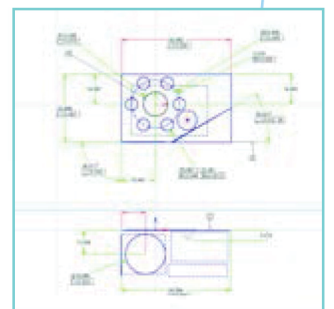


Comprehensive range of Renishaw probing options and accessories.



Intuitive software ensures simple and fast results.

Axiom too... the complete inspection system.

Fast, accurate and reliable, the Axiom too CMM comes in four different sizes with Y axis travel up to 1500mm. Available as either a manual machine or with full CNC control, the Axiom too can be used with touch trigger probe, continuous contact scanning probe or with Aberlink's revolutionary non-contact camera system.

The all aluminium bridge structure not only ensures that the Axiom too has low inertia and hence high acceleration to get the job done quickly, but also that the temperature of the machine rapidly follows the temperature of the room, ideal when the CMM is not housed in a controlled environment. Temperature compensation in the software reports results as if they had been measured at 20°C/68°F.

The standard high-tech granite and aluminium table, originally developed for the optics industry, provides fantastic natural damping of high frequency vibration and the granite Y rail allows pre-loading of the bridge air bearings in both directions for superior accuracy.

Another unique feature of the Axiom too is that manual machines can be simply upgraded to CNC at any point in the future, which is great if you are not sure of your requirement or perhaps can't initially justify the additional cost of a CNC machine.

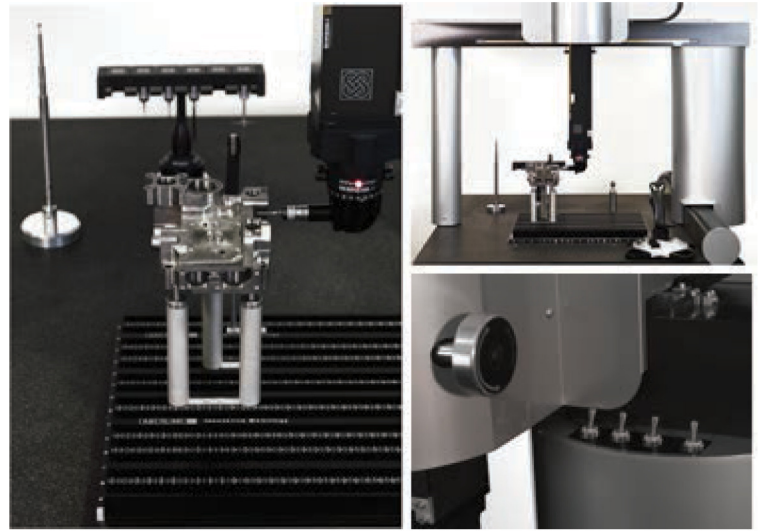
Because of Aberlink's fully integrated manufacturing processes, the Axiom too offers unbelievable value, but above all it is simple to use. Aberlink 3D measurement software is way out on its own as the market leader for ease-of-use, perfect for both occasional user and also metrology professional alike.

Key Features:

- Shortest learning curve of any equivalent system
- Smallest overall footprint of any comparable size CMM
- Choice of Y axis sizes ranging from 600mm to 1500mm
- Suitable for the workshop environment
- Protection from environmental vibrations as standard
- Optimised friction free air bearings, all aluminium bridge and granite table

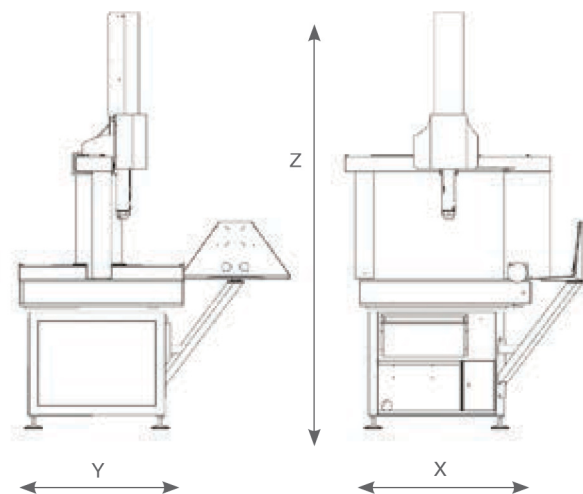
Common Probe Options: Machine Options:

- | | |
|-------------------------|--------------------------------------|
| • MH20i | • Automatic Temperature Compensation |
| • RTP20 | • Touch Screen Joystick |
| • PH10T (w/TP20, TP200) | • CCD Camera System |
| • PH20 | • Collimated Back Light Option |
| • PH10M (w/SP25) | |
| • PH6M (w/SP25) | |



Axis Travel (mm)	Overall Size (mm)
X 640	X 1130
Y 600, 900, 1200, 1500	Y 900, 1200, 1500, 1800
Z 500	Z 2320

*Volumetric Accuracy:	TP20 (2.4 + 0.4L/100) µm TP200 (2.3 + 0.4L/100) µm SP25M (2.1 + 0.4L/100) µm
Scale Resolution:	0.5µm
**Optimum Temp Range:	18 - 22°C
Operational Temp Range:	0 - 45°C
Table:	Honeycomb aluminium & granite or solid granite
Table Load Capacity:	300kg (Honeycomb) or 500kg (Solid)
Max. Velocity Vector:	600mm/sec (CNC)
Max. Acceleration Vector:	600mm/sec ² (CNC)
Air Consumption:	50 l/min (1.8 cfm)
Required Air Pressure:	4 bar (60 psi)



*Maximum Permissible Error MPE_E according to 10360-2, 2009 within the thermal limits defined for optimum temperature range.

**Installation environment thermal limits:
Rate of change <1°C/hr and <2°C/24hr
Temperature gradient <1°C/m



Probe Options

Every Aberlink CMM will fully support the range of probe heads and both touch trigger and scanning probes supplied by Renishaw.

The following are common options:

TP8 Probe



The TP8 probe offers an entry level option for customers that require infrequent indexing of the probe and no indexing during the running of a measurement programme. The TP8 is supplied with two knuckle joints to allow infinite alignment of the probe to the feature being measured, but this alignment is non-repeatable, meaning that the stylus will need to be requalified following each index. The TP8 probe accepts the M3 range of styli.

MH20i Probe Head

The MH20i probe offers repeatable manual indexing of the probe head from 0° to 90° in the A axis and through 360° in the B axis, in 15° increments. Ideal for manual CMMs, it can also be used on CNC models, but will require intervention from the operator whenever indexing is required. The MH20i uses a TP20 stylus module, which in turn accepts the M2 range of styli.



RTP20 Probe Head



The RTP20 probe offers a really cost effective solution for customers that require automatic indexing on CNC machines. Modelled on the MH20i body, the RTP20 uses the CNC motion of the CMM to position itself using a post mounted to the bed of the machine. Like the MH20i it is able to index from 0° to 90° in the A axis and through 360° in the B axis, in 15° increments and uses a TP20 stylus module, which in turn accepts the M2 range of styli. The RTP20 is also fully compatible with the MCR20 change rack to provide an option that provides both automatic stylus changing as well as automatic indexing.

PH10T Probe Head

The PH10T is a fully motorised probe head that offers immediate indexing from 0° to 105° in the A axis and through 360° in the B axis, in 7.5° increments. This probe head should be used by customers requiring frequent indexing or when more precise alignment to the features being measured is required.

Common probe options for the PH10T:

TP20

The TP20 is a robust probe for general purpose measurement that can be used in conjunction with the MCR20 change rack to facilitate automatic stylus changing. The TP20 stylus modules can be supplied with different trigger forces which accept M2 styli up to 60mm long, and with different length modules to assist with probing at greater depths.

TP200

The TP200 probe utilises strain gauge technology and so does not exhibit lobing characteristics and therefore should be considered by customers requiring more accurate measurement of form. It can be used with the SCR200 change rack for automatic stylus changing and the TP200 modules are available as standard or low force for use with M2 styli up to 100mm long.



PH10T probe head fitted with TP20 probe



PH10M
with SP25M
scanning
probe

PH10M Probe Head

Like the PH10T probe head, the PH10M is also a fully motorised probe head that offer immediate indexing from 0° to 105° in the A axis and through 360° in the B axis, in 7.5° increments. The M head, however, incorporates an autojoint with multiwire capability, which is necessary for the SP25M scanning probe. The PH10M probe head can also be fitted with either TP20 or TP200 probes and should be chosen in preference to the PH10T when using these probes if the future use of a scanning technology may be required.

PH6M Probe Head

This head provides a fixed autojoint for when an SP25M scanning probe is required without the requirement for indexing.



PH6M with
SP25M
scanning
probe

SP25M Scanning Probe

The SP25M scanning probe uses an isolated optical metrology transducer system to enable extremely accurate measurements to be taken with the stylus in continuous contact with the feature being inspected. This enables more data to be taken which is important when form is critical. A range of modules are available for the SP25M to provide optimised scanning performance using M3 styli up to 400mm long



PH20 Probe Head

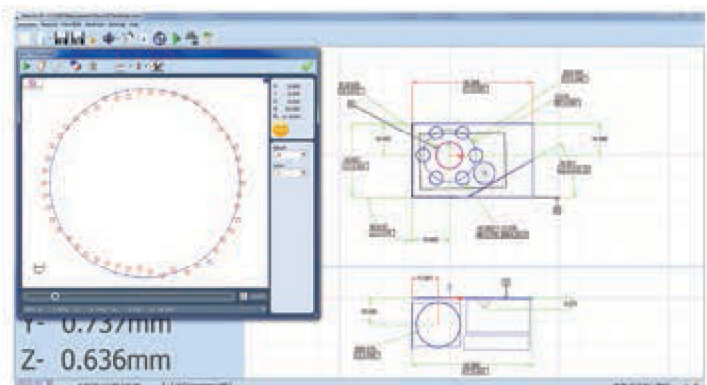
Incorporating the latest 5-axis technology, the PH20 head offers infinite indexing to assist with alignment to any feature being measured at any angle up to 120°. The probe is able to perform 'head touches', where it flicks the stylus on to the surface of the component being measured, while the machine remains stationary. This increases both the speed of measuring and accuracy achievable. Please note that if selecting the PH20 head, then the machine would also have to be fitted with a Renishaw CMM controller. The PH20 uses TP20 stylus modules, which in turn accept the M2 range of styli.

Probe Head Comparison

	Integral Probe	Index Motion	Maximum Length	Index Resolution	Index Positions	Repeatable Indexing	Repeatable Stylus Changing
TP8	Yes	Manual	105mm	Infinite	Infinite	No	No
MH20i	Yes	Manual	150mm	15°	168	Yes	Yes
RTP20	Yes	Automated	168mm	15°	168	Yes	Yes
PH10T	No	Motorised	450mm	7.5°	720	Yes	Yes
PH20	Yes	Motorised	168mm	Infinite	Inifinite	Yes	Yes
PH6M	No	No	450mm	No	No	No	Yes
PH10M	No	Motorised	450mm	7.5°	720	Yes	Yes



Aberlink 3D software is not only way ahead of its competition in being the industry standard for 'easy-to-use' software, but also has the depth of functionality to make it the choice for either occasional users or full-time inspection professionals.



Aberlink 3D software is revolutionary. As a component is measured a representation of it is built up on the screen. The user simply clicks on the measured features to call up dimensions exactly as they would appear on a drawing.

Inspection reports can be in the form of fully dimensioned graphical representations as created on the screen, or tabulated reports in various formats that can show nominals, tolerances, errors, pass/fails, geometric tolerances etc. These reports can also be output to an Excel spreadsheet.

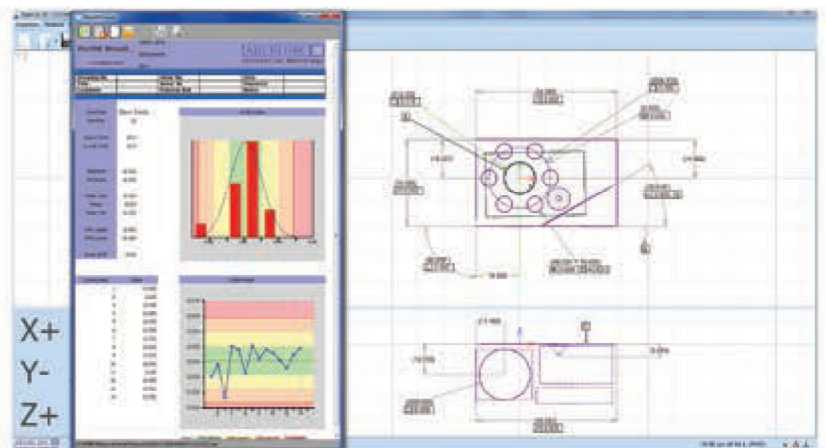
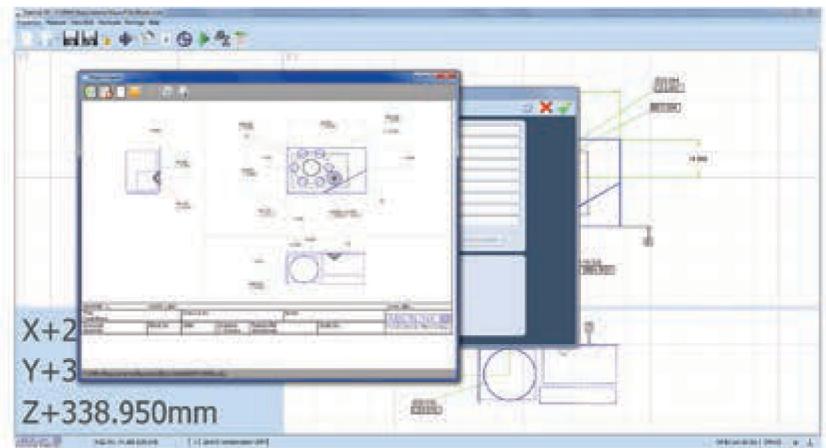
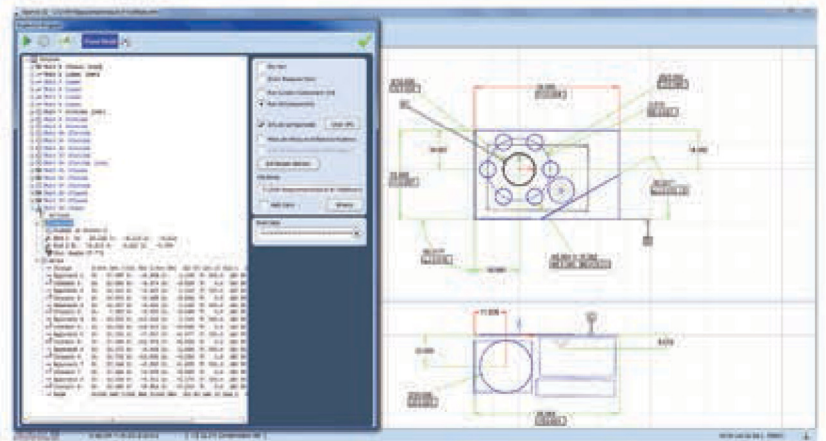
Further reports are available to show the form of features (roundness, straightness etc.), hole or point positions, or complete batch results on one report. The user's company name also appears on all outputs.

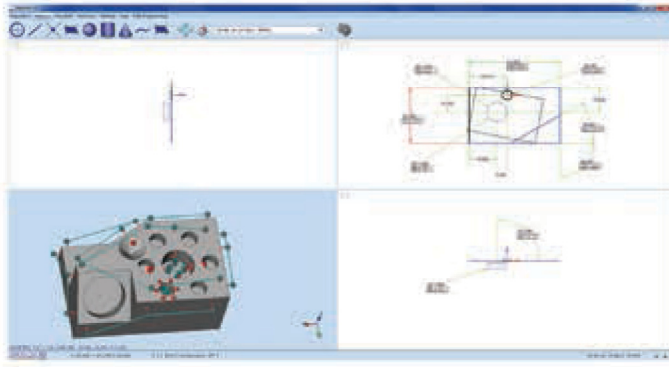
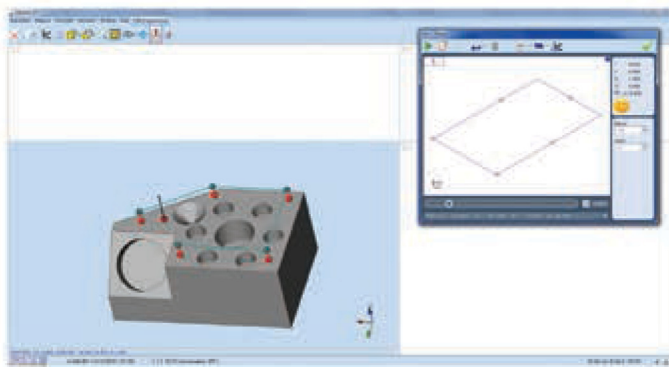
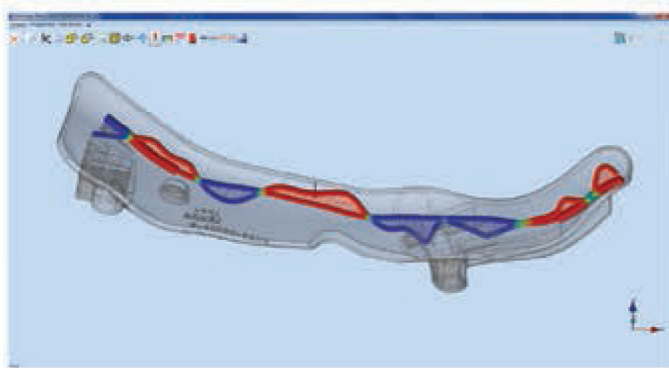
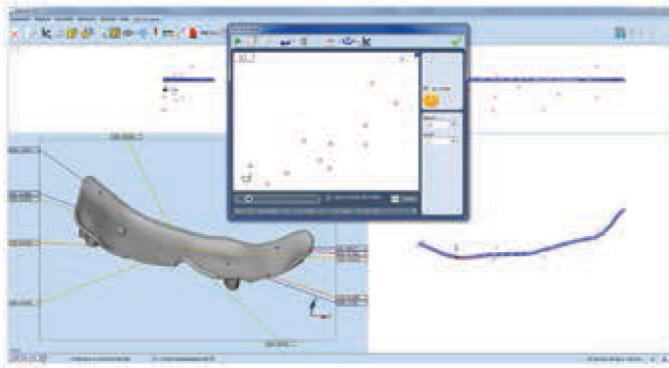
Every time a component is inspected, a programme for measuring subsequent components is automatically created. The software also calculates 'safe' moves between features, even when the probe is indexing – just another thing that the operator doesn't have to worry about!

Popular throughout the world and available in many languages, Aberlink's revolutionary measurement software provides the user with a powerful, yet easy-to-use solution for inspection measurements. This not only increases component throughput but vastly reduces the learning period for new users.

Key Features

- Automatic measurement routines
- Powerful interactive graphics window
- Automatic feature recognition
- 2D and 3D manual and CNC inspection
- Geometric feature inspection
- Free form curve inspection
- DXF data import/export
- STEP and IGES export for reverse engineering
- Feature construction
- Intelligent feature projection
- GD&T dimensions and tolerances





CAD Comparison Module

The Aberlink CAD Comparison software module enhances Aberlink 3D with the capability to compare measured points to a CAD model. Often this will be the only way to measure complex parts or perhaps sometimes drawings for the component simply don't exist.

Powerful alignment routines allow measurement points to be best-fitted to the model. Colour coded errors can then be displayed on the model to produce both graphical and tabulated reports that are extremely clear and very easy to understand.

Aberlink's CAD comparison module allows the input of either STEP or IGES files as standard and allows reports to be exported as an Excel spreadsheet. It really does make measuring complex parts easy, whether on a manual or CNC CMM.

Key Features

- IGES and STEP import and export
- Point cloud best-fit
- Feature best-fit
- Simple measurement of complex parts
- Graphical and tabulated reports
- Export to Excel

Programming from CAD

For many years Aberlink 3D software has been setting the industry standard for both ease of use and speed of programming. However, until now this has been best done by using the teach-and-repeat method of programming when measuring a component. But what if you want to prepare the measurement programme before you even have the first component? Now, we are pleased to introduce our new CAD programming module, which in true Aberlink fashion, allows the simplest programming possible from either an IGES or STEP CAD model.

If you can use Aberlink 3D software then you will already know how to use the CAD programming module – it couldn't be easier. Rather than taking measurement points on a component, you can now just click on the surface of the model where you would like the points to be taken.

Feature Predict works in the same way as when measuring, for instance, if you click in four places on the same plane on the model, then the software will automatically create a Plane Measure unit with those four points in it. Then click on a different feature and it will automatically close the Plane window and look for another feature. If you click on a circular feature it will take just one click to produce a circle or two for a cylinder. Suddenly programming in Aberlink 3D just got even easier!

Aberlink's CAD programming module can be used either on the CMM or off-line... nothing could be more straightforward.

Aberlink's camera system offers a non-contact facility on any Aberlink CMM. A clever design of magnetic, kinematic joint allows the probe and camera to be swapped in just seconds. This means that components can be inspected using both touch trigger and vision inspection technology on the same machine.

The camera incorporates a telecentric lens that gives a distortion-free image on the monitor. It also contains a fully programmable 16-LED light ring which contains alternate white and UV LEDs. The white LEDs provide surface illumination in the normal manner while the UV LEDs provide an ingenious solution to the perennial problem of backlighting on a CMM - the component to be measured is simply placed on a plate containing special reflective paper. Just another example of Aberlink's innovative approach to solving metrology problems.

Key Features

- Swap between touch probe and CMM camera in seconds
- Use touch and vision technology within the same inspection programme
- High precision edge detection for feature inspection
- Thread measurement - min/max/mean pitch, left/right angles, effective diameter
- Fully programmable digital zoom (no need to change lenses)
- Directional overhead lights and back light for profile and surface feature inspection
- Telecentric lens measures accurately even when the feature is out of focus

Specification

- Sensor: 3 Mega pixel high speed colour camera
- Resolution: 2048 x 1536 (QXGA)
- Stand off: min 125mm | max 1000mm (manually adjusted)
- Field Of View: min 9.5mm | max 125mm
- Pixel Size: min 4.8µm | max 48µm



A collimated back light option is available for when measuring 3D or small turned components - see accessories (inside back cover)



The Aberlink Vision software module allows Aberlink 3D software to be used for non-contact measuring. Fully automatic edge detection tools can be used in both manual and CNC mode ensuring fast and repeatable results without relying on the skill of the operator.

Powerful tools allow both geometric and complex shapes to be measured easily. Dimensions can either be called up by clicking on the measured features in the normal way, or alternatively measurement points can be best-fitted against a DXF file. As well as edge detection the operator may use either full cross hairs or mouse cross hairs with other advanced tools available including "smart measure", centre line detection, an "all edge points" function, a "thread measure" tool and a "screen ruler" for quick measurements between any two points on the image.

Key Features

- Full colour video image
- CNC and manual machine controls
- Auto focus
- Digital Zoom
- Light intensity and direction
- Align to edge
- Automatic 2D profile scanning
- Scan geometric features
- Scan individual features
- Scan all visible features with a single mouse click
- Digitise 2D profiles - data export via DXF

