

# Surftest Extreme SV-3000CNC / SV-M3000CNC

## SERIES 178 — CNC Surface Measuring Instruments

### FEATURES

- High-accuracy CNC Surface Roughness Measuring Instrument that allows both measurement of surface roughness.
- Each axes has the maximum drive speed of 200mm/s, which permits high-speed positioning that may result in a large increase in the throughput of multiple-profile/multiple-workpiece measurement tasks.
- For models with the  $\alpha$  axis, it is possible to perform continuous measurement over horizontal and inclined surfaces by power-tilting the drive unit.
- 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.
- With the support for optional rotary table  $\theta 1$  and  $\theta 2$  designed for use with the CNC models enables to expand the CNC measurement application range.
- Enables inclined plane measurements through 2 axes simultaneous control in the X- and Y-axis directions.
- Since the detector unit incorporates an anti-collision safety device, the detector unit will automatically stop even if its main body collides with a workpiece or jig.
- Supplied with an 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.
- Communication with the Data Processing/Analysis section is via USB.



SV-3000CNC with personal computer system and software

### SPECIFICATIONS

Model No.	SV-3000CNC	SV-3000CNC	SV-3000CNC	SV-3000CNC	SV-3000CNC	SV-3000CNC	SV-3000CNC	SV-3000CNC
Order No.* (100V - 120V)	178-521-1	178-541-1	178-522-1	178-542-1	178-523-1	178-543-1	178-524-1	178-544-1
Order No.* (200V - 240V)	178-521-2	178-541-2	178-522-2	178-542-2	178-523-2	178-543-2	178-524-2	178-544-2
X1-axis measuring range	200mm	200mm	200mm	200mm	200mm	200mm	200mm	200mm
Z2-axis vertical travel	300mm	500mm	300mm	500mm	300mm	500mm	300mm	500mm
Y-axis table unit	—	—	—	—	Installed	Installed	Installed	Installed
$\alpha$ -axis unit	—	—	Installed	Installed	—	—	Installed	Installed

#### Main Unit Startup System

This 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.

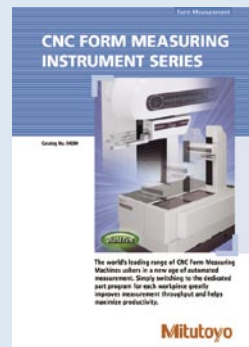
### Technical Data: SV-C3000CNC

X1-axis	
Measuring range:	200mm
Resolution:	0.05 $\mu$ m
Measurement method:	Reflective-type linear encoder
Drive speed:	200mm/s (max., CNC) 0 - 60mm/s (joystick)
Measuring speed:	0.02 - 2mm/s
Traversing direction:	Backward
Traverse linearity:	0.5 $\mu$ m/200mm
$\alpha$ -axis	
Inclination angle:	-45° to +10°
Resolution:	0.000225°
Rotating speed:	1rpm
Z2-axis (column)	
Vertical travel:	300mm (500mm)*
Resolution:	0.05 $\mu$ m
Measurement method:	Reflective-type linear encoder
Drive speed:	200mm/s (max., CNC) 0 - 60mm/s (joystick)
Base size (W x H):	750 x 600mm
Base material:	Granite
Detector	
Range / resolution:	800 $\mu$ m / 0.01 $\mu$ m, 80 $\mu$ m / 0.001 $\mu$ m, 8 $\mu$ m / 0.0001 $\mu$ m
Measuring force:	4mN or 0.75mN (low force type)
Stylus tip:	Diamond, 90° / 5 $\mu$ mR (60° / 2 $\mu$ mR: low force type)
Dimension (W x D x H):	800 x 620 x 1000mm (800 x 620 x 1200mm)*
Mass:	240kg (250kg)*
*High column model	

### Optional Accessory

Vibration insulating stand  
 Vibration insulating mechanism: Diaphragm air spring  
 Natural frequency: 2.5 - 3.5Hz  
 Damping mechanism: Orifice  
 Leveling mechanism: Automatic control with mechanical valves  
 Air supply pressure: 0.4MPa  
 Allowable loading capacity: 350kg  
 Dimensions (W x D x H): 1000 x 895 x 715mm  
 Mass: 280kg

Y-axis table unit  
 Measuring range: 200mm  
 Minimum reading: 0.05 $\mu$ m  
 Scale unit: Reflective-type Linear Encoder  
 Drive speed: 200mm/s (max., CNC)  
 0 - 60mm/s (joystick)  
 Maximum loading capacity: 20kg  
 Traverse linearity: 0.5 $\mu$ m / 200mm  
 Linear displacement accuracy (at 20°C):  
 $\pm(2+2L/100)\mu$ m,  
 L: Dimension between two measured points (mm)  
 Table size: 200 x 200mm  
 Dimensions (W x D x H): 320 x 646 x 105mm  
 Mass: 35kg



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

## Technical Data: SV-MC3000CNC

<b>X1-axis</b>	
Measuring range:	200mm
Resolution:	0.05µm
Measurement method:	Reflective-type linear encoder
Drive speed:	200mm/s (max., CNC) 0 - 50mm/s (joystick)
Measuring speed:	0.02 - 2mm/s
Traverse linearity:	0.5µm / 200mm 0.7µm / 200mm (long-type detector) 0.5µm / 200mm (rotary-type detector, up/down direction) 0.7µm / 200mm (long-type detector, forward/backward direction)
<b>α-axis</b>	
Inclination angle:	-45° to +10°
Resolution:	0.000225°
Rotating speed:	1rpm
<b>Z2-axis (column)</b>	
Vertical travel:	500mm
Resolution:	0.05µm
Measurement method:	Reflective-type linear encoder
Drive speed:	200mm/s (max., CNC) 0 - 50mm/s (joystick)
<b>Y-axis</b>	
Measuring range:	810mm
Resolution:	0.05µm
Measurement method:	Reflective-type linear encoder
Drive speed:	200mm/s (max., CNC) 0 - 50mm/s (joystick)
Measuring speed:	0.02 - 2mm/s
Traverse linearity:	0.5µm / 50mm, 2µm / 800mm 0.7µm / 50mm, 3µm / 800mm (long-type detector) 0.7µm / 50mm, 3µm / 800mm (rotary-type detector, up/down direction)
<b>Base unit</b>	
Size (W x H):	600 x 1500mm
Material:	Steel
Loading capacity:	300kg
<b>Detector</b>	
Range / resolution:	800µm / 0.01µm, 80µm / 0.001µm, 8µm / 0.0001µm (up to 2400µm with an optional stylus)
Detecting method:	Skidless / skid measurement
Measuring force:	4mN or 0.75mN (low force type)
Stylus tip:	Diamond, 90° / 5µmR (60° / 2µmR: low force type)
Skid radius of curvature:	40mm
Detecting method:	Differential inductance
Dimension (W x D x H):	1085 x 1695 x 1922mm
Mass:	1600Kg (including vibration isolating unit)

**MICAT**

Mitutoyo Intelligent Computer Aided Technology

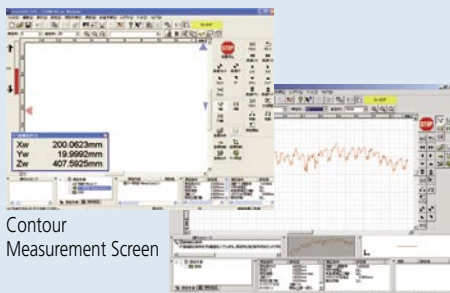
the standard in world metrology software

**FORM**

## 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



SV-M3000CNC with personal computer system and software

## FEATURES

- CNC Surface Roughness Tester that covers measurement of large/heavy workpieces such as engine blocks, crankshafts, etc.
- In combination with the surface roughness detector rotating unit, S-3000AR (optional), covers continuous measurement over the bottom, top and side surfaces of a workpiece.
- Compatible with the optional large table for supporting a load of 100kg or a large Ø2 table. Enables continuous automatic measurement of large-size workpiece
- Suitable for automatic surface roughness measurement on large and heavy workpieces.
- Employs the column-moving type configuration that is not restricted by workpiece size. This is advantageous for measuring heavy workpieces such as engine blocks, crankshafts, etc.
- Provides 800 mm of Y-axis stroke. This makes it possible to measure multiple profiles on large workpieces.
- Load table has a self-contained structure to ensure that various size workpieces, jigs, auto-feed devices, etc., are easily accommodated and can be specified, if required, by special order.

## SPECIFICATIONS

Model No.	SV-M3000CNC
Order No. (100V - 120V)	178-549-1
Order No. (200V - 240V)	178-549-2
X1-axis measuring range	200mm
Z2-axis column travel range	500mm
Y-axis travel range	800mm
α-axis inclination angle	-45° (CCW), ±10° (CW)

### 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.