QSS
SENSORS AND COMPONENTS

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ULTRA PRECISION TECHNOLOGIES

Solartron Metrology
Precision Driven

orbit LTH

A high precision non-contact laser for Gauging

Description

Solartron Metrology, the world leader in linear measurement innovation, has now added another high performance sensor to it's line-up. Orbit LTH is a Laser Triangulation unit for higher precision measurements, with 0.02% F.S. reading over 2 or 10mm measurement ranges. With the 2mm stroke, that means accuracy up to +/- 0.4 µm!

Its advantages include:

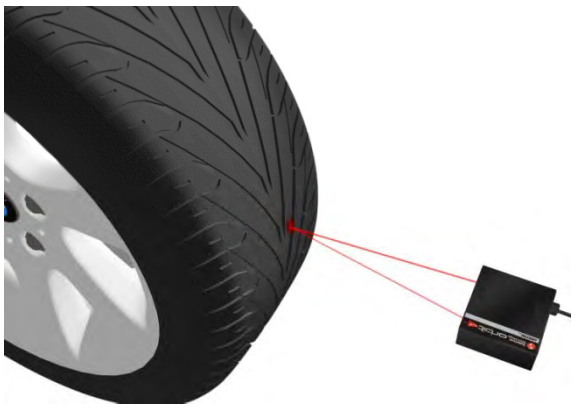
• Auto Gain Circuitry: The unit automatically adjusts the power to the laser based on feedback from the material, providing better readings on more difficult surfaces

• Gap Time: If you are checking a surface with gaps or holes that could throw off data, the laser has a bridging function where you can program the laser to account for those dropoffs. Your data is then less likely to be skewed.

• Diffuse or Specular modes: Instead of purchasing a separate unit for Diffuse or Specular applications, the laser can switch between the two different modes, depending on the material. For Specular Mode, the laser must be tilted to 22.5 degrees from the perpendicular axis.

Like other Solartron sensors, Orbit LTH connects into Orbit®3, allowing you to network up to 150 different sensors! A simple Orbit software interface allows you to adjust the laser.

Product Applications

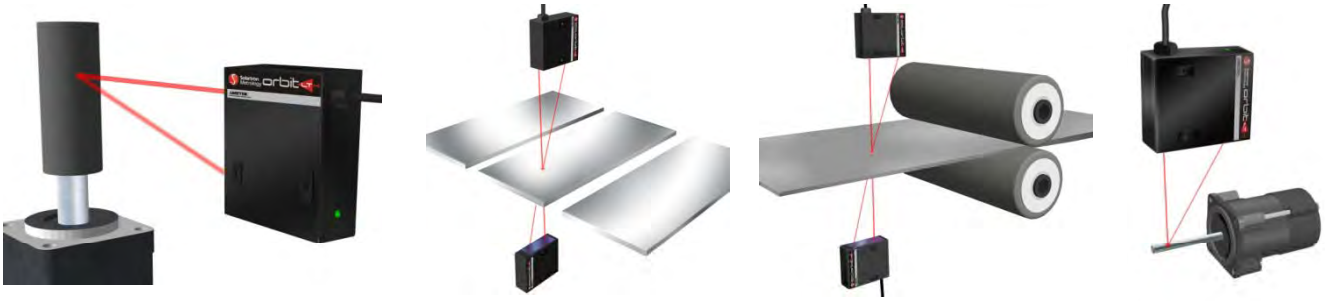


Features

2 mm and 10mm ranges
Up to +/- 0.02% F.S. Accuracy
Up to 0.0076 µm resolution
40 khz sampling speed
Up to 4 khz output
Plugs into Orbit®3, network up to 150 sensors
Also, integrated with Orbit ACS for standalone systems
USB, Ethernet TCP, RS232, and Modbus outputs available

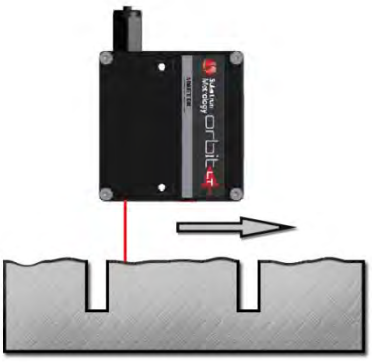
Precision. Quality. Reliability

Product Applications



Indicator Light to show when in range

Gap Time Feature



Diffuse Mode

Specular Mode (for reflective surfaces)

www.federalmetrology.com

Technical Specification

Measurement Range	2 mm		10 mm	
Offset Distance (from laser to start of measurement range)	24mm		45 mm	
Reference Distance (from laser to centre of measurement range)	25mm		50mm	
Spot size (diameter)	30µm		25µm	
	Best	Typical	Best	Typical
Linearity (1) (+%FSO)	0.01%	0.02%	0.03%	0.04%
Repeatability (2)	0.02µm	0.04µm	0.05µm	0.07µm
Repeatability in Dynamic Mode (3)	0.1µm	0.2µm	0.2µm	0.4µm
Resolution (4)	0.0076µm		0.0381µm	
Resolution (5)		0.02µm		0.05µm
Max Sampling Frequency	40khz			
Output frequency	Up to 4khz (via Orbit®3 network)			
Sampling cycles	256/512 us or 1/2/4/8/16/32/64 ms			
Working Bandwidth (6) (eight options)	1300, 650, 325, 163, 81, 40, 20, 10, 5 Hz			

(1) Measured on white photographic paper with the laser sample rate at 4khz and averaging 16 cycles
(2) Static repeatability measured on white photographic paper target set at the reference distance with the laser sample rate at 4 khz and averaging 64 cycles
(3) Dynamic repeatability measured on a white target with the laser sample rate at 4khz and averaging 64 cycles
(4) One LSB (1 bit of the Analogue to Digital conversion)
(5) Resolution based on one standard deviation from a sample of 25 measurements with a laser sample rate 4khz and averaging 64 cycles
(6) Real measurement bandwidth based on ability to reconstruct sine wave at the filter frequency

*Laser can be calibrated to surface you intend to measure. Please contact your local Solartron representative for details.

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Technical Specification

Laser

Laser Power	<5mW
Laser Class (IEC 60825)	3R
Laser Wavelength	670nm
Laser Modes	Diffuse or Specular

Environmental

Sealing for Laser	IP67
Sealing for Laser Interface Electronics	IP43
Storage Temperature (ºC)	-20 to +70
Operating Temperature (ºC)	0 to 40
Humidity Range	10 to 95% Non condensing
Temperature Coefficient	±0.05% to F.S./°C
EMC	Emissions EN61000-6-3
	Immunity EN61000-6-2
Power	
Orbit®3 version	5±0.25 VDC @ 0.09A and 24±2.5 VDC @ 0.06A typical
Orbit ACS version	18 - 24 VDC @ 0.13A typical
Weight of Laser Head only (g)	203

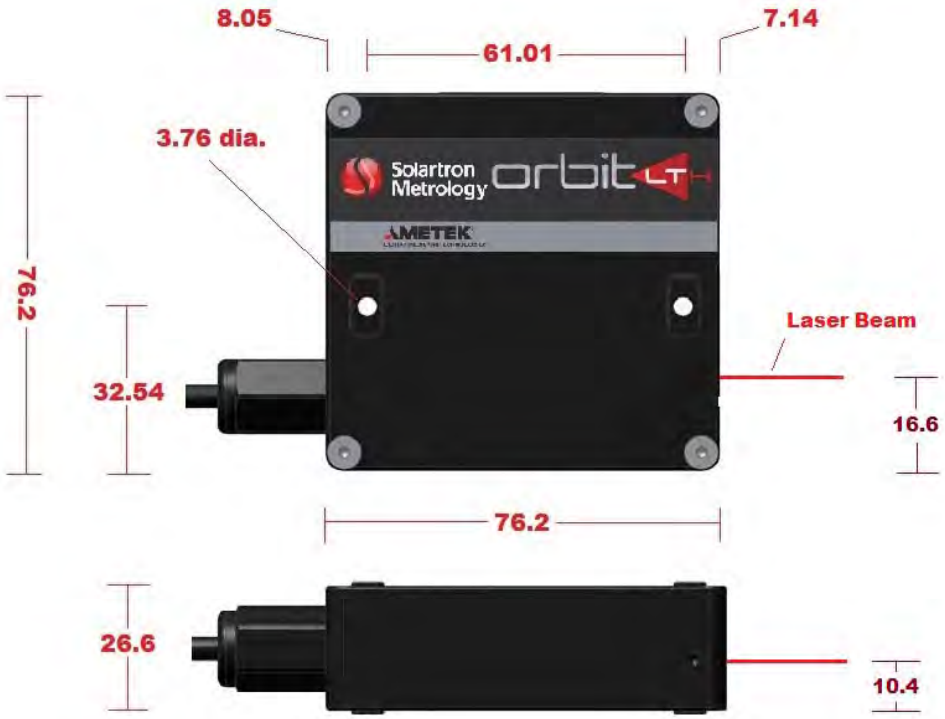
Interface

Orbit®3 version	Integrates with the Orbit®3 network via the Orbit®3 Support Pack for Windows (for Microsoft .NET Framework), version 1.3.1.4 or above. - Available to download, free of charge, at www.solartronmetrology.com
Method to configure laser	Via the Orbit®3 Library, included as part of the pack
Orbit interfaces	USB, Ethernet, RS232
Orbit Power Supplies	Orbit LT Power Supply Module, AC and DC versions available
Orbit ACS version	Integrated into an Orbit ACS module
Method to configure laser	Via the integral display / keyboard or via the PC based configurator software. - Available to download, free of charge, at www.solartronmetrology.com

See separate Orbit®3 manual & Orbit ACS datasheets for further product details

*Accuracy determined on white, non-porous surface, LTH filter set to 200Hz
**Depends on surface being measured, LTH filtering level set

Dimensional Drawing



World leaders in linear measurement

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orbit LT

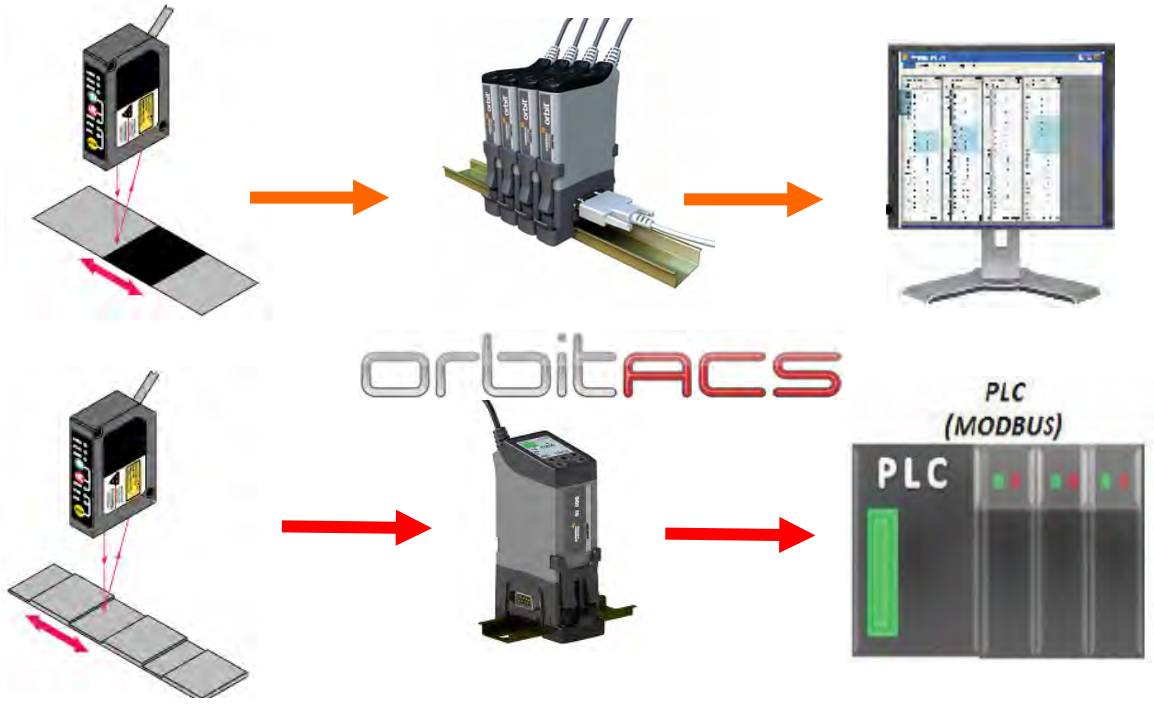
Orbit LT

Solartron's First Non-Contact sensor!

- Compact Laser Triangulation unit
- 15 mm measurement range with 45 mm offset
- Teachable settings for different surfaces
- 0.1 % F.S. Accuracy
- 2 µm repeatability, 1 µm resolution
- Widest range of available outputs: Modbus, RS232 or RS485 Serial, USB, Ethernet TCP, Discrete NPN, PNP & Logic

Solartron Metrology, the world leader in linear measurement innovation, is now adding a non-contact laser to its lineup! Like our standard touch probes, you have a precise, reliable reading that is quick and easy to set up, with multiple outputs available into a PC or PLC.

Orbit LT can be connected with other Solartron probes and sensors via the Orbit network. If a stand-alone or two channel solution is preferred, it can be connected to an SI 100, SI 200, or other Orbit ACS system.



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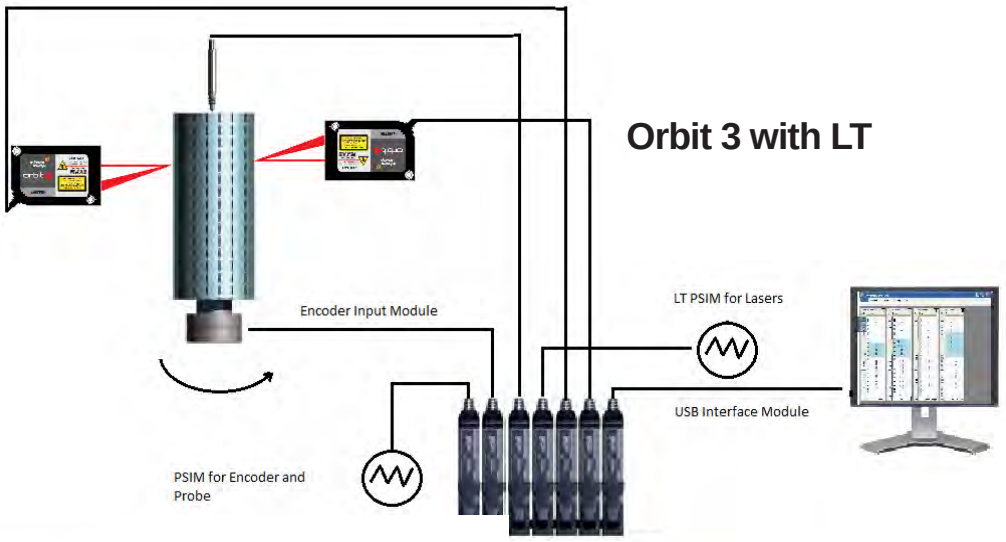
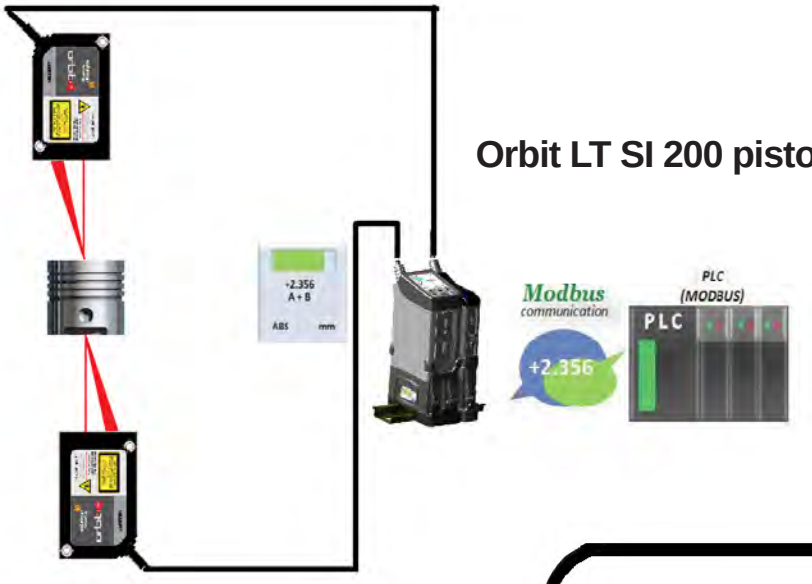
Orbit LT Applications



Orbit 3 with LT



Orbit LT SI 200 piston

Orbit LT with SI 100 chip

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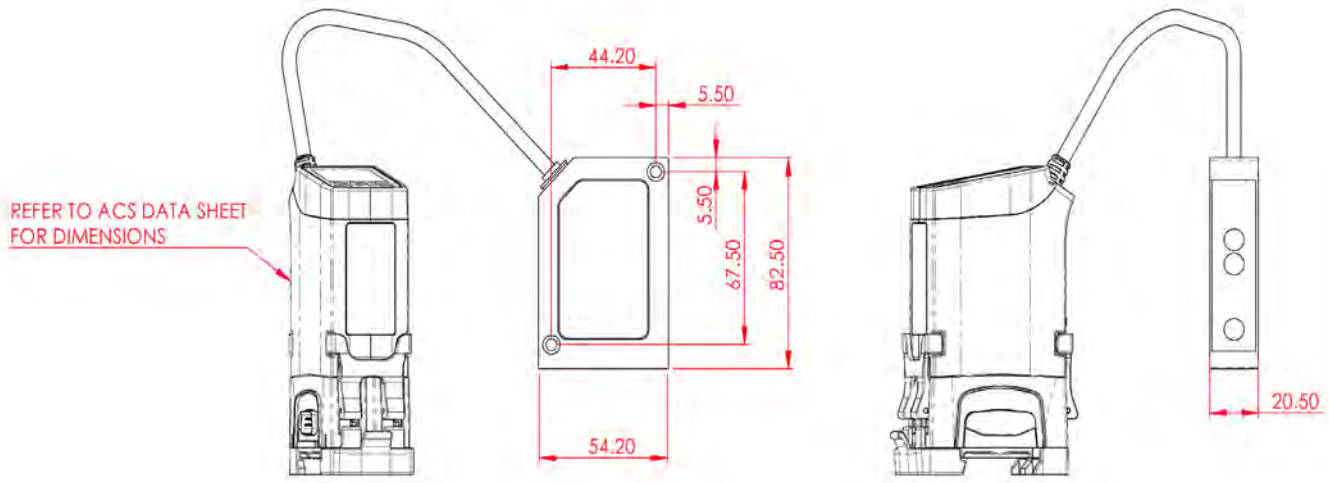
Technical Specification	
System	
Offset	45 mm
Measurement Range	45-60 mm (15 mm total)
Beam type	650 nm visible red IEC and CDRH Class 2 laser; 0.20 mW radiant output power
Beam size	0.6 mm x 0.9 mm @ 45 mm distance
	0.4 mm x 0.6 mm @ 53 mm distance
	0.3 mm x 0.5mm @ 60 mm distance
Accuracy	+/- 0.1% Full Scale Accuracy at range of 49-51 mm from unit
Repeatability	2 µm
Resolution	1 µm
Laser Head	
Colour Sensitivity	< 75 microns for white to dark grey ceramic target
Temperature Drift	+/- 7 µm / °C
Operating Temp Range	-10 to 50 °C
Construction	Housing: Zinc Die Cast
	Cover Plate: Aluminum
	Lens: Acrylic
Dimensions	82.5 mm L x 20.5 mm W x 54.2 mm T
Environmental Rating	IP 67
Vibration Testing	60 Hz, 30 minutes, 3 axis
Mechanical Shock	30 G for 11 milliseconds, 3 axis
Outputs	
Orbit 3	USB 2.0 (via USB Interface Module), Ethernet TCP (via Ethernet IM), RS232 Serial (via RS232 IM)
Supply voltage	Orbit LT Power Supply Interface Module. AC and DC versions available.
Output speed	4.5 Hz, 45 Hz, or 450 Hz (selectable)
	* Orbit LT will NOT function with Orbit 2 module stack.
Environmental Sealing (PIE / T-Con)	IP43 / IP65 Optional
Operating Temperature (PIE / T-Con)	0 °C to +60 °C
Orbit ACS	RS485 or RS232 Serial Communications, Modbus RTU or Modbus ASCII, Discrete NPN/PNP or Logic
Supply voltage	18-30 VDC
Output speed	4.5 Hz, 45 Hz
Operating Temperature	+5 °C to +70 °C
Storage Temperature	-20 °C to +80 °C
Environmental Rating	IP41 (top and front), (IP20 rear)

* Accuracy and repeatability measurements taken on white target at 4.5 Hz. Accuracy and repeatability can vary with different surfaces and measurement speeds. Please contact your Solartron representative for testing of a surface application.

For full Orbit and Orbit ACS system specifications, please refer to their respective catalogs or datasheets. A unit with a 0-10 VDC output is also available. Please contact your Solartron representative or distributor for details.

DIMENSIONAL DRAWING

(SOLARTRON PURSUES A POLICY OF CONTINUOUS DEVELOPMENT. SPECIFICATIONS IN THIS DOCUMENT MAY THEREFORE BE CHANGED WITHOUT NOTICE. DIMENSIONS ARE NOMINAL AND SPECIFIED IN MILLIMETRES)



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Offices worldwide

Agent and distributor details available at
www.solartronmetrology.com

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Solartron pursues a policy of continuous development. Specifications in this document may therefore be changed without notice.

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