), Laser Class 1, EN 60825-1:2003-10
Pilot Laser	650 nm (visible red), Laser Class 2, $\leq 1$ mW (on, off, blinking)
Operating modes	Single and continuous measurement with average, ext. triggering
<b>Serial interface</b> <sup>5</sup>	<b>RS232 or RS422</b> <ul style="list-style-type: none"><li>• Transfer rate 1.2 kBaud ... 460.8 kBaud, ASCII, 8N1</li><li>• Programming with Windows terminal program (e.g. LDMTTool or HyperTerminal)</li><li>• programmable automatic start of measurement after switching on</li></ul>
<b>Analog output</b>	<b>4 mA up to 20 mA current output</b> <ul style="list-style-type: none"><li>• programmable distance range limits</li><li>• load resistance <math>\leq 500 \Omega</math></li></ul>
<b>Digital switching output</b>	<b>2x „high-side switch“</b> <ul style="list-style-type: none"><li>• max. load capacity 0,2 A, permanent short-circuit-proof</li><li>• adjustable windowing functionality</li></ul>
<b>Trigger input</b>	<ul style="list-style-type: none"><li>• max. trigger pulse 30 VDC</li><li>• trigger edge and delay adjustable</li></ul>
<b>Supply voltage</b>	<b>10 up to 30 V direct voltage</b>
Power consumption	$< 5$ W (operation without heating) 11.5 W (operation with heating at 24 V)
<b>Operating temperature</b>	<b>-40 °C up to +60 °C</b>
Storage temperature	-40 °C up to +70 °C
Humidity	15 % ... 90 %
Dimensions	136 mm x 57 mm x 104 mm
Weight / protection class	approx. 800 g / IP 67
EMV	EN 61000-6-2 and EN 55011
Shock resistance	10 g / 6 ms persistence shock DIN ISO 9022-3-31-01-1
Scope of delivery	Sensor with prefabricated cable 2 m, connector 1x 12-pole (BINDER series 723) M18; printed user manual; CD with test version of LDMTTool and documentation
Options	Cable with varied length 2m, 5m 10m, connecting box, Profibus gateway, alignment telescope RED DOT, protection equipment on customer demand

<sup>1</sup> dependent on target reflectance, stray light influences and atmospheric conditions

<sup>2</sup> natural, diffuse reflecting surfaces, do not use bad reflective materials (dark / black surfaces) as target under 10 m

<sup>3</sup> Measuring distance to objects: 0.5 m ... 700 m

<sup>4</sup> Standard models: 1.7 mrad, Special models: 10 mrad

<sup>5</sup> Ordering number LDM 301/RS232 or LDM 301/RS422