

Formtracer Extreme CS-5000CNC/CS-H5000CNC

SERIES 525 – CNC Form Measuring Instruments

- High-accuracy stylus type CNC Surface Measuring Instrument that allows simultaneous measurement of surface roughness and form/contour.
- The X1 and Z2 axes have maximum drive speeds of 40 mm/s and 200 mm/s, respectively. This permits high-speed positioning that potentially offers a large increase in the throughput of multiple-profile/multiple-workpiece measurement tasks.
- Mitutoyo Laser HoloScales are incorporated in the X1 and Z1 axes to provide sufficiently high resolution for simultaneous measurement of form/contour and surface roughness, which is vital for batch working.
- 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.
- The Z1 axis incorporates an anti-collision safety device to automatically stop the detector unit if it collides with a workpiece or jig.
- The CS-5000CNC model has an α axis, enabling continuous measurement over horizontal and inclined surfaces by power-tilting the detector unit.
- Models with the Y-axis table installed allow greater coverage of larger workpieces and enable multiple workpieces to be measured at one setup.
- Supplied with the easy-to-operate Remote Box by which the user can control any movement by selecting the required axis using the two joysticks.
- Uses USB for communicating with the Data Processing / Analysis Unit (optional).



Formtracer Extreme CS-H5000CNC



Remote box

Technical Data

X1 axis	
Measuring range:	200 mm
Resolution:	0.00625 μ m
Scale type:	Laser HoloScale
Drive speed:	Max. 40 mm/s (in CNC mode) 0 - 40 mm/s (in joystick control mode)
Measuring speed:	0.02 - 0.2 mm/s (surface roughness) 0.02 - 2 mm/s (form/contour)
Measuring direction:	Forward/backward direction
Traverse straightness:	CS-5000CNC: (0.1+0.0015L) μ m - standard stylus (0.2+0.0015L) μ m - 2X-long stylus CS-H5000CNC: (0.05+0.0003L) μ m - standard stylus (0.1+0.0015L) μ m - 2X-long stylus
Accuracy (at 20°C):	CS-5000CNC: $\pm(0.3+0.002L)$ μ m CS-H5000CNC: $\pm(0.16+0.001L)$ μ m L = measured length (mm)
Z1 axis	
Measuring range:	12 mm (with standard stylus) 24 mm (with 2X-long stylus)
Resolution:	CS-5000CNC: 0.004 μ m (with standard stylus) 0.008 μ m (with 2X-long stylus) CS-H5000CNC: 0.001 μ m (with standard stylus) 0.002 μ m (with 2X-long stylus)
Stylus movement:	Arc
Scale type:	Laser HoloScale
Accuracy (at 20°C):	CS-5000CNC: $\pm(0.3+ 0.02H)$ μ m CS-H5000CNC: $\pm(0.07+ 0.02H)$ μ m H = measured height (mm)
Measuring force:	4 mN (with standard stylus) 0.75 mN (with 2X-long stylus)
Traceable angle:	60° for ascent, 60° for descent (Depending on the workpiece surface condition)
Face of stylus:	Downward
Z2 axis (column unit)	
Traverse range:	300 mm or 500 mm* *Not for CS-H5000CNC
Resolution:	0.05 μ m
Scale type:	Reflective-type linear encoder
Drive speed:	Max. 200 mm/s (in CNC mode) 0 - 50 mm/s (in joystick control mode)
Base size (W x D):	750 x 600 mm
Base material:	Granite
Y axis	
Measuring range:	200 mm
Resolution:	0.05 μ m
Drive speed:	Max. 200 mm/s (in CNC mode) 0~50 mm/s (in joystick control mode)
Max. workpiece load:	20 kg
Traverse linearity:	0.5 μ m / 200 mm
Accuracy (at 20°C):	$\pm(2+2L/100)$ μ m L = measured length (mm)
Dimension (W x D x H):	800 x 620 x 1000 mm (800 x 620 x 1200 mm: tall-column type)
Mass:	240 kg (250 kg: tall-column type)



Wide range detector employing active control technology.