

For the supply of 2 off:

CO-ORDINATE MEASURING MACHINE SYSTEM

MODEL 191-396 CRYSTA-APEX-S123010

Movement Range:	X Axis 1205mm Y Axis 3005 mm Z Axis 1005mm*
Measuring Scale Resolution:	0.0001mm
Traversing Speed:	8-400mm/sec per axis
Max Combined Speed:	693mm/sec
Compressed Air Flow Rate:	100NL/Min (source 150L/min)



	18-22°C	16-26°C	Probe
Volumetric Length Measuring Accuracy according to ISO10360-2 (2009) "E_{0,MPE"} Specification L = measured length in mm.	2.3 + 3L/1000µm	2.3 + 4L/1000µm	MPP310Q (Φ4 x 18 mm)
	2.3 + 3L/1000µm	2.3 + 4L/1000µm	SP25 (Φ4 x 50 mm)
	2.5 + 3L/1000 µm	2.5 + 4L/1000 µm	TP200 (Φ4 x 10 mm)
	2.8 + 3L/1000 µm	2.8 + 4L/1000 µm	TP20 (Φ4 x 10 mm)
Maximum permissible Probing Error (Single Stylus Form Error) according to ISO10360-5 (2010) "P_{FTU,MPE"} Specification		2.0µm	MPP310Q
		2.0µm	SP25
		2.2 µm	TP200
		2.6 µm	TP20
Maximum permissible Scanning Probing Error ISO10360-4 (2004) "MPE_{THP"} Specification		2.3 µm (80s)	MPP310Q
		2.8 µm (50s)	SP25

Description

The Crysta-Apex S is a high accuracy, high Speed Moving Bridge Type Co-ordinate Measuring Machine utilising a Granite Base, which also provides the Y-Axis, guide way. A unique design of self-adjusting air bearing is used on each axis to provide excellent stability during high-speed movement and measurement. The moving Bridge is constructed of low mass alloy, the "X" Beam and "Z" Spindle external surfaces being impregnated by an oxide coating process to form an extremely hard surface, which further improves these critical components stability and also provides good wear resistance. Power drive is activated via a remote joystick unit for manual drive operation.

Each axis can be locked and fine movement adjustment is provided. The measurement system is by Mitutoyo SRD Linear Encoders fitted so as to become an integral part of the machine for thermal stability, and provide a direct digital output of measured data.

The machine is fully equipped for CNC Operation via the newly designed Machine Control Unit Model UC400 which provides full digital servo control for high speed, high accuracy positioning with 3-Axis vector drive and automatic computation of all acceleration and deceleration without operator input.

The controller uses a Universal Serial Bus (USB) connection to simplify computer connectivity and installation.

Circular Path motion is also provided for continuous movement between relative positions.

Twin Joystick unit for control of 'X' and 'Y' axis movements with second joystick for 'Z' axis control and optional rotary table. Comprehensive display with control buttons for individual axis locks and speed control.

* Actual Z axis movement range is dependent on selected probe system.

THERMAL COMPENSATION SYSTEM

The CRYSTA-Apex S has a temperature compensation system that guarantees the accuracy of the CMM main unit under temperature conditions of 16 to 26 °C. This system, consisting of a temperature sensor installed in the scale unit of each axis and workpiece temperature sensors, monitors the temperature and converts the measurement result to a value equivalent to that at 20 °C. (The system requires the user to input the coefficient of expansion of the work-piece).

The temperature compensation unit enables the stated accuracy's to be maintained within these environments.

Temperature range :	18°C - 22°C	16°C - 26°C
Temperature change :	Per hour	1.0K
	Per 24 hours	5.0K
Temperature gradient :	Vertical / Horizontal	1.0K/m

ACCESSORIES

Part Number	Description
191-000-145	Ceramic Masterball for calibration of Probe positions.
191-000-228	Point of use Membrane Dryer to remove water vapour from the incoming supply
932861	Clamping Kit with 8mm threaded studs, nuts, clamp bars and segmented angular blocks
191-000-124*	Desk type computer workstation with draw. Dimensions 1200W x 800D x 715H.
OR	
191-000-136*	Upright type workstation. Dimensions 800W x 500D x 900H (Adjustable).

NB* Please specify choice of workstation when ordering.

COMPUTER SYSTEM

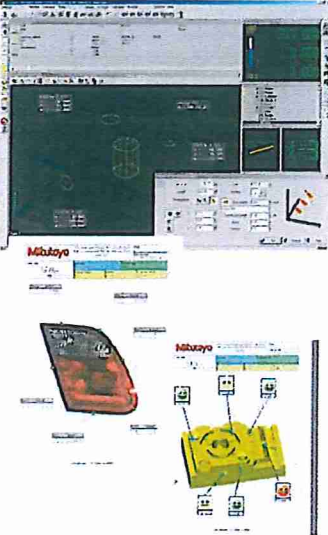
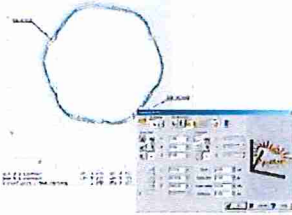


- ~ HP Z220 Workstation (Tower Computer System)
- ~ Intel® Core™ Processor i3 3.07 GHz CPU
- ~ 4gb DDR3 1333 MHz memory
- ~ NVidia Quadro 400 512MB Graphic Card
- ~ Windows 7 Professional 32-bit O/S

Includes the following;

- ~ 22" TFT Flat Screen Monitor
- ~ A4 single sheet colour printer
- ~ MCosmos USB Software Dongle

CMM SOFTWARE

Part Number	Description
	<p>MCOSMOS-1 software for use with all CMM's for geometric measurement and evaluation</p> <p>MCosmos-1 allows the generation of repeat part programs by automatically storing all commands. The operator interface uses easily identified icons for simple operation, even when editing programs, removing the need for complex programming code.</p> <p>Features being measured are automatically identified, calculated and in some cases automatically aligned removing the need for operator intervention.</p> <p>Automatic Probe Calibration of motorised heads is also included as an integral part of the system for CNC machines.</p> <p>User defined report generation software is included as standard with output formats including PDF, HTML, JPEG etc, Automatic Probe Calibration of motorised heads is also included as an integral part of the system for CNC machines.</p>
<p>011260-03</p>	
	<p>Scanning and Profile Analysis Program</p> <p>Module for use with all CMM's for measurement and analysis of profiles. The module operates within the MCOSMOS Windows environment and is fully programmable. The operator interface uses easily identified icons and input window masks for simple operation and fast training. Transfer of data to and from CAD systems is also a standard feature of the program.</p>
<p>011411</p>	

PROBE SYSTEM

Part Number	Description
191-000-104Q Motorised Indexing Probe Head System	<ul style="list-style-type: none"> ▪ PH10MQ Head which indexes in 7.5° increments: <ul style="list-style-type: none"> ~ 0-105° in A-Axis and ~ +/- 180° in B-Axis ▪ HUC1 10 Remote Hand Control Unit ▪ PHC 10-2 Control unit



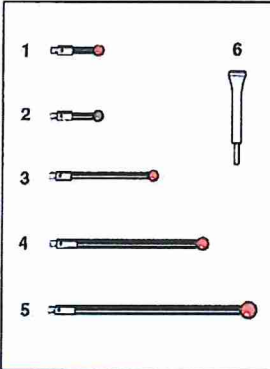
191-000-170	Connecting Cables for the PH10MQ system
-------------	---

06ABK022	PH10MQ Probe Quill Adapter
----------	----------------------------

191-000-295B SP25 Scanning Probe with SM25-3 scanning module	<p>Renishaw SP25 Analogue Scanning Probe for use with CNC Machines only, with Autojoint for connection to PH10M/Q Head. The Probe can be used in Touch Trigger mode or for continuous output in Scanning mode.</p> <p>The system when used in Scanning mode automatically corrects the movement of the Measuring Machine; there is no requirement for pre-programming of the component shape. As this is a laser based system, it is imperative to allow warm-up time prior to use.</p>
---	---

Range:	±0.4mm in each Axis
Resolution:	<0.1µm
Spring rate:	0.2 N/mm to 0.6 N/mm nominal dependent on stylus length
Includes:	SM25-3 (for 120–200mm Styli lengths) with 2 stylus holders. 6 Styli holders in total.

Includes the following M3 thread styli kit; **A-5003-6153**



Position	Part number	Description
1	A-5003-5975	M3 STY D5R L21 EWL13.5 d3CF
2	A-5003-5978	M3 STY D5SIN L21 EWL13.5 d3CF
3	A-5003-5974	M3 STY D5R L50 EWL42.5 d3CF
4	A-5003-4860	M3 STY D8R L75 EWL75 d4CF
5	A-5003-4863	M3 STY D8R L100 EWL100 d4CF
6	M-5000-3540	M2-M3 STYLUS TOOL

Includes 2 off additional styli worth £600.00

MODULAR RACK SYSTEM (MRS) FOR SP25 PROBE

Part Number	Description
<p>The FCR25 flexible change rack unit provides three changer ports that can be configured to accept any SP25M system elements. SM25 scanning modules and the TM25-20 TTP module adaptor can be docked directly into the FCR25 ports, whereas SH25 scanning stylus holders require a PA25-SH adaptor. Similarly, TP20 modules can be stored with the help of a PA25-20 adaptor.</p>	
<p>Please note that for SP25 MODULE changing, the use of the FCR25-TC (Thermally Controlled) rack is recommended. The FCR25 TC is <u>not</u> suitable for use with the PA25-20 (and TP20 modules) or PA25-SH (and the range of SP25 stylus holders), therefore customers wishing to use these options will require the standard FCR25 for these items.</p>	
<p>1 OFF A-2237-1408 & 2 OFF 191-000-301</p>	<p>1 OFF FCR25-TC Rack (A-2237-1408) & 2 OFF FCR25 Rack (A-2237-1401) 3 Port rack unit to enable SP25M System elements to be interchanged, under CNC control</p> <p>An MRS Rail is also required to mount individual racks (see below).</p>
<p>Modular Rack System 191-000-362</p>	<p>A 400mm rail is supplied as standard and accommodates up to three 3-port FCR25 units. Includes 4 x 125mm support legs.</p>
191-000-363	600mm Rail
191-000-139S	MRS Rack Support Plate

TOTAL PACKAGE PRICE

2 off Crysta Apex S123010 Machines	Total List Price : £252,260.00
Total List Price including 2 off Linear Height Gauges	£283,360.00
SPECIAL OFFER PACKAGE PRICE	£250,000.00
<p>Price includes ;</p> <ul style="list-style-type: none"> • 2 x CMM Service Contracts for 4 Years from date of installation (Value: £16,000.00) • Virtual MCosmos 2 191-000-402V Network Dongle, two user licence (Value: £6,500.00) • TWO Linear Height Gauge Systems as follows. 	

For the supply of 2 off:

LINEAR HEIGHT GAUGE SYSTEM

MODEL 518-341E-21 LH-600D		
<p>Description</p> <p>Multifunctional single axis height gauge makes 2D measurement simple and accurate.</p> <p>It is possible to measure from simple 1D parameters of the surface height, circle diameter, distance, perpendicularity and straightness to sophisticated 2D measurement</p>		
Range:	0-972mm/38"	
Slider Travel:	600mm	
Resolution:	0.0001mm (0.1/0.01/0.001mm can be selected) 0.000001" (0.001/0.0001"/0.00001" can be selected)	
Indication Accuracy:	(2 + L/600)µm (L:mm)	
Repeatability:	Plane: 0.5 µm (2 Sigma); Hole: 1 µm (2 Sigma)	
Perpendicularity:	6µm	
Straightness:	4µm	
Drive Method:	Manual/Motor (5-40mm, 7steps)	
Measuring Force:	1N (automatic constant-force function)	
Output:	RS232C, Centronics / USB	
Power Supply:	AC Adaptor / Battery (Ni-MH)	
Dimensions:	240 (W) × 287 (D) × 1013 (H) mm	
Standard Accessories		
Compensation Block Ball probe 10mm Diameter Stylus Holder Manuals		

TERMS AND CONDITIONS

Carriage and Installation

This is included in the quotation provided that the destination address is within the British Isles. However, the provision of lifting equipment for siting the machine within customer's premises is deemed to be the customer's responsibility. Insurance to the point of unloading is also included.

Calibration

On completion of installation the machine will be fully calibrated and a Calibration Certificate, traceable to National Standards will be issued.

Electrical Supply

The machine and computer system requires a 230v (+10/-6%) 50 Hz single phase supply available at the machine site via 2 standard 13A sockets. The supply should be free of interference and distortion.

Air Supply

A clean dry supply is required to be provided at the machine site to provide a minimum of 4 bar pressure. (0.4MPa).

Foundations/Machine movement

The machine site should have a solid base which is free from low frequency vibration. A start-up system (relocation detection sensor) is an integral security feature of this machine and will disable its operation if subject to relocation or strong vibration. Please be advised to contact your nearest Mitutoyo Service Centre as soon as possible or in advance of such circumstance.

Warranty

The complete system is guaranteed against faulty parts and workmanship for 12 months from completion of installation. Conditions of warranty for peripheral equipment, other than that of Mitutoyo manufacture, is as specified by the original equipment manufacturers and should be registered with them. Such equipment includes the computer, monitor and printer, for warranty issues concerning these items, please liaise with the OEM directly. Modification to any part of the system or additions not supplied or sanctioned by Mitutoyo, including loading of proprietary software's that may corrupt the P.C. configuration, will invalidate the warranty provided by either party. Should the computer system be subjected to an adverse environment, we would recommend the use of an industrial housing to protect the system, damage caused by environmental conditions are not covered by this warranty.

Service

Full maintenance facilities, following the warranty period, are available, including the provision of annual maintenance and re-calibration contracts.

Health & Safety

Mitutoyo UK is a member of the British Safety Council, and as such is committed to working to current Health, Safety and Environmental Regulations and Best Practices. Individual codes of practice are documented in our quality procedures, which are held by our quality manager, and are available for inspection if required.

Software

The software license is controlled by means of a USB dongle lock fitted to the supplied computer. Replacement, should it be required due to loss, would be charged at the then current list price for the software. It is highly recommended that customers ensure that replacement of the dongle lock is covered by their insurance policy. Software is issued under license to the end-user and is not transferable to a third party.

Export Control Compliance

This quotation is governed in the UK by the Export of Goods Act 2008 (SI 2008/3231), as applicable under the Export Control Act 2002; EU Regulations 428/2009 and the Japanese Foreign Exchange and Foreign Trade Act; Export Trade Control Order; Foreign Exchange Order and any subsequent amendments. The recipient of this quotation has a legal responsibility to declare to Mitutoyo any intended export (or suspected export thereof) of any goods, technology (or software) as quoted herein and hereby referred to as 'goods'. The goods may be classified as 'dual use' where their use or the transfer of related information may be used towards such acts as the proliferation of Weapons of Mass Destruction (WMD), destabilising accumulation of conventional arms or terrorism.

Mitutoyo shall not be obliged to procure or supply any such goods, technology (or software) for import or export without due authority from the UK Department of Business Innovation and Skills (BIS) Export Control Organisation (ECO) and/or the Ministry of Economy Trade and Industry (METI) Japan. This shall require the buyer and/or end-user to cooperate with Mitutoyo in the provision of a detailed report as a prerequisite to an Export Licence application. This shall entail the completion of a security control questionnaire that shall gather facts relating to the buyer/user status, machine destination and application/use and final use of the component parts of the artifacts to be inspected/measured. A confirmatory order and letter of assurance will complete the report process; the integrity of all such information being of paramount importance. Mitutoyo are unable to accept liability for the refusal by the authorities to issue a licence or in any possible delay incurred as a result of the application or approval process. These controls are common to international non-proliferation activities as conducted by all recognised international export control regimes in order to contribute to the maintenance of World peace and security

All pictures shown within this quotation are for illustration purposes only and do not explicitly imply details of supply.

TRAINING

Included in this quotation is training on Mitutoyo M-COSMOS software, dependent upon system supplied, at either our Coventry or Halifax training centres for up to four operators. This will be on the earliest available courses, which are held on a regular basis. Training may be taken en-block or in separate sessions as required, provided this is taken within six months' of date of installation. However, the facility of allowing separate sessions may not be considered reason for infringement of due payments following actual installation of the machine and system.

On-site or Telephone Application support can only be provided to customer's staff who have successfully completed the relevant Mitutoyo training course(s). Mitutoyo reserve the right to charge the current rates for support provided to staff who have not attended training courses.

The costs of travelling and hotel expenses are not included within this quotation. In very exceptional circumstances training can be provided on-site but this will be at additional cost to this quotation and at a mutually convenient time.

The following training (as applicable to your order) will take place within 6 months of machine installation on a mutually convenient date at any of our regional training centres and for the stated duration:

Course Code	
TRC-227	MCOSMOS Software, Basic Training - 5 days
TRC-228	MCOSMOS Software, Advanced Training - 2 days
TRC-231	Scanning/Profile Software - 2 days
TRC-535	CAT1000 Software - 2 days
TRC-263	MeasurLink SPC Software - 1 day



The Branching (Sub-Routines) function is included in MCOSMOS but is to be considered as an advance-programming tool. It will therefore not be covered in the standard training package included with MCOSMOS. Training for this function can be provided on request, at additional cost.

Following machine installation and completion of the relevant courses above, a further application support day is also included in this quotation. On request, this will be held on a mutually convenient date to include tailored application support for customer's components or for unique systems, such as scanning probes or probe rack alignment and configuration. This day will be undertaken by one of our engineers at our regional training centres or, if agreed, at customer's premises.

A Training Course Manual will be given to all trainees which will include telephone numbers to ring for assistance with problems should they arise.

M-COSMOS SOFTWARE UPDATES

Software will be supplied as per that specified in this quotation, at the current revision level(s) available at the time of installation. Changes in revision level(s) introduced within 12 months of the installation date will be provided free of charge, by the issue of a CD, with documentation covering the modifications and the procedure to install the update. Additional training, if requested, will be charged at the current daily rates.



Mitutoyo reserve the right to offer on a minimum chargeable basis any additional features or functions introduced to the supplied program(s) during this period, and should any additional hardware be required to use updated software, this will also be at an extra cost. For the 2nd and subsequent years an annual Software Update Contract can be provided to cover any further revisions of the original program(s).

COMMERCIAL TERMS AND CONDITIONS

Validity	All quotations are valid for 30 days from the date of issue unless otherwise advised in writing.
Delivery	Delivery to be advised at time of order placement.
Prices	The quoted prices are strictly nett and exclusive of VAT which will apply at the appropriate rate at time of supply. Prices quoted are for delivery to UK mainland only.
Title/Risk	Title to the goods shall remain with Mitutoyo, until paid for in full, irrespective of the chosen method or means of payment. Risk to the goods shall pass upon delivery.
Payment Terms	The total Invoiced value will be payable:- 50% upon completion of installation. 50% balance within 30 days of installation, or on completion of the FIRST session of training, whichever is the earlier regardless of the chosen method of payment. Invoices will be presented accordingly to reflect the value of the payment terms.
Condition of Business	The specific conditions applicable to the goods within this quotation are as detailed herein with all general terms and conditions of business being detailed on the supplementary enclosure.

PROMPT SETTLEMENT IS PART OF THIS QUOTATION

In the event of an order being placed, please ensure all departments concerned with payment are aware of our payment terms. Completion of installation is deemed to be an authorised signature on our engineer's installation acceptance sheet. All other conditions remain as per our standard terms and conditions of sale, copy enclosed.



FOR MITUTOYO (UK) LTD



 CNM Technical Manager

E&OE