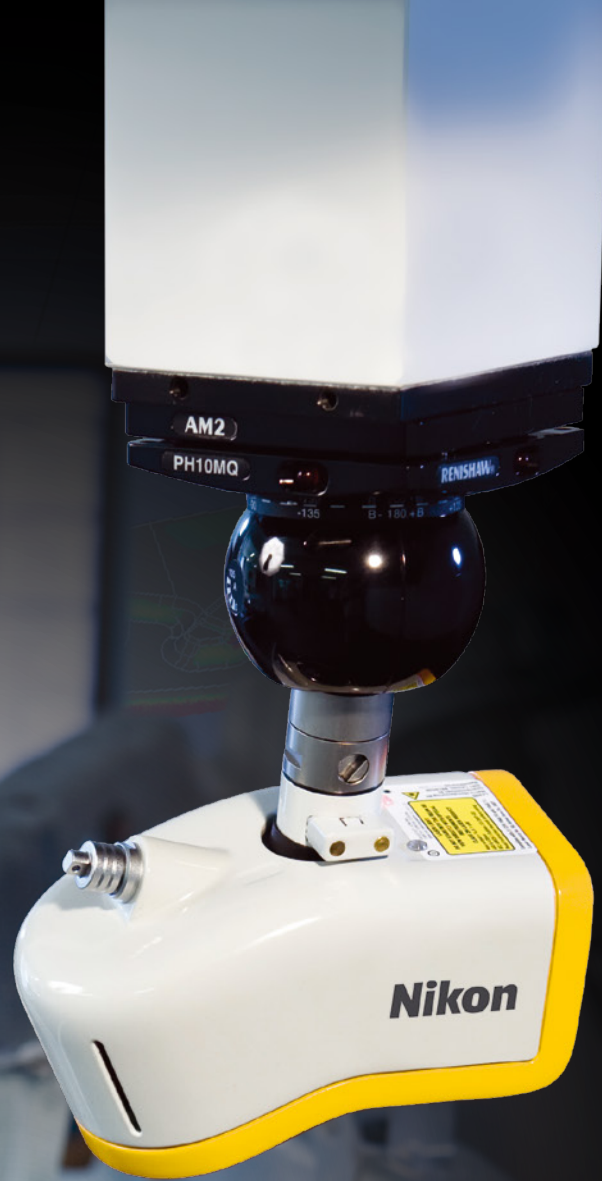




# LC60Dx

Digital CMM scanner



Get the best out of your CMM

# EFFICIENT AND PRODUCTIVE SCANNING...

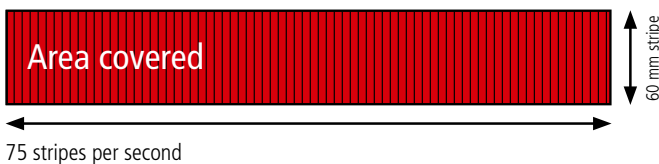


The LC60Dx is a cost-effective CMM scanner that provides high accuracy and productivity standards by using latest digitizing technology. It scans at a high frame rate nearly all material surfaces and features without requiring manual sensor adjustment.

The LC60Dx laser scanner boosts CMM performance and is suited for digitizing freeform objects including parts with hard-to-scan surfaces.

## BENEFITS OF 3D LASER SCANNING

- Digitizing test objects quickly and straightforward, even for novice users
- Gain valuable geometric insights from the 3D representation of the entire part
- Benefit from the unique capability to measure soft and fragile surfaces
- Run any kind of analysis on the digital copy, no need to keep the physical part anymore
- Boost your CMM performance



## ACCURACY FOR TOP PERFORMANCE

The LC60Dx offers accuracy below 10  $\mu\text{m}$  in comparable tests to EN/ISO10360 MPE<sub>av</sub>. This brings the scanner in the accuracy range of tactile measurements, while capturing thousands of measurement points per second to accurately digitize freeform shapes.

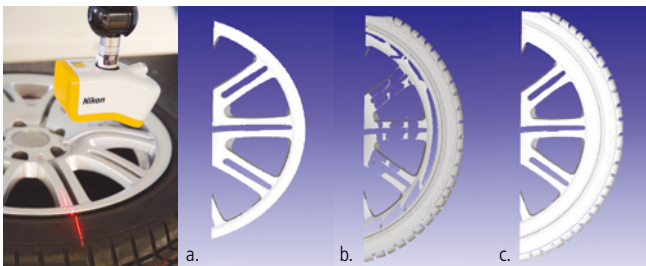
The LC60Dx achieves a scanning rate of 75,000 points per second minimizing the scan time to inspect larger parts such as e.g. vehicle sides or doors.

## SCAN ANY SURFACE WITH ESP3

The LC60Dx scanner is designed for effortless scanning of varying or hard-to-scan surface materials. The unique **Enhanced Sensor Performance (ESP3)** capability provides real-time, point per point laser intensity adjustment to constantly adapt to the scanned material.

On top of this, the LC60Dx also features a highly effective filter to avoid capturing of scattered reflection points.

As a result, sheet metal parts, plastics, castings, milled objects or combinations of these – can be scanned in one single move without the need for spraying the part.



- ESP3 Off: Settings optimized to scan the rim → Tire is not scanned
- ESP3 Off: Settings optimized to scan the tire → Rim is partly scanned
- ESP3 On: Automatic point-per-point tuning results in optimal data in one single scan

# ... FOR A MULTITUDE OF APPLICATIONS

## RETROFIT YOUR EXISTING CMM

The LC60Dx fits on CMMs of most manufacturers. In the case companies own fixed-bed CMMs and articulated arms, the LC60Dx uniquely allows to easily exchange the scanner between CMM and handheld localizers. In this way, they are able to execute most of their digitizing work using a single laser scanner.

## COPING WITH EVERY APPLICATION

For applications requiring high productivity and high accuracy, the LC60Dx is the right choice. Combine this with its unique versatility and it is clear why LC60Dx is the ideal all-purpose scanner to use for a broad range of applications.

- Inspection of sheet metal shapes and features
- Assembly problem troubleshooting
- Shape validation of machined orthopedic implants
- Automotive flush & gap inspection
- Inspection and reverse engineering of turbine blades
- Investigating shrinkage of casted metal or plastic parts
- Inspection of tool wear
- Reverse engineering of manually tuned mold and dies

## SOFTWARE

Compared to inspection performed directly on the physical test part, "digital inspection" first digitizes the test part and subsequently runs inspection on the acquired digital model data. From measurement preparation to final report, the acclaimed Focus and CAMIO software suites help you take full advantage of the typical automation capabilities and flexibility benefits of this entirely digital workflow.

### FOCUS SCAN

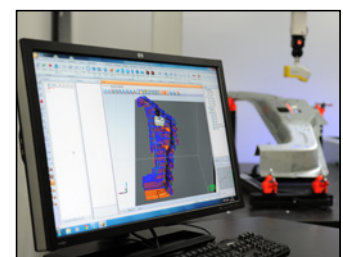
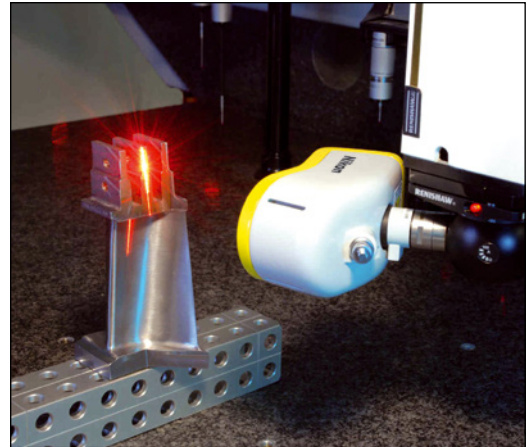
Focus Scan is the driver software for laser scanner integrations on a wide range of CMMs. The offline version offers advanced scan path generation methods, as well as collision detection and scan preview animation. The offline virtual scan process allows to prepare and automate the inspection workflow including reporting, before the actual scan is performed. The online version is the driving software of the scanner and CMM and benefits from the same functionalities.

### FOCUS INSPECTION

As today's reference for point cloud inspection, Focus Inspection accelerates 2D/3D feature and full part-to-CAD inspection, and packages inspection results in easy-to-interpret graphics and reports.

### CAMIO MULTI-SENSOR SOFTWARE

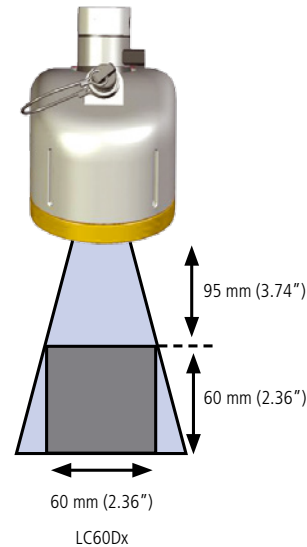
CAMIO is a fully integrated multi-sensor software platform for CMM based inspection featuring off-line programming and on-line inspection. It includes efficient software tools to create DMIS-based CMM inspection programs that efficiently drive laser scanners as well as a wide variety of touch sensors.





# SPECIFICATIONS

Probing error (MPE <sub>p</sub> ) <sup>1</sup>	9 μm (0.0004")
Ball bar length (MPE <sub>l</sub> ) <sup>2</sup>	6+L/350(μm) (0.00024+L/350) (")
Multi-stylus test (MPE <sub>AL</sub> ) <sup>3</sup>	9 μm (0.0004")
ISO Probing form error <sup>4</sup>	20 μm (0.00079")
ISO Probing size error all <sup>5</sup>	30 μm (0.00118")
ISO Probing dispersion value <sup>6</sup>	36 μm (0.00141")
ISO Cone angle <sup>7</sup>	125°
Stripe width	60 mm (2.36")
Scanning speed	75,000pts/s
Resolution	900
60μm (0.0024")	18-22°C (64.4-71.6° F)
Stand-off distance	95 mm (3.74")
Field-of-View (FOV)	370 g (0.82 lbs)
Width and height	60x60 mm (2.36x2.36")
Weight	390 g (0.86 lbs)
Interface on manual localizers	Ethernet
Laser safety	Class 2
Enhanced Scanner Performance	ESP3
Daylight filter	Yes
Probe head compatibility	PH10M, PH10MQ, CW43, PHS



**CLASS 2 LASER PRODUCT**  
 Max output = 5.0 & 1 mW  
 660 & 635nm  
 IEC 60825-1 Edition 2.0 2007-03

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.OODS,MPE</sub> : "Maximum probing form error" using 25 representative points in translatory scanning mode

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

<sup>6</sup> P<sub>Form.Sph.D95%;Tr.OODS,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



## NIKON METROLOGY NV

Geldenaaksebaan 329  
 B-3001 Leuven, Belgium  
 phone: +32 16 74 01 00 fax: +32 16 74 01 03  
 Sales.NM@nikon.com

## NIKON METROLOGY EUROPE NV

tel. +32 16 74 01 01  
 Sales.Europe.NM@nikon.com

## NIKON METROLOGY GMBH

tel. +49 6023 91733-0  
 Sales.Germany.NM@nikon.com

## NIKON METROLOGY SARL

tel. +33 1 60 86 09 76  
 Sales.France.NM@nikon.com

## NIKON METROLOGY, INC.

tel. +1 810 2204360  
 Sales.US.NM@nikon.com

## NIKON METROLOGY UK LTD.

tel. +44 1332 811349  
 Sales.UK.NM@nikon.com

## NIKON CORPORATION

Shinagawa Intercity Tower C, 2-15-3, Konan,  
 Minato-ku, Tokyo 108-6290 Japan  
 Telephone: +81-3-6433-3701 Fax: +81-3-6433-3784  
 www.nikon.com/products/industrial-metrology/

## NIKON INSTRUMENTS (SHANGHAI) CO. LTD.

Tel.: +86 21 5836 0050  
 Tel.: +86 10 5869 2255 (Beijing office)  
 Tel.: +86 20 3882 0550 (Guangzhou office)

## NIKON SINGAPORE PTE. LTD.

Tel.: +65 6559 3618  
 nsg.industrial-sales@nikon.com

## NIKON MALAYSIA SDN. BHD.

Tel.: +60 3 7809 3609

## NIKON INSTRUMENTS KOREA CO. LTD.

Tel.: +82 2 2186 8400



More offices and resellers at [www.nikonmetrology.com](http://www.nikonmetrology.com)