

Non-contact «line» sensors

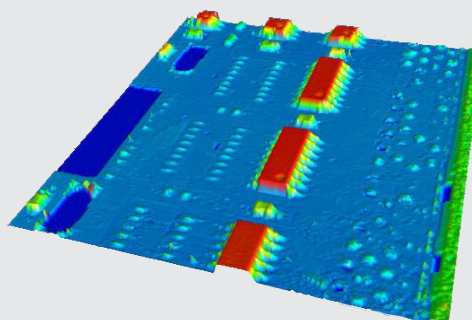
MPLS180 «line» sensors

The MPLS180 is the first «line» chromatic confocal sensor in the world. It pushes one step forward the amazing non-contact sensing technology based on STIL's patented confocal chromatic imaging.

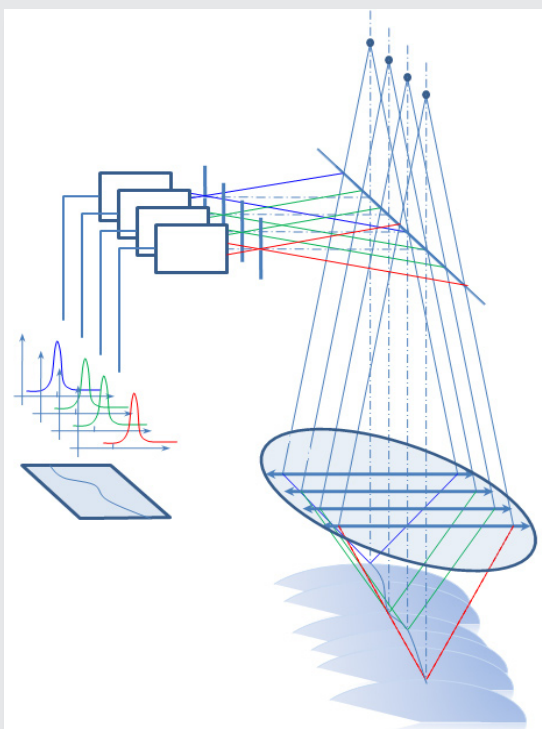
The MPLS180 offers an incredible measurement speed of up to 1800 lines per second (each line being made of 180 discrete points) providing up to 324 000 measured points per second. This outstanding performance is the result of a high level of technological integration, made possible thanks to STIL's know-how design and advanced manufacturing processes.



The MPLS180 sensor has received the «Silver Photon» Innovation Award at the Opto 2008 fair in Paris.



MPLS180 optical principle



Each of the 180 white light source pinholes is imaged through a common chromatic objective, into a continuum of monochromatic images along the optical axis, thus providing a series of «color coded» optical axes.

When an object is placed in these colored fields, a unique wavelength is perfectly focused at its surface for each point, and then efficiently reflected into the objective. These monochromatic light beams go through a series of filtering pinholes into an array of spectrographs.

The analysis of the wavelengths that have passed through the filtering pinholes allow for each point to accurately determine its position in the measuring field.

The MPLS180 sensor then provides instant profile measurements, each profile being made of 180 points simultaneously acquired.

■ Basic sensor constitution

The MPLS180 Chromatic Confocal sensor comprises:

- An **Optoelectronic controller** including the light source, the spectrographs arrays, the acquisition and processing electronic unit,
- An **optical fiber** bundle linking the controller with the optical head,
- A **Chromatic Confocal Optical head** generating the Multi-Point Line.

Optionally, it can be equipped with a scanning mirror to generate a full field measurement.

■ Optoelectronic controller : technical specifications

Model	MPLS180
Number of measured points along the line	180
Maximum measuring rate	1.800 lines per second x 180 points per line = 324.000 measured points per second
Data transmission	USB 2.0 link
Software package	Dedicated DLL for Windows XP SP2
Measurement Synchronization	External trigger (TTL)
Power supply	100 - 240 Vac
Consumption	100W with standard LED light source / 150W with optional 12V/50W halogen bulbs
Optional field scanning function	180 x 230 points acquired per field
Field scan duration	0.13 second (at a line frequency of 1800 lines/sec)
Mechanical interface	Table top controller

■ Advantages

- Ultra fast non-contact measurement
- Confocal chromatic sensor
- High accuracy measurements
- Passive optical head
- Works on any kind of material
- Insensitive to ambient lighting
- Perfect for online inspection
- Scanning mirror (optional) for direct 3D acquisitions
- Easy interfacing thanks to the DLL toolkit

Non-contact «line» sensors

SENSORS

3D SYSTEMS

SPECTRO
COLORIMETERS

GONIO
PHOTOMETERS

OPTICAL
COMPONENTS

Optical heads

Model		Wavy	Microview	Cobra
Line length (x axis)	mm	44.75	1.8	14
Number of points along the line	-	180	180	180
Spot size diameter (for each point)	µm	50	3.85*	30
Pitch (distance between 2 points)	µm	250	10	75
Numerical aperture		0.2	0.5	0.14
Working distance	mm	36	10	1
Measuring range	mm	2	0.5	15
Resolution	µm	0.5	0.125	2.5
Accuracy	µm	2.5	0.5	8
Field scanning	mm	44.75 x 45.8 (optional)	1.8 x 1.8 (optional)	14 x 17 (serial)

(*) The Microview model exists also with a spot size diameter of 2.8 µm or 5 µm.



MICROVIEW
(x,z) = 1.8x0.5 mm²



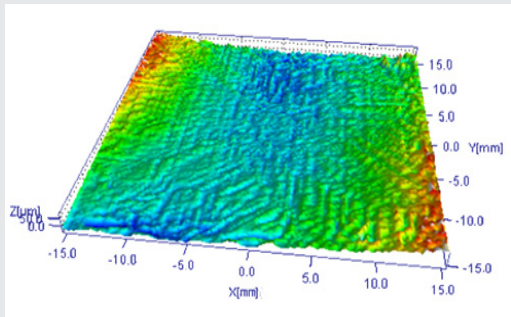
WAVY
(x,y,z) = 44.75x45.8x2 mm³



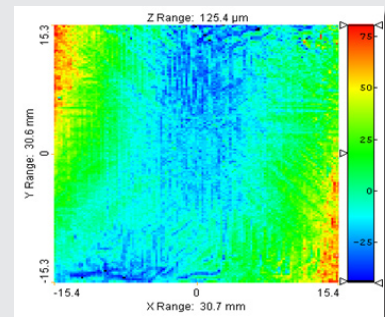
COBRA
(x,y,z) = 14x17x15 mm³

■ Measurement examples

Warpage measurement of Printed Circuit Board (measured with WAVY optical head)

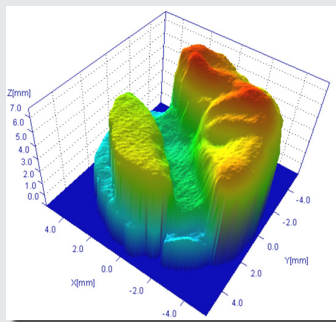


3D view

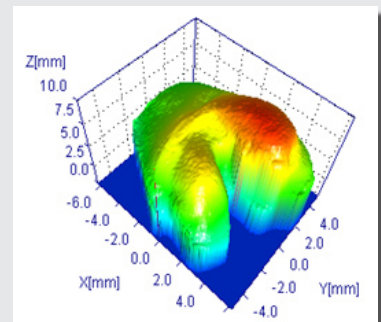


Altitude measurement

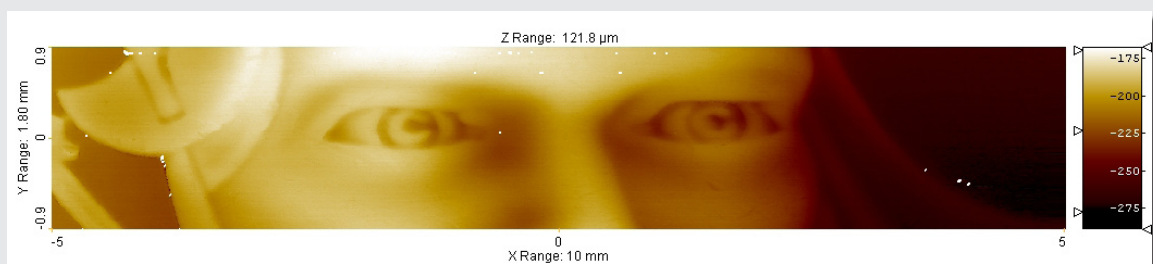
Dental measurements (measured with COBRA optical head)



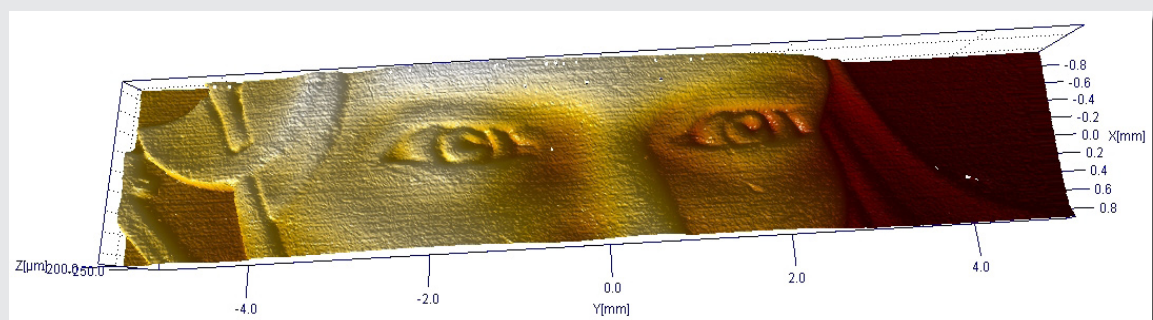
3D views



Mechanical measurements (measured with MICROVIEW optical head)



Altitude measurement



3D view