

Transform your CMM  
with a Renishaw retrofit

**RENISHAW**   
apply innovation™

**RENISHAW** retrofit™



## Transform your CMM

Give your old CMMs a new lease  
of life with a Renishaw retrofit

## One stop shop

Total system supplied and  
supported by Renishaw

## Speed and capability

Renishaw's new MODUS™ metrology  
software and the revolutionary REVO®  
5-axis measurement technology

Give your old CMMs a new lease of life

## Transform your CMM with a complete retrofit solution, supplied and supported by Renishaw

### Why retrofit?

Most CMM structures are not subject to high levels of wear and so remain serviceable for many years. BUT, software, control systems and sensors can become outdated as new, faster and more capable ones are introduced.

**Upgrading your CMM can give it a new lease of life...**

- Increased measurement capability
- Greater software functionality & usability
- Faster throughput
- Automation & lower operating costs
- Supported, open CMM controller
- Future-proof investment
- Low risk of change

### A complete solution direct from Renishaw

Users of all brands of CMM now have the opportunity to transform their measurement performance with an upgrade to Renishaw's innovative metrology systems.

Renishaw can now provide a comprehensive CMM retrofit solution, based around the proven UCC2 universal CMM controller and its new MODUS™ CMM metrology software. Combined with an unrivalled range of touch-trigger, scanning and 5-axis sensors, as well as global support and UKAS-accredited machine calibration, Renishaw has assembled all the elements to deliver a professional, state-of-the-art CMM retrofit solution.

### Join the measurement revolution!

Recent advances in measurement, such as Renishaw's innovative REVO® 5-axis measurement technology, have made upgrading the capability of existing machines more attractive than ever.



### A solution for all brands of CMM

Although Renishaw's unique REVO® 5-axis measurement system has been available from Mitutoyo, Wenzel, Dukin and Metris for some time, until now users of other CMMs have been unable to take advantage of this revolutionary technology.

The operational benefits of increased productivity, reduced inspection lead times and greater automation of measurement tasks are now available to all CMM users.

A Renishaw retrofit gives users of all brands of CMM access to state-of-the-art technology, with the security of global service and support direct from the manufacturer

The award-winning REVO® 5-axis measurement system provides unprecedented speed, accuracy and flexibility



*"We can now offer customers of all brands of CMM, including Hexagon and Zeiss, a complete solution that features leading-edge technology in every aspect, backed up by the security of service and support direct from Renishaw."*



## A professional approach to minimise risk

Renishaw believes that CMM retrofit customers have the right to expect the same level of professionalism and quality from a CMM upgrade as they get when they buy a new CMM. Its retrofit service is designed to deliver just that.

### A performance guarantee

The first step is a rigorous machine survey designed to assess the mechanical and electrical components of each CMM. Combined with Renishaw's extensive experience with all brands of CMMs, this enables Renishaw to commit to a level of system performance. You will know exactly what to expect from your upgraded CMM before you make any commitment.



Renishaw staff perform an extensive survey to determine the status of all performance-critical CMM components.

This rigorous approach ensures that the proposed solution will reliably meet your requirements.

### 'Plug and play' installation

Renishaw has built up a comprehensive knowledge base of CMM installations, so it can provide a 'plug and play' solution using its UCC universal CMM controller for most models of CMM.



Renishaw has developed a range of interface panels for common CMMs, enabling the existing 'umbilical' cable to be plugged straight into UCC controller cabinet, saving many hours of on-site rewiring.

### Certified calibration

Renishaw is certified by UKAS to ISO 17025, giving customers confidence in the accuracy of their upgraded machine.



Your upgraded machine will be supplied with a UKAS calibration certificate to ISO 10360-2.



The elements of success

## State-of-the-art sensors for all applications

### A measurement revolution

The award-winning REVO® 5-axis measurement system offers unprecedented measurement speeds, reduced calibration time, and flexible access to features unmatched by indexing or fixed probing systems.

Packed with innovative technology, REVO® allows CMM users to measure feature form whilst also increasing measurement throughput and reducing operator intervention. With programmable stylus and sensor changing, REVO® users can automate even the most complex measurement task.

Furthermore future REVO® sensors, the first of which will enable surface finish measurement on a CMM (available later in 2009), will allow quality assurance tasks that are currently manually intensive to be integrated into a CNC inspection process for the first time.



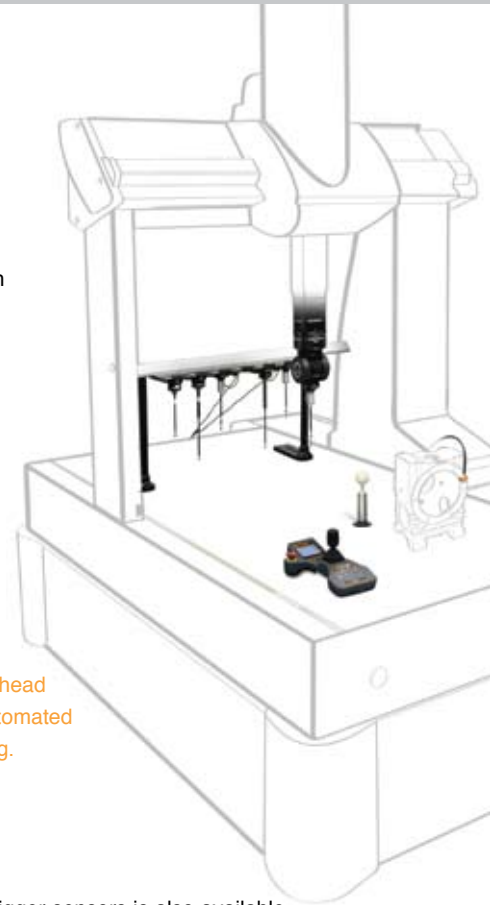
REVO® provides a range of sensors and stylus holders.

### Flexible scanning

Renishaw's unparalleled range of sensors includes contact scanning systems, such as the SP25M scanning probe. Mounted to the industry-standard PH10 indexing head and with automation features such as stylus and sensor changing, these provide powerful capabilities suitable for many measurement applications.



PH10M / SP25M featuring head indexing combined with automated module and stylus changing.



### Touch trigger

Renishaw's industry-standard range of touch-trigger sensors is also available for applications where discrete point measurement is all that is required.



TP20 touch-trigger probe system provides flexible feature access with indexing and module changing.

### Upgrade path

All Renishaw retrofits are based on a common controller and software platform. This means that customers who choose touch-trigger or 3-axis scanning solutions retain a cost-effective upgrade path towards leading-edge PH10M / SP25M featuring head indexing combined with automated module and stylus changing.

## Always in control

Renishaw provides everything you need to transform the performance of your old CMMs.

### Universal control

Renishaw's UCC universal CMM controller is at the heart of a Renishaw CMM retrofit. Combined with a Renishaw servo power amplifier, it enables precise motion control of up to 5 axes of simultaneous motion on machines of all sizes and also supports rotary tables. It also provides a single-box interface to all Renishaw sensors and can gather surface data at up to 4,000 points per second.

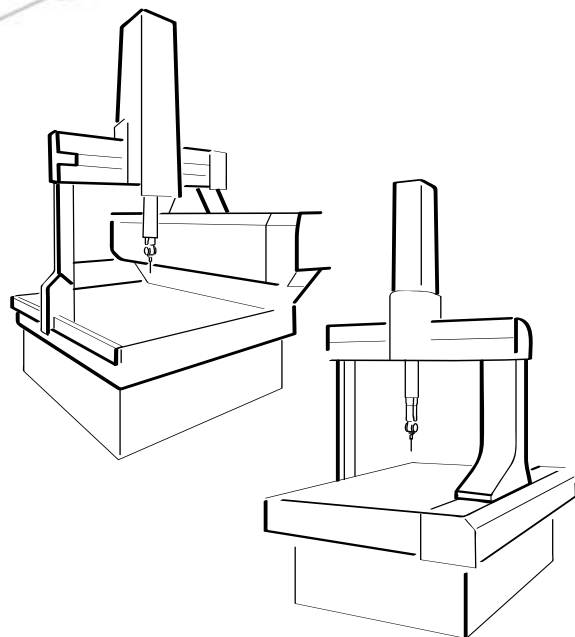
Sophisticated machine error mapping is provided in an open format, allowing users to perform their own recalibration, whilst temperature compensation is also available. Crucially, the UCC2 also complies with the I++ DME protocol, giving users the freedom to use any metrology software that features an I++ DME client.

- Full support for all Renishaw sensors
- I++ DME compliant
- Future proof - future Renishaw sensors will be designed to integrate with UCC controllers
- Cost-effective UCCLite suitable for touch-trigger applications

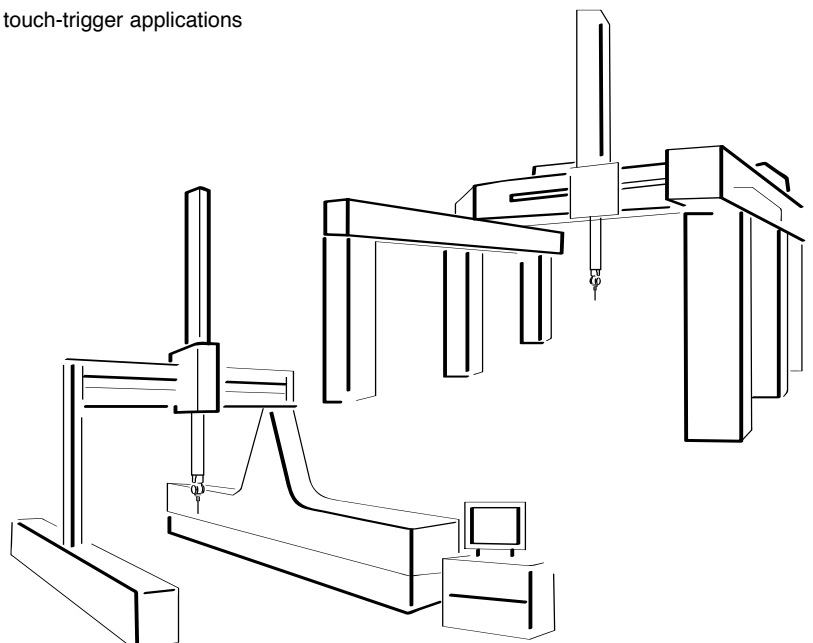


UCC CMM controllers support multiple temperature sensors for improved measurement accuracy on the shop floor.

The I++ DME protocol is a common interface that supports interoperability between any compliant software and hardware.



Renishaw's UCC universal CMM controllers and servo power amplifiers can drive CMMs of all configurations and sizes



Transform your measurement  
capability and productivity

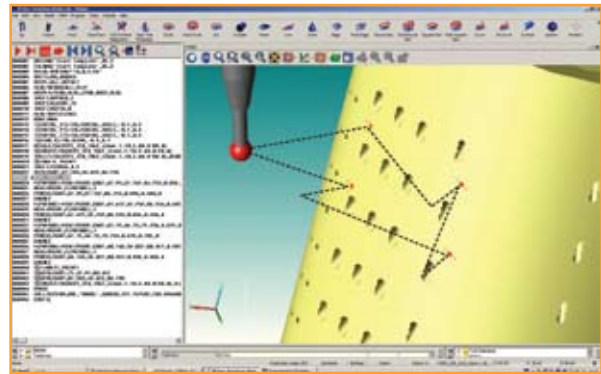
## Making sophisticated measurement simple

### Powerful metrology software

Renishaw's new MODUS™ software provides a powerful platform for 5-axis measurement. A configurable user interface allows native DMIS programs to be developed offline, drawing geometry, embedded dimensions and tolerance data from CAD, with full simulation and collision detection. The software includes certified algorithms for feature measurement, feature construction and part alignment.

Building on a foundation of industry standards such as DMIS, I++ DME, DML and Microsoft® SQL Server, MODUS maximises compatibility with your existing programs and reports. Flexible reporting options include text-based and graphical reports, and results data that can be exported in a wide range of file formats, including certified Q-DAS for comprehensive SPC analysis.

MODUS metrology software is a futureproof investment, ensuring guaranteed availability of the latest sensor and controller technology advancements from Renishaw.



Programs can be created offline directly from CAD with on-screen probe path verification. The CMM environment, the fixture and the location of the part on the machine can all be defined, enabling full simulation and crash detection of 5-axis measurement programs. This minimises CMM down-time as programs arrive at the machine ready to run, with little or no prove-out time required.

 A screenshot of the MODUS software reporting interface. The top part shows a 3D CAD model of a blue part with several yellow callout boxes indicating measurement points. Below the model is a table of measurement results.
 

Feature	Location	Value	Tolerance	Min	Max	Target
Meas_point_1	0.000	0.010	-0.010	0.000	0.010	0.000
Meas_point_2	0.000	0.010	-0.010	0.000	0.010	0.000
Meas_point_3	0.000	0.010	-0.010	0.000	0.010	0.000
Meas_point_4	0.000	0.010	-0.010	0.000	0.010	0.000
Meas_point_5	0.000	0.010	-0.010	0.000	0.010	0.000

The reporting capability of MODUS is extensive, including traditional CMM text reports with comprehensive userdefined formatting. Graphical reporting enables results to be displayed against the CAD model, including whisker charts or 3D form plotting for many features.

## Responsive service and support

### Maintaining performance

Renishaw offers retrofit customers a flexible range of maintenance contract options, including software maintenance; visits for calibration, preventative maintenance and emergency support; out-of-hours support and top-up software training.

Each contract is bespoke, so you can select the combination of services that suits your needs, with the flexibility to carry over unused days to the next period.

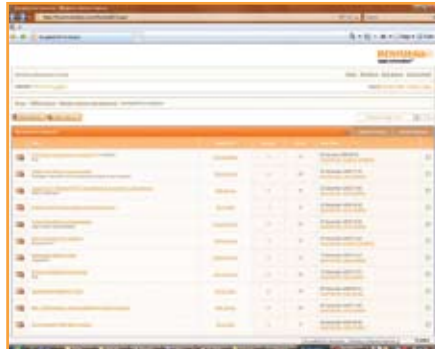


Customers can tailor a maintenance contract to suit their needs, ensuring that they get the best return on their investment.

### Rapid service & support

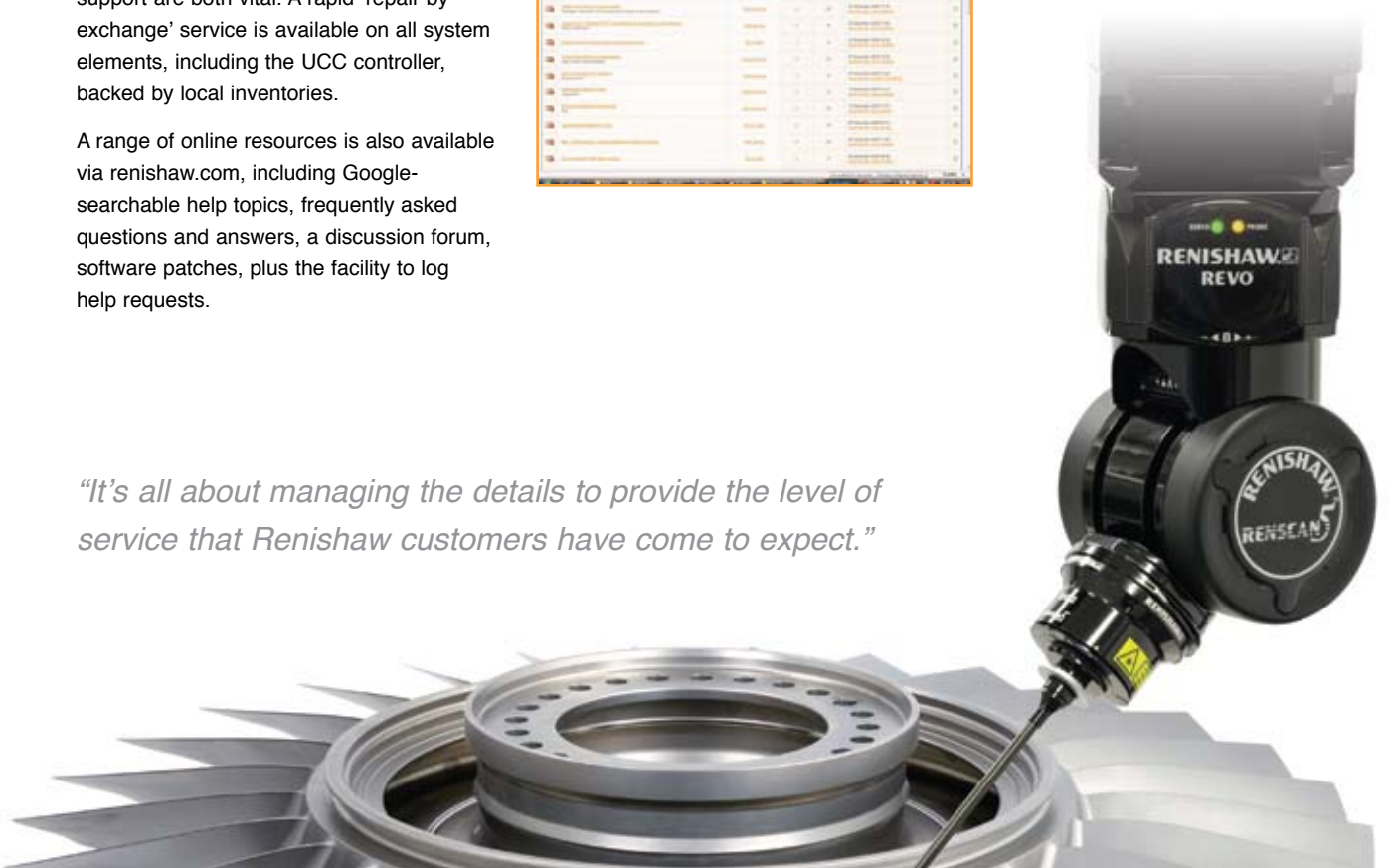
Renishaw recognises that CMM users will require high levels of machine uptime and so responsive service and knowledgeable support are both vital. A rapid 'repair by exchange' service is available on all system elements, including the UCC controller, backed by local inventories.

A range of online resources is also available via [renishaw.com](http://renishaw.com), including Google-searchable help topics, frequently asked questions and answers, a discussion forum, software patches, plus the facility to log help requests.



Support resources on [renishaw.com](http://renishaw.com) include a discussion forum.

*"It's all about managing the details to provide the level of service that Renishaw customers have come to expect."*



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**RENISHAW**   
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## Renishaw applies innovation to provide solutions to your problems

Renishaw is an established world leader in metrology, providing high performance, cost-effective solutions for measurement and increased productivity. A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Renishaw designs, develops and manufactures products which conform to ISO 9001 standards

**Renishaw provides innovative solutions using the following products:**

- Probe systems for inspection on CMMs (co-ordinate measuring machines).
- Systems for job set-up, tool setting and inspection on machine tools.
- Scanning, digitising and dental systems.
- Laser and automated ballbar systems for performance measurement and calibration of machines.
- Encoder systems for high accuracy position feedback.
- Spectroscopy systems for non-destructive material analysis in laboratory and process environments.
- Styli for inspection and tool setting probes.
- Customised solutions for your applications.

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