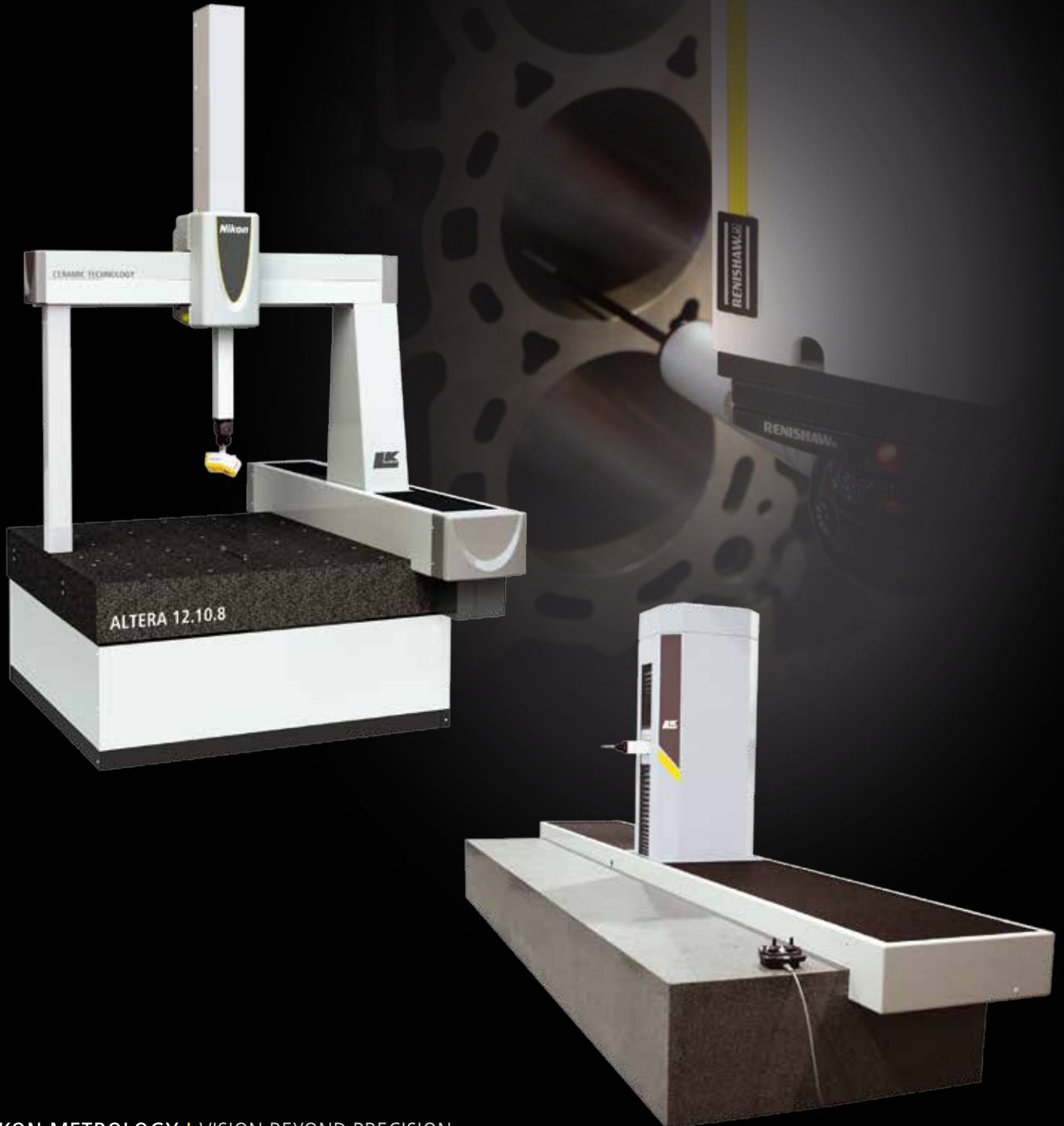




LK CMM

Coordinate Measuring Machines



SO MUCH MORE THAN PRECISION

The Nikon Metrology LK range of Coordinate Measuring Machines represent the ultimate in CMM technology. Designed and manufactured using only the highest quality materials, they carry a heritage of over 45 years experience and expertise.

LK CMMs deliver the ability to perform dimensional, positional and surface measurement in a single system. Combined with a complete range of contact and non-contact sensors, Nikon Metrology CMMs provide true multi-sensor capability. Sensors can be quickly changed to combine geometric and surface measurement into a single inspection routine.

Key design features

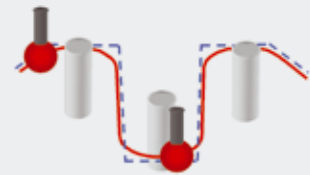
- Ceramic bridge and spindle provide a thermally stable and ultra-stiff frame for long lasting accuracy.
- Nikon Metrology unique LK air bearings provide a smaller air gap with greater stiffness than standard air bearings to enhance the rigidity of the frame.
- Granite table with integral dovetail guideway (10.10.8 and bigger) provides the smoothest of drives with high velocity and acceleration.
 - Steel support legs designed on CAD with Finite Element Analysis provide a stable mounting for the ceramic beam and carriage assembly.
 - Friction-driven axes remove the uncertainty of belt drives and gear-boxes and provide a hysteresis-free smooth repeatable motion.
 - Bonded Renishaw scales negate the need for separate scale and mechanical frame thermal compensation, providing confidence in repeatability and accuracy.



Key performance features

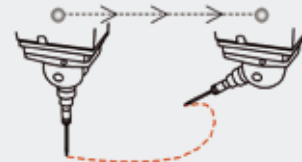
Ceramics for LK premium performance

Stress-free ceramic guideways are most dimensionally stable, provide high and long-lasting measurement accuracy, and require minimum machine verification, saving both time and money.



Fly Mode

Provides optimized motion control for more efficient machine movement and faster throughput.



PH Fast

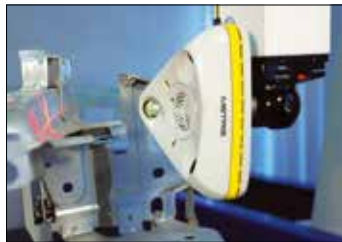
Further optimize the machine throughput by moving the probe head simultaneously with machine motion.

CMM Hand-box

Multi-function hand-box provides access to programming tools without returning to the computer.



MULTI-SENSOR PRODUCTIVITY



Scanning made easy

Regardless whether contact or non-contact scanning is required, Nikon Metrology has a solution designed that provides highly repeatable and accurate scanning results for geometric feature and free-form surface inspection.

Unique and unequalled, digital scanning is delivered as standard on every Nikon Metrology LK CMM equipped with either TP20 or TP200 probes. This cost-effective scanning solution enhances traditional CMM inspection to increase productivity.

When accuracy and high speed are expected, LK CMMs' ultra-stiff ceramic frame guarantees that continuous contact scanning (SP25M) will provide you feature, form and free-form surface data that is equal to any 'fixed-head' probe system.

Non-contact laser scanning, with the world leading Nikon Metrology LC and unique patented XC (Cross-Scanner) technology, allow you to scan virtually any component with unequalled levels of performance. Suitable for geometric inspection, free-form surface inspection or reverse engineering, laser scanning is available for everyone.

When size truly matters

Nikon Metrology recently manufactured one of the largest CMM bridge sizes ever to be ordered with a measuring length and width of 6 meter.

Whether it is a large bridge or a horizontal arm configuration you require, the Nikon Metrology LK range has a standard solution ready for you. Based on the same ceramic and granite construction, the large bridge and horizontal arm CMM range offers market leading accuracy and performance characteristics.



ALTERA & LK V BRIDGE CMM

High performance ceramic bridge CMMs

LK's ceramic bridge and spindle components coupled with proven air-bearing design provide the ultimate in stiffness and stability, altogether delivering significantly improved repeatability.

Benefits

- Premium performance
- High velocities/accelerations for low cycle times
- Excellent accuracy and repeatability
- Total solution for probing, scanning and digital inspection

Features

- Flexible multi-sensor platform: touch probes, analog scanning and laser scanning
- High capacity (loads) table

Applications

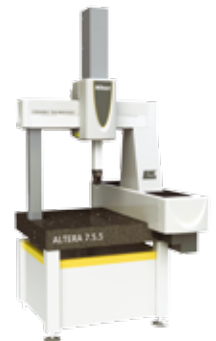
- Machined and pressed parts
- Plastic moldings
- Casting and forgings
- Touch trigger and non-contact inspection
- Digitizing, scanning and reverse engineering

Specifications

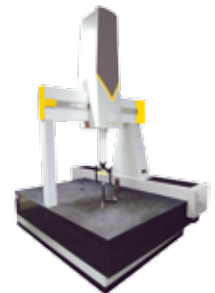
- Volumetric accuracy
 - from 1.8 μm + L/400 (ALTERA)
 - from 2.1 μm + L/375 (LK V)
 - from 1.5 μm + L/350 (LK V HA)
- Repeatability
 - from 1.8 μm (ALTERA)
 - from 2.1 μm (LK V)
 - from 1.5 μm (LK V HA)
- Velocity
 - up to 762 mm/s (ALTERA)
 - up to 833 mm/s (LK V, LK V HA)
- Acceleration
 - up to 2303 mm/s² (ALTERA)
 - up to 1242 mm/s² (LK V)
 - up to 1403 mm/s² (LK V HA)



ALTERA 12.10.8



ALTERA 7.5.5 (box stand)



LK V 15.12.10

ALTERA - Small bridge general-purpose CMM

Sizes (box stand)	Sizes ¹	Probe head	Sensors
7.5.5	15.7.6	MH20i	TP20
8.7.6	10.10.8	PH10T PLUS	TP200
10.7.6	12.10.8	PH10M PLUS	SP25M
	15.10.8	PH20	InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)
	20.10.8		

LK V - Medium to large bridge general-purpose CMM

Sizes ¹				Probe head	Sensors
15.12.10	20.15.12	25.15.15	20.20.15	PH10MQ PLUS	TP20
20.12.10	25.15.12	30.15.15	30.20.15	PH20	TP200
25.12.12	30.15.12	35.15.15	35.20.15	SP80	SP25M
30.12.10	35.15.12	40.15.15	40.20.15	REVO	InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)

LK V HA - Small to medium bridge high accuracy CMM

Sizes ¹				Probe head	Sensors
8.7.6	10.10.8			PH10MQ PLUS	TP20
10.7.6	15.10.8			PH20	TP200
	20.10.8			SP80	SP25M
	25.10.8			REVO	InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)

¹ (other sizes available on request)

LK V-SL HIGH-SPEED SCANNING BRIDGE CMM

Ultimate scanning and inspection performance

The LK V-SL features a revolutionary design that delivers the best scanning and inspection performance currently available in the marketplace. Particularly suited to meet the demands of automotive and aerospace applications, the LK V-SL is a unique and distinctive multi-sensor CMM. With the HA option, such a system becomes a metrology lab reference CMM featuring submicron accuracy for applications requiring highest precision.

Benefits

- Increased scanning performance delivering high accuracy and throughput
- Increased stiffness and stability of the metrology frame
- Ready for shop floor and metrology lab

Features

- Granite table with ceramic Y & Z guideways
- Raised X-axis guideway provides ultrafast dynamics
- S-axis 0.1 micron scale
- Multi-sensor capability
- Pneumatic anti-vibration mounts
- Temperature compensation as standard

Applications

- Analog, digital or laser scanning
- Automotive, engine and transmission components
- Aerospace blade, engine and aircraft components
- General precision engineering
- Medical instruments

Specifications

- Volumetric accuracy
 - from 1.1 $\mu\text{m} + L/400$ (LK V-SL)
 - from 0.7 $\mu\text{m} + L/600$ (LK V-SL HA)
- Repeatability
 - from 0.7 μm (LK V-SL)
 - from 0.5 μm (LK V-SL HA)
- Velocity
 - up to 850 mm/s (LK V-SL)
 - up to 317 mm/s (LK V-SL HA)
- Acceleration
 - up to 1407 mm/s² (LK V-SL)
 - up to 566 mm/s² (LK V-SL HA)



LK V 10.10.8 SL equipped with an LC60Dx laser scanner

LK V-SL and LK V-SL HA - High accuracy bridge style CMM

Preferred sizes ¹			Probe Head	Probes
8.7.6	10.10.8	20.12.10	PH10MQ PLUS	TP200
10.7.6	15.10.8			SP25M
15.7.6				InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)

¹ (other sizes available on request)

LK V LARGE BRIDGE AND GANTRY CMMS

A new breed of large scale CMMs

Nikon Metrology offers large scale gantry and twin-rail mounted bridge style CMMs when size really matters. In addition to high accuracy with maximum volume, these large scale CMMs support a variety of probing solutions, including touch-trigger digital, analogue and laser options. Nikon Metrology also provides customized gantry CMM projects that meet customers' exacting requirements. LK large scale CMMs are constructed using materials with high thermal stability to guarantee optimum accuracy.



LK V 50.40.12 R

Benefits

- Ceramic material offering 300% more stiffness over aluminium allows for ultra large machine sizes with premium accuracy
- Floor-mounted or raised gantry versions to suit all environments and component handling situations
- Twin drive systems valued for smooth motion
- Available with separate measuring plate if required

Features

- High-performance air bearings
- LK CMMs feature granite rails with ceramic Y and Z guideways
- Supports tactile styli, analogue scanning and laser scanners

Applications

- Automotive and commercial vehicles
- Aerospace components and structures
- Marine and locomotive engine components
- Telecommunications and satellite equipment

Specifications

- Volumetric accuracy
 - from 4.5 $\mu\text{m} + L/200$ (LK V-R)
 - from 3.5 $\mu\text{m} + L/250$ (LK V-G(P))
- Repeatability
 - from 4.5 μm (LK V-R)
 - from 3.5 μm (LK V-G(P))
- Velocity
 - up to 533 mm/s (LK V-R)
 - up to 467 mm/s (LK V-G(P))
- Acceleration
 - up to 631 mm/s² (LK V-R)
 - up to 581 mm/s² (LK V-G(P))



LK V-R twin-rail mounted bridge style CMM

LK V-R and LK V R-SL - Twin-rail mounted bridge style CMM

(short-leg models available)

Sizes¹ Rail lengths from 3m to 10m+ Bridge sizes from 2m to 4m Spindle lengths from 1.2m to 3m <i>(short-leg model with steel legs or concrete riser foundation)</i>	Probe Head PH10MQ PLUS	Probes TP20 TP200 SP25M InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)
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LK V-G(P) - High accuracy and ultra high accuracy bridge style CMM

Sizes¹ Rail lengths from 2m to 10m+ Bridge sizes from 4m to 7m Spindle lengths from 3m to 4m <i>(available with steel legs or concrete riser foundation)</i>	Probe Head PH10MQ PLUS	Probes TP20 TP200 SP25M InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)
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¹ (other sizes available on request)

LK H HORIZONTAL ARM CMM

The fastest high accuracy horizontal arm CMMs on the market

Nikon Metrology's complete range of horizontal arm CMMs provides unequalled performance in speed, accuracy and repeatability. Ceramic guideways and air bearings used in the construction of LK H CMMs, offer stability at high velocity and acceleration. LK horizontal arm CMMs provide unique access to the measuring envelope and can be supplied as subfloor or floor level installations, or as part of fully-automated measurement cells.

Benefits

- High velocities/acceleration for low cycle times
- Excellent accuracy and repeatability
- Flexible multi-sensor platform: touch probes, analog scanning, laser scanning

Features

- Multiple CMM configurations available: table, rail, twin, etc.
- Supports laser scanners and touch sensors
- Can be supplied with cast-iron measuring plate if required

Applications

- Automotive full body and panels inspection
- Inspection of large parts such as mold tools, housings, castings, etc.
- Integrated in-line inspection
- Touch trigger and non-contact inspection
- Digitizing, scanning and reverse engineering

Specifications

- Volumetric accuracy
 - from 1.9 $\mu\text{m} + L/250$ (LK H-T)
 - from 10 $\mu\text{m} + L/200$ (LK H-R)
- Repeatability
 - from 1.9 μm (LK H-T)
 - 6.0 μm (LK H-R)
- Velocity
 - up to 850 mm/s (LK H-T)
 - up to 667 mm/s (LK H-R)
- Acceleration
 - up to 3008 mm/s² (LK H-T)
 - up to 2106 mm/s² (LK H-R)



LK H-R premium series twin-rail mounted horizontal arm CMM with walk-on covers

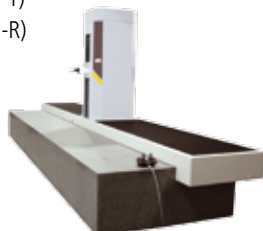
LK H-R - high accuracy rail mounted horizontal arm style CMM (single or twin column)

Sizes ¹	Probe Head	Probes
Rail lengths from 4m to 10m+	PH10MQ PLUS	TP7M
Spindle lengths from 0.4m to 1.6m		TP20
Column heights from 2m to 3m		TP200B
<i>(available with walk-on or bellow covers for rails)</i>		SP25M
		InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)

LK H-T - high accuracy table mounted horizontal arm style CMM

Sizes ¹	Probe Head	Probes
Rail lengths from 1m to 5m	PH10MQ PLUS	TP20
Spindle lengths from 0.4m to 1.6m		TP200B
Column heights from 0.6m to 2m		SP25M
		InSight L100, LC15Dx, LC60Dx, XC65Dx (-LS)

¹ (other sizes available on request)



LK H-T high accuracy table mounted horizontal arm CMM


















LK H-T featuring rotating table

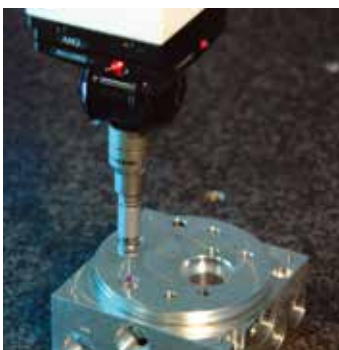


LK H-R dual column horizontal arm CMM

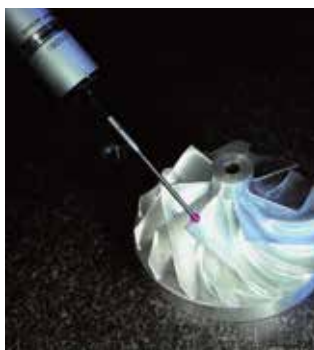
SUPPORTED PROBE SYSTEMS

From traditional single point data collection to state-of-the-art 5 axis measurement incorporating probe head touches, Nikon Metrology supports many different configurations of probe system.

Contact measuring systems										
Manually indexing			Motorized			Dynamic				
Manual probe heads with integral TP20 probe systems		Manual probe head with autojoint connection	Fixed position with autojoint		Motorized probe heads with 720 positions available		Infinite positioning probe head for 5 axis point collection	Infinite positioning probe head for 5 axis multi-point measurement	Fixed probe head with long stylus capability	
MH20i MH20 		MIH 	PH6M 		PH10T PLUS PH10M PLUS PH10MQ PLUS 			PH20 	REVO 	SP80 
PH6M PH6M 		TP20 TP200 	TP20 TP200 		TP20 TP20 SP25M 				RSP2 	
		SP25M 			TP20 TP200 TP7M 				RSP3 	
MCR20		MCR20/SCR200/FCR25		MCR20/SCR200/FCR25/MRS-ACR3			MCR20			



High accuracy TP200 touch trigger probe



High speed SP25 scanning probe



REVO

Contact Nikon Metrology to check availability of the probe system to each machine model



Non-contact measuring systems

Single and multi-stripe laser

Laser data collection for inspection of features, comparison to nominal CAD data or reverse engineering

PH10M PLUS PH10MQ PLUS



InSight L100



LC15Dx



LC60Dx



XC65Dx / XC65Dx-LS



MCR20



Scanning of medical implant



Sheet metal inspection



Feature inspection

DIGITAL CMM SCANNERS



Digital scanning boosts inspection performance

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

The all-digital Nikon LC15Dx scanner brings 3D digitizing in the accuracy range of tactile measurement, while offering the advantage of capturing a multitude of inspection points. With its smaller field of view, it perfectly suits digitizing small or detailed objects with higher point density and tighter tolerances

The LC60Dx is an all-purpose scanner that can be used both on CMM and portable arms.

Incorporating 3 lasers in a cross pattern, the XC65Dx captures all full 3D details of features, edges, pockets, ribs and freeform surfaces in a single scan. The XC65Dx-LS version with a longer stand-off distance (170mm) facilitates scanning of complex forms.

Features

- Fully compatible with Renishaw PH10M(Q) PLUS and automatic change racks (ACR)
- Data collection over multi-wire is integrated into most CMM brands and types
- Designed for minimum warm-up time and maximum operational stability and robustness

Applications

Inspection and reverse engineering of mobile phones, turbine blades, tools, castings, dies, sheet metal parts, plastics, etc.

Specifications

	InSight L100	LC15Dx	LC60Dx	XC65Dx	XC65Dx-LS
Filed-of-View	Approx 100x60 mm	18x15 mm	60x60 mm	65x65 mm (3x)	65x65 mm (3x)
Probing error (MPE _v) ¹	6.5 µm	1.9 µm	9 µm	12 µm	15 µm
Data acquisition (approx. pts/sec)	200,000	70,000	77,000	3 x 25,000	3 x 25,000
Enhanced Scanner Performance	ESP4	ESP3	ESP3	ESP3	ESP3

¹ Nikon Metrology test comparable to EN/ISO 10360-2



XC65Dx

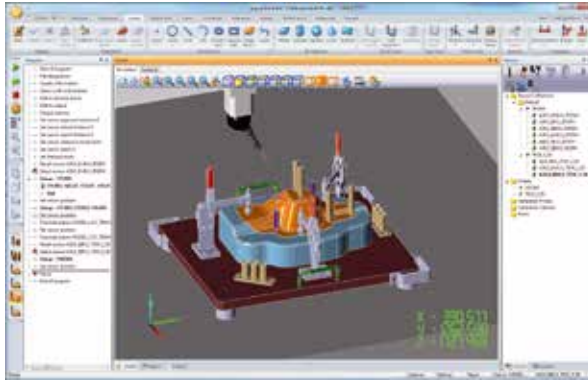


LC60Dx

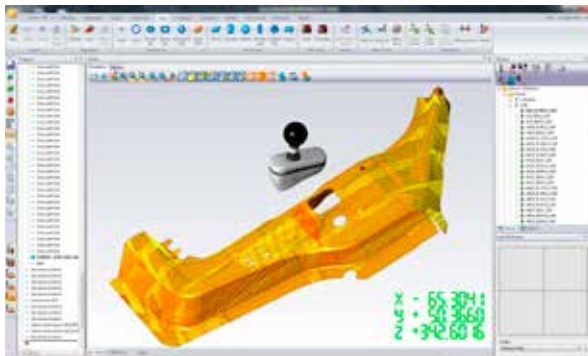


LC15Dx

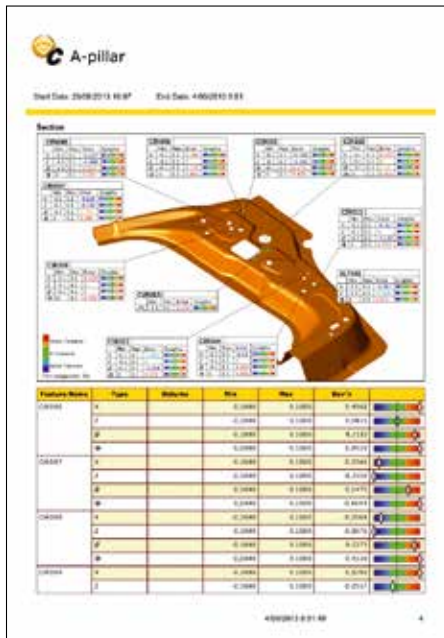
CAMIO MULTI-SENSOR CMM METROLOGY SOFTWARE



CAMIO provides a rich programming environment, with intuitive software tools for both tactile and laser scanning applications.



Measured point clouds are immediately visualized. Geometric features can be automatically extracted from a surface point cloud scan.



Integrated reporting combining graphical and tabular results

The measurable advantage

CAMIO offers true multi-sensor capability, allowing best-practice selection of sensor technology for each task. By combining touch trigger, analog scanning and 3D laser scanning sensors within the same inspection program, the right inspection results are obtained in the fastest way.

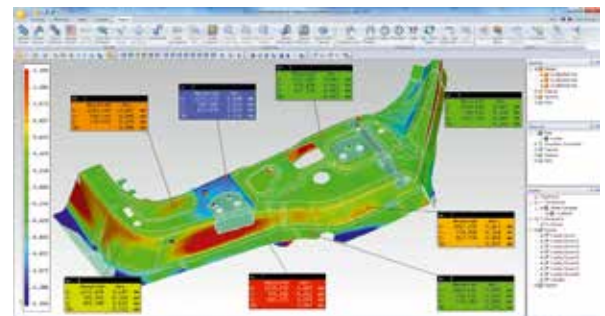
Nikon Metrology multi-sensor solutions provide manufacturers with greater measurement flexibility and a better insight of product conformance while increasing CMM throughput.

Features

- Simple CAD-based programming environment optimized for a minimum number of mouse-clicks.
- Open inspection plans direct from CAD data including the import of part axis and GD&T tolerance data.
- Fast workflow to program multiple features of multiple types (ie points, circles etc.) in a single operation.
- Structured and comprehensible probe management.
- Full machine simulation and collision detection to verify the probe path before execution on the CMM operation.
- Flexible reporting options with multiple outputs including full colour graphics, ASCII text, Excel or internet browser compatible formats.
- Support for the latest versions of CAD data.
- Fully DMIS compliant

Benefits

- Select the right sensor for the job to get better insights while reducing overall cycle time
- Easily write your inspection program based on the CAD model
- Proof programs offline with collision detection and measurement simulation
- Analyze product conformance through graphic CAD comparison for features and surfaces
- Speed up the decision process with instant reporting
- Increase productivity by automating the inspection processes



Laser scanning enables full part-to-CAD inspection



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