

# TRADITIONAL METROLOGY SOLUTIONS

Digital Inspection Process

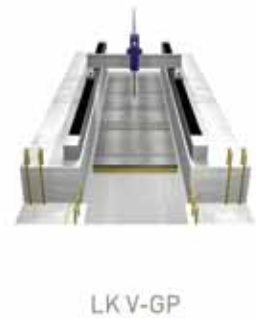
X-ray and CT Insight

Industrial Measuring Instruments

Metrology Assisted Production

Traditional Metrology Solutions

Motion Measurement Solutions



A complete portfolio of CMMs and articulated arms

BRIDGE, HORIZONTAL ARM, GANTRY  
 CMM PORTFOLIO

ARTICULATED MEASURING ARMS

MULTI-SENSOR CMM SOFTWARE

TACTILE SOFTWARE FOR CNC, MANUAL  
 AND PORTABLE CMMS

# Bridge CMM

## High-performance ceramic and aluminum 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.

With super-light aluminum as a key structural component and air bearings on all axes, C3 bridge CMMs are high-specification and cost-effective metrology solutions for small to medium size applications.

### Features

- Standard volume ranges
  - LK from 800x700x600 to 6000x2500x2000mm
  - LK V-SL from 1000x700x600 to 2500x2000x1500mm
  - C3 from 500x400x400 to 3300x2000x1500mm
- Flexible multi-sensor platform: touch probes, analog scanning and laser scanning
- High capacity (loads) table
- LK V-SL performance
  - Repeatability from 0.5µm
  - Velocity up to 51 m/min
  - Volumetric accuracy equals 0.7µm + L/600mm

### Benefits

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

### Applications

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

### Related solutions

- CMM laser scanners
- Camio multi-sensor metrology software



LK V-SL provides the ultimate scanning and inspection performance by delivering sub-micron accuracy.



C3 bridge CMMs are high-specification, cost effective metrology solutions

# Horizontal arm CMM

## The fastest high accuracy horizontal arm CMMs on the market



### 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

### Related solutions

- CMM laser scanners
- Camio multi-sensor metrology software



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.

### Features

- Multiple CMM configurations available : table, rail, twin, etc.
- Standard volume ranges
  - LK H-T (Table variant) from 1000x400x600 to 5000x1600x2000mm
  - accuracies from 1.9µm + L/250mm
  - LK H-R (Rail variant) from 4500x1600x2000 to 10000x1600x3000mm
  - accuracies from 10µm + L/200mm
- Supports laser scanners and touch sensors

### Benefits

- Premium performance
- High velocities/acceleration for low cycle times
- Excellent accuracy and repeatability
- Flexible multi-sensor platform: touch probes, analog scanning, laser scanning
- High-capacity (loads) table



## Gantry CMM

### A new breed of large scale CMMs



#### Applications

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

#### Related solutions

- CMM laser scanners
- Camio multi-sensor metrology software

Nikon Metrology offers truly flexible and reliable gantry CMMs when size really matters. In addition to high accuracy with maximum volume, gantry 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 gantry CMMs are constructed using materials with high thermal stability to guarantee optimum accuracy.

#### Features

- Standard volume ranges
  - LK V-G from 3000x2500x1500 to 10000x7000x4000
  - accuracies from 4.5µm + L/200mm
- High-performance air bearings
- Supports tactile styli and laser scanners
- Use of materials with high thermal stability and optimized dimensional characteristics
- LK CMMs feature granite rails with ceramic Y and Z guideways

#### Benefits

- Elevated guideway combines high accuracy with maximum volume
- Ceramic guideway allow for larger machine volume
- Superior reliability and performance
- Multi-sensor support
- Integration pallet transfer systems available

## 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.



# MCA - Manual CMM Arm

## Full flexibility and portable productivity



### Applications

- Full part-to-CAD inspection
- Feature inspection
- Flush & gap inspection
- On-site troubleshooting
- Solving assembly problems
- Data collection for reverse engineering

### Related solutions

- ModelMaker laser scanners
- Focus software



MCA comes in 6 or 7-axis versions for touch trigger or laser scanner measurement

MCA is a precise, reliable and comfortable portable measuring system that can be equipped with a wide range of probing devices. Operated wirelessly and battery powered, it feels perfectly at home in the metrology lab, on the shopfloor and in the field.

MCA comes in different sizes and in two accuracy variants. The 6-axis version ideally suited for touch trigger measurement, while combined with a ModelMaker scanner, the 7-axis MCA is the perfect partner for a wide range of digital scanning tasks.

### Features

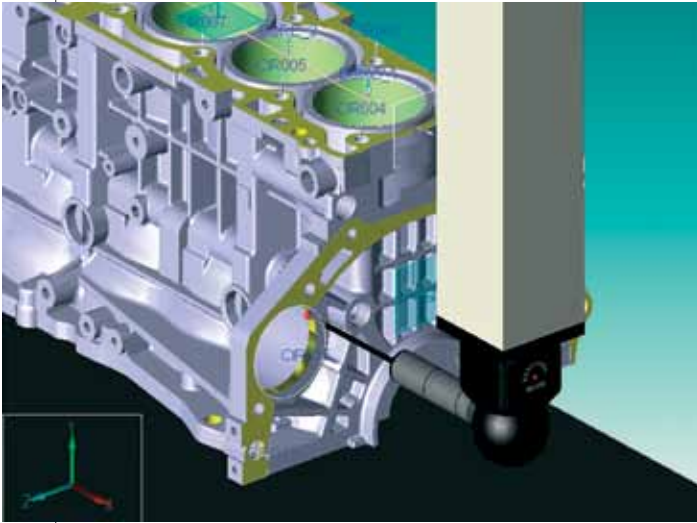
- 6 and 7-axis versions in two variants
  - Industry variant for quick verification
  - Metrology variant for high accuracy inspection
- Lightweight carbon fiber and aluminum alloy components
- Wireless data communication for scanning and touch probe measurements
- Battery operation provides hours of measurement autonomy
- New encoder technology ensures optimum measurement accuracy
- Electromagnetic brake locks lower arm segment for effortless measurements

### Benefits

- Scan and go! - Easy and fully integrated solution for articulated arm scanning
- Truly portable solution
- Ergonomic design increases operator productivity

# Camio multi-sensor metrology software

## The benchmark for efficient multi-sensor CMM operation



Camio is a fully integrated multi-sensor software platform for off-line programming and on-line inspection. It redefines the world of CMM measurement, featuring powerful tools that efficiently drive laser scanners as well as a wide variety of touch sensors.

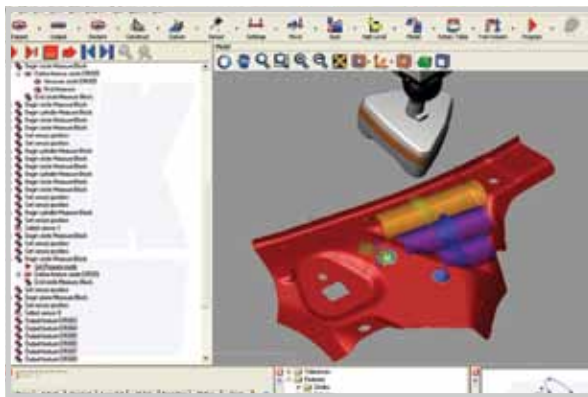
User-friendly programming techniques as well as drag-and-drop and wizard-based functionality provide new and experienced users all efficient means to create DMIS CMM inspection programming from CAD product model data.

### Features

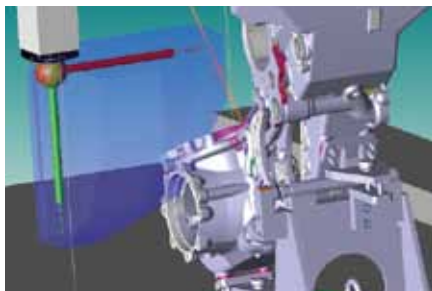
- Integrated solution for on-line and off-line programming
- Full and exact compliance to the DMIS standard
- Support of wide range of CAD file formats: CATIA® v4 & v5, Pro/E®, UG®, Parasolid®, HOOPS®, STEP® and IGES®
- Multi-sensor programming and simulation
- Powerful laser scanning feature inspection

### Benefits

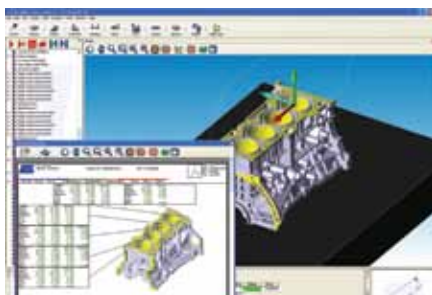
- Support 3<sup>rd</sup> party CMM through I++ interface
- Switch between touch trigger probing, analog or laser scanning with minimum program modifications
- Access to GD&T data from leading CAD software packages
- Production mode operation, reducing cycle time up to 25%



Straightforward scanner paths are programmed off-line based on CAD data



Powerful off-line programming with collision detection



Feature reporting covering full GD&T

### Applications

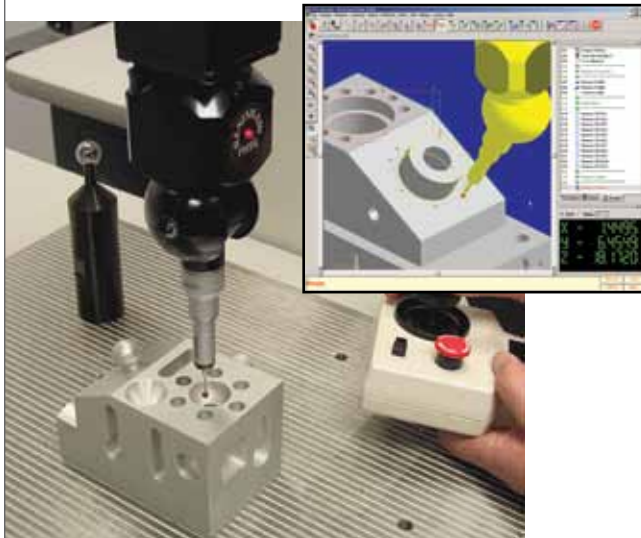
- Automotive sheet metal and powertrain
- Aerospace airframe and components
- General precision engineering
- Reverse engineering
- Medical manufacturing

### Related solutions

- Bridge, horizontal arm and gantry CMMs
- RCA Robot CMM Arm

# CMM-Manager metrology software

## A full-featured metrology software for manual, CNC and portable CMMs



CMM-Manager is a task-oriented, highly intuitive software for tactile measurements using manual, CNC and portable CMMs. It is a fully integrated CMM measurement environment featuring walk-in quick-measure, one-click CAD measure, collision-free CAD teach, virtual simulation, real-time verification, CAD and datum alignment, and many more smart functions.

Large intuitive icons and measurement guidance for operator make CMM-Manager a highly intuitive, easy-to-use metrology software for portable inspection tasks on the shopfloor, in the lab as well as in the field.

### Features

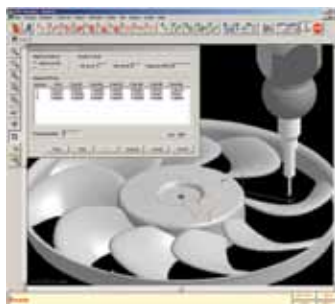
- CAD based graphical programming
- Automatic collision detection
- Smart alignment features
- Automatic probe recognition
- Leap frogging to extend measurement volume for portable measurement
- Drag and Drop web-ready graphical reporting

### Benefits

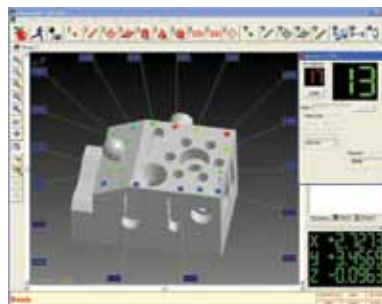
- Focus on quick and accurate measurement results
- Easy to use, yet very complete metrology software
- Single software package for CNC, manual and portable measurement

### Retrofit capabilities

- CNC or Manual CMM: Nikon Metrology CMM, Sheffield Cordax, Brown & Sharpe, Mitutoyo, Zeiss, Starrett, Renishaw UCC1/UCC2 controller
- Portable CMM retrofits: MCA, Faro, Romer/CimCore, K-Series Optical CMM



Easy-to-use software capable of measuring complex parts



Quick data interpretation through color-coded local geometry deviation



K-Series Optical CMM with SpaceProbe for large volume measurements

# MOTION MEASUREMENT SOLUTIONS

Nikon Metrology provides solutions for non-contact industrial motion and displacement measurement based on the Optical CMM technology.

## WHEEL/ENGINE TRACKER

DMM - DYNAMIC MOTION MEASUREMENT

ROBOT CALIBRATION & TESTING

## Wheel/EngineTracker

### The reference for wheel and engine displacement measurements



Slalom test for wheel behavior analysis

WheelTracker is an optical contactless wheel and engine motion measurement system. It measures up to four wheels and offers an optional camera for engine motion measurement. WheelTracker operates on all road surfaces in all weather conditions, and streams the data directly into a data acquisition system or laptop.

#### Features

- Full 6-DOF motion measurement
- Non-contact optical measurement
- Low mass added to wheels
- All-weather proof
- Accuracy down to 80µm

#### Applications

- Dynamic kinematics and compliance (K&C) evaluation
- Toe and camber evolution during maneuvers
- Lap recording for road simulators on test and race tracks
- Wheel and engine packaging testing
- Full-speed performance tests
- Emergency stop and ABS testing
- Vehicle dynamics tests (bump steer, roll steer, dive, etc.)
- Ride and handling evaluation

#### Benefits

- Synchronized measurement of 4 wheels and engine
- Compact and quick setup
- High dynamic accuracy



WheelTracker



EngineTracker