

Orbit® Non-Contact - Laser Triangulation

For applications where a contact gauging sensor or Confocal is unsuitable, Solartron offers a range of high performance or low cost Non-Contact Laser Triangulation Transducers. This solution is fully compatible with the Orbit® Measurement Network.

LTH and LTM Features

- ▶ 2 mm to 200 mm measurement ranges
- ▶ Up to +/- 0.02% F.S. Accuracy
- ▶ Up to 0.0076 μm resolution
- ▶ 40 kHz sampling speed and up to 4 kHz output
- ▶ Laser Beam Control – on or off
- ▶ Plugs into Orbit® network up to 150 sensors with full control
- ▶ Auto gain circuitry – power automatically adjusts for optimum measurement
- ▶ Gap Time - Bridging function used when measuring parts with holes
- ▶ Diffuse or Specular modes

LT Features

- ▶ 15 mm measurement range with 45 mm offset
- ▶ Teachable settings for different surfaces
- ▶ 0.1% F.S. Accuracy
- ▶ 3 μm resolution

Laser Beam Control – the laser beam can be switched off, allowing multiple lasers to measure points very close together where the beams could interfere. In the beam off mode, the laser head is still powered allowing readings to be taken quickly (0.5 S) after turning the beam on. Beam control is via the Orbit® interface or via the Orbit® ACS using either the Menu or Modbus commands. The laser functions via the Orbit®, interface using Ethernet, Modbus, USB or Serial (RS232). The LTH can also be used with the Orbit® ACS products (with integral display) where control is via the menu or via Orbit® ACS Modbus interface.



Technical Specifications

	High Performance Lasers							Low Cost Laser	
Product	LTMD/25/2/B	LTMD/50/10/B	LTHM/50/20/B	LTHM/120/20/B	LTHM/120/40/B	LTHM/200/100/B	LTHM/300/200/B	LT/15/A	
	LTHD/25/2/B	LTHD/50/10/B	-	-	-	-	-	-	
Range (mm)	2	10	20	20	40	100	200	15	
Offset (mm) (Note 1)	25	50	50	120	120	200	300	53	
Spot Size (µm)	ø30	ø36	ø36	ø100	ø100	ø100	ø130	400x600	
Laser Angle °	45	30	30	20	20	12	8	-	
Linearity (±% FSO) (Note 2)									
Best (±% FSO)	0.01	0.02	0.025	0.025	0.03	0.03	0.03	0.1	
Typical (±% FSO)	0.02	0.04	0.045	0.06	0.05	0.04	0.04		
Best (±µm)	0.2	2	5	5	12	30	60	-	
Typical (±µm)	0.4	4	9	12	20	40	80	-	
Repeatability (µm) (Note 3)									
Best	0.1	0.2	0.4	0.5	1	3	7	3	
Typical	0.2	0.4	0.8	1	2	6	15		
Resolution (µm)									
LTM (Note 4)	0.24	0.3	0.0763	0.0763	0.1526	0.3815	0.7629		
LTM (Note 5)	0.24	0.3	0.23	0.23	0.8	2	4		
LTH Versions	0.02	0.05	N/A	N/A	N/A	N/A	N/A		
LT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	
Laser									
Modes (Note 7)	Diffuse or Specular			Diffuse only			Diffuse		
Weight Head only (g)	203			460					
Power mW / Class (IEC 60825)	< 5 / 3R			< 5 / 3R			2		
Wavelength µm	670			670			650		
Performance									
Max Sampling Frequency (Hz)	40							450	
Orbit® Data Rate (Readings/sec)	3906								
Sampling Cycles	256/512 µS or 1/2/4/8/16/32/64 ms (Selectable)								
Working Bandwidth Hz (Note 6)	1300, 650, 325, 163, 81, 40, 20, 10, 5								

- ▶ Note 1: Distance from the laser face to the middle point of the measuring range (mm)
- ▶ Note 2: Measured on white photographic paper with the laser sample rate set to 4 kHz (LTM) or 4.5 Hz (LT) and averaging 4 ms
- ▶ Note 3: Measured on white photographic paper with the laser sample rate set to 4 kHz (LTM) or 4.5 Hz (LT) and averaging 16 ms, the laser beam is blocked between each measurement
- ▶ Note 4: Resolution 1 LSB of the Digital System
- ▶ Note 5: Standard Deviation of 25 Measurements with the laser pointing at a fixed white photographic paper target with the laser sample rate set to 4 kHz and averaging 16 ms
- ▶ Note 6: Real measurement bandwidth based on ability to reconstruct sine wave at filter frequency
- ▶ Note 7: Specular Mode is recommended for high reflective (shiny) surfaces. ND filter required, specify when ordering
The laser products require 24 V PSIM - See PSIM section