Nikon

Nikon 100th anniversary

K-SCAN MMDx
Handheld scanners

K-CMM
Optical trackers

Full freedom scanning in large volumes

NIKON METROLOGY | VISION BEYOND PRECISION

LARGE VOLUME, FULL FREEDOM 3D SCANNING

K-Scan MMDx is Nikon Metrology's walk-around laser scanner for portable metrology applications. Accuracy, ease-of-use and stunning performance ensure it to be the most capable handheld scanning solution without mechanical constraints. The scanner is tracked by the K-CMM Optical Tracker so that operators can measure anywhere needed

By combining the accuracy and productivity of the ModelMaker MMDx laser scanner with the user freedom, measurement volume and motion compensation of the K-CMM Optical Tracker system, the K-Scan MMDx becomes an invaluable tool for accurate part-to-CAD inspection and productive reverse engineering

K-SCAN MMDx ADVANTAGES

- Fully portable scanning system that is easy to set up which is suited for both metrology lab and shop floor measurements
- Large system measurement volume of up to 35 m^3, further expandable by leap frog functionalities, multi-camera support or dynamic referencing
- Maximum productivity is achieved by a scanning rate up to 150,000 points/second with a laser stripe width of up to 200 mm
- High-resolution data acquisition for both freeform surfaces and geometric features
- Excellent material scanning capabilities through use of Enhanced Sensor Performance (ESP3). Laser intensity of every point is instantly adapted automatically to the material being measured. This capability allows different surface materials, finishes and transitions to be scanned without user interaction, eliminating manual parameter tuning and part spraying altogether
- Lightweight and stable carbon fiber structure provides ergonomic features and visual/audio indicators for enhanced operator handling
- Continuous and precise omni-directional optical tracking via optimized LED configuration
- K-Scan MMDx is supported by the powerful and intuitive Focus Handheld & Inspection software suite
- Through the Nikon Metrology API, the K-Scan MMDx can be used directly in many 3rd party inspection and reverse engineering software applications, including PolyWorks® and Geomagic®

K-CMM ADVANTAGES

DYNAMICALLY COMPENSATED MEASUREMENT

By positioning LED markers on the measured part, instabilities are compensated so measurement of parts that move or vibrate is possible to the same level of accuracy as if they were rigidly fixtured

At the same time it is possible to simply move the camera to measure from a different location using the LEDs to define a reference frame.

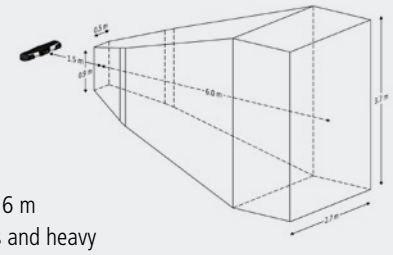
MULTI-PROBING SOLUTION

To measure geometric features, seamlessly switch to the lightweight, highly repeatable Multi-Sided Probe which features a range of motion free from directional limitations

Probe configurations can be quickly changed using the integrated Renishaw Autojoint adaptor to enable precise inspection of visually or physically obstructed regions

FULL FREEDOM OF MOVEMENT

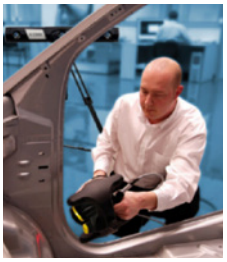
Mechanically unconstrained, the K-CMM system can measure large areas without the need to move the camera or the part



With a measurement depth of 6 m even full cars, large press tools and heavy machinery can be measured without repositioning

WALK-AROUND INSPECTION

Combine several K7500 cameras into the same co-ordinate system using dynamic targets to create a full walk-around measurement cell



K-CMM is an accurate portable measurement system suitable for checking design, production and dimensional quality in industrial environments. The system offers high measurement accuracy in a volume of 35 m³ up to 7.5 m distance from the camera by employing high-resolution optical technology to precisely triangulate the locations of infrared LEDs mounted on the K-Scan MMDx scanner

Features / Key benefits

- Measure anywhere
- Effortless handling by ergonomic design
- High scanning throughput for maximum productivity
- Superior accuracy
- Flexibility

Applications

- Full freedom scanning of large objects: Automotive components of any size, complete vehicles
- Gap and flush analysis
- On-site measurement applications
- Part-to-CAD inspection
- Scanning for reverse engineering

SPECIFICATIONS

K-Scan MMDx specifications

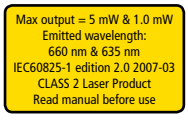
	K-Scan MMDx100	K-Scan MMDx200
Accuracy (1σ)[1,2]	10 µm	16 µm
Stripe width	100 mm	200 mm
Measuring range	100 mm	150 mm
Stand-off	85 mm	95 mm
Min. point resolution	65 µm	115 µm
Full FoV frame rate	50 Hz	60 Hz
Max. frame rate	150 Hz	
Max. points per stripe	1000	
Laser power adjustment	ESP3 real-time per point	
Warm up time	0 s	
Laser power	Class 2, 660 nm	
Field of View indicator	Dot	
Weight	1200 g	
Dimensions	250 mm x 220 mm x 210 mm	

[1] Typical values are 30% better than published values.

*[2] Laser scanner **Accuracy** is determined by scanning a plane from various directions, each time using the entire scanner field of view. The result is the maximum 1σ deviation of the scan data to fitted plane features.*

CE

Complies with 21 CFR 1040.10 and 1040.11, Laser Notice No. 50 dated June 24, 2007



K-CMM specifications

	K-CMM K7500	
Depth of Field	6.0 m	
Max. Field of View	3.7 m x 2.7 m	
Volume	35 m^3	
Volumetric accuracy [3]	Zone 1 (1.5 m to 3.0 m from camera)	70 µm + 25 µm/m
	Zone 2 (3.0 m to 4.5 m from camera)	80 µm + 25 µm/m
	Zone 3 (4.5 m to 6.0 m from camera)	95 µm + 25 µm/m
	Zone 4 (6.0 m to 7.5 m from camera)	170 µm + 25 µm/m
Single point accuracy [4]	Up to 20 µm RMS	
Single point repeatability[5]	Up to 20 µm RMS	
Weight	24 kg	
Dimensions	1157 mm x 230 mm x 175 mm	
Temperature	Operating: 10 °C to 35 °C	(Storage: -10 °C to 50 °C)
Humidity	Operating: 30% to 70%	(Storage: 10% to 90%, non-condensing)
Warm up time	30 to 60 minutes	
Power	100/240 VAC, 50/60 Hz, 1.0 A	
Volume indicator laser	Class 2M, 635 nm	

*[3] **Volumetric accuracy** is certified in accordance with procedures derived from the general guidelines of ISO 10360-2:2013 for size measurements. Certification consists of performing comparisons of measured values to traceable length artefacts in various different locations and/or orientations in the field of view of the Optical Tracker using the MSP with standard probe stylus. The indicated specification represents a 95% confidence interval.*

*[4] **Single point accuracy** is calculated by measuring the MSP with standard probe stylus in a static position for one second. The RMS error of the collected points is reported.*

*[5] **Single point repeatability** is calculated by placing the standard probe stylus with MSP in a conical socket and measurements taken from various angles. The RMS error of the collected points is reported.*

All weights and dimensions are approximate.

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