

Contracer CV-3100 / CV-4100

SERIES 218 — Contour Measuring Instruments



CV-3100S4 with personal computer system and software

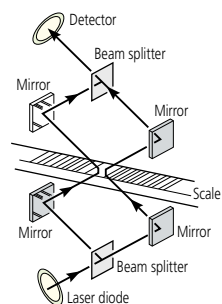
FEATURES

- Dramatically increased drive speed (X axis: 80 mm/s, Z2-axis: 20 mm/s) further reduces total measurement time.
- In order to maintain the traverse linearity specification for an extended period of time, Mitutoyo has adopted highly rigid ceramic guides that combine the characteristics of smallest secular change and remarkable resistance to abrasion.
- With the support for a wide range of optional peripherals designed for use with the CNC models enables simplified CNC measurement.
- The drive unit (X-axis) and column (Z2-axis) are equipped with a high-accuracy linear encoders (ABS type on Z2-axis). This improves reproducibility of continuous automatic measurement of small holes in the vertical direction and repeated measurement of parts which are difficult to position.
- X axis accuracy: $\pm(0.8+0.01L)\mu\text{m}$
Z1-axis accuracy: $\pm(0.8+10.5HI/25)\mu\text{m}^*$
Designed to handle workpieces calling for high accuracy.

*CV-4100S4, H4, W4 types, L = Drive length, H = Measurement height (mm)

- The drive unit of CV-4100 series is equipped with a Laser Hologage detector giving excellent narrow/wide range accuracy and resolution in the Z1-axis.

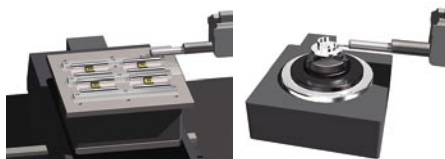
Principle of Operation



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.

Automatic Measuring Function

- With the support for a wide range of optional peripherals designed for use with the CNC models enables automatic measurement.



Using Y-axis Table

Using Rotary Table 01



Using Rotary Table 02

Technical Data

X-axis

Measuring range:	100mm or 200mm
Resolution:	0.05 μm
Measurement method:	Reflective-type linear encoder
Drive speed:	80mm/s and manual
Measuring speed:	0.02 - 5mm/s
Measuring direction:	Forward/backward
Traverse linearity:	0.8 μm / 100mm, 2 μm / 200mm *with the X axis in horizontal orientation
Linear displacement accuracy (at 20°C):	$\pm(1+0.01L)\mu\text{m}$ (CV-3100S4, H4, W4) $\pm(0.8+0.01L)\mu\text{m}$ (CV-4100S4, H4, W4) $\pm(1+0.02L)\mu\text{m}$ (CV-3100S8, H8, W8) $\pm(0.8+0.02L)\mu\text{m}$ (CV-4100S8, H8, W8) *L = Drive length (mm)
Inclining range:	$\pm 45^\circ$

Z2-axis (column)

Vertical travel:	300mm or 500mm
Resolution:	1 μm
Measurement method:	ABSOLUTE linear encoder
Drive speed:	0 - 20mm/s and manual

Z1-axis (detector unit)

Measuring range:	$\pm 25\text{mm}$
Resolution:	0.2 μm (CV-3100), 0.05 μm (CV-4100)
Measurement method:	Linear encoder (CV-3100), laser hologage (CV-4100)
Linear displacement accuracy (at 20°C):	$\pm(2+14HI/100)\mu\text{m}$ (CV-3100) $\pm(0.8+12HI/100)\mu\text{m}$ (CV-4100) *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: 77° , descent: 87° (using the standard stylus provided and depending on the surface roughness)

Stylus tip

Radius:	25 μm , carbide tip
Base size (W x H):	750 x 600mm or 1000 x 450mm
Base material:	Granite

Mass

Main unit:	140kg (S4), 150kg (H4), 155kg (W4) 145kg (S8), 155kg (H8), 220kg (W8)
Controller Unit:	14kg
Remote Control Box:	0.9kg
Power supply:	100 - 240VAC $\pm 10\%$, 50/60Hz
Power consumption:	400W (main unit only)

Collective Calibration Function

- A dedicated calibration gage enables the user to calibrate the instrument for Z-axis gain, symmetry, stylus-tip radius, etc, in a single procedure.

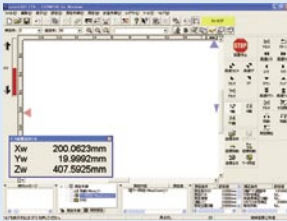


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Mitutoyo Intelligent Computer Aided Technology

the standard in world
metrology software
FORM

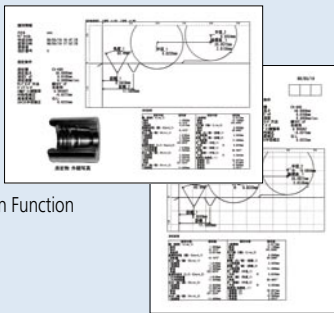
Optional Software FORMPAK-1000



Measurement Control Screen

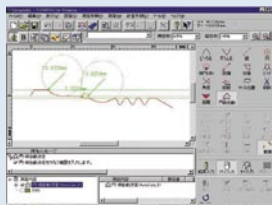


Profile Analysis Screen

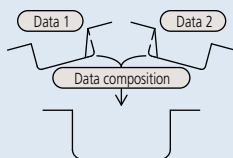


Report Creation Function

Automatic Circle/Line Application Function



Data Composition Function



Refer to the Contracer CV-3100 / 4100 Series leaflet (E4293) for more details.

SPECIFICATIONS

Model No.	CV-3100S4	CV-3100H4	CV-3100W4
Order No. (mm)	218-421*	218-422*	218-423*
Order No. (inch)	218-431*	218-432*	218-433*

Model No.	CV-4100S4	CV-4100H4	CV-4100W4
Order No. (mm)	218-461*	218-462*	218-463*
Order No. (inch)	218-471*	218-472*	218-473*
X1-axis measuring range	100mm	100mm	100mm
Vertical travel	300mm power column	500mm power column	500mm power column
Granite base size (WxD)	600 x 450mm	600 x 450mm	1000 x 450mm
Dimensions (main unit, WxDxH)	741 x 450 x 905mm	741 x 450 x 1105mm	1118 x 450 x 1111mm
Mass (main unit)	140kg	150kg	155kg

Model No.	CV-3100S8	CV-3100H8	CV-3100W8
Order No. (mm)	218-426*	218-427*	218-428*
Order No. (inch)	218-436*	218-437*	218-438*

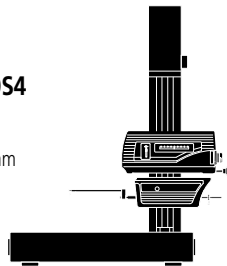
Model No.	CV-4100S8	CV-4100H8	CV-4100W8
Order No. (mm)	218-466*	218-467*	218-468*
Order No. (inch)	218-476*	218-477*	218-478*
X1-axis measuring range	200mm	200mm	200mm
Vertical travel	300mm power column	500mm power column	500mm power column
Granite base size (WxD)	600 x 450mm	600 x 450mm	1000 x 450mm
Dimensions (main unit, WxDxH)	741 x 450 x 905mm	767 x 450 x 1105mm	1144 x 450 x 1111mm
Mass (main unit)	145kg	155kg	160kg

* To denote your AC line voltage add the following suffixes to the order No. (e.g.: **218-421A**):
A for UU/CSA, **D** for CEE, **E** for BS, **DC** for China, **K** for EK, **No suffix** is required for JIS/100V

A variety of models available for measuring requirements

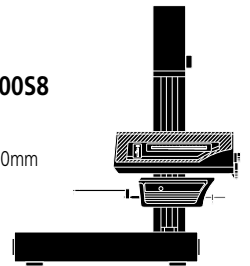
CV-3100S4 / CV-4100S4

Traverse range: 100mm
 Vertical travel: 300mm
 Base size (W x D): 600 x 450mm
 Base material: Granite



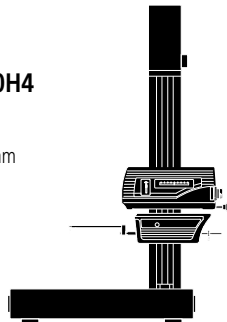
CV-3100S8 / CV-4100S8

Traverse range: 200mm
 Vertical travel: 300mm
 Base size (W x D): 600 x 450mm
 Base material: Granite



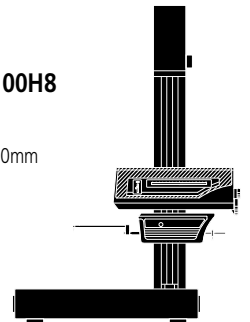
CV-3100H4 / CV-4100H4

Traverse range: 100mm
 Vertical travel: 500mm
 Base size (W x D): 600 x 450mm
 Base material: Granite



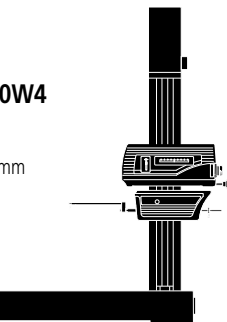
CV-3100H8 / CV-4100H8

Traverse range: 200mm
 Vertical travel: 500mm
 Base size (W x D): 600 x 450mm
 Base material: Granite



CV-3100W4 / CV-4100W4

Traverse range: 100mm
 Vertical travel: 500mm
 Base size (W x D): 1000 x 450mm
 Base material: Granite



CV-3100W8 / CV-4100W8

Traverse range: 200mm
 Vertical travel: 500mm
 Base size (W x D): 1000 x 450mm
 Base material: Granite

