



CMM laser scanning



L100

The ultimate  
CMM laser scanner  
combining productivity  
and accuracy



## It's a Nikon ...

The L100 CMM laser scanner offers the best possible combination of speed, accuracy and ease-of-use. Suited for both surface and feature measurement, the L100 quickly delivers accurate data and insightful part-to-CAD comparison reports even on shiny or multi-material surfaces.

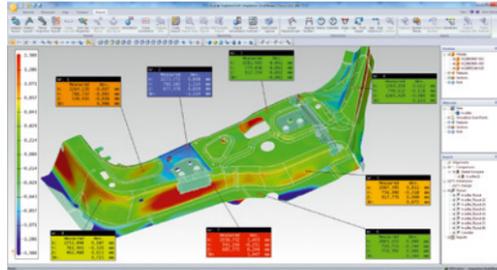
The L100 builds on 20 years of experience in optical metrology. With the L100, Nikon Metrology confirms their technology leadership in the field of CMM laser scanning.

# L100

Higher productivity  
Better understanding  
Faster decisions  
Superior product quality



# 8 Reasons to choose Nikon non-contact metrology



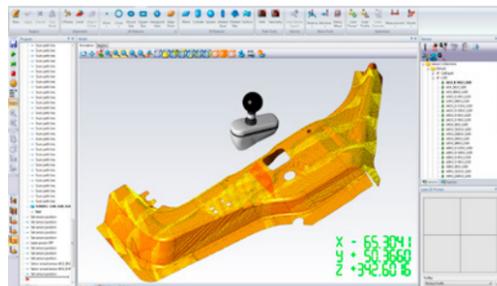
## BETTER INSIGHTS IN DEVIATIONS

- Detailed, colorful part-to-CAD surface / profile / feature reports enable precise visualisation of dimensional quality
- Leads to faster decision-making and corrective actions
- Results in fewer and shorter design iterations and faster time-to-market
- Shortens production downtime through faster troubleshooting



## FACILITATE COMMUNICATION

- A picture is worth a thousand numbers
- Easy-to-interpret graphical reports
- Exchange unambiguous results with internal or external colleagues or suppliers



## INCREASE INSPECTION PRODUCTIVITY

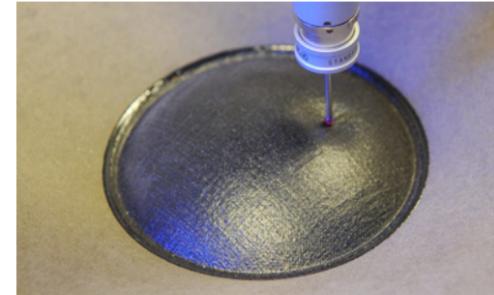
- Laser scanners collect more information in less time
- Faster feature measurement due to fewer CMM movements
- Easy off-line CAD-based programming saves on preparation and modification of measurement programs



## ENHANCE THE CAPABILITY OF YOUR CURRENT CMM

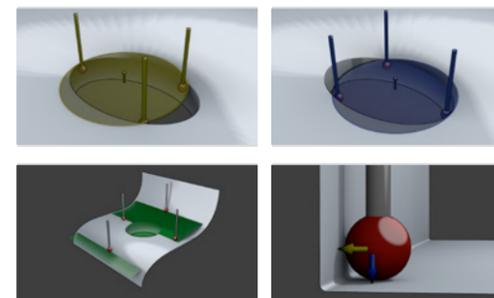
- Upgrade to a versatile multi-sensor CMM offering both non-contact and touch probe inspection
- Retrofit existing CMMs controller hardware and software

Retrofit kits are available for most leading CMM controller brands



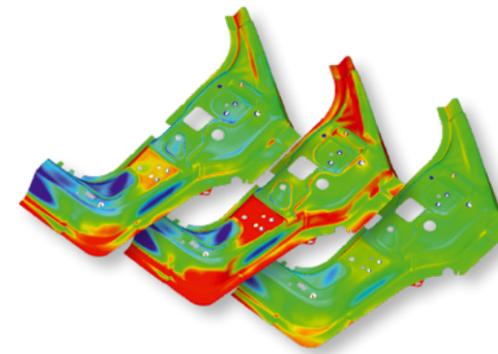
## MEASURE SOFT AND FRAGILE COMPONENTS

- Measure delicate surfaces that cannot be touched
- No deformation of soft materials like foams, rubber, membranes, etc
- Scan any material - No special treatment required for dark or shiny parts



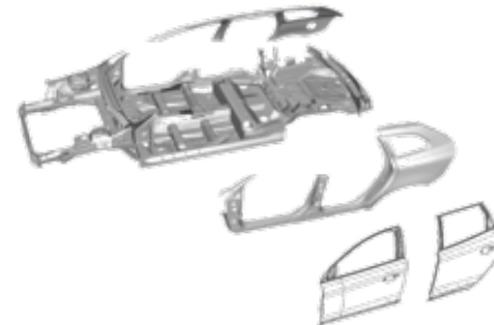
## IMPROVED DATA QUALITY

- Overcomes errors inherent to tactile probing
  - No errors due to probe tip compensation
  - Uses large numbers of measuring points to extract features or reference planes compared to just a few points in case of tactile probing
- Measures complex surfaces with fine detail



## REDO ANY ANALYSIS AT ANY TIME

- Perform additional analyses on existing measuring data even when the physical part isn't available anymore
- Easily compare samples from different measuring sessions
- Re-use existing data to accelerate development of new models
- Reverse-engineer older or modified parts to obtain actual CAD models



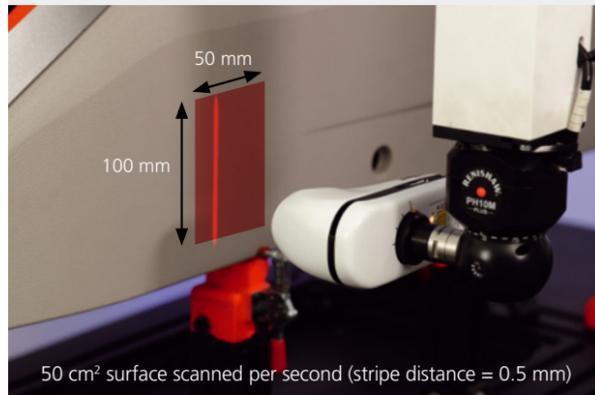
## REDUCE COSTS

- Less physical prototype iterations by virtual assembly of individually measured parts
- Laser scanning avoids the need for expensive checking fixtures
- Reduce (online) programming and maximize measuring time

# L100 laser scanner

## ULTRAFAST DATA COLLECTION

The L100 is ideal to inspect larger components where productivity is key but without having to compromise on accuracy. The 100 mm wide Field-of-View combined with the increased measurement speed results in measurement productivity that wasn't achievable with CMM scanning before.



## CAPTURE THE FINEST DETAILS

The L100 is equipped with a high-quality glass Nikon lens optimized for laser scanning. Combined with the high definition camera this results in a point resolution of 42 µm and a data quality that is the best on the market, enabling fine detail capture and measurement of sharper edges. The L100 has an exceptionally small probing dispersion value (according to ISO10360-8 standard) of 26 µm, which is a measure of the scanner's noise level, enabling delivery of smooth meshes and high levels of detail.



## ACCURATE FEATURE MEASUREMENT

The L100 is perfectly suited for combined surface and feature measurements. Thanks to the low measurement noise and high point resolution, feature measurement accuracy approaches the accuracy of a touch probe.



## COPE WITH CHANGES IN SURFACE COLOR

The 4<sup>th</sup> generation of Enhanced Sensor Performance (ESP4) adapts the laser intensity for each point in the scan line to varying colors or materials faster than ever. This makes the scanner even more robust for digitizing multi-material assemblies or shiny surfaces without the need for cumbersome surface treatment.



# No compromises on accuracy and speed



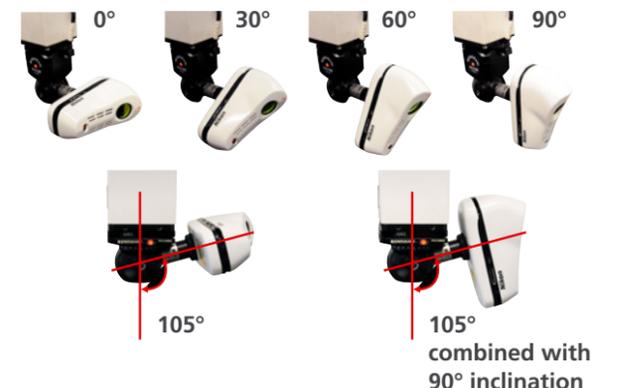
## EASY TO USE

The new Field-of-View (FOV) projection provides a clear indication for the user whether the scanner is optimally positioned. This facilitates scanner programming and provides better feedback during actual scanning.



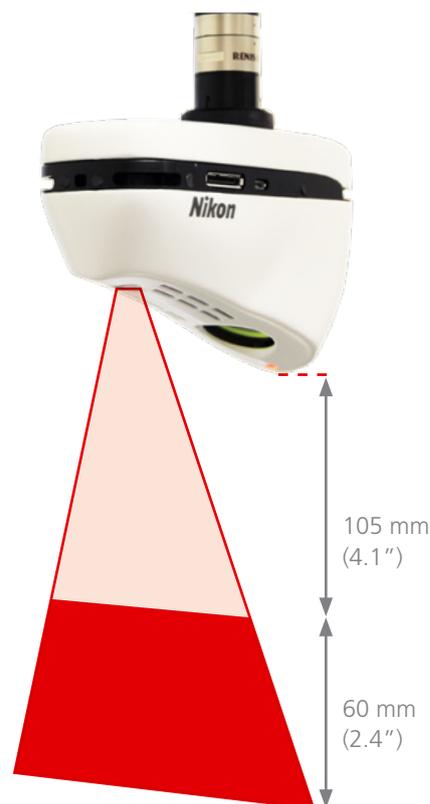
## EXTEND THE MEASUREMENT REACH

The patent-pending integrated mount rotation allows the scanner to rotate around its auto-joint axis in 30° increments up to 90°. This is particularly interesting to measure turbine blades or parts with vertically oriented features and edges. The L100 also allows the use of an extended 105° PH10 A-angle allowing better access to measure underneath or behind parts.



# Specifications

Probing error (MPE <sub>p</sub> ) <sup>1</sup>	6.5 μm (0.00026")
Ball bar length (MPE <sub>l</sub> ) <sup>2</sup>	6 μm +L/350 mm (0.00024" +L/13.8")
Multi-stylus test (MPE <sub>Al</sub> ) <sup>3</sup>	6 μm (0.00024")
ISO Probing form error <sup>4</sup>	15 μm (0.00059")
ISO Probing size error all <sup>5</sup>	20 μm (0.00079")
ISO Probing dispersion value <sup>6</sup>	26 μm (0.00102")
ISO Cone angle <sup>7</sup>	125°
Points per stripe	Up to 2,000 (non-interpolated)
Scanning speed	420,000 points/sec
Resolution	Max. 42 μm (0.0017")
Maximum stripe width	110 mm (4.3")
Measurement depth	60 mm (2.4")
Stand-off distance	105 mm (4.1")
Laser safety	Class 2
Weight	475 g (1.05 lbs)
Ingress Protection	IP30
Enhanced Scanner Performance	ESP4
Daylight filter	Yes
Probe head compatibility	PH10M(i)(Q), CW43, PHS



All accuracy specifications valid for a CMM with an accuracy of 2μm + L/350 or better using manufacturer supplied test sphere

<sup>1</sup> Nikon Metrology test comparable to EN/ISO 10360-2 MPE<sub>p</sub> using 1σ sphere fit.

<sup>2</sup> Nikon Metrology test comparable to EN/ISO 10360-2 MPE<sub>l</sub>.

<sup>3</sup> Nikon Metrology test comparable to EN/ISO 10360-5 MPE<sub>Al</sub>.

Accuracy specifications according ISO 10360-8:2013:

<sup>4</sup> P<sub>Form.Sph.1x25.Tr.ODS,MPE</sub>: "Maximum probing form error" using 25 representative points in translatory scanning mode

<sup>5</sup> P<sub>Size.Sph.All.Tr.ODS,MPE</sub>: "Maximum probing size error using All" measured points in translatory scanning mode

<sup>6</sup> P<sub>Form.Sph.D95%.Tr.ODS,MPL</sub>: "Maximum probing dispersion value" using 95% of the measured points in translatory scanning mode

<sup>7</sup> Cone angle: Region of sphere on which the measured points are selected



**LASER RADIATION  
DO NOT STARE INTO THE BEAM  
CLASS 2 LASER PRODUCT**  
Max output = 1.65 mW 660 nm  
1 mW 635 nm  
IEC 60825-1 Edition 3.0 2014  
Read instruction manual before use

US 6611617; 6944564; 7009717;  
7299145; 7313264; 7428061; 8117668;  
8353059; RE43895; EP 0840880;  
1160539; 1361414; 1754951; 2010863;  
2096403 Other intl. / pending patents  
Complies with 21 CFR 1040.10  
and 1040.11, Laser Notice  
No. 50 dated June 24, 2007

## L100

### Laser scanning beyond expectations



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