

Coordinate Measuring Machines Full-lineup —With Selection Guide—





Coordinate Measuring Machines | Lineup

COORDINATE MEASURING MACHINE LINEUP

High-accuracy CNC CMM

LEGEX 500/700/900 Takumi Model

Ultra-high Accuracy CNC CMM



The ultra-high accuracy has been achieved by uncompromised elimination of error factors and artisan's superb skills of finishing straightness and perpendicularity.

Takumi is a Japanese word meaning "artisan" with superb craftsmanship.

**STRATO-Apex 500/700/900
STRATO-Active 700/900**

High-accuracy CNC CMM

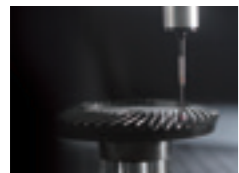


High Accuracy CNC CMM
Higher rigidity realizes high-accuracy measurement.

Standard CNC CMM

CRYSTA-Apex V PLUS500/700/900

Bridge Type Standard CNC CMM



Automatic measurement of small to medium-sized workpieces.
Lineup includes models supporting production line use as well as in measurement rooms.

CRYSTA-Apex EX 1200R

5-axis CNC CMM



The versatile CNC coordinate measuring machine equipped with REVO-2, a 5-axis control-scanning probe head.

Large-sized CNC CMM

**CRYSTA-Apex V1200/1600/2000
STRATO-Apex 1200/1600/2000**

Bridge Type Standard CNC CMM



The Large CNC coordinate measuring machines developed to facilitate quality evaluation and assembly of large workpieces.

STRATO-Apex G

Large Gantry Type
High-accuracy CNC CMM

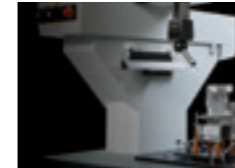


The CNC coordinate measuring machine with a moving bridge and installation base designed to provide high-accuracy measurement of large and heavy workpieces.

Shop-floor/In-line use CNC CMM

MiSTAR 555/575

Shop-floor Type CNC CMM



The CNC coordinate measuring machine for any installation environment.

MACH-V9106

In-line CNC CMM



The CNC coordinate measuring machine for in-line use provides high acceleration and high-speed movement to enable high-throughput measurements.

MACH-3A 653

In-line CNC CMM



The horizontal CNC coordinate measuring machine for in-line use that saves space and increases throughput with high acceleration, high speed movement and measurement. An optional index table allows more flexible measurements.

MACH Ko-ga-me

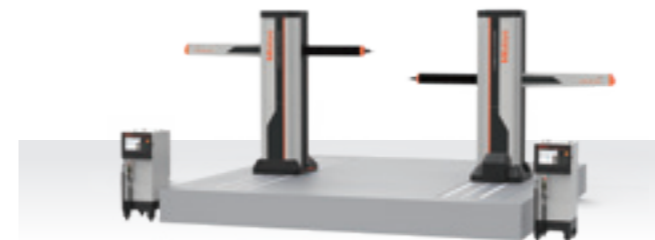
Compact In-line CNC CMM



Assembly into equipment for system configuration is also possible.
Ultra-compact CNC coordinate measuring machine saving space.

CARBstrato

Horizontal Arm Type CNC CMM for Automobile Bodies



The large CNC CMM offers the world's largest class measurement range, making it possible to measure car bodies.



Coordinate Measuring Machines | Selection Guide

COORDINATE MEASURING MACHINE SELECTION GUIDE

Select by installation environment Measurement Room Environment

*1: Measuring machine with accuracy of 1/5 drawing tolerance or below. *2: Accuracy with temperature environment 1. For details, contact a Mitutoyo sales representative.

Step1 Select by accuracy (drawing tolerance) [μm] *1	Step2 Select by measuring range X × Y × Z [mm]	Product name	Model	Maximum permissible error of length measurement [μm] *2 L: measurement length [mm]	Maximum combined acceleration [mm/s ²]	Maximum loading mass [kg]	Accuracy guaranteed temperature
Up to 4	500 × 700 × 400	LEGEX Takumi	LEGEX574 Takumi Model	0.23 + 0.7L/1000	980	250	18-22°C
	700 × 700 × 400		LEGEX774 Takumi Model	0.23 + 0.7L/1000	980	500	18-22°C
	700 × 700 × 600		LEGEX776 Takumi Model	0.23 + 0.7L/1000	980	500	18-22°C
	900 × 1000 × 600		LEGEX9106 Takumi Model	0.23 + 0.7L/1000	980	800	18-22°C
Over 4	500 × 700 × 400	STRATO-Apex	STRATO-Apex 574	0.7 + 2.5L/1000	2309	180	18-22°C
	700 × 700 × 600		STRATO-Apex 776	0.7 + 2.5L/1000	2598	500	19-21°C
	700 × 1000 × 600		STRATO-Apex 7106	0.7 + 2.5L/1000	2598	800	19-21°C
	900 × 1000 × 600		STRATO-Apex 9106	0.7 + 2.5L/1000	2598	800	19-21°C
Over 6	900 × 1600 × 600	STRATO-Apex	STRATO-Apex 9166	0.7 + 2.5L/1000	2598	1200	19-21°C
	700 × 700 × 600		STRATO-Active 776	1.2 + 3L/1000	2309	800	18-22°C
	700 × 1000 × 600		STRATO-Active 7106	1.2 + 3L/1000	2309	1000	18-22°C
	900 × 1000 × 600		STRATO-Active 9106	1.2 + 3L/1000	2309	1200	18-22°C
Over 6	900 × 1600 × 600	STRATO-Active	STRATO-Active 9166	1.2 + 3L/1000	2309	1500	18-22°C
	1200 × 1200 × 1000		STRATO-Apex 121210	1.1 + 2.5L/1000	1732	2000	18-22°C
	1200 × 2000 × 1000		STRATO-Apex 122010	1.1 + 2.5L/1000	1732	3000	18-22°C
	1200 × 3000 × 1000		STRATO-Apex 123010	1.1 + 2.5L/1000	1732	3500	18-22°C
Over 9	500 × 400 × 400	CRYSTA-Apex V PLUS	CRYSTA-Apex V PLUS544	1.8 + 3L/1000	2309	180	15-30°C
	500 × 700 × 400		CRYSTA-Apex V PLUS574	1.8 + 3L/1000	2309	180	15-30°C
	700 × 700 × 600		CRYSTA-Apex V PLUS776	1.8 + 3L/1000	2309	800	15-30°C
	700 × 1000 × 600		CRYSTA-Apex V PLUS7106	1.8 + 3L/1000	2309	1000	15-30°C
	900 × 1000 × 600		CRYSTA-Apex V PLUS9106	1.8 + 3L/1000	2309	1200	15-30°C
	900 × 1600 × 600		CRYSTA-Apex V PLUS9166	1.8 + 3L/1000	2309	1500	15-30°C
	900 × 2000 × 600		CRYSTA-Apex V PLUS9206	1.8 + 3L/1000	2309	1800	15-30°C
	900 × 1000 × 800		CRYSTA-Apex V PLUS9108	1.8 + 3L/1000	1732	1200	15-30°C
	900 × 1600 × 800		CRYSTA-Apex V PLUS9168	1.8 + 3L/1000	1732	1500	15-30°C
	900 × 2000 × 800		CRYSTA-Apex V PLUS9208	1.8 + 3L/1000	1732	1800	15-30°C

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Step1 Select by accuracy (drawing tolerance) [μm] *1	Step2 Select by measuring range X × Y × Z [mm]	Product name	Model	Maximum permissible error of length measurement [μm] *2 L: measurement length [mm]	Maximum combined acceleration [mm/s ²]	Maximum loading mass [kg]	Accuracy guaranteed temperature
Over 11	570 × 500 × 500	MiSTAR	MiSTAR 555	2.2 + 3.0L/1000	2695	120	10-40°C
	570 × 700 × 500		MiSTAR 575	2.2 + 3.0L/1000	2695	180	10-40°C
Over 12	1200 × 1200 × 1000	CRYSTA-Apex V	CRYSTA-Apex V121210	2.3 + 3L/1000	1732	2000	16-26°C
	1200 × 2000 × 1000		CRYSTA-Apex V122010	2.3 + 3L/1000	1732	2500	16-26°C
	1200 × 3000 × 1000		CRYSTA-Apex V123010	2.3 + 3L/1000	1732	3000	16-26°C
	1600 × 2000 × 1200	STRATO-Apex	STRATO-Apex 162012	2.5 + 4.0L/1000	1350	3500	18-22°C
	1600 × 3000 × 1200		STRATO-Apex 163012	2.5 + 4.0L/1000	1350	4000	18-22°C
	1600 × 2000 × 1600		STRATO-Apex 162016	3.0 + 4.0L/1000	1350	3500	18-22°C
Over 16	1600 × 3000 × 1600	CRYSTA-Apex V	STRATO-Apex 163016	3.0 + 4.0L/1000	1350	4000	18-22°C
	1600 × 2000 × 1200		CRYSTA-Apex V162012	3.3 + 4.5L/1000	1390	3000	16-24°C
	1600 × 3000 × 1200		CRYSTA-Apex V163012	3.3 + 4.5L/1000	1390	3500	16-24°C
	1600 × 4000 × 1200		CRYSTA-Apex V164012	3.3 + 4.5L/1000	1390	4500	16-24°C
	1600 × 2000 × 1600		CRYSTA-Apex V162016	3.3 + 4.5L/1000	1390	3000	16-24°C
	1600 × 3000 × 1600		CRYSTA-Apex V163016	3.3 + 4.5L/1000	1390	3500	16-24°C
Over 23	2000 × 3000 × 1600	CRYSTA-Apex V	CRYSTA-Apex V164016	3.3 + 4.5L/1000	1390	4500	16-24°C
	2000 × 4000 × 1600		CRYSTA-Apex V164016	3.3 + 4.5L/1000	1390	4500	16-24°C
	2000 × 3000 × 1600		CRYSTA-Apex V203016	4.5 + 8L/1000	1390	4000	16-24°C
	2000 × 4000 × 1600		CRYSTA-Apex V204016	4.5 + 8L/1000	1390	5000	16-24°C

Select by installation environment Machining site environment

For details, contact a Mitutoyo sales representative.

Features	Product name	Maximum permissible error of length measurement [μm] *2 L: measurement length [mm]	Measuring range X × Y × Z [mm]	Maximum combined acceleration [mm/s ²]	Maximum loading mass [kg]	Accuracy guaranteed temperature
Accuracy guaranteed in a wide range of temperature environments	MACH-V9106	2.5 + 3.5L/1000	900 × 1000 × 600	8770	150	5-35°C
Structure resistant to dust and oil mist	MACH-3A 653	2.2 + 3.5L/1000	600 × 500 × 280	11882	200	5-40°C
High-speed movement and high acceleration realize high measurement throughput	MACH Ko-ga-me	2.4 + 5.7L/1000	120 × 120 × 80	6750	—	10-35°C
Space saving						


For details, contact a Mitutoyo sales representative.

Features	Product name	Model	Maximum permissible error of length measurement [μm] *2 L: measurement length [mm]	Measuring range X × Y × Z [mm]	Maximum combined acceleration [mm/s ²]	Maximum loading mass [kg]	Accuracy guaranteed temperature
External connection is easy, with compact installation	MiSTAR	MiSTAR 555	2.2 + 3.0L/1000	570 × 500 × 500	2695	120	10-40°C
		MiSTAR 575	2.2 + 3.0L/1000	570 × 700 × 500	2695	180	10-40°C
Rapidly automates measurement	MiSTAR Robot system		Measurement machine specifications equivalent to MiSTAR Series above				

Probes | Lineup


Probe Heads

PH10M/PH10MQ
Motor-drive type




Allows automatic control of the position of a probe.

PH6M
Fixed type



Supports auto-joint type probes and adapters.


PH1
Manual type



Probe head which can be manually adjusted to any orientation (TP200/TP20 only)

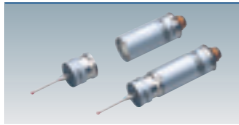
Touch-Trigger Probes

TP7M
High-accuracy type




High-accuracy touch trigger probe enabling long styli use.

TP200
Compact and high-accuracy type



A high-accuracy touch-trigger probe is capable of changing styli automatically.

TP20
Compact type



Compact touch trigger probe with replaceable module.

Non-Contact Probes

SurfaceMeasure
Laser scanning type



A non-contact line-laser probe that can collect a large volume of 3D profile data from a workpiece surface.

QVP
Quick Vision Probe



Useful for measuring small features like small holes.


CF20
Centering Microscope for CMMs



With the CF20 the CMM can be used as a large microscope.

Scanning Probes

MPP-310Q
Ultra-high accuracy and low measuring force type



Data collection can be performed by scanning measurement, ultrahigh precision point measurement and center alignment measurement.

SP25M
Compact and high-accuracy type



Compact, high-accuracy scanning probe supporting automatic orientation change.

5-axis Control System

PH20
5-axis control touch-trigger type



5-axis control touch trigger head with unrestricted probe orientation angle.

The lineup includes a diverse variety of probe models in addition to those introduced in the Selection Guide.

Scanning Probes
SP80
High accuracy type
Supports long styli.

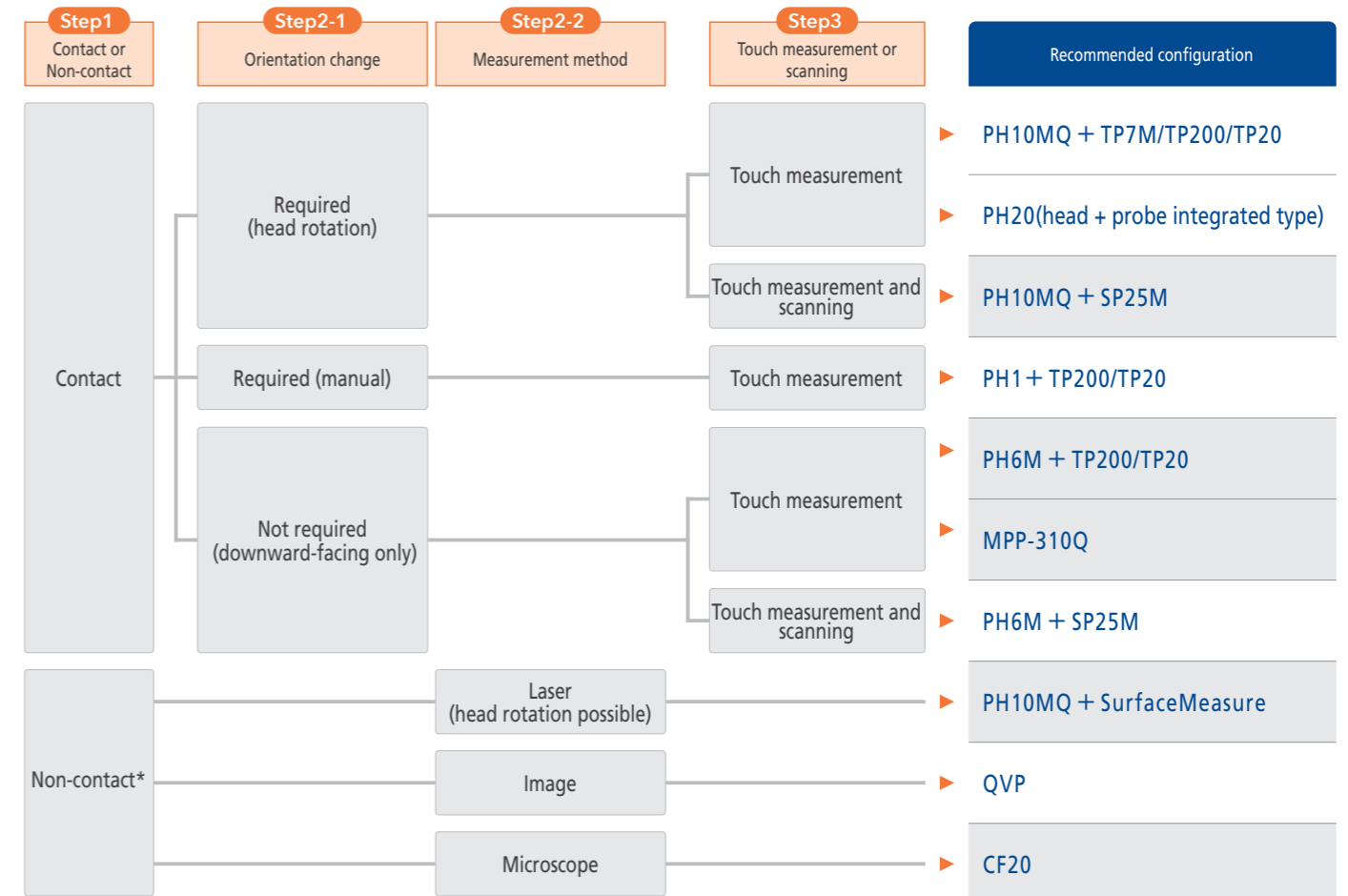
SP600Q
High accuracy type
Scanning Probe for CRYSTA-Apex V500 only

Special-purpose Probes
SURFTEST PROBE
Roughness measurement probe
Roughness measurement probe enabling surface roughness measurement.

5-axis control system
REVO-2
High speed 5-axis scanning head
5-axis control scanning head with unrestricted probe orientation angle.

Probe Selection Guide

PROBE SELECTION GUIDE



*Highly effective in measurement of workpieces deformed by contact-type measuring force (plastic, rubber, sheet metal, etc.), workpieces with holes too small for the measuring element, etc.

Software/Options | Lineup

Data Processing Software

MCOSMOS [GEOPAK]



Data processing program family for 3D measuring instruments. Ample connection with 3D-CAD data as well.

MCOSMOS [SCANPAK]



Software for evaluation of contour measurement curve data. Enables contour comparison, best-fit comparison, and contour graphic display.

Automatic Measurement Program Generation Software

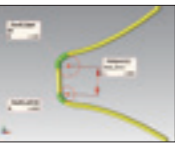
MiCAT Planner



Designed to import 3D CAD models and automatically complete measurement programs with one click. Not only checks for collision, but also automatically generates collision avoidance paths.

Gear Measurement Evaluation Software

GEARPAK Express



Evaluates tooth profile and lead deviations, measurements, and evaluations of facewidths, cylindrical shafts, keyways, etc., all performed in a single program.

Point Cloud Data Measurement Software

MSURF



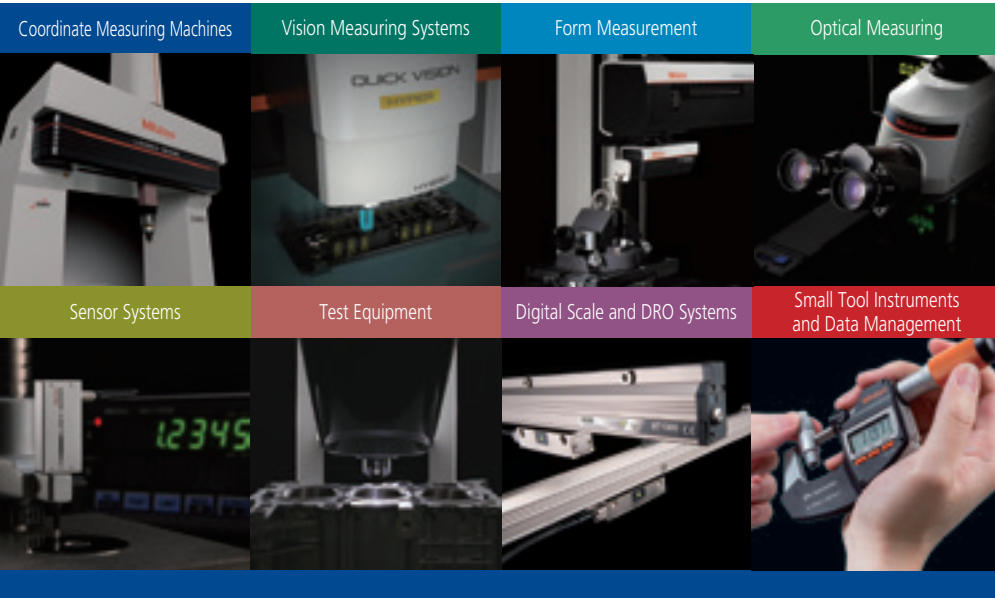
With **SurfaceMeasure**, a non-contact line laser probe, the software can capture workpiece surface points and execute data analysis and evaluation. Linked with **MCOSMOS**, it can execute fully automatic contact and non-contact measurements.

Software Selection Guide

SOFTWARE SELECTION GUIDE

Required advantages/measurement methods	Recommended software
Everyone using coordinate measuring machines	MCOSMOS [GEOPAK]
Need to create programs offline in parallel with measurement work	MiCAT Planner
Need automatic creation of programs making measurement easy for any operator	MiCAT Planner, MCOSMOS [CAT1000P]
Need to create programs making use of 3D CAD	MCOSMOS [CAT1000S]
Need to evaluate 3D curved forms (surface profiles)	MCOSMOS [SCANPAK]
Need to evaluate 2D contour forms (line profiles)	GEARPAK Express, MCOSMOS [GEARPAK Worm • GEARPAK-Bevel/Hypoid]
Need to measure gears	MAFIS Express
Need to evaluate blades	SURFPAK-SP Required when using roughness measurement probe SURFTESTPROBE
Need to evaluate roughness too	VISIONPAK-PRO Required when using image measurement probe QVP
Need to measure flat face (thin) detailed shapes such as small holes and line widths	MSURF Required when using line laser probe SurfaceMeasure
Need to measure easily deformed workpieces	
Need to acquire product overall forms and point clouds quickly	
Need to evaluate thickness	
Reverse engineering	

The lineup also includes many other products. For details, contact a Mitutoyo sales representative.



Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed up by comprehensive services that ensure your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.



Find additional product literature and our product catalog

<https://www.mitutoyo.co.jp/global.html>

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