

Contracer Extreme CV-3000CNC / CV-4000CNC

SERIES 218 — CNC Contour Measuring Instruments

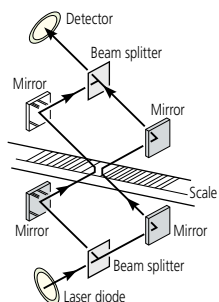


CV-3000CNC with personal computer system and software

FEATURES

- High-accuracy CNC contour / form measuring instrument.
- X1-, Y-, and Z2-axis have a maximum drive speed of 200 mm/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 α axis, it is possible to perform continuous measurement over horizontal and inclined surfaces by power-tilting the X1-axis.
- The drive unit of CV-4000CNC series is equipped with a Laser Hologage detector giving excellent narrow/wide range accuracy and resolution in the Z1-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.
- Enables inclined plane measurements through 2-axis simultaneous control in the X- and Y-axis directions.
- 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.
- 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.

Principle of Operation



Mitutoyo's innovative Laser Hologage technology provides near interferometer-grade accuracy using the interference phenomenon of diffracted light, coupled with a resolution of $0.05\mu\text{m}$ over the entire detecting range of 50mm.

Technical Data

X1-axis	
Measuring range:	200mm
Resolution:	$0.05\mu\text{m}$
Measurement method:	Reflective-type linear encoder
Drive speed:	200mm/s (max., CNC) 0 - 50mm/s (joystick)
Measuring speed:	0.02 - 2mm/s
Measuring direction:	Forward/backward
Traverse linearity:	$2\mu\text{m} / 200\text{mm}$ *with the X axis in horizontal orientation
Linear displacement accuracy (at 20°C):	$\pm(1+4L/200)\mu\text{m}$, *L = Drive length (mm)
α-axis	
Inclination angle:	-45° to $+10^\circ$
Resolution:	0.000225°
Rotating speed:	1rpm
Z2-axis (column)	
Vertical travel:	300mm or 500mm
Resolution:	$0.05\mu\text{m}$
Measurement method:	Reflective-type linear encoder
Drive speed:	200mm/s (max., CNC) 0 - 50mm/s (joystick)
Z1-axis (detector unit)	
Measuring range:	$\pm 25\text{mm}$
Resolution:	$0.2\mu\text{m}$ (CV-3000CNC), $0.05\mu\text{m}$ (CV-4000CNC)
Measurement method:	Linear encoder (CV-3000CNC), laser hologage (CV-4000CNC)
Linear displacement accuracy (at 20°C):	$\pm(0.8+10.5H/25)\mu\text{m}$ (CV-4000CNC) *H: Measurement height from the horizontal position (mm)
Stylus up/down operation:	Arc movement
Face of stylus:	Upward/downward
Measuring force:	30mN
Traceable angle:	Ascent: 70° , descent: 70° (using the standard stylus provided and depending on the surface roughness)
Stylus tip:	Radius: $25\mu\text{m}$, carbide tip
Base size (W x H):	750 x 600mm
Base material:	Granite
Mass:	240kg, 250kg (high column type)
Power supply:	100 - 240VAC $\pm 10\%$, 50/60Hz
Power consumption:	400W (main unit only)

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.



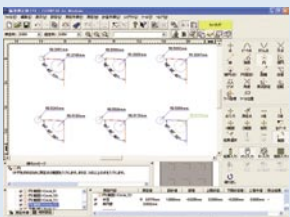
Mitutoyo Intelligent Computer Aided Technology

the standard in world
metrology software
FORM

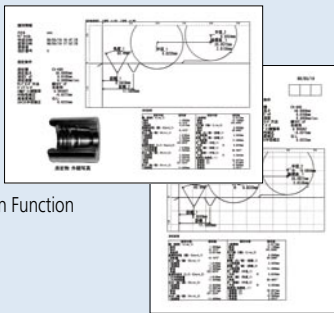
Optional Software FORMPAK-1000



Measurement Control Screen

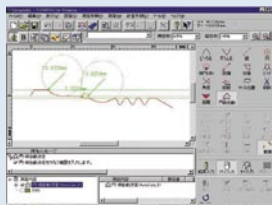


Profile Analysis Screen

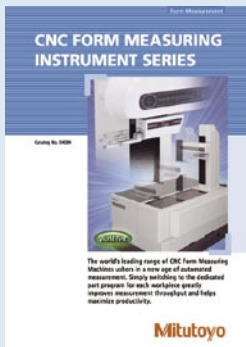
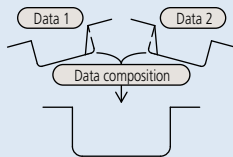


Report Creation Function

Automatic Circle/Line Application Function



Data Composition Function



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

SPECIFICATIONS

Model No.	CV-3000CNC	CV-3000CNC	CV-3000CNC	CV-3000CNC
Order No.* (100V - 120V)	218-521-1	218-522-1	218-523-1	218-524-1
Order No.* (200V - 240V)	218-521-2	218-522-2	218-523-2	218-524-2
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
Granite base size (WxD)	750 x 600mm	750 x 600mm	750 x 600mm	750 x 600mm
Dimensions (main unit, WxDxH)	800 x 620 x 1000mm	800 x 620 x 1000mm	800 x 620 x 1000mm	800 x 620 x 1000mm
Mass (main unit)	240kg	240kg	240kg	240kg

Model No.	CV-3000CNC	CV-3000CNC	CV-3000CNC	CV-3000CNC
Order No.* (100V - 120V)	218-541-1	218-542-1	218-543-1	218-544-1
Order No.* (200V - 240V)	218-541-2	218-542-2	218-543-2	218-544-2
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
Granite base size (WxD)	750 x 600mm	750 x 600mm	750 x 600mm	750 x 600mm
Dimensions (main unit, WxDxH)	800 x 620 x 1200mm	800 x 620 x 1200mm	800 x 620 x 1200mm	800 x 620 x 1200mm
Mass (main unit)	250kg	250kg	250kg	250kg

*Select one of the optional accessory set suited to your AC line voltage and measurement unit. **12AAH790** (mm, UL/CSA), **12AAH791** (mm, EU), **12AAH792** (mm, BS), **12AAH796** (mm, China), **12AAH797** (mm, EK), **12AAH793** (inch, UL/CSA), **12AAH794** (inch, EU), **12AAH795** (inch, BS), **12AAH798** (inch, China)

Model No.	CV-4000CNC	CV-4000CNC	CV-4000CNC	CV-4000CNC
Order No.* (100V - 120V)	218-561-1	218-562-1	218-563-1	218-564-1
Order No.* (200V - 240V)	218-561-2	218-562-2	218-563-2	218-564-2
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
Granite base size (WxD)	750 x 600mm	750 x 600mm	750 x 600mm	750 x 600mm
Dimensions (main unit, WxDxH)	800 x 620 x 1000mm	800 x 620 x 1000mm	800 x 620 x 1000mm	800 x 620 x 1000mm
Mass (main unit)	240kg	240kg	240kg	240kg

Model No.	CV-4000CNC	CV-4000CNC	CV-4000CNC	CV-4000CNC
Order No.* (100V - 120V)	218-581-1	218-582-1	218-583-1	218-584-1
Order No.* (200V - 240V)	218-581-2	218-582-2	218-583-2	218-584-2
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
Granite base size (WxD)	750 x 600mm	750 x 600mm	750 x 600mm	750 x 600mm
Dimensions (main unit, WxDxH)	800 x 620 x 1200mm	800 x 620 x 1200mm	800 x 620 x 1200mm	800 x 620 x 1200mm
Mass (main unit)	250kg	250kg	250kg	250kg

*Select one of the optional accessory set suited to your AC line voltage and measurement unit. **12AAH800** (mm, UL/CSA), **12AAH801** (mm, EU), **12AAH802** (mm, BS), **12AAH806** (mm, China), **12AAH807** (mm, EK), **12AAH803** (inch, UL/CSA), **12AAH804** (inch, EU), **12AAH805** (inch, BS), **12AAH808** (inch, China)

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: 390kPa
 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 : 0.05μm
 Scale unit: Reflective-type Linear Encoder
 Drive speed: Max. 200mm/s (CNC)
 0 - 50mm/s (joystick)
 Maximum loading capacity: 20 kg
 Traverse linearity: 0.5μm/200mm (surface roughness)
 2μm/200mm (contour)
 Linear displacement accuracy (at 20°C):
 ± (2+2L/100) μm, contour mode
 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