



CMS 106 & CMS 108  
Laser line scanners brochure

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www.hexagonmetrology.com



# CMS – 3D point scanning at its best

## The new laser scanner from Hexagon Metrology

The new CMS laser scanning probe provides many benefits for metrology in a complete and powerful turnkey package via rapid point-cloud capture, including:

- **Feature inspection to CAD**
- **Free form surface inspection to CAD**
- **Reverse engineering**

The **CMS106** probe is available on Hexagon Metrology GLOBAL, ALPHA, DELTA, LAMBDA, MERCURY & BRAVO CMMs, allowing for fully automated system operation.

The **CMS108** probe is primarily designed for use on ROMER portable measuring arms, but is also compatible with GLOBAL CMMs using a TESASTAR-m series motorized probe head..



CMS 106 for CMMs

## CMS Key Features

- **Fully automatic** – No complicated settings or parameters to worry about
- **High precision** – Sensor accuracy of up to 20 $\mu$ m\*
- Unique **"3 x zoom"** variable optical resolution – user selectable 24mm, 60mm or 124mm line length with up to 2000 points per line. Perfect for quick surface inspection of large areas or measurement of small isolated features.
- **Real time automatic laser power control** – Unique, technology allows the laser intensity to be optimised 10 times during measurement of every single point
- Reliable and reproducible results at all times plus a high measuring acceptance angle of  $\pm 60^\circ$ , even on machined surfaces
- Suitable for measuring almost any material, including machined, semi-finished, stamped, forged, cast, painted metals, sand cores, carbon fibre, plastics, clay, rubber, wood and ceramic.
- Fully compatible with several probe changers for multi-sensor measurement

*Compatible with systems to suit  
all types and sizes of application.*





TESASTAR-r rack



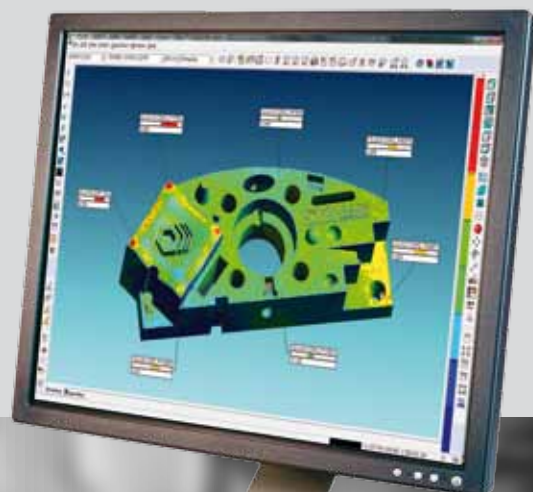
CMS Controller

### Benefits of Laser Scanning

- High density point cloud allows fast identification of features
- Scan free form surfaces at rapid rates
- Non contact scanning of fragile, flexible and soft parts
- Increase in productivity with shorter measuring times
- Obtain a complete digital copy of a part within only a few minutes
- Can be used in combination with other sensors to aid high accuracy alignments and other dimensions.



PC-DMIS showing the CAD overlaid with a colour map of the scanned part



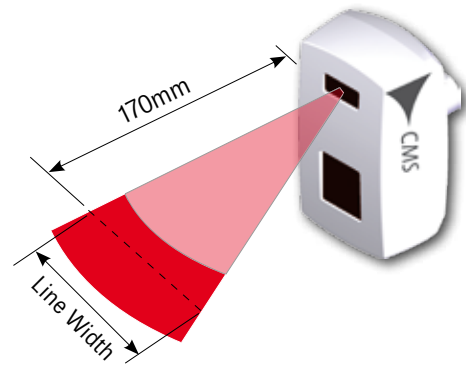




CMS

## Specifications

Model	CMS 106	CMS 108
Standoff	170±30mm (6.7"±1.18")	180±40mm (7.09"±1.57")
Sensor accuracy <sup>1</sup>	MPE 20µm	MPE 30µm
Line width	24, 60, 124mm (0.95", 2.4", 4.88") User selectable	
Measuring rate	max 53 Hz	
Points per line	max 2000	
Ambient light	40,000 lx	
Operating temp	5 ~ 45°C (41 ~ 113°F)	5 ~ 45°C (41 ~ 113°F)
Measuring temp	15 ~ 32°C (59 ~ 90°F)	10 ~ 42°C (59 ~ 108°F)
Relative humidity	90% non-condensing	
Laser	Visible red, Class 2 690nm	
Sensor size	L134 × W72 × H60.5mm (5.27" x 2.83" x 2.38")	
Sensor weight	382g	398g
Sensor IP rating	IP64	
PC communication	Ethernet LAN	
Power	85 ~ 240Vac, 50/60Hz, 0.5A	



Zoom	Line Width (170mm standoff)
1 x	124mm
2 x	60mm
3 x	24mm

<sup>1</sup> The sensor accuracy is defined as the maximum excursion of the X or Y centre location of a cylinder through the measuring range of the sensor.

## Hardware Compatibility

### DCC Systems (Coordinate Measuring Machines) : CMS106

Item	Model	Remark
Bridge	GLOBAL <sup>2</sup>	9.12.8 minimum size for articulation
Gantry	ALPHA, DELTA, LAMBDA	On Special Request
Horizontal arm	BRAVO, MERCURY	Single/Dual arm
Wrist	TESASTAR-m, TESASTAR-sm80	TKJ
	CW43L-mw	With 3rd axis
	PH10M/MQ	AJ
Rack	TESASTAR-r / CU43 / ACR3	Warmup option available
Angular adaptors	35mm TKJ	0°, 30°, 60° and 90°
	25mm AJ	-90°, -60°, -30°, 0°, 30°, 60° and 90°

### Portable Systems : CMS108<sup>2</sup>

Item	Model	Remark
Portable arms	ROMER Absolute Arm	7 axis only (SE)

<sup>2</sup> CMS108 is compatible with both Portable arms and GLOBAL CMMs using the TESASTAR-m series motorized wrist.

## Accuracy

### Accuracy on DCC CMM

CMM Type	Bridge CMM	Horizontal Arm CMM
Specification	MPE <sub>PF(OT)</sub> : 60 µm <sup>3</sup> According to VDI 2617 Part 6.2	MPE <sub>AL</sub> : 70 µm <sup>4</sup> Comparable with ISO 10360-5

<sup>3</sup> Measured on Global C Advantage 09.15.08 with indexable motorized probe head, probing test in 5 positions over the sensor working area.

<sup>4</sup> Measured on Bravo HP 60.16.25 with DEA continuous wrist CW43L-mw and 3rd axis, multi-stylus test in 30 positions.

### Accuracy on Portable arms<sup>5</sup>

Arm Series	2.0m	2.5m	3.0m	3.5m	4.0m	4.5m
73 Series arm	±0.075	±0.080	±0.113	±0.140	±0.172	±0.203
75 Series arm	±0.053	±0.058	±0.078	±0.096	±0.114	±0.133

<sup>5</sup> The test consists of measuring a matte grey sphere with 5 different arm articulations. In each articulation of the arm the sphere is scanned from 5 different directions such that the majority of the sphere is scanned. The result is the maximum 3D center to center distance of the 5 spheres. Test relates to B89.4.22

**Hexagon Metrology**

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Hexagon Metrology brands represent an unrivaled global installed base of millions of Coordinate Measuring Machines (CMMs), portable measuring systems and handheld instruments, and tens of thousands of metrology software licenses. Hexagon Metrology empowers its customers to fully control manufacturing processes that rely on dimensional precision, ensuring that products manufactured precisely conform to the original product design. The company offering of machines, systems and software is complemented by a wide range of product support, aftermarket and value-added services.

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