

Formtracer Extreme CS-5000CNC / CS-H5000CNC

SERIES 525 — CNC Form Measuring Instruments



CS-5000CNC with personal computer system and software



Remote box



Wide range detector employing active control technology



FEATURES

- High-accuracy stylus type CNC Surface Measuring Instrument that allows simultaneous measurement of surface roughness and form/contour.
- The X1-axis has a maximum drive speed of 40mm/s, and Z2-axis have a maximum drive speed of 200mm/s, respectively. This permits high-speed positioning that may result in a large increase in the throughput of multiple-profile / multiple-workpiece measurement tasks.
- A Mitutoyo Laser Holescale is incorporated in the X1-axis and Z1-axis so that high resolution (X1-axis: 6.25nm, Z1-axis: 4nm / 8nm) is achieved and batch measurement of form / contour and surface roughness can be made.
- The active control method is employed for the Z1-axis detector to implement a wide-range measurement capability wherein the variation in dynamic measuring force is restricted.
- Since the Z1-axis detector incorporates an anti-collision safety device, the detector unit will automatically stop even if its main body collides with a workpiece or jig.
- For models with the α axis, it is possible to perform continuous measurement over horizontal and inclined surfaces by power-tilting the X1-axis.
- For models with the Y-axis table, it is possible to expand the measuring range for multiple workpieces, etc., through positioning in the Y-axis direction.
- Supplied with the easy-to-operate Remote Box, on which the user can make any movement by selecting the required axis using the two joysticks. The current axis selection is easily identified by the icon on the key top.
- Uses USB for communicating with the Data Processing / Analysis Unit (optional).

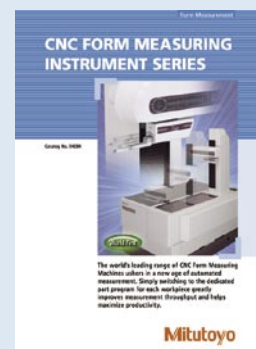
Technical Data:

X1-axis	
Measuring range:	200mm
Resolution:	0.00625 μ m
Measurement method:	Laser Holescale
Drive speed:	Max. 40mm/s (in CNC mode) 0 - 40mm/s (in joystick control mode)
Measuring speed:	0.02 - 0.2mm/s (surface roughness) 0.02 - 2mm/s (form/contour)
Measuring direction:	Forward / backward direction
Traverse linearity:	(0.1+0.0015L) μ m with standard stylus (0.2+0.0015L) μ m with 2X-long stylus
Traverse linearity:	(0.05+0.0003L)μm with standard stylus (0.2+0.0015L)μm with 2X-long stylus
Linear displacement accuracy (20°C):	\pm (0.3+0.002L) μ m
Linear displacement accuracy (20°C):	\pm(0.16+0.001L)μm L = Measured length (mm)
Z1-axis	
Measuring range:	12mm (with standard stylus) 24mm (with 2X-long stylus)
Resolution:	0.001 μ m (with standard stylus) 0.002 μ m (with 2X-long stylus)
Stylus up/down:	Arc movement
Measurement method:	Laser Holescale
Linear displacement accuracy (20°C):	\pm (0.3+0.02H) μ m
Linear displacement accuracy (20°C):	\pm(0.07+0.02H)μm H = Measured height (mm)
Measuring force:	4mN (with standard stylus) 0.75mN (with 2X-long stylus)
Traceable angle:	60° for ascent, 60° for descent (Depending on the workpiece surface condition)
Stylus tip:	Radius: 5 μ m, angle: 40°, diamond (Radius: 0.25mm, sapphire)
Face of stylus:	Downward
Z2-axis (column unit)	
Measuring range:	300mm (500mm: high column type)
Resolution:	0.05 μ m
Measurement method:	Reflective-type linear encoder
Drive speed:	Max. 200mm/s (in CNC mode) 0 - 50mm/s (in joystick control mode)
Base size (W x D):	750 x 600mm
Base material:	Granite
Dimension (W x D x H):	800 x 620 x 1000mm (800 x 620 x 1200mm: high column type)
Mass:	240kg (250kg: high column type)

*CS-H5000CNC

Main Unit Startup System

This machine incorporates a startup system (relocation detection system), which disables operation when an unexpected vibration is applied or the machine is relocated. Be sure to contact your nearest Mitutoyo prior to relocating this machine after initial installation. Refer to the page 9 for details.

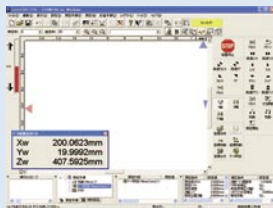


Refer to the CNC Form Measuring Instrument Series leaflet (E4284) for more details.

Optional Software

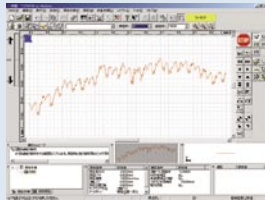
FORMTRACEPAK

Enables control of the optional motor-driven Y-axis table and rotary table for realizing efficient measurement automation. You can also perform contour evaluation that allows free analysis of level differences, angle, pitch, area and other characteristics based on surface roughness data. In addition, you can create an original inspection certificate by setting the print format to suit your particular requirements.



Contour Measurement Screen

Surface Roughness Measurement Screen



ASPHERICALPAK

Aspherical lens analysis program



SPECIFICATIONS

Model No.	CS-5000CNC	CS-5000CNC	CS-5000CNC	CS-5000CNC
Order No.* (100V - 120V)	525-721-1	525-722-1	525-723-1	525-724-1
Order No.* (200V - 240V)	525-721-2	525-722-2	525-723-2	525-724-2
X1-axis measuring range	200mm	200mm	200mm	200mm
Z2-axis vertical travel	300mm	300mm	300mm	300mm
Y-axis table unit	—	—	Installed	Installed
α-axis unit	—	Installed	—	Installed

Model No.	CS-5000CNC	CS-5000CNC	CS-5000CNC	CS-5000CNC
Order No.* (100V - 120V)	525-741-1	525-742-1	525-743-1	525-744-1
Order No.* (200V - 240V)	525-741-2	525-742-2	525-743-2	525-744-2
X1-axis measuring range	200mm	200mm	200mm	200mm
Z2-axis vertical travel	500mm	500mm	500mm	500mm
Y-axis table unit	—	—	Installed	Installed
α-axis unit	—	Installed	—	Installed

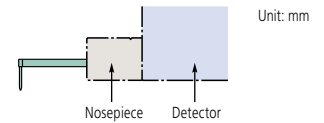
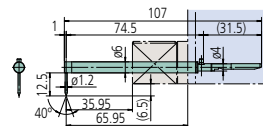
*Select one of the optional accessory set suited to your AC line voltage and measurement unit. **12AAH837** (mm, UL/CSA), **12AAH838** (mm, EU), **12AAH839** (mm, BS), **12AAH843** (mm, China), **12AAH844** (mm, EU), **12AAH849** (mm, BS), **12AAH853** (mm, China), **12AAH854** (mm, EK), **12AAH850** (inch, UL/CSA), **12AAH840** (inch, UL/CSA), **12AAH841** (inch, EU), **12AAH842** (inch, BS), **12AAH845** (inch, China)

Model No.	CS-H5000CNC	CS-H5000CNC
Order No.* (100V - 120V)	525-761-1	525-763-1
Order No.* (200V - 240V)	525-761-2	525-763-2
X1-axis measuring range	200mm	200mm
Z2-axis vertical travel	300mm	300mm
Y-axis table unit	—	Installed
α-axis unit	—	—

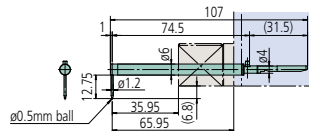
*Select one of the optional accessory set suited to your AC line voltage and measurement unit. **12AAH847** (mm, UL/CSA), **12AAH848** (mm, EU), **12AAH849** (mm, BS), **12AAH853** (mm, China), **12AAH854** (mm, EK), **12AAH850** (inch, UL/CSA), **12AAH851** (inch, EU), **12AAH852** (inch, BS), **12AAH855** (inch, China)

Stylus

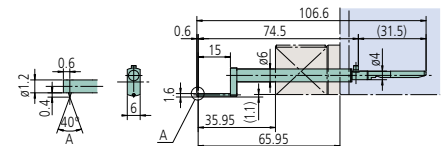
12AAJ037: Standard-length stylus (tip radius: 5μm)



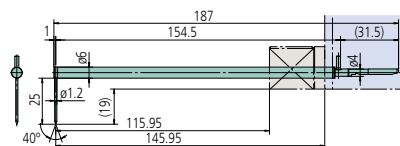
12AAD544: Standard-length ball stylus



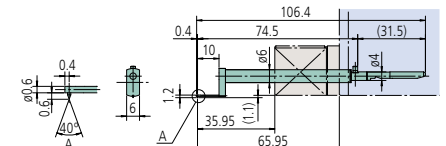
12AAD651: Standard-length stylus for small hole



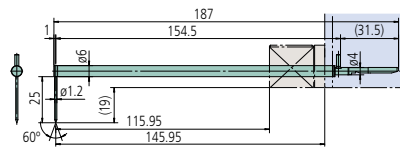
12AAJ039: Double-length stylus (tip radius: 5μm)



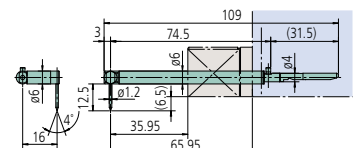
12AAD652: Standard-length stylus for extra-small hole



12AAG155: Double-length stylus (tip radius: 2μm)



12AAD653: Standard-length eccentric stylus



12AAD546: Double-length ball stylus

