

CRYSTA-PLUS M

PRE1203(5)



The all-round system for manual 3-D coordinate measuring tasks.

Cost-efficient, versatile, uncomplicated.

Mitutoyo

CRYSTA-PLUS M:

The ultimate in manual precision.

Welcome to the world of 3-D coordinate measuring technology! CRYSTA-PLUS M is the intelligent alternative to complex, cost-intensive measuring equipment with conventional multi-point measuring devices. CRYSTA-PLUS M is a high performance, manual 3-D coordinate measuring machine that really demonstrates its strengths wherever the measuring tasks are constantly changing, different work pieces are involved, and random measurements are needed.



Manual

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CRYSTA-PLUS M



CRYSTA-PLUS M: all in all, the cheapest solution

Precision work is a highly individual matter – especially when measurements are not performed constantly at intervals of mere seconds: when conducting selective tests during the manufacturing process, or for special tasks, such as preliminary adjustment of tools for ED machining. CRYSTA-PLUS M is the ideal solution for performance-oriented and cost-conscious users performing both these and all other special measuring tasks. Because CRYSTA-PLUS M combines the capabilities of numerous individual pieces of test equipment in a single all-round system – thus allowing enormous savings, not only on procurement and operation, but also on test equipment monitoring.



And CRYSTA-PLUS M is even geared to accept any new challenges.

A standard feature of CRYSTA-PLUS M is the premium MCOSMOS software with MiCAT (Mitutoyo Intelligent Computer Aided Technology), the easy-to-operate center of command for professional management, measurement and analysis. As MCOSMOS is optionally combinable with numerous application-oriented modules, it can easily cope with any task, no matter how specific.

Added to which, a widely diverse, user-oriented range of accessories is available – from specially designed sensor technology right up to flexible tensioning systems.

Example: Non contact measurement with centering microscope CF20 (fig. at the right)

CRYSTA-PLUS M allows you to enjoy the full benefits of high performance, manual 3-D coordinate measuring. At terms that quickly pay off; with added performance capabilities that bring immediate benefits.



Cost efficient



CRYSTA-PLUS M:

More quality, right down to the very last detail.



Versatile

- Integrated thermal error compensation on measuring device and work piece at temperatures ranging from 15°C to 30°C (optional)
- Deviation of lengthwise measurement 3.5 µm*: impressive accuracy when measuring 3-D coordinates manually
- Highly accurate, dust-protected glass scales (resolution: 0.5 µm) on all axes
- White LED illumination of the work area for easier positioning of the probe on the work piece (optional)
- High performance MCOSMOS Manual software included as a standard feature
- User navigation with speech output
- Self-adjusting air bearings on all axes
- Vibration damping design in accordance with FEM analysis
- Three model series with five variants
- Space saving and lightweight thanks to its compact design and top quality material components
- Outstanding value for money

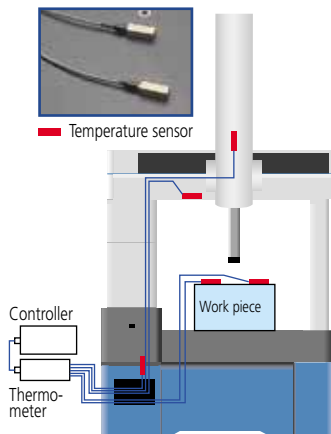
Versatile



* For models with 500 mm X axis:

$MPE_E = (3.5 + 0.4L/100) \mu\text{m}$ with TP20/MH20i at temperatures ranging from 19°C to 21°C resp. 15°C to 30°C when using optional thermal error compensation.

CRYSTA-PLUS M: simply the better ideas

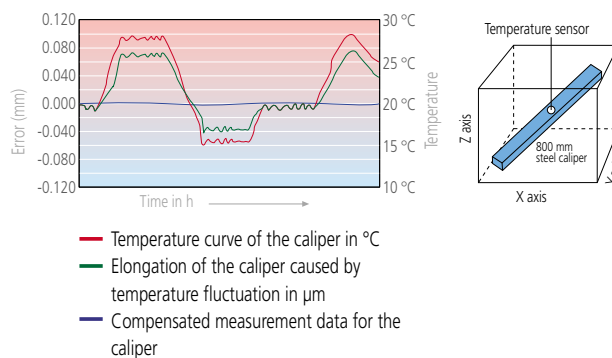


Stable measuring results, even at fluctuating temperatures (optional)

CRYSTA-PLUS M performs just as well if temperatures in the surroundings of the measuring device or on the work piece fluctuate between 15°C and 30°C for all models as it does under thermally stable conditions. Sensors on the glass scales of the measuring device and on the work piece record these fluctuations, transmit the information to the automatic, temperature-dependent error corrector (optional) and adjust the system to the changed conditions in real time. Ensuring a level of precision when measuring in a manufacturing environment that is otherwise only achievable in a thermally stable measuring room.

Visualization of the correction

Temperature-dependent correction using an 800 mm long steel caliper as an example – measured at differing ambient temperatures and diagonally positioned in the room.



Intelligent

Fixing the X, Y and Z axes and central fine adjustment of the X and Y axes.
(Models X-400 and X-500)



Uncomplicated

User navigation with speech output

MCOSMOS measuring software provides users with speech guidance throughout the entire measuring program, which prevents misunderstandings and focuses concentration entirely on the management of the equipment. Allowing even less experienced employees to perform complex measuring tasks securely and without errors. A very important factor for universal use in a company.

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Uncomplicated

Dust-protected glass scales

CRYSTA-PLUS M is equipped with highly accurate, dust-protected glass scales with a resolution of 0.5 μm .

Temperature sensors on the glass scales of the measuring device ensure thermal error compensation. Making Crysta-Plus M particularly suited for use in rough manufacturing environments.

Air bearings on all axes

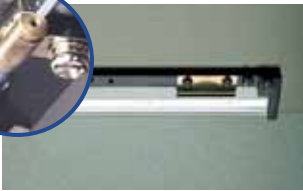
Self-adjusting air bearings on all axes enable CRYSTA-PLUS M to move particularly smoothly, quickly and precisely. They form the reassuring basis for utterly precise measuring results.



Competent Compact

Space saving and lightweight

No special static construction issues need to be observed when setting up CRYSTA-PLUS M. With its particularly high quality, lightweight materials and alloys and its space saving dimensions, it only requires a compact area on a normal base.



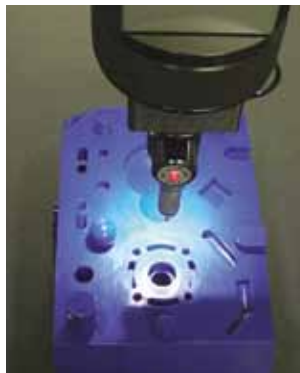
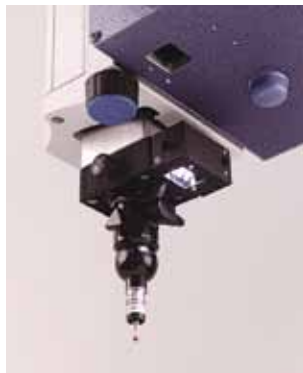
Precise

Uncomplicated

Spot on

Illuminated work area (optional)

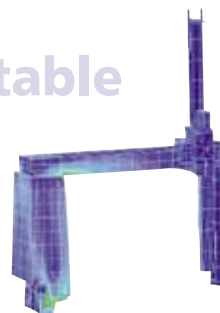
CRYSTA-PLUS M is fitted with white LED illumination on the sleeve to considerably simplify probe positioning. The beam is directed straight at the probe ball while at the same time illuminating the immediate work area. A highly convenient feature, especially when measuring bores.



State of the art technologies for guide stability

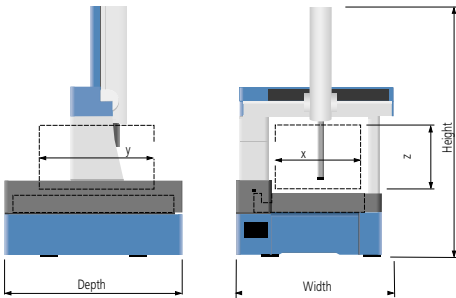
The portal structure is designed in accordance with the finite element method (FEM) and guarantees high levels of rigidity and straightness of the guide elements while at the same time damping vibration transference. In addition, the good thermal conduction capacity of the aluminum guide prevents deformations and distortions caused by thermal influences. And is joined by a direct measuring portal guide on the granite table.

Stable



A diverse range of quality products.

M400 series M500 series



M443

M544

M574

Measuring range	X axis	400 mm	500 mm	500 mm
	Y axis	400 mm	400 mm	700 mm
	Z axis	300 mm	400 mm	400 mm
Work piece	Max. height	480 mm	510 mm	
	Max. weight	180 kg	180 kg	
Work piece tensioning	No. of M8 bores	13	9	13
Length measurement deviation	TP20	ISO 10360-2 (20°C ± 1°C)	MPE _E = (3.0+0.4 L / 100) μm	
	TP8		MPE _E = (4.0+0.4 L / 100) μm	
Contact deviation TP20/TP8	ISO 10360-2	MPE _p = 4 μm / 5 μm		MPE _p = 4 μm / 5 μm
Permissible ambient temperature*		15°C to 30°C		19°C to 21°C
Temperature gradients		max. 2.0 K/h, 5.0 K/24h		max. 2.0 K/h, 5.0 K/24h
	vertical and horizontal	max. 1.0 K/m		max. 1.0 K/m
Length measurement system	Resolution	0.5 μm		0.5 μm
Guide		Air bearings on all axes		Air bearings on all axes
Axis fixing		Rapid fixing on all axes, pneumatic		Rapid fixing on all axes, pneumatic
Measuring table	Material	Granite		
	Dimensions	624 x 805 mm	638 x 860 mm	638 x 1160 mm
Air supply	Consumption/Air pressure	approx. 12.5 l / min at 0.35 MPa		
	Delivery rate	25 l / min at 0.5 - 0.9 MPa		
Dimensions	Width	981 mm	1082 mm	
	Depth	1047 mm	1078 mm	1458 mm
	Height	1967 mm	2285 mm	
Device weight	With support table	410 kg	495 kg	615 kg

Precision figures are based on a TP20/TP8 measuring head with ø 3 x 10 mm probe ø 4 x 10 mm / ø 4 x 20 mm; * when optional thermal error compensation is used

CRYSTA-PLUS M

M700 series



M776

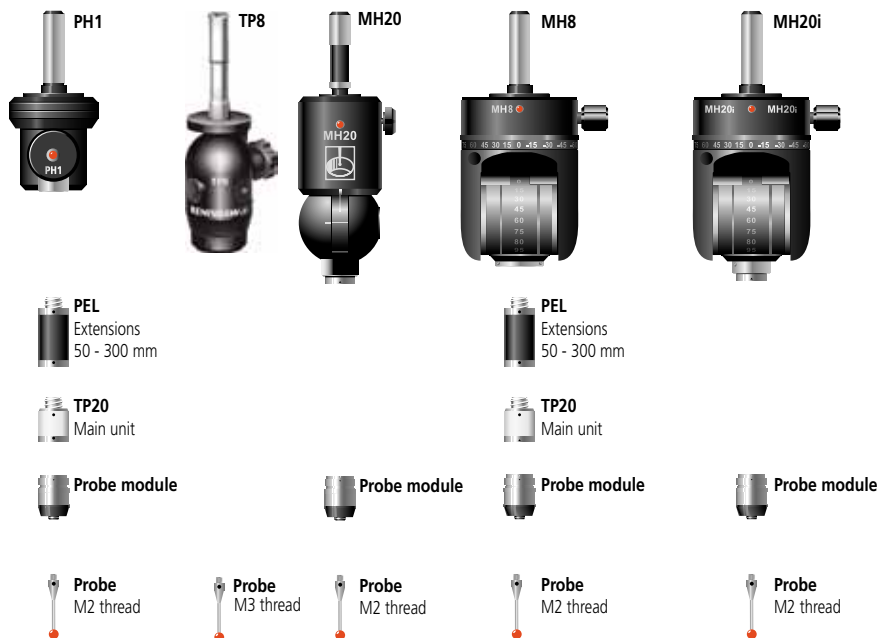
M7106

700 mm	700 mm
700 mm	1000 mm
600 mm	600 mm
800 mm	
500 kg	800 kg
13	
$MPE_E = (4.5+0.45L/100) \mu\text{m}$	
$MPE_L = (5.5+0.45 L/100) \mu\text{m}$	
$MPE_P = 5 \mu\text{m} / 6 \mu\text{m}$	
15°C to 30°C	
Max. 2.0 K/h, 5.0 K/24h	
Max. 1.0 K/m	
0.5 μm	
Air bearings on all axes	
Rapid fixing on all axes, on mobile box	
Granite	
900 x 1440 mm	900 x 1740 mm
approx. 12.5 l/min at 0.4 MPa	
25 l/min at 0.5 - 0.9 MPa	
1460 mm	
1717 mm	2017 mm
2840 mm	
1560 kg	1800 kg

Quality and diversity for all requirements: Mitutoyo measuring systems

Mitutoyo offers a wide range of measurement heads for your measuring tasks.
Matched to the functions of the CRYSTA-PLUS M series.

Contact measuring systems				Optical (without contact) measuring system
Infinitely adjustable manual swivel measuring systems		Indexable manual swivel measuring systems		Centering microscope
Manual turn/swivel system with separate measuring head	Manual turn/swivel system with integrated measuring head	Manual turn/swivel system with separate measuring head (indexable)	Manual turn/swivel system with integrated measuring head (indexable)	Sleeve mounted



A CCD camera can be connected via C-Mount Adapter (Pixel Fox) for representation on a PC screen



Probe system changer
Manual storage point MSR1

Versatile

The flexible KOMEG repro-fix tensioning system allows you to save even more time while further enhancing cost efficiency and precision in manufacturing-oriented measurement tasks. repro-fix is capable of handling any task, no matter how individualized – and is perfectly matched to the performance capabilities of CRYSTA-PLUS M.

The exclusive clamping technology allows repro-fix to be used as a complete system or easily broken down into modules. QUICK-RAIL is an add-on part that makes positioning the repro-fix elements even faster and easier.



The modular KOMEG eco-fix clamping system ensures a more relaxed approach in every respect. For the first time, it combines function and color into a practice-oriented concept for time-optimized, economical work that eliminates any possibility of mistakes.

Design with system, focusing on what is important: eco-fix concentrates on performing virtually any clamping task; its cost is as optimized as its performance capabilities. Logically assignable elements with an uncomplicated and user-friendly design build on the KOMEG eco-fix base plate, which is fitted entirely with threads.



MiCAT

Mitutoyo Intelligent Computer Aided Technology

the standard in world
metrology software

CMM

MCOSMOS is the modular MiCAT technology software for professional management, measurement and analysis in coordinate measuring technology.

MCOSMOS 1



Statistical analysis
Real time data collation, SPC analysis, network-enabled

2-D contour analysis and 3-D digitalization
Combines automatic scanning of work piece contours with 3-D digitalization of surfaces

3-D clearance area analysis
for target/actual comparisons of free form areas with the CAD model

Analysis of bearing surface profiles
Measurement and analysis of selected characteristics of bearing surface profiles

GEO_EDM
Online correction program for EDM tools and workpieces.

Professional

This top quality modular software system developed by Mitutoyo allows you to easily access the capabilities offered by various software modules, to comprehensively analyze, document and impressively present measuring results, and to store the data material in clear, practice-oriented structures.

MCOSMOS 1 is, of course, a standard component of all CRYSTA-PLUS M coordinate measuring machines.

Performance features

PartManager

is the center of command for starting and managing the software package.

Geometry module (GEOPAK)

for recording, analyzing and documenting geometries.

ProtokollDesigner

for creating and adapting user-defined test reports

Extension modules

Statistical analysis module (MeasurLink)

2-D profile analysis module (SCANPAK)

3-D free form area analysis module (CAT 1000S)

Bearing surface analysis module (MAFIS)

... other modules available on request

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Professional



Coordinate measuring machines from Mitutoyo give you the cutting edge in terms of experience and competency of the world's leading specialist for production measurement technology. You can gain access to the knowledge assimilated over decades for performing the tasks of tomorrow. The standards of quality and performance and the level of progressiveness are unequalled.

Ask for our other prospectuses focusing on coordinate measuring machines and clamping systems:



KOMEK repro-fix



KOMEK eco-fix

- Coordinate Measuring Machines
- Vision Measuring Systems
- Form Measurement
- Optical Measuring
- Sensor Systems
- Test Equipment and Seismometers
- Digital Scale and DRO Systems
- Small Tool Instruments and Data Management

Further information can be found in our product lounge
Coordinate measuring machines:
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