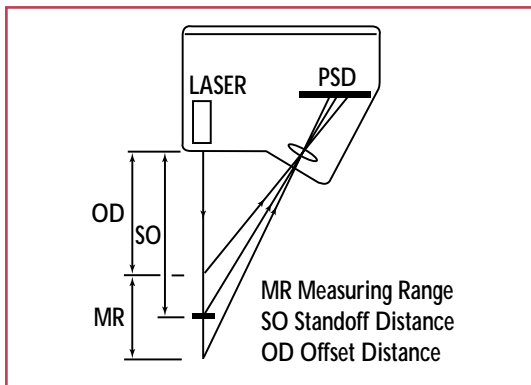




LDS Laser Distance Sensor

Triangulation Measurement Principle

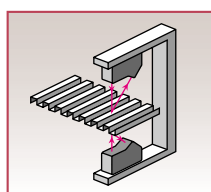
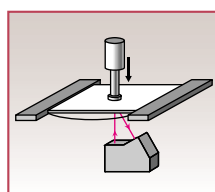
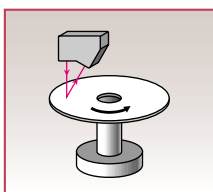
A light beam emitted by a laser diode is projected onto the object to be measured via a system of lenses. Reflection off the object's surface produces diffusely scattered light. After passing through imaging optics, a portion of the light falls onto a position-sensitive detector (PSD) as a light spot. The PSD is a special photodiode with two current outputs. The ratio between the output currents is determined by the position of the light spot on the PSD. If the object is located in the focal point of the laser beam (center of measurement range), the reflected light spot will hit the PSD exactly in the middle, resulting in two equal output currents. Displacing the object will lead to a change in angle (in relation to the sensor). As a result, the light spot will hit the PSD more to the left or more to the right. In turn, the change in position of the light spot will lead to a change in the ratio of the output currents. The ratio is translated into a distance by signal processing electronics. An internal feedback loop automatically compensates for differences in detected light intensity due to the object's color and texture by varying power to the laser diode. A modulated version is available which only responds to 50 kHz frequency and effectively cancels any influence from other light sources.



Technical Specifications

Model Number		Measurement Range (MR)	Stand Off (SO)	Offset Distance (OD)	Resolution* 0.1% of MR	Linearity 0.5% of MR	Triangulation Angle at SO	Spot Size at SO
LDS 80/10	mm	10	80	75	0.010	0.050	30	0.200
	in	0.39	3.15	2.95	0.0004	0.0020	30	0.008
LDS 80/20	mm	20	80	70	0.020	0.100	30	0.200
	in	0.79	3.15	2.76	0.0008	0.0040	30	0.008
LDS 80/30	mm	30	80	65	0.030	0.150	30	0.200
	in	1.18	3.15	2.56	0.0012	0.0060	30	0.008
LDS 90/40	mm	40	90	70	0.040	0.200	26	0.250
	in	1.57	3.54	2.76	0.0016	0.0080	26	0.010
LDS 90/45	mm	45	90	67.5	0.045	0.225	26	0.250
	in	1.77	3.54	2.66	0.0018	0.0090	26	0.010

* - Resolution is target dependent and reported without averaging at full bandwidth (worst case). Data averaging will improve resolution specifications (see chart in general brochure).



Options & Accessories

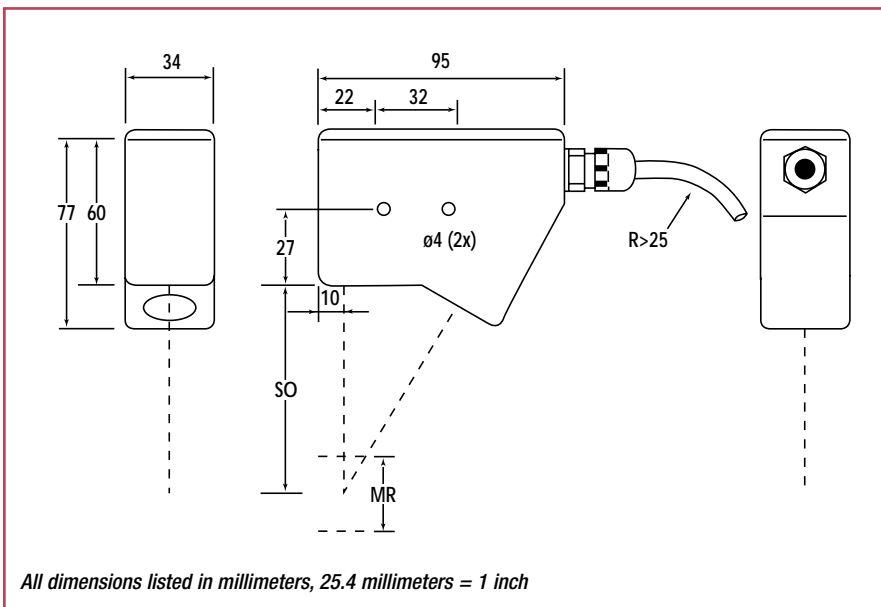
- High-Speed Analog Output (up to 100 kHz Response Frequency)
- Standard Modulated Version† (3 kHz Response Frequency)
- High-Speed Modulated Version† (up to 10 kHz Response Frequency)
- 40 mW Infra-Red Laser Diode (780nm, Class IIb)

† - Modulated version for ambient light conditions

LASER SOURCE		Standard	Modulated*	ENVIRONMENTAL	
Laser type		GaAlAs	GaAlAs	Enclosure	N/A
Laser class		IIIb	IIIa (optional IIIb)	Temperature	°C 0 - 50
Laser source power	mW	25 (optional 40)	30 (optional 40)		°F 32 - 122
Wavelength	nm	780	670	Temp. fluctuation	% MR/°C 0.01
Modulation frequency	kHz	n/a	50	Relative humidity	% <90 non-condensing
Lifetime expectancy	hr	100,000	100,000		

ELECTRICAL		Standard	Modulated*	PHYSICAL	
Power supply (linear)	VDC	+15/-15 ±5%	+15/-15 ±5%	Dimensions	mm 95 x 75 x 34
Current draw	mA	< 200	< 200		in. 3.74 x 2.95 x 1.34
Analog output signal	VDC	0 to +10	0 to +10 (opt. 0/4-20 mA)	Weight	g 300
Frequency response	kHz	30 (optional 100)	3 (optional 10)		lbs. 0.66
Detector type	PSD	PSD	PSD	Cable length	m 2.5
					ft. 8

* - modulated version available for use in ambient light conditions



CONNECTION WIRING

Brown	Power (+15 VDC)
White	Power (-15 VDC)
Green / Black	Ground
Yellow	Analog out (0V to +10V)
Gray	Intensity
Red*	Laser ON (+15 VDC)
Blue*	Invalid out
Pink* (option)	Analog out 0/4-20 mA

* Only on modulated versions

1- YEAR LIMITED WARRANTY

The company will replace or, at the company's option, repair any system or parts thereof which are found defective in material or workmanship within one year from the date of shipment. Our obligation with respect to such system or part thereof shall be limited to repair and replacement F.O.B. company's facilities, and in no event shall the company be liable for incidental, consequential or special damages, or for transportation, installation, adjustment or other expenses which may arise in connection with such system or parts. This warranty is expressly made in lieu of any and all other warranties, expressed or implied, including warranties of merchantability and fitness. No waiver, alteration, or modification of the foregoing warranty shall be valid unless made in writing and signed by an executive of the company.

LMI laser sensors are manufactured under one or more of the following U.S. patents: 4,305,661; 4,373,804; 4,375,921; 4,394,683; 4,576,482; 4,667,231; 4,875,776; 5,056,922; 5,114,230; 5,164,579; 5,362,970; 5,510,625; 5,670,787; 5,684,292; 5,691,545; 5,734,172; 5,811,827; 5,854,491; 5,877,491; 5,880,459; 5,940,302; 5,981,965. Other US and foreign patents pending.



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