

CO-ORDINATE MEASURING MACHINES



The GMT CMM

The GMT Co-ordinate Measuring Machine is the culmination of decades of experience in metrology and machine tools. GMT CMM's combine accuracy with functionality and practicality.

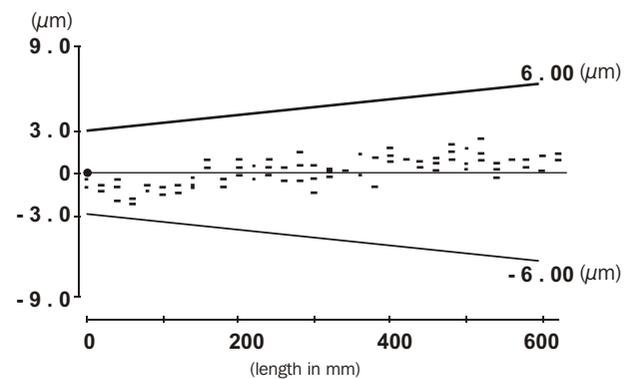
GMT CMM's are the ideal measurement systems for small-to-medium sized general mechanic and prismatic components.

A wide variety of state-of-the-art accessories are provided with GMT bridge-type Co-ordinate Measuring Machines to suit all dimensional inspection tasks and needs.

All GMT 3D CMM's are designed and manufactured with proven technology and air bearings for frictionless travel. GMT constantly researches new materials such as composites to incorporate in its machines to achieve the required dynamic performance.

*Structure Accurate
to 5 micron*

Enhanced accuracy with CAA possible



Type:

Bridge type CMM with stationary table and moving bridge placed on an ergonomically designed machine table. Machine base, cross beam and Z-axis are made of rigid granite. All axis with friction free air bearings.

The drive unit and scale of the X and Y-axis are protected by a bellows. The GMT Manual CMM can be easily upgraded to the CNC version at a later date as user needs change and inspection demands increase. Individual axis locking system is provided for Manual CMM's.



Unparalleled service... value for money

Machine Structural Components:

Granite Base:

- GMT diabase wear-resistant black Indian granite, precision lapped to grade 00 as per IS-7327-1991.
- More rigid, vibration resistant and temperature stable than steel.
- Threaded stainless steel inserts provided on granite base for easy clamping of components and fixtures.

Bridge design:

- Hollow granite structure design used in the bridge provides greater rigidity and stability.
- Optimized bearing design assures optimum stability of bridge for precise volumetric measuring accuracy.

Z axis:

- Hollow granite square section.
- Failsafe brake and pneumatic counter balance.
- Pneumatic brake for Z-axis to protect against air supply failure.

Air Bearings:

- Precision, backlash-free, orifice compensated air bearings support all linear movements
- Designed for maximum stability and minimum consumption of air.

Measuring scales:

- Self adhesive tape scale and non-contact digital read head offers greater repeatability and accuracy.

Servo system:

- Accurate, versatile, precision, low power and low heat dissipation DC motors with integral tachometers.
- Friction drives on all axis.
- Motor gets disengaged on air supply failure.

Vibration dampers:

- Vibrations absorbing leveling mount and steel base for added stability & rigidity.

Standard for calibration:

In general, GMT tests and evaluates CMM products using the international standard, ISO 10360-2. It is possible to provide certificates according to other standards upon customer request at the time of placing the order.



*Sophisticated
calibration equipment
traceable to
international standard*

CMM Calibration Facilities

Fully equipped with precision calibration equipment like Koba Step Gauges and Renishaw Laser Interferometer, GMT ensures that all CMM's are calibrated prior to despatch.

KOBA-step® Gauge

Koba Step Gauges have a castellated configuration, with a large number of gauge faces on a single line of measurement. A CMM can be easily calibrated in a single setup. A unique feature of the Koba Step Gauge is its special construction wherein all the points of measurement are on a neutral axis, which enables exact measurement even with the slight bending that takes place at the point of support.

This ensures the necessary accuracy and allows the Koba Step Gauge to be placed in any position with different supports. The GUK-S analysis software verifies and documents the results. The Koba Step Gauge is certified by DKD (the German National Calibration Authority) and its user-friendly software interfaces with the CMM's own hardware for data management and file storage.

Renishaw Laser Systems:

Laser systems

The ultimate in precision machine performance measurement and calibration of CMM's, the Renishaw laser system & software provides the capability for static and dynamic measurement of a CMM for linear, angular, straightness, squareness & flatness errors.

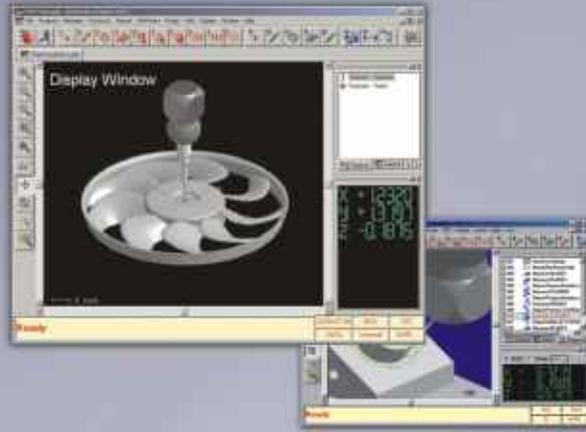
Features

- automatic data capture
- dynamic measurement
- universal error compensation
- new report standards.

*Calibration service provided
on an ongoing basis*

GMT CMM SPECIFICATIONS

Model - GRANO	4-5-4	4-5-4	4-10-4	6-7-5	6-7-5	7-10-6	7-15-6	10-10-8	10-15-8	10-20-8	12-15-10	12-20-10	12-25-10	12-30-10
Machine Type	Moving Bridge													
Operating Mode	Manual	DCC	Manual	DCC	DCC	DCC	DCC	DCC	DCC	DCC	DCC	DCC	DCC	DCC
Guide Method	Air bearings on all axis													
Measuring Range X axis mm	450	600	750	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
Measuring Range Y axis mm	500	750	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
Measuring Range Z axis mm*	400	550	600	800	1000	1200	1500	1800	2000	2500	3000	3500	4000	4500
Clearance Under Bridge mm	560	670	800	1030	1230	1430	1630	1830	2030	2230	2430	2630	2830	3030
Overall Dimensions	Reflective linear encoder													
Length - mm	1400	1900	2400	2900	3400	3900	4400	4900	5400	5900	6400	6900	7400	7900
Width - mm	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300
Height - mm	2600	2600	2600	2800	2800	3050	3050	3550	3550	3550	3750	3750	3800	3800
Length Measuring System	Reflective linear encoder													
Uncertainty of Measurement as per ISO-10360-2	3.5+L/200													
MPEE - (L=Measured Length in mm) & E in μm	5+L/200	3+L/200	5+L/200	3+L/200	5+L/200	3+L/200	5+L/200	3+L/200	5+L/200	3+L/200	5+L/200	3+L/200	5+L/200	3+L/200
MPEP-Probing Error P(μm)	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0
Resolution of Tape Scale in μm	0.5	0.5/0.1	0.5	0.5/0.1	0.5	0.5/0.1	0.5	0.5/0.1	0.5	0.5/0.1	0.5	0.5/0.1	0.5	0.5/0.1
Velocity - mm/s	-	350	-	350	-	350	-	350	-	350	-	350	-	350
Acceleration - mm/s ²	-	700	-	700	-	700	-	700	-	700	-	700	-	700
Measuring Table Material	Granite													
Working Area (lxb) mm	1040 X 550	1500 X 550	1315 X 700	1700 X 810	2000 X 810	2500 X 1250	3000 X 1250	3500 X 1250	4000 X 1250	4500 X 1250	5000 X 1250	5500 X 1250	6000 X 1250	6500 X 1250
Threaded Stainless Steel Insert	M8													
Max. Permissible Workpiece Weight Kg	250	400	350	500	750	1100	1200	1600	1600	2000	2000	2500	2500	3000
Machine Weight Kg	750	1500	810	1500	2750	2650	3350	4050	4050	4650	4650	5350	5350	6050
Air Supply in lpm	80. Supply Pressure 6-10 bar, Pre filtered Air quality as per ISO 8573 part1, Class 4													
Power Input (KVa)	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0	0.5	2.0
Operational Voltage	230VAC \pm 10%, 50/60 Hz													
Operating Temperature in $^{\circ}\text{C}$	20 \pm 2													
Humidity	40 - 60%													
Temperature fluctuations $^{\circ}\text{C/h}$	1													
Temperature fluctuations $^{\circ}\text{C/day}$	2													
* Probing system clearance - 90 mm from z ram bottom face to granite base top surface.														



Software Options:

CMM Manager from IQ Metrology, USA



Metrolog XG from Metrologic Group, France



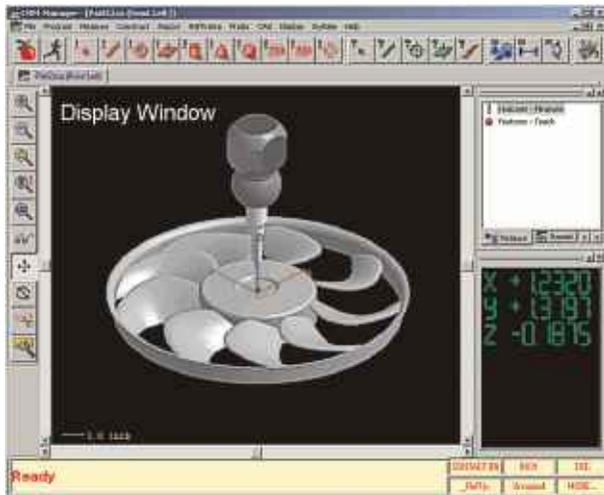
Metronics QC 5300 from Acu-Rite, USA



PowerINSPECT from Delcam, UK



CMM Manager Software:



CMM Manager is a task oriented, highly intuitive measurement software package for your CMM's. It is a fully integrated environment supporting walk-in quick measure, one-click CAD measure, collision free CAD teach, virtual simulation, real time verification, advanced path planning, CAD alignment and Datum alignment.

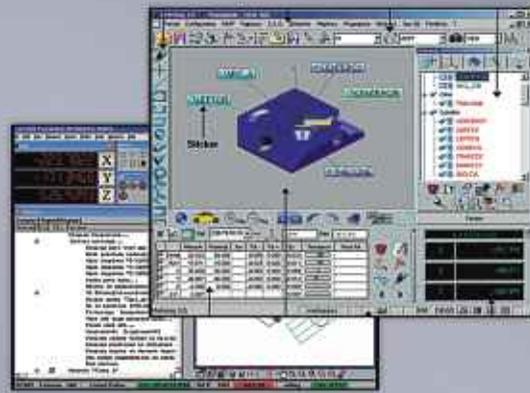
CMM Manager also offers easy to use functionalities, including graphical probe configuration management, automatic tip

calibration, cross section scanning and hole pattern measurement.

Features:

- Walk-in measurement
- Graphical dimensioning
- Web ready report
- True Click-in Measure capability
- Ionized Part program representation
- CAD based graphical programming
- Graphics assisted Tolerance reporting
- Drag-N drop Graphical Report creation
- Cross section & free form surface scanning
- Automatic probing angle selection
- Automatic collision avoidance
- Iterative datum alignment for soft fixturing
- Best-fit analysis for improved inspection accuracy

Wide variety of software to suit customer application



Metrolog Software:



Metrolog software is a user friendly software with PTB certified algorithms. The integration of all functions on one-screen gives the program the highest efficiency. You are guided through the windows even with very complicated measuring jobs. This way you save time and can do away with errors.

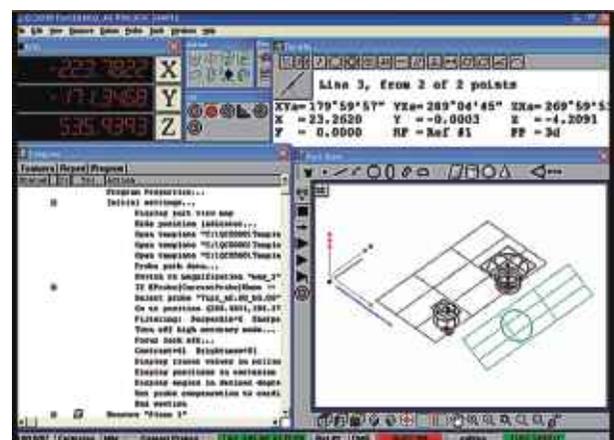
Features:

- Can be used to create, modify and export a program in DMIS format.
- CAD/CAM Interfaces: VDA, UNISURF, SET, IGES, CATIA, STEP, PARASOLID.
- Offline-programming, online help.
- Scanning modules for digitization of work pieces.
- Has statistics module for calculation and editing of statistical results.
- Work piece temperature compensation.
- Provides a detailed graphical display of the work pieces geometrical features, including the measuring components and their movements.

- Provides a powerful editor for reports, from tables, to graphical charts as well as combinations of both.

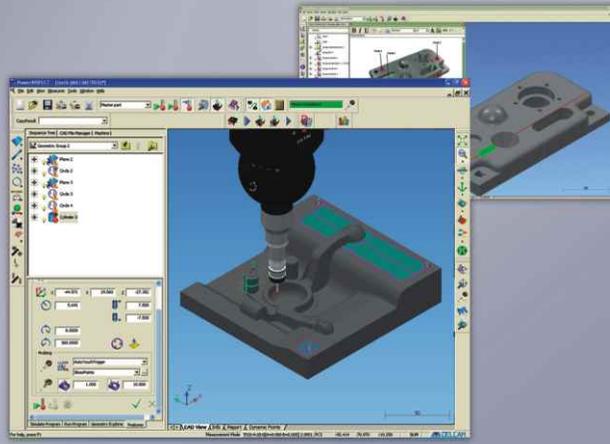
Metronics Software

Quadra-Check software supports industries that require precise measurement and inspection of 2D and 3D parts in single-sensor and multi-sensor environments. The products feature an intuitive user interface and simple, meaningful visual displays. Their design reflects a deep understanding of user needs and a uniform work process model that supports operators at every stage in the measurement process. Metronics software leads the industry in programming and automation innovations that improve operator productivity, reduce errors and saves time and money.



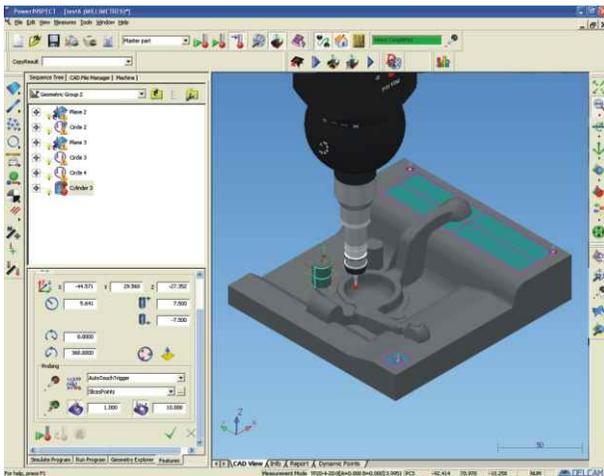
Features:

- Windows Protocol
- Graphic User interface
- Icon based tools & toolbars



- Colour coding
- Audio feedback
- Contextual help
- Intelligent, time saving protocols
- CAD export
- SPC export
- CNC control
- Integrated databases

PowerINSPECT Software



PowerINSPECT allows you to carry out rapid inspection of complex parts and tools, by

comparing manufactured items with the original 3D CAD models.

PowerINSPECT also includes a full geometric package which can be used with or without any CAD being available.

With a CNC installation of PowerINSPECT you can also create your inspection sequence offline and simulate it within PowerINSPECT before running it on the CNC machine.

Features:

- Reposition the inspection device.
- Reports can be viewed during the measurement.
- CAD view with text report.
- Automatic collision avoidance.
- True click-in measure capability.
- Iconized part program representation.
- CAD based graphical programming.
- Automatic probing angle selection.
- Best-fit analysis for improved inspection accuracy.



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All specifications subject to change. We reserve the right to change product specifications as part of product improvement