METROLOGY®

Coordinate Measuring Machine (Manual)

BEST CHOICE
SATISFACTION GUARANTEED

Innovation Design R&D
Patented Technology Award

TAIWAN R&D
International manufacturing

VelociRaptor

Fast、Cool、Accurate

New Standard Software for DMIS Metrology

*International technique combination*

**Innovation Design R&D
Patented Technology Award**

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1) Main body structure

Three-axis adoption of quality DIN00 grade granite guarantees small coefficient in thermal expansion and so that it serves excellent stability regardless the temperature effects, strong rigidity and small geometrical error in motion.
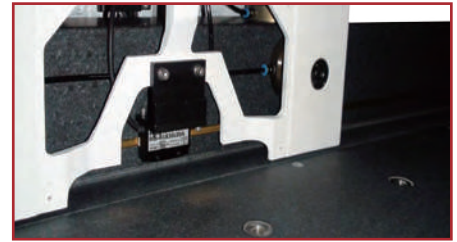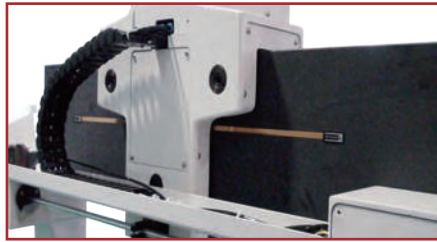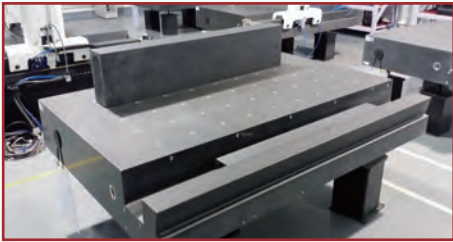
2) Motion system

Three-axis adoption of FESTO and SMC quiescent air pressure & bearing guide way, comprised of air bearings which are self-cleaning, pre-loading and high precision guarantees the large span of bearings, strong anti-sways, small resistance, no abrasion and stable motions.
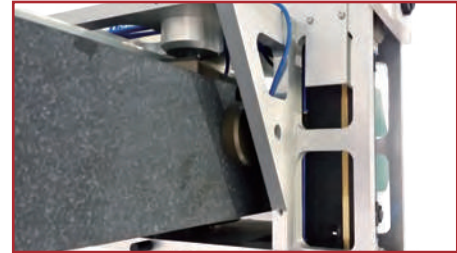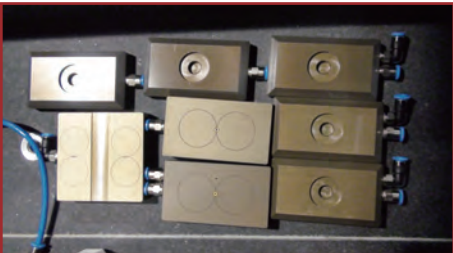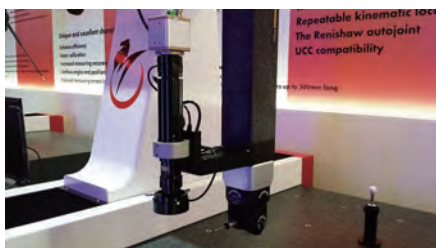

3) Movement Method

One-button air control ON/OFF switch for 3 axes fast movement, locking, and operation procedure. Include high accuracy chrome steel, non-screw drive bar device for fine position adjustment.

4) Image Measuring System (optional for non-contact measurement)

- 1/3" 0.41M pixel high-resolution color CCD
- 0.7-4.5X optical continuous zoom lens
- High brightness adjustable LED surface lighting source
- Image correction optical glass ruler
- Image capture card and measuring software
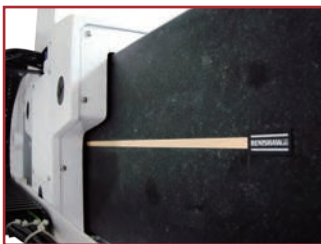
International technique combination

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5) Measuring System

Three-axis adoption of Renishaw reflecting metal tape measuring scale system, resolution: 0.5 um.

*Veloci**R**aptor*

6) Software System

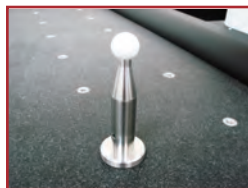**VISUAL DMIS new 3D manual graphical display measuring software by germany PTB certification**

7) Probe system

Renishaw MCP – Electronic manual trigger probe and MH20i-360° rotating and 15° electronic manual trigger probe. Ceramic Ø20mm origin standard ball, Ruby stylus kit.

Ceramic standard ball

MCP

MH-20I

MCP Kit Data Sheet.

MCP Manual Probe Specification.

- **Suitable interface** — Standard touch trigger interface e.g. PI4-2
- **Sensor Directions** — ±X, ±Y, +Z
- **Unidirectional Repeatability** — 0.75 μm
- **Pretravel variation (XY plane)** — ±1.5 μm
- **Trigger force (fixed)** — 12 g
- **Stylus mount** — M3
- **Probe status** — LED
- **Probe signal connection** — 5 pin Din
- **Overtravel protection** — Z 5 mm   XY ±20 degrees

MCP Manual Probe (A-1311-0096)
PL1T cable (A-1016-0004)
M3 Φ1x21mm Stainless Steel Stylus (A-5000-3551)
M3 Φ2x21mm Stainless Steel Stylus (A-5000-3552)
M3 Φ3x21mm Stainless Steel Stylus (A-5000-3553)

MH20i indexing probe head

Probing systems for coordinate measuring machines

MH20i features and benefits:

- Enhanced inspection capability from adjustable probe orientation with 168 repeatable index positions set at 15° increments

- Repeatable TP20 stylus module changing in each pre-qualified position without the need for re-qualification significantly enhances productivity

- TP20 compatibility, providing a wide range of force and length options to optimise machine performance and access capability

- Easy-to-read scales allow rapid re-orientation

- Position repeatability: 1.5um(TP20SF) 2.5um(TPEM2)

LF   SF   MF   EF   6W   EM1 STD   EM2 STD

Stylus module

Styli

M3 / M2 adaptor

M2 thread styli

M3 thread styli
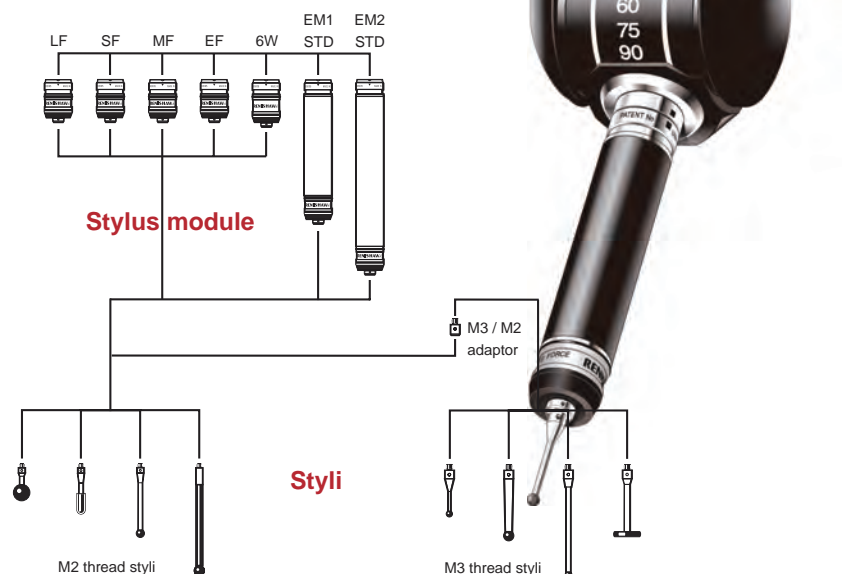
Detail information see www.renishaw.com

VelociRaptor Coordinate Measuring Machine (Manual)

| Model NO.	CMM-564M	CMM-785M	CMM-7105M	CMM-7155M
Measuring Range (X.Y.Z)	500x600x400mm	700x800x500mm	700x1000x500mm	700x1500x500mm
Resolution	0.0005mm / 0.00002″			
Measuring Accuracy	MPE_E：2.5+L/300(um)	MPE_E：3.0+L/300(um)	MPE_E：3.5+L/300(um)	MPE_E：4.0+L/300(um)
Repeatability	MPE_P：3 um			
Main Structure	3-Axis DIN00 grade granite Bridge type measuring machine			
Motion Style	3-Axis with FESTO Air pressure control configuration SMC self-clean air floating and filter system			
Movement System	3-Axis high accuracy chrome steel threadless screw drive			
Measuring System	3-Axis Renishaw high accuracy reflecting metal tape measuring scale system			
Probe System (Optional)	1.Renishaw MCP - Electronic manual trigger probe 2.Renishaw MH20I - 360° rotating and 15° electronic manual trigger probe 3.Standard Accessories: Ruby stylus kit / Extension rod / Ceramic Ø 20mm origin standard ball			
Measuring Software	VISUAL DMIS New 3D manual graphical display measuring software			
Computer Hardware	2.5G Dual-Core Computer / Win 7 / 21.5" LED monitor			
Dimension of Machine (LxWxH)	950x1000x2200mm	1150x1200x2400mm	1150x1400x2400mm	1150x1900x2400mm
Weight of Machine	550kg	700kg	800kg	1000kg
Max. Loading Weight	300kg	500kg	500kg	600kg
Air Supply	0.6~0.8 Mpa			
Power Requirement	100-240VAC ±10% 50-60HZ			
Environment Requirement	Storage temperature 15°C ~ 32°C Relative humidity <70%RH The best temperature / Humidity of measuring 18°C ~ 22°C / 45%~65%RH			
Optional Accessory	Fixture / Stylus kit / CAD software module / Image measuring system			
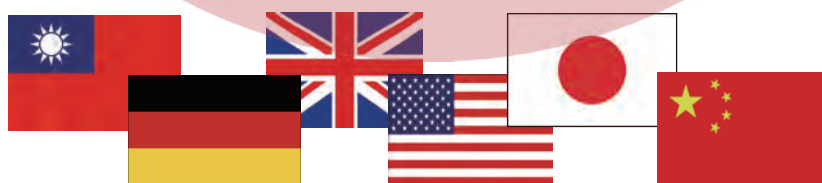
German craftsmanship Heritage   International technique combination

Visual DMIS measurement software
Coordinate Measuring Machine

Visual DMIS The measurement software is currently the world's highest standard and the most easy-to-operate intelligent detection software. The reliability, validity and accuracy of its algorithm have been approved by the world's authoritative German National Institute of Physics (PTB).

Visual DMIS The measurement software is mainly used in the measurement of various industrial parts and products, especially the measurement of geometric elements, the evaluation of shape tolerances and the evaluation of the surface shape of parts in the fields of aerospace, automobiles, molds, and inspection tools.

Visual DMIS main function

- **Probe system management:** Including probe assembly and calibration
- **Geometric element measurement:** Equipped with the measurement elements specified by the international CMMA, such as points, lines, planes, circles, cylinders, cones, balls, arcs, ellipses, keyways, curves, curved surfaces and other functions, which can be directly displayed in the graphics window
- **Construct geometric elements:** Use the measured elements to construct the required geometric elements and automatically display them on the screen, such as projection, intersection, center division, fitting, parallel, perpendicular, tangent, translation, rotation, etc.

- **Geometric element evaluation:** Able to directly click the icon of the geometric element in the graphics window to quickly complete the measurement and evaluation
- **Evaluation of shape error and position error:** Calculate the geometric tolerances of the measured elements according to ISO standards, such as straightness, flatness, angle, roundness, cylindricity, sphericity, taper, parallelism, perpendicularity, inclination, symmetry, and position , Concentricity, Coaxis, Runout, Contours of Points, Lines and Surfaces, etc., and drag and drop the evaluated geometric elements to complete the measurement


- **Workpiece coordinate management:** Including the creation, storage, recall, transfer and deletion of coordinate system
- **Self-learning measurement function:** For repeated measurement of a large number of workpieces, the self-learning function can be used to efficiently complete DMIS program creation
- **CAD function module (optional):** It can support multiple formats such as IGES, STEP, etc., can realize the establishment and import and export of CAD alignment coordinate system, the identification and selection of CAD theoretical elements, rapid programming, and the comparison of the measured element with the CAD model

Visual DMIS measurement software
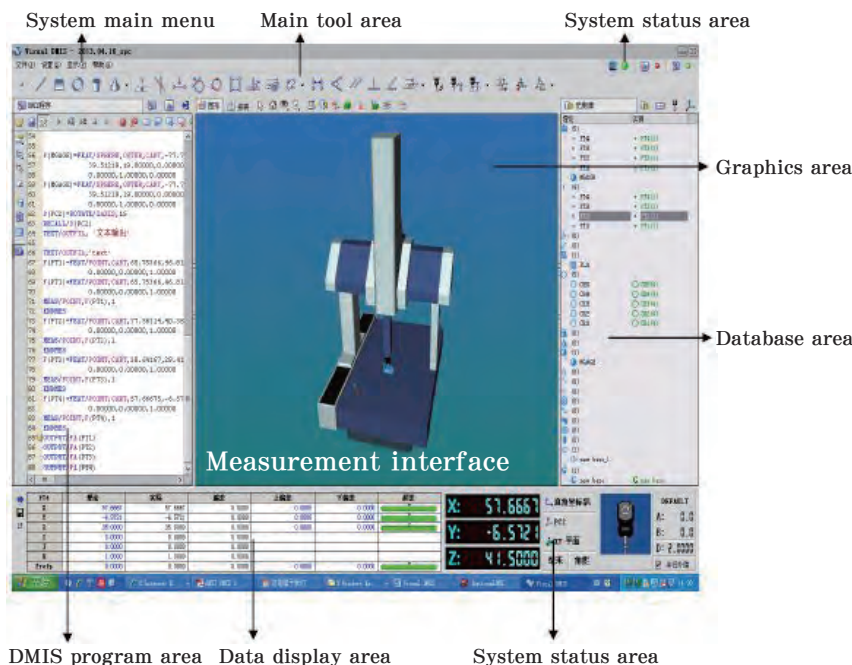# Coordinate Measuring Machine

■ **DMIS program input, output, editing and various report output**
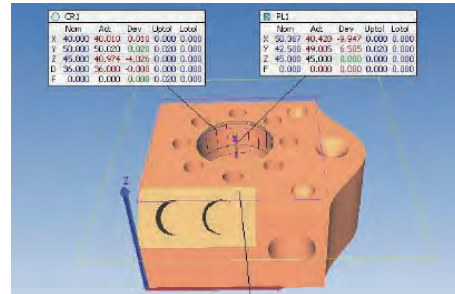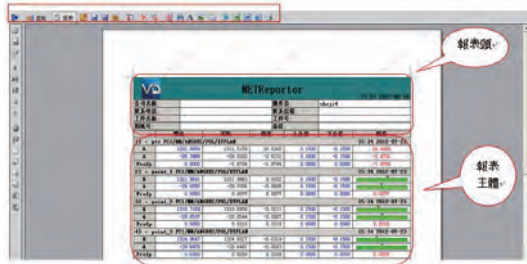
Multiple format output, measurement report printing form, easy to understand measurement result output report, more convenient

■ **Graphics function:** It has the display of the real 3D physical machine model, can display the geometric elements of the measured workpiece intuitively, and print out the 3D graphics and dimensions of the measured geometric elements

It can display the movement status of the three coordinates and the actual measurement movement of the real 3D response probe in real time. Move the mouse to rotate the position of the CMM, adjust the size and proportion of the window, so as to observe the measurement process and results

■ **Measurement result output:** It can display and output 3D graphics, the measurement results can be output in a built-in format or EXCEL format, etc. cyclically output size reports, as well as self-designed print result reports, the output report can display the upper and lower limits tolerances of the setting to automatically determine the measurement results is it out of tolerance

■ **Reverse measurement function:** The measurement results of geometric elements can be output in IGES format, so that the measurement data can be directly read in CAD software, which is convenient for designers to form CAD mathematical model graphics

System main menu   Main tool area   System status area

Graphics area

Database area

Measurement interface

DMIS program area   Data display area   System status area

During the measurement process, the motion status of the measuring machine, machine model, workpiece model, and geometric figures can be displayed at any time, the process of virtual measurement operation and the actual motion of the measurement probe can be reflected.

■ **Main tool area**

Measurement toolbar, Construction toolbar, Tolerance toolbar, Probe toolbar, Coordinate system toolbar

Intuitive and clear measurement interface and measurement results