

orbit CONFOCAL

Description

Introducing Orbit® Non-Contact Confocal Measurement Transducer, with the compact size of a Solartron gauging probe and the flexibility of Solartron Metrology's Orbit® 3 Digital Measurement System. For applications where a contact gauging sensor is unsuitable, this is a cost efficient non-contact measurement solution that includes an adjustable light source, standoff distances and a small spot size.

Features

- Compact, 8 mm diameter Transducer Gauge Head
- 1 mm or 5 mm measuring range
- 8 mm or 24 mm standoff distance
- Repeatable measurements to ± 1 micron
- 30 micron diameter spot size
- Excellent for measurement on reflective surfaces
- Three Modes of Operation
 - Single Probe
 - Single Probe - Clear Material Thickness Measurement
 - Dual Probe – Two heads on one controller with B-A or B+A measurements
- Adjustment via LCD touch screen or Orbit® 3 controller
- Plugs into Orbit® 3, network for up to 150 different sensors
- USB, Ethernet TCP, RS232, Wireless Bluetooth, Modbus, and Ethernet/ IP outputs available. Also, integrate with Orbit® ACS for standalone systems.

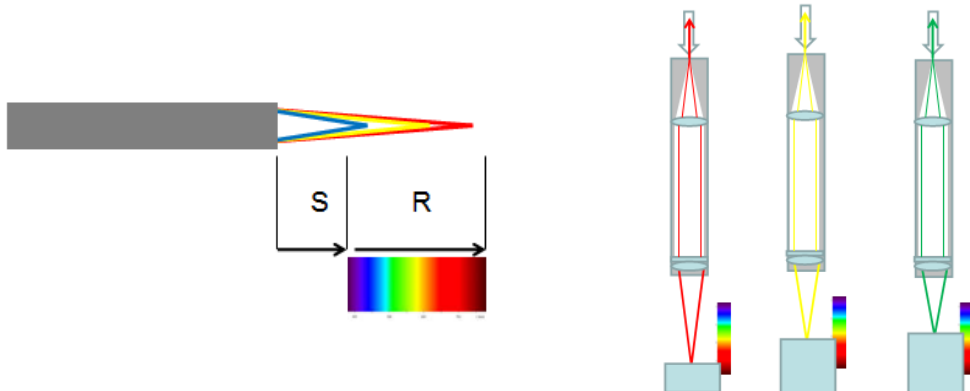


Confocal System

The Orbit® Confocal System comprises of three parts, the controller, the Confocal head and the interconnecting fibre optic cable.



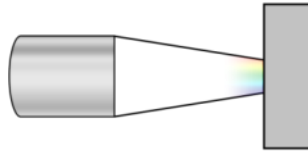
The Confocal system uses a white LED to generate the signal to the Confocal head. Optics within the head split the light into its spectral colours and the colour focused onto the object Being measured is reflected back. This is captured by the head and processed by the controller to give the measurement. The controller provides the ability to change measuring parameters to accommodate different materials.



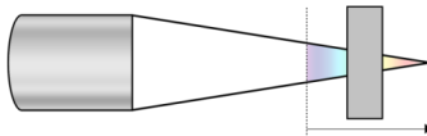
- The Confocal system is best suited for measurement of reflective surfaces which have a smooth finish, including glass.
- The Confocal system can be connected to the Orbit® 3 network to provide great flexibility working with Orbit® lasers, conventional contact probes and third party sensors.
- One advantage of Confocal heads is that the head is totally passive, only light enters and leaves the head.

Reading Modes

- 1) **Single Probe** – For simple non-contact spot measurements
 - *Measure in Normal mode (faster output) or High Precision mode for higher accuracy.*



- 2) **Single Probe Thickness** – Use one probe to measure the thickness of a clear material.



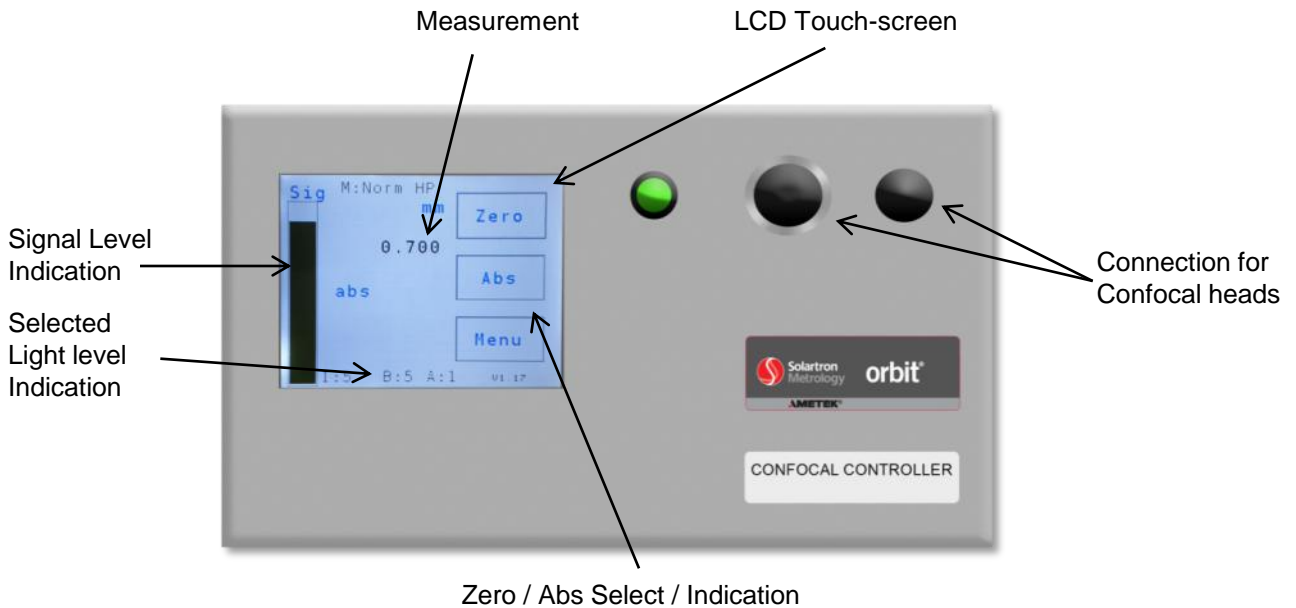
- 3) **Dual Probes** – Connect two heads to one controller for A, B, B-A, or B+A measurement.



For each of these modes, measurements may be taken one of two ways:-

- **Absolute:** The full measurement range is used in an application.
- **Gauging:** The probe is mastered at one point, and a tolerance is checked using a small part of the measurement range. (Higher precision can be attained in this mode. Refer to performance specs for details.)

Controller



The controller unit contains a colour touch screen which can be used to both set up the product and display the current measurement. The power to the head can be adjusted to cope with less reflective materials. Measurement exposure and averaging can be set and the returned signal level can be seen on the bar graph.



Technical Specification

Measurement Performance

Calibrated Range	mm
Standoff (to start of measuring range)	mm
Linearity (full range) ¹	±%FSO µm
Linearity (limited range) ²	±%FSO µm
Resolution	µm
Repeatability ¹	µm
Spot Diameter	µm
Operating Angle	± °
Temperature Coefficient	µm/°C

Confocal Head Type	
C8H/8/1	C8H/24/5
1	5
8	24
0.5	0.2
5	10
0.25	0.1
2.5	5
1	1
2	2
30	30
5	3
2	2

Environmental

Operating Temperature	°C
Storage Temperature	°C
Operating Humidity	
Shock and Vibration	

20 ±5
10 to 50
Do not use controller in wet conditions
Do not expose controller to shock and vibration

Electrical Interface

Power requirements	
Signal Interfaces	
Reading Rate	R/s
Bandwidth (Precision Mode)	Hz
Bandwidth (Normal Mode)	Hz

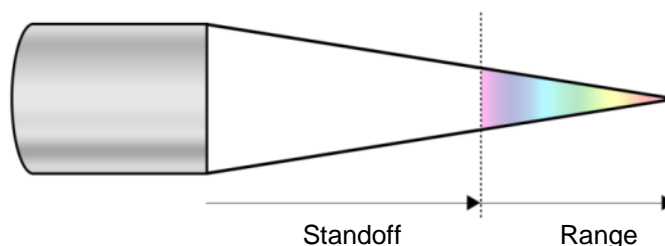
24 VDC from power pack provided
Orbit® 3
4000
10
50

Functional

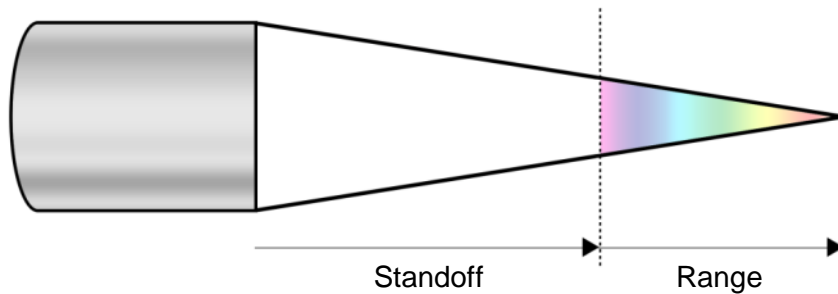
Light Output Level
Exposure Settings
Averaging
Zero or Absolute
Menu
Indications

8 settings to accommodate different levels of reflective surfaces (set from touch screen or Orbit®)
5 ms to 100 ms to accommodate different levels of reflective surfaces (set from touch screen or Orbit®)
1 to 64 set higher to improve signal to noise ratio
Displayed Readings only (set from touch screen)
Touch Screen for setting up
Displayed Measurement and Signal Strength

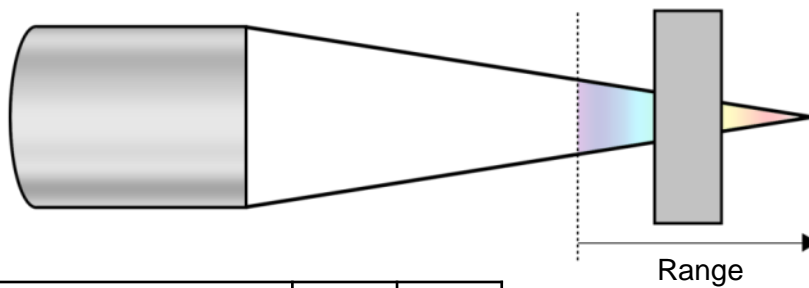
1: Performance on a polished carbide steel surface, other surface colours and surface finishes will degrade the performance



Performance Specification – Single Probe



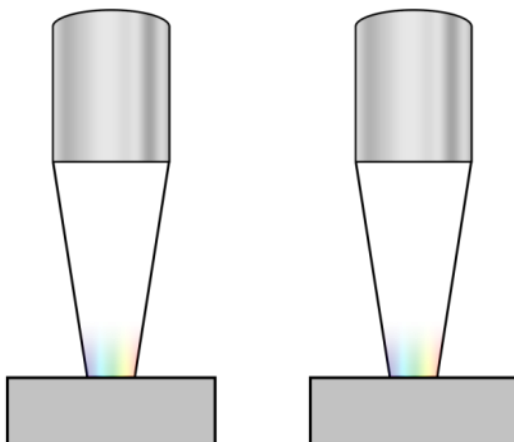
Absolute Range Specification (Using full measurement range)



Range (mm)	1	5
Linearity (μm)	± 10	± 20
Repeatability (μm)	± 1	± 2

Single Probe Measurement can be taken in Normal Mode (faster speed) or High Precision (More accurate)

Gauging Specification (When mastering at one point and checking over small operating range)

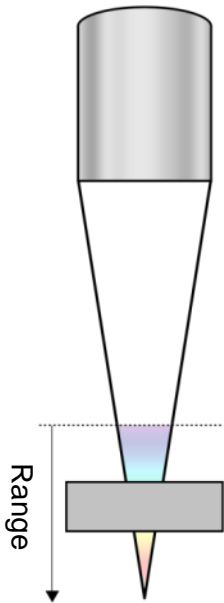


Range (mm)	1	5
Accuracy (μm)	± 1	± 2
Resolution (μm)	± 0.5	± 0.5

Specifications taken on carbide slip in High Precision mode

Performance Specification – Single Probe Thickness for Clear Materials

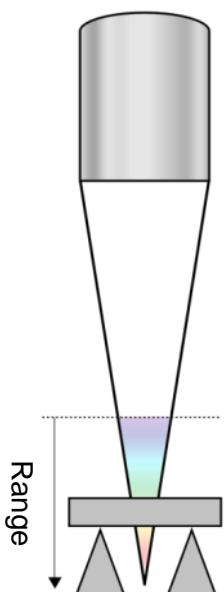
Absolute Range Specification (Using full measurement range)



Measured Part Anywhere in Measuring Range

Range (mm)	1	5
Min Thickness (mm)	0.4	1
Max Thickness	1	4
Accuracy (μm)	± 20	± 50
Repeatability (μm)	± 2	± 4
Resolution (μm)	± 0.5	± 0.5

Gauging Specification (When mastering at one point and checking over small operating range)



Master



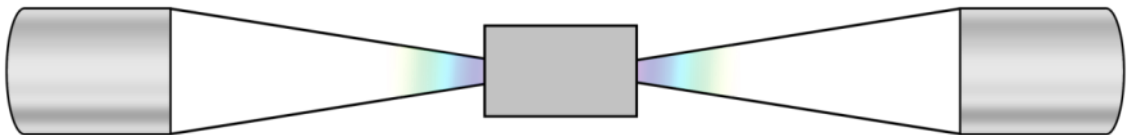
Part

Range (mm)	1	5
Min Thickness (mm)	0.4	1
Max Thickness	1	4
Accuracy (μm)	± 2.5	± 5
Repeatability (μm)	± 2	± 4
Resolution (μm)	± 0.5	± 0.5

Performance will vary based on material and index of refraction

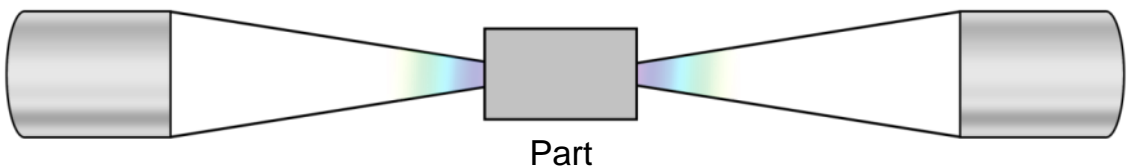
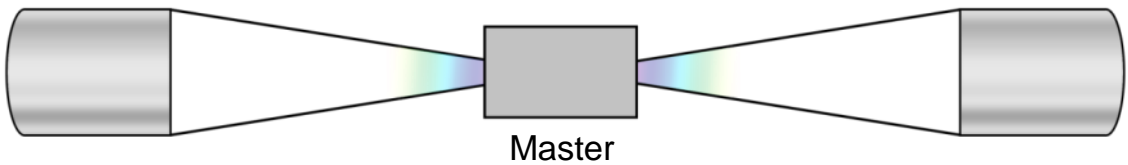
Performance Specification – Dual Probes

Absolute Range Specification (Using full measurement ranges)



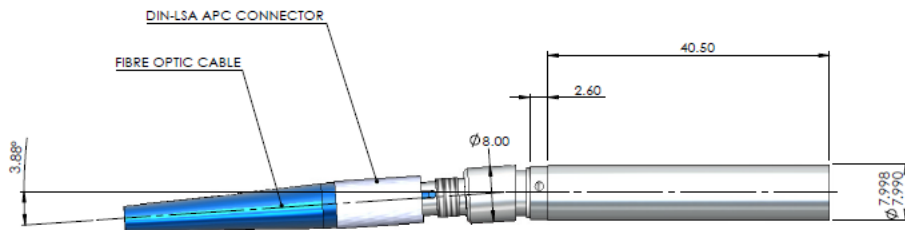
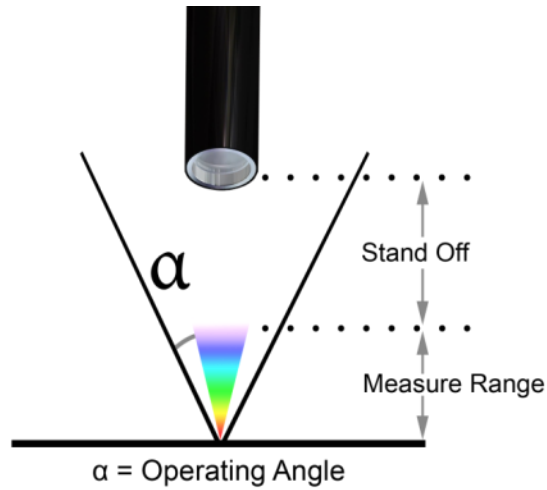
Range (mm)	1	5
Accuracy (μm)	± 15	± 30
Repeatability (μm)	± 2	± 4
Resolution (μm)	± 0.5	± 0.5

Gauging Specification (When mastering at one point and checking over small operating range)

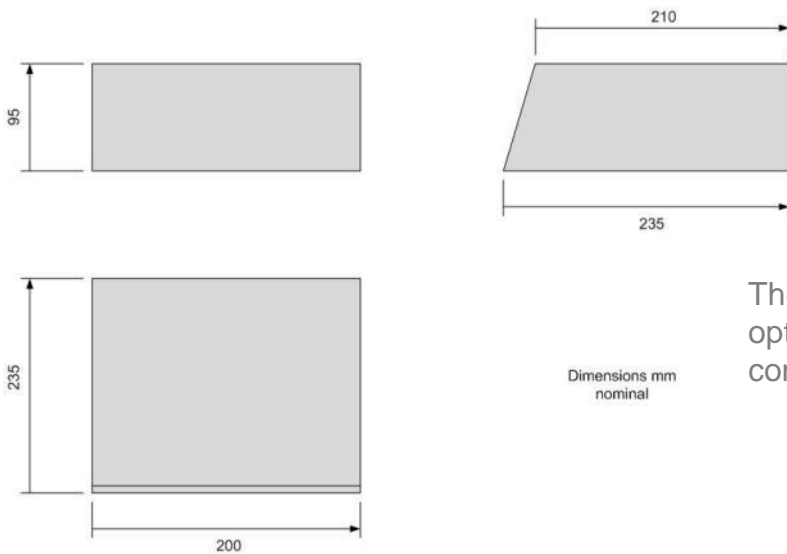


Range (mm)	1	5
Accuracy (μm)	± 2	± 4
Repeatability (μm)	± 1	± 2
Resolution (μm)	± 0.5	± 0.5

Head dimensions



Controller dimensions

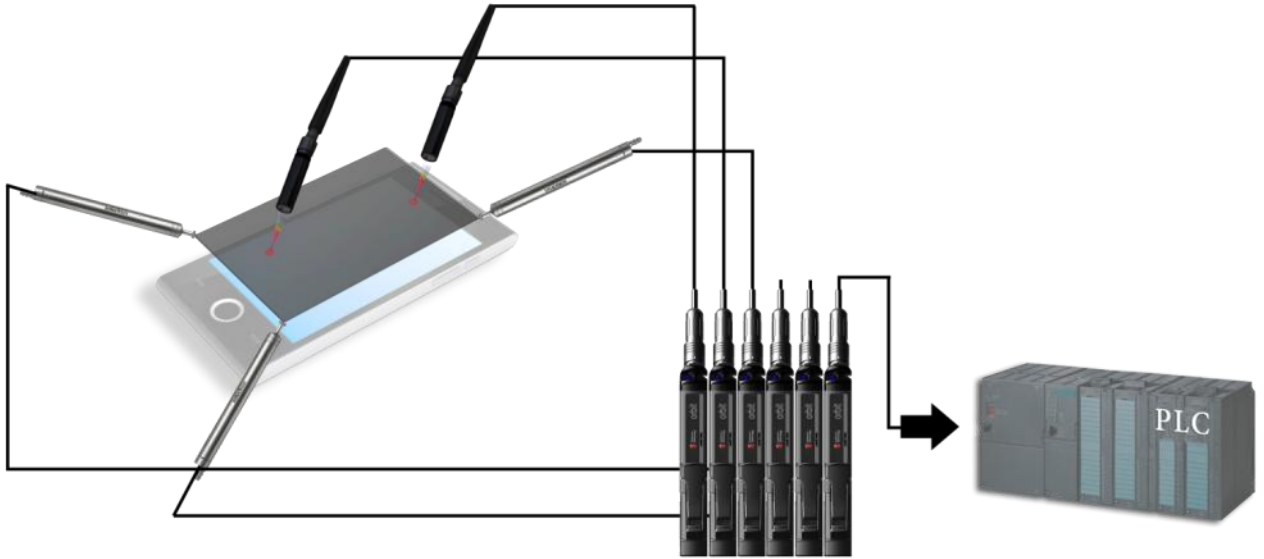


Dimensions mm nominal

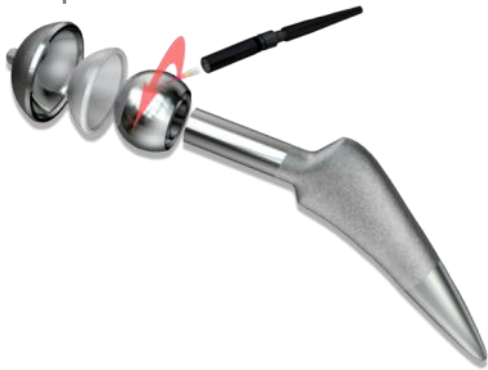
The system is provided with a 2 m optical fibre between the head and controller. Other lengths can be used.

Product Applications

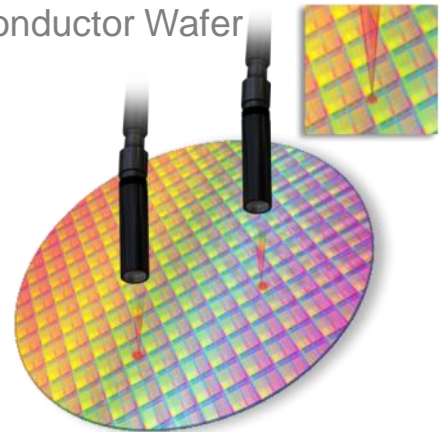
Phone Screen Dimensions / Thickness



Hip Replacement



Semi Conductor Wafer



Hearing Aid



Checking Phone Thickness

