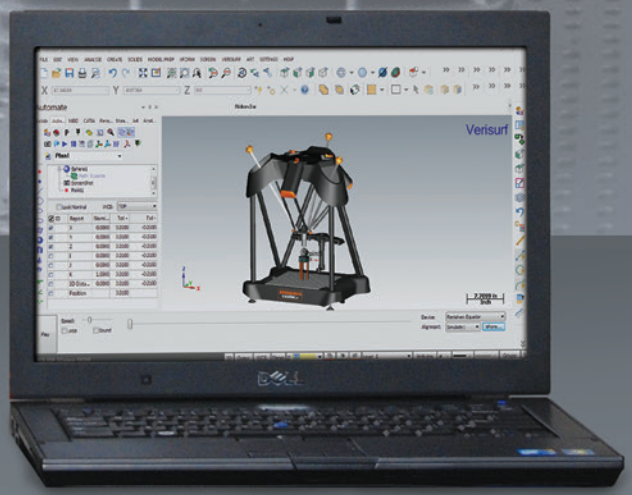
# CMM Master™

POWERED BY VERISURF X

## Automated Shop Floor Inspection

- Fast, Affordable In-Process Inspection
- Offline and Teach Mode Programming
- Portable, Shop Floor Footprint

# CMM Master™

## Flexible Shop Floor Inspection System

The CMM Master™ based on the Renishaw Equator™ and powered by Verisurf AUTOMATE software increases shop floor productivity, reduces scrap and replaces multiple single use fixture gages at a fraction of the cost of traditional CMM systems. Portability, compact footprint, single phase power and no compressed air requirement makes this system ideal for flexible shop floor inspection and automated production cells.

- Lightweight, portable—goes where you need it
- Plug and play for ease of setup and use
- Joy stick for teach mode or manual inspection
- Parallel Kinematic Machine design for high speed measurement, superior repeatability, and low power consumption

## Verisurf Software Increases Accuracy

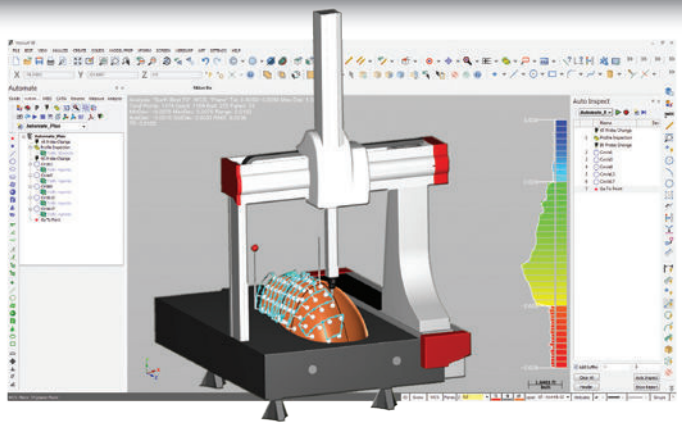
Verisurf software increases the accuracy of the Renishaw Equator with Cubic Volumetric Mapping. The unique software technology utilizes a 24 parameter calculation to volumetrically error map the 3D measurement volume, making the CMM Master more accurate than the standard Equator. Every CMM Master comes with calibration certificate and 12 month factory warranty.

## Software Driven Comparator Process

CMM Master includes a unique software driven gaging comparator process by measuring a 'known to be good master reference part' then comparing subsequent production parts to the master. This further reduces costs and increases inspection flexibility by replacing hundreds of single use hard gages.

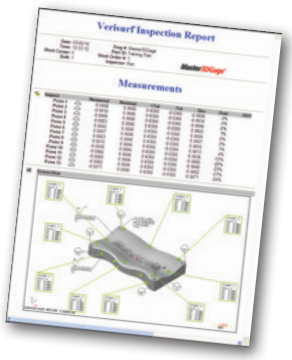
## The Power of Verisurf AUTOMATE Software

Verisurf AUTOMATE provides a 3D programing environment that includes an object oriented operations manager, CAD feature extraction and solid model associativity. Ease of use and productivity is enhanced with file recognition, logical right mouse click options, customizable user configurations and drag and drop reording of operations. When creating



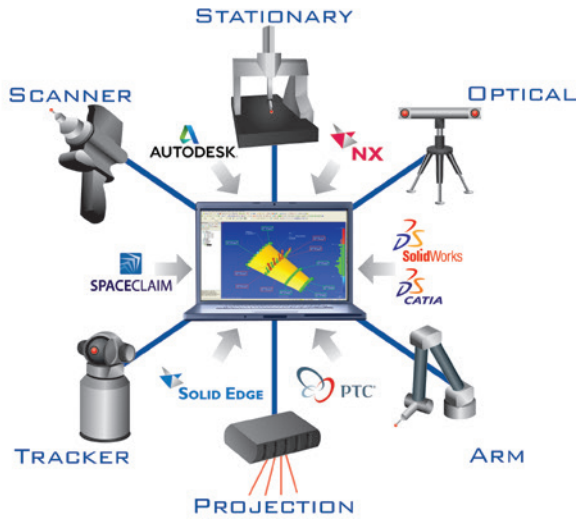
inspection routines probe points and paths can be created and edited dynamically on CAD features or surfaces including specialized routines for helical and radial features. An intuitive user interface helps users learn quicker, program routines faster and automate their inspection process.

- **Online and Offline Part Programming**—Programs can be created offline from CAD or online in "teach" mode using the CMM joystick
- **Multiple Part Alignment Methods**—Align parts from simple 3-2-1, feature fitting or iterative best fitting
- **Full Simulation and Collision Detection**—Verisurf AUTOMATE can simulate all measurement routines including probe scanning to identify and repair work piece collisions before they occur.
- **Flexible Reporting Options**—Verisurf AUTOMATE can automatically generate AS9102 First Article Inspection Report; inspection data can also be exported to other popular presentation formats including, Microsoft® Word®, PowerPoint® and Adobe® 3D PDF Viewer™.




## Based on a CAD Platform

Verisurf AUTOMATE is a complete coordinate measurement CAD system with 3D surface modeling, traditional 2D drafting and 3D model associative GD&T. With Verisurf you can open any CAD model, including STL files to create inspection routines for 3D printed prototypes and additive manufactured parts. The same measurement plan used to run the CMM Master can be used with all brands and models of portable CMM Arms, Scanners, Laser Trackers,




Optical Trackers and stationary CMM's. Whether the measurement job is on the shop floor or in the QA lab this high level of interoperability empowers the inspection technician to choose the ideal measurement system for each job.

## Open Standard Support

Verisurf is committed to non proprietary, open standards to provide customers with freedom of choice and ease of integration when implementing manufacturing measurement solutions:

- **Open Device Connection** allows Verisurf software to drive virtually all portable measurement devices, including PCMMs, laser trackers and more.
- **Open CAD Compatibility** insures Verisurf works with all popular CAD file formats, including IGES, STEP, AutoCAD, Inventor, Pro-E, SolidWorks, SolidEdge, CATIA, Unigraphics/NX and more.
- **Open CMM Communications** extends Verisurf open standard support to all stationery CMMs committed to the I++ protocol.
- **Open CMM Curriculum** from Verisurf University delivers online learning, customized on-site training and lab/classroom support for educational institutions.

## Verisurf Is Tested To International Standards

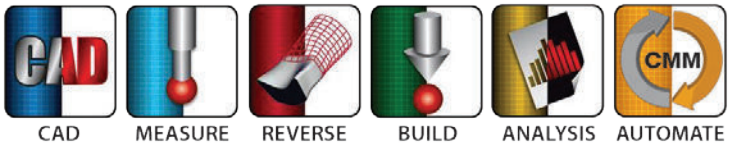
Verisurf software supports the National Institute of Standards and Testing (NIST) Algorithm Testing and Evaluation Program for Coordinate Measurement Systems (ATEP-CMS).

ASME B89.4.10-2000, Methods for Performance Evaluation of Coordinate Measuring System Software—provides the specification for testing basic least squares fitting algorithms for CMM software.

Verisurf is tested by the Physikalisch-Technische Bundesanstalt (PTB) which is the supreme authority for accurate and precise measurement in Germany.

## Verisurf Software Flexibility

Verisurf software is modular so you can configure the right functionality for your application and budget.




## CMM Master Specifications

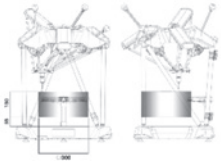
| | |
|---|---|
| Volume accuracy specification (Vertical probe styli and Verisurf CVM) | +/-0.0127 mm (.0005 in) |
| Maximum scanning speed | 100 mm/s (3.937 in/s) |
| Maximum movement speed | 500 mm/s (19.685 in/s) |
| Scanning rate | 1000 points/s |
| Scale resolution | +/- 0.0002 mm (.0000079 in) |
| Machine air supply requirement | No air required |
| Operating temperature | +10 to +40 C (+50 to +104 F) |
| Storage temperature | -25 to +70 C (-13 to +158 F) |
| Relative humidity operating range | Maximum 80% RH at 40 C (104 F), non-condensing |
| Machine electrical supply requirements | 100-240 V AC ±10 %, 50-60 Hz |
| Maximum power consumption | 190 W |
| Typical power consumption | 80-100 W |
| Probe type | Renishaw 3-axis SP25 analogue scanning |
| Fixture plate | 305 mm x 305 mm (12 in x 12 in) aluminum |
| Maximum work piece weight | 25 kg (55 lb) |

# CMM Master™

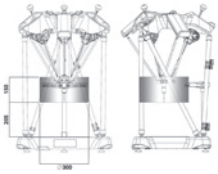
## Standard or Extended Volume

There are two models and a variety of accessories to customize your CMM Master™ system.

**CMM Master 300**
**Standard Height**



**CMM Master300**
**Extended Height**

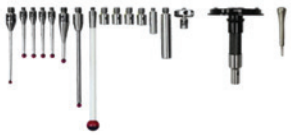


| | | |
|---|---|---|
| Working Volume (X x Y x Z) | 300mm x 300mm x 150mm (11.81in x 11.81in x 5.90in) | 300mm x 300mm x 150mm (11.81in x 11.81in x 5.90in) |
| Height From Base | 55mm (2.16in) | 205 mm (8.07in) |
| Machine Weight | 25 kg (55.11lb) | 27 kg (59.52lb) |
| Dimensions (W × D × H) | 570mm x 500mm x 700mm (22.44in x 19.68in x 27.56in) | 570mm x 500mm x 850mm (22.44in x 19.68in x 33.46in) |

## Probe Accessories

Commonly used probes are available in three versions, at package prices lower than the sum of the contents. The kits have been designed to provide a storage solution for up to six assembled probe tools. With all the kits contained within the same box, extra probes can be stored in the spare locations. All probes are also available separately. M3 probes are intended for use in straight configurations, while lighter M2 probe and adaptors are included for cranked and star probe applications.

**Basic Probe Kit–** Contains the most commonly used probes.



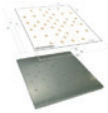
**Intermediate Probe Kit–** Includes all the probes in the basic kit, plus more specialized probes and accessories.

**Advanced Probe Kit–** Includes all the probes in the intermediate kit, plus more specialized probes and accessories.

## Standard Accessories


**Warranty– 12 months**

**6 Position Probe Rack–** The standard 6 position auto change rack can automatically change probes while retaining full repeatability and does not require probe calibration between measurement sequences or different parts.



**Fixture Plates–** The standard system comes with your choice of M6 or 1/4"- 20 plate. Additional fixture plates for mastering or calibration are available.

**MCUlite-2 Joystick–** This ergonomic joystick manually controls the probe within the working volume and includes speed override and the ability to lock movement in x, y or z directions.

**SP25 Probe–** SP25 5mm ruby ball straight stylus 3-axis analog scanning probe.

## Optional Accessories

**Stop Button**
The large stop button is an alternative configuration to the joystick. It is easily attached to the front of the CMM Master.

**Enclosure Accessories**
The optional CMM Master enclosure provides a self-contained gauging station with an optimized footprint, configurable to individual customer requirements.

- **Standard top unit**– with high level access door for cleaning.
- **Standard base unit**– with levelling feet and shelf for controller.
- **Monitor bracket**– height adjustable on left or right side of top unit.

**Fixture Accessories**
Fixture components can be easily positioned for minimal contact on and around the part, providing an unobstructed probe path for inspecting every detail.

- **Fixture plates**– Two fixture plate spacer options raise the kinematic location of the fixture plate by 55 or 150 mm—ideal if gauging small parts or using short probe.

- **Modular kits**– Using modular fixtures can improve the throughput, reproducibility and accuracy of your inspection process with quick and repeatable fixture set-ups that are easy to configure.

**Cleaning Kit–** The cleaning kit provides everything needed to ensure the clean and reliable running of the CMM Maser. The cleaning kit includes replacement dust filters and cleaning products are non-abrasive and non-corrosive.

VERISURF
*3D Measurement Solutions*

4907 East Landon Drive, Anaheim, CA 92807
P 888.713.7201 • F 714.660.5386 • www.verisurf.com