

SENSOFAR

METROLOGY



New integrable areal confocal head

S mart

The **S mart 2** is the only autonomous areal confocal profilometer in the market and that is a must when high standards of lateral resolution, accuracy, and repeatability are required by the customer. Its powerful features and compact design turn it into a breakthrough in the optical field. The sensor head incorporates all the electronics, even the computing power, to facilitate its integration. Apart from Confocal, the **S mart 2** has in the same head two more optical technologies: Ai Focus Variation and Interferometry (CSI), which allow the customer to scan with the most appropriate technique for the task at hand.

Efficient
design



3-in-1

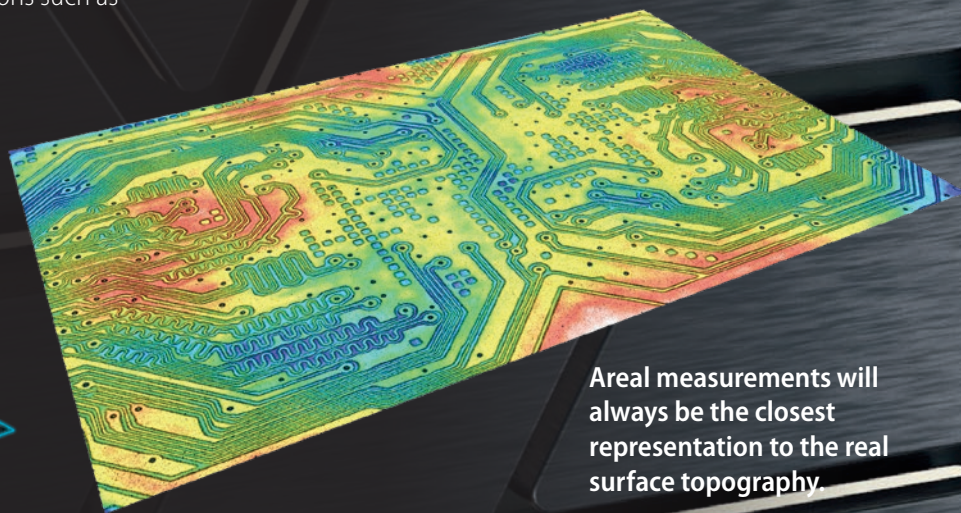
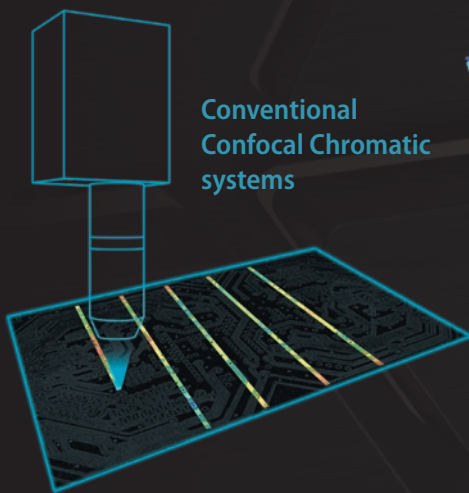
Confocal
Ai Focus Variation
Interferometry

AUTOMATIC
3D



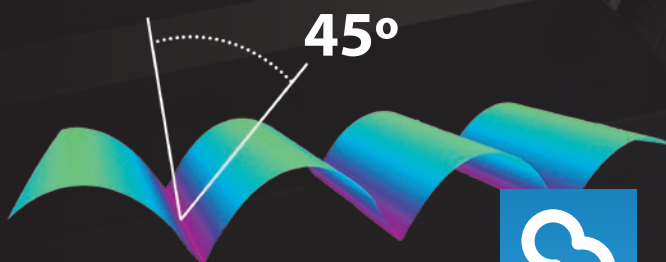
The real areal confocal head

The S mart 2 areal confocal capability images an area at a time, so the lateral resolution and X and Y remain the same, unlike point or line confocal chromatics. In addition, our areal measurements are traceable to certified calibration specimens from national measurement institutions such as PTB, NPL or NIST.



Performance you'll want to see

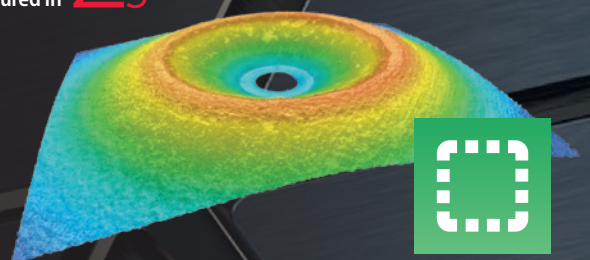
To scan with the most suitable technology, the **S mart 2** comes with three technologies to measure in the same head: Ai Focus Variation, Confocal and Interferometry.



Confocal



Interferometry



Ai Focus Variation

INTEGRABLE
HEADS 

Easy to fit, easy to connect

The shape of the integrable head has been engineered to improve the fitting of the system. Its narrow width allows the integrable head to be installed in zones that will not interfere with the user or the manufacturing operations.

Designed to be exceptionally easy to integrate, the **S mart 2** has all the electronics inside the head, including the computing power. Never before has it been so easy to install a Sensofar system, the **S mart 2** has two single connections: an ethernet cable and a power supply.



Our sensors product portfolio has been designed to fulfill the automatization typically required in manufacturing lines. The measurement is done with just one click, the sensor finds the focus, optimizes the light and Z range and the user gets the result.

AUTOMATIC
3D

Objective lenses

	Brightfield				Interferometric		
Magnification	5X	10X	20X	50X	10X	20X	50X
NA	0.15	0.30	0.45	0.80	0.30	0.40	0.55
WD (mm)	20	15.8	3.0	1.0	7.4	4.7	3.4
FOV ¹ (μm)	2820x2820	1410x1410	700x700	280x280	1410x1410	700x700	280x280
Spatial sampling ² (μm)	2.76	1.38	0.69	0.27	1.38	0.69	0.27
Optical resolution ³ (μm)	1.11	0.55	0.37	0.21	1.38	0.69	0.30
Measurement noise ⁴ (nm)	90	35	10	4	< 5		
Maximum slope ⁵ (°)	9	17	27	53	17	24	33

System specifications

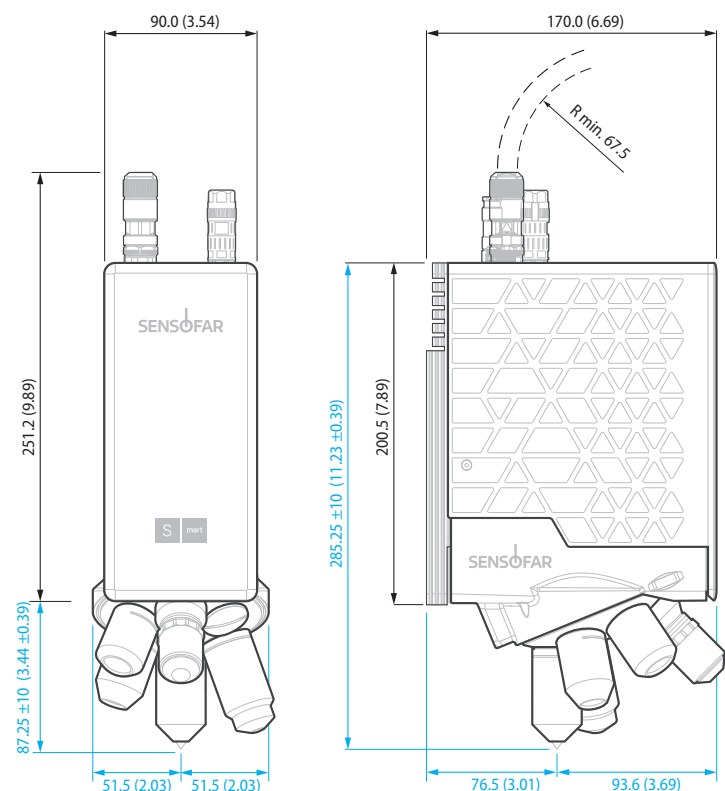
Measuring principle	Confocal, CSI and Ai Focus Variation
Measurement types	Image, 3D, 3D thickness
Camera	1 Mpx: 1024x1024 pixels (150 fps)
Confocal frame rate	60 fps
Vertical scan range	Linear stage: 20 mm range; 5 nm resolution
Max. Z measuring range	12 mm
LED light sources	Blue (460 nm); white (580 nm; center)
Nosepiece	6 positions fully motorized
Sample reflectivity	0.05 % to 100%
Advanced Software Analysis	Inc: SensoVIEW; Op: SensoPRO, SensoMAP
Communication protocol	DLL; gRPC (optional)
Operating system	Microsoft Windows 10®, 64 bit
Cable Length	3, 5 or 10 m (20 m optional)
Environment	Temperature 10 °C to 35 °C; Hum. <80 % RH; Alt. <2000 m

Dimensions mm (inch)

Weight⁶: 5.5 kg (12.1 lbs)

Head dimensions

Working distances



1 Maximum field of view with 2/3" camera and 0.25X optics. **2** Pixel size on the surface. **3** L&S: Line and Space, half of the diffraction limit according to the Rayleigh criterion. Spatial sampling could limit the optical resolution for interferometric objectives. Values for blue LED in brightfield objectives and white LED in interferometric objectives. **4** Measurement noise measured as the difference between two consecutive measurements of a calibration mirror placed perpendicular to the optical axis. Values obtained in a VC-E vibration environment. **5** On smooth surfaces. Up to 86° on rough surfaces. Other objectives are available. **6** This is the weight of the sensor head with one objective in the turret.

HEADQUARTERS

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Brochure
in multiple
languages