Coordinate Measuring Machine (Manual)

VelociRaptor

Fast  `  Cool  `  Accurate

New Standard Software for DMIS Metrology
Coordinate Measuring Machine (Manual)

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) 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
5) **Measuring System**
Three-axis adoption of Renishaw reflecting metal tape measuring scale system, resolution: 0.5 um.

6) **Software System**
VISUAL DMIS new 3D manual graphical display measuring software by Germany PTB certification

7) **Probe system**
MCP Kit Data Sheet.


- Suitable interface
- Sensor Directions
- Unidirectional Repeatability
- Pretravel variation (XY plane)
- Trigger force (fixed)
- Stylus mount
- Probe status
- Probe signal connection
- Overtravel protection

Standard touch trigger interface e.g. PI4-2
±X, ±Y, +Z
0.75 μm
±1.5 μm
12 g
M3
LED
5 pin Din
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

Details: www.renishaw.com
## VelociRaptor Coordinate Measuring Machine (Manual)

<table>
<thead>
<tr>
<th>Model NO.</th>
<th>CMM-564M</th>
<th>CMM-785M</th>
<th>CMM-7105M</th>
<th>CMM-7155M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Range (X.Y.Z)</td>
<td>500x600x400mm</td>
<td>700x800x500mm</td>
<td>700x1000x500mm</td>
<td>700x1500x500mm</td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
<td>0.0005mm / 0.00002&quot;</td>
<td></td>
<td></td>
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<tr>
<td>Measuring Accuracy</td>
<td>MPEₜ : 2.5+L/300(um)</td>
<td>MPEₜ : 3.0+L/300(um)</td>
<td>MPEₜ : 3.5+L/300(um)</td>
<td>MPEₜ : 4.0+L/300(um)</td>
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<tr>
<td>Repeatability</td>
<td></td>
<td></td>
<td></td>
<td>MPEₜ : 3 um</td>
</tr>
<tr>
<td>Main Structure</td>
<td>3-Axis DIN00 grade granite</td>
<td>Bridge type measuring machine</td>
<td></td>
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<tr>
<td>Motion Style</td>
<td>3-Axis with FESTO Air pressure control configuration</td>
<td>SMC self-clean air floating and filter system</td>
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<tr>
<td>Movement System</td>
<td>3-Axis high accuracy chrome steel threadless screw drive</td>
<td></td>
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<tr>
<td>Measuring System</td>
<td>3-Axis Renishaw high accuracy reflecting metal tape measuring scale system</td>
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<tr>
<td>Measuring Software</td>
<td>VISUAL DMIS</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Computer Hardware</td>
<td>2.5G Dual-Core Computer / Win 7 / 21.5&quot; LED monitor</td>
<td></td>
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</tr>
<tr>
<td>Dimension of Machine (LxWxH)</td>
<td>950x1000x2200mm</td>
<td>1150x1200x2400mm</td>
<td>1150x1400x2400mm</td>
<td>1150x1900x2400mm</td>
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<tr>
<td>Weight of Machine</td>
<td>550kg</td>
<td>700kg</td>
<td>800kg</td>
<td>1000kg</td>
</tr>
<tr>
<td>Max. Loading Weight</td>
<td>300kg</td>
<td>500kg</td>
<td>500kg</td>
<td>600kg</td>
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<tr>
<td>Air Supply</td>
<td></td>
<td></td>
<td></td>
<td>0.6~0.8 Mpa</td>
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<tr>
<td>Power Requirement</td>
<td></td>
<td></td>
<td></td>
<td>100-240VAC ±10% 50-60HZ</td>
</tr>
<tr>
<td>Environment Requirement</td>
<td>Storage temperature 15°C ~ 32°C Relative humidity &lt;70%RH</td>
<td>The best temperature / Humidity of measuring 18°C ~ 22°C / 45%~65%RH</td>
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<td></td>
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<tr>
<td>Optional Accessory</td>
<td></td>
<td></td>
<td></td>
<td>Fixture / Stylus kit / CAD software module / Image measuring system</td>
</tr>
</tbody>
</table>

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

- **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.

- **Main tool area**
  - Measurement toolbar, Construction toolbar, Tolerance toolbar, Probe toolbar, Coordinate system toolbar

Multiple format output, measurement report printing form, easy to understand measurement result output report, more convenient.