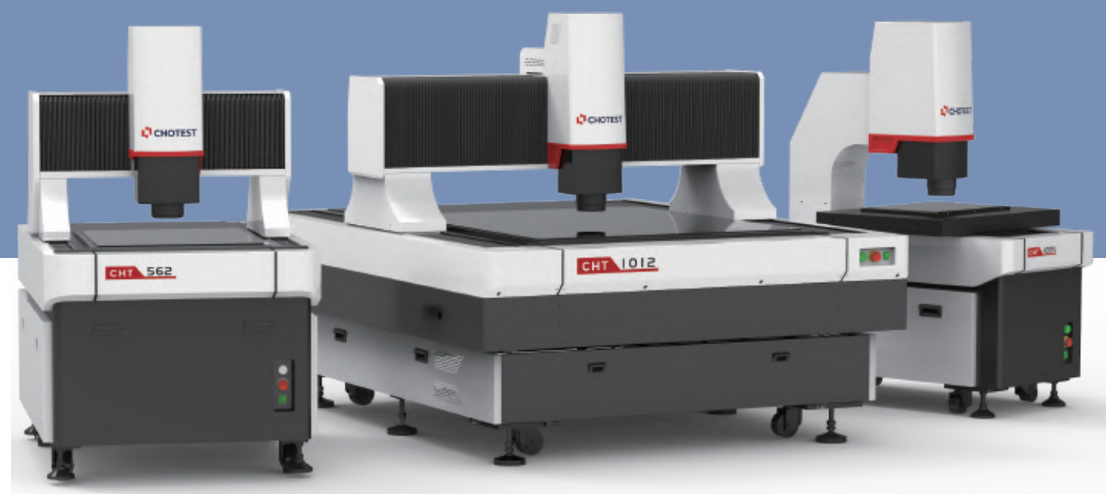
Automatic Video Measuring Machines CHT Series

Precision, Versatile

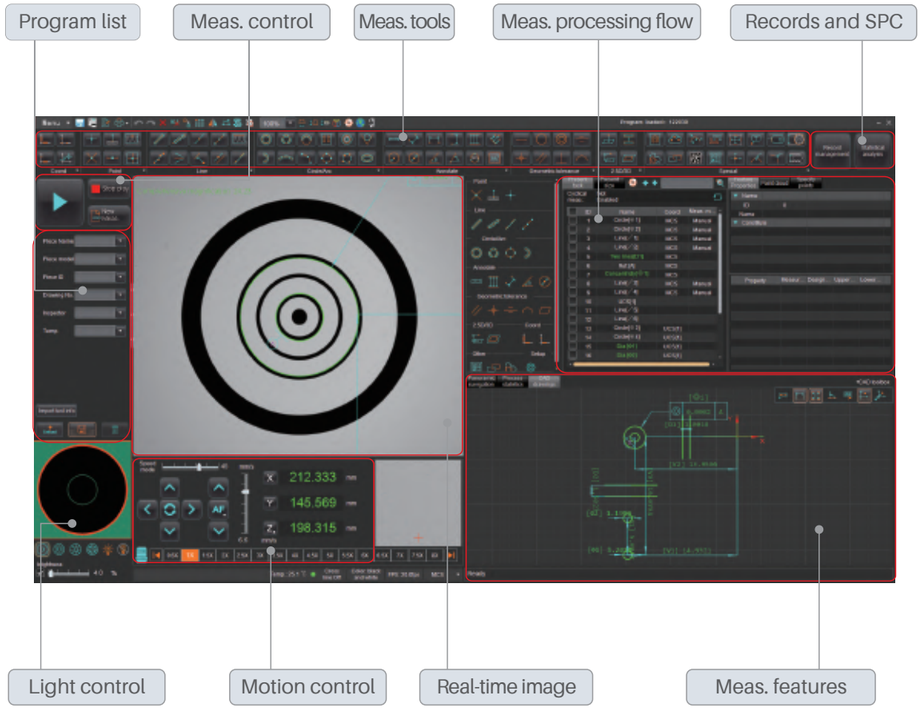


Description

Automatic video measuring machines CHT series covers different measurement ranges and offers powerful functionality. It can perform precise measurements of surface dimensions, contours, angles, positions, and geometric tolerances for various complex parts.

Automatic video measuring machines CHT series can be used in machinery, electronics, mold, injection molding, hardware, rubber, low-voltage electrical appliances, magnetic materials, precision stamping, connection Plug-ins, connectors, terminals, mobile phones, home appliances, printed circuit boards, medical equipment, clocks, knives, measurement and testing, etc.

Software Interface



User-Friendly Operation Interface

Auto data export

- Support exporting data to designated excel file according to designated template in real time.
- Can output Excel, Word, PDF, TXT reports and AutoCAD files.
- Support Q-DAS transmission according to designated format.
- Support data exchanging via HTTP or socket protocol.
- Output SPC analysis report, which includes statistical values (such as CA, PPK, CPK, PP, etc.) and control charts (such as mean and range charts, mean and standard deviation charts, median and range charts, single value and moving range chart).

Easy to operate

With user-friendly software,
anyone can be trained to use it quickly

Programming
Save program

Place objects
Place test objects on object table

Batch meas.
Measure all features by one-click

Measurement function

Extraction Tools
Scanning to extract edge points, multi-segment edge point extraction,circular edge point extraction, ellipse extraction, frame selection to extract contour lines, focus points, closest points, etc.

Annotation Tools
Point, line, circle (center coordinates, radius, diameter), arc, center, angle, distance, line width, hole position, aperture, number of holes, distance from hole to hole, distance from hole to edge, distance from arc center to hole, the distance from the center of the arc to the side, the distance from the high point of the arc to the high point of the arc, and the distance from the intersection to the intersection, etc.

Construction
Intersection point, center point, extreme point, end point, line connecting two points, parallel line, perpendicular line, tangent line, bisector,Centerlines, line segment fusion, radius circle, three-line inscribed circle, two-line radius inscribed circle, etc.

GD&T
Straightness,roundness,position,parallelism,symmetry, perpendicularity, concentricity , profile and position tolerance evaluation.

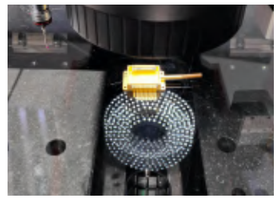
Coordinate
Instrument coordinate system, point to line, point to point, line to line and other workpiece coordinate systems; image registration coordinate system;Can translate, rotate, manually adjust the coordinate system.

Special Tools
R angle,horizontal pitch,circumferential pitch,screen,slot,contour comparison,spring,O-ring and other special tools for rapid measurement .

Support tolerance batch setting, scale classification, and color custom management.

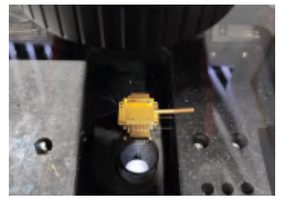
Flexible shooting and precise calculation

Support segmental programming control of surface light, transmitted light and coaxial light , automatically identify the measurement position, and obtain uniform and stable measurement results every time.



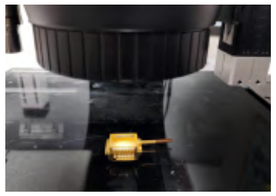
Ring light

Surface features are clear



Back light

Easy to measure profile features

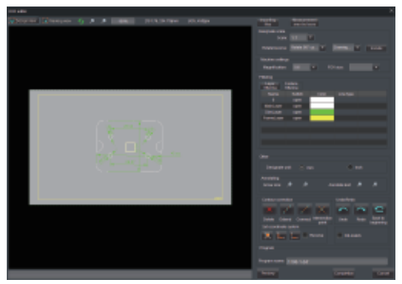


Coaxial light

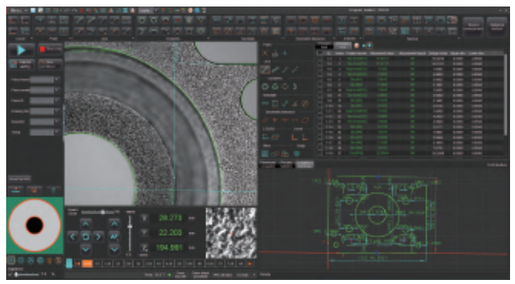
Measure diameter of blind hole

Auto batch measurement

- The program matches the coordinate system of the workpiece, automatically executes the measurement process,supports the import drawing in dxf, dwg, ger, gbr, bmp, pdf, and coordinates system matching measurement;
- In the CNC fixed coordinate system mode, batch measurement can be performed quickly and accurately.



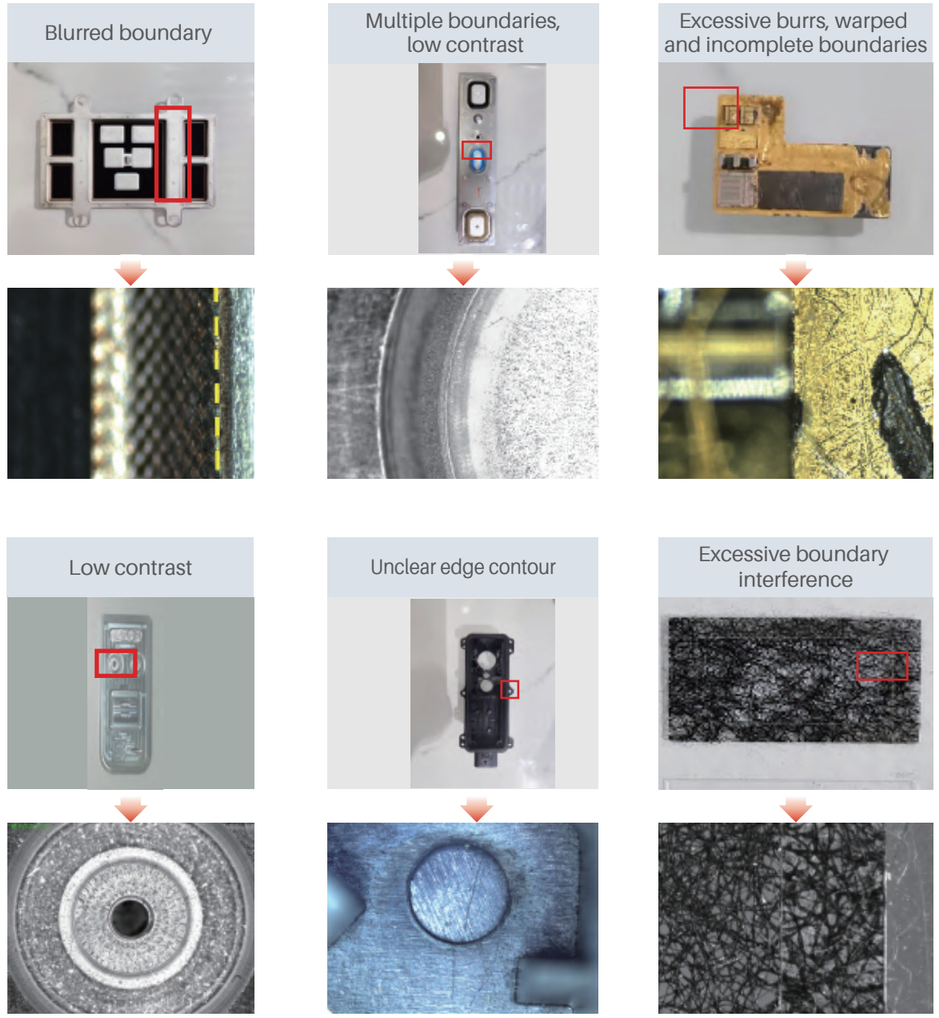
Import CAD drawing to build a program



CNC batch measurement

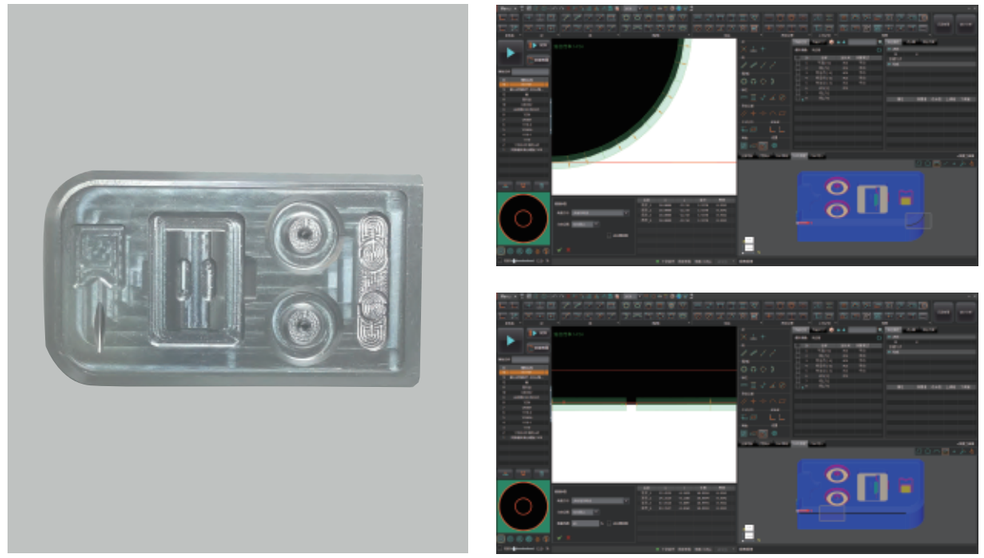
Intelligent AI edge-finding technology

The AI measurement software has powerful algorithms and strong training capabilities. It can measure and store images at the same time, continuously optimize and iterate the model A, and can cope with scenarios where traditional measurement methods cannot automatically measure, such as warped and incomplete boundaries, blurred contours, many interferences on boundaries, and blurred boundaries. Compared to traditional manual measurement, it significantly enhances efficiency and repeatability.



3D offline programming

- Without an actual VMM, the programming of measurement programs can be completed on 3D images, effectively improving the practical efficiency of using VMM.
- The interface is intuitive, easy to learn and operate.

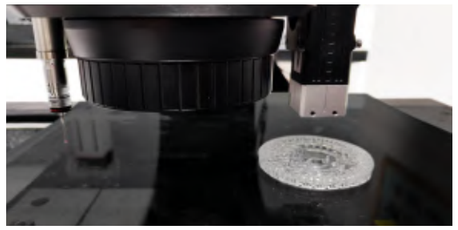


Profile tolerance

Multiple profile-extracting tools can be used to extract profile with complex edges, as well as import a set of profile points at specified locations for extraction. Can evaluate profile by non reference, single reference, and double references. Errors are displayed with color bands, which are intuitive and clear.

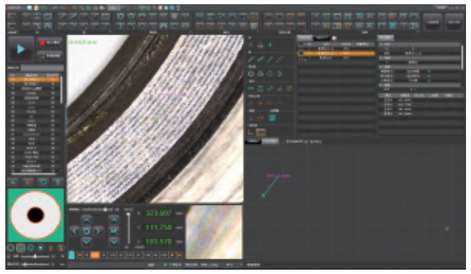
Various accessories

- Equips a touch probe or optical probe to measure height and flatness and realize 2.5D space measurement.
- Supports external input from digital calipers and height gauges.
- Supports label printers.

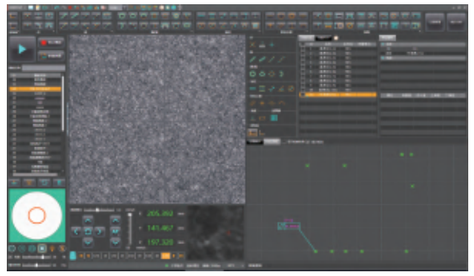


Height measurement

Flatness measurement



Height result

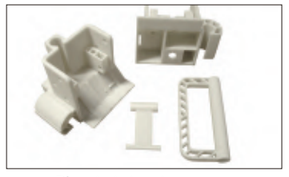


Flatness result

Application

Phone accessories

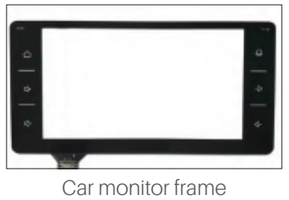
Machining parts



Plastic injection parts

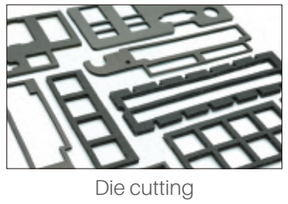
Rigid PCB

Mask board

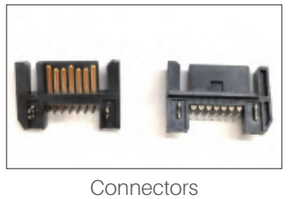


Car monitor frame

Small metal parts



Die cutting



Connectors

Parameters

Model No.			CHT322A	CHT432A
Travel Range	X		300 mm	400 mm
	Y		200 mm	300 mm
	Z		200 mm	200 mm
Structure Type			Column	
Base Material			Granite	
Monitor			24" LCD(1920×1080)	
Image Sensor			1.6MP High definition colorful industrial camera	
Resolution of Glass Scale			0.5μm	
Lens			6.5X manual lens(Motorized lens is optional)	
Magnification			Optical Zoom: 0.7X~4.5X, Image Zoom: 32~206X	
Light	Back Light		Telecentric transmission illumination	
	Ring Light		5 rings and 8 segments (256 levels) surface light	
	Coaxial Light		LED(Optional)	
Accuracy*1	X/Y		(2.5+L/200)μm	
	X⊥Y		(3.0+L/200)μm	
	Z*2		(5.0+L/200)μm	
Height Meas. (Optical Probe) (Optional)	Measuring Range(X*Y)		200*200mm	300*300mm
	Max Depth/Diameter(H/Φ)		1.64	
	Dia. of Beam		Φ100μm(Φ18μm optional)	
	Resolution		0.25μm	
	Z Non-movement	Range(Z)	±2mm	
		Accuracy	±2μm	
	Z Movement	Range(Z)	200mm	
		Accuracy	(5.0+L/200)μm, L is Z movement height in mm	
Max Speed	XY		500 mm/s	
	Z		200 mm/s	
Size			760x1150x1650mm	860x1300x1650mm
Weight			560 kg	650 kg
Loading Capacity			25 kg	
Power			1500W	2000W
Sensor Option			(1)Touch probe; (2)Optical probe	
Motion Control			Servo control system	
Software			VisionX	
Input			AC200~240V, 50/60Hz	
Working Environment			Temp. 20°C ±2°C, Humidity 20~80%, Vibration<0.002g, Less than15Hz	

Note:
*1 In the focus position, the environment temperature is +20 °C ± 1.0 °C, and the load on the table is 5 kg or less;
L is the moving range of the table in mm.
*2 It is mechanical accuracy, and actual accuracy depends on object surface where lens focuses.

Parameters

Model No.		CHT322U	CHT432U
Travel Range	X	300 mm	400 mm
	Y	200 mm	300 mm
	Z	200 mm	200 mm
Structure Type		Column	
Base Material		Granite	
Monitor		24" LCD(1920×1080)	
Image Sensor		1.6MP High definition colorful industrial camera	
Resolution of Glass Scale		0.1μm	
Lens		8.3X motorized lens	
Magnification		Optical Zoom: 0.6~5.0X, Image Zoom: 27~229X	
Light	Back Light	Telecentric transmission illumination	
	Ring Light	6 rings and 8 segments (256 levels) surface light	
	Coaxial Light	LED	
Accuracy*1	X/Y	(2.0+L/200)μm	
	X⊥Y	(3.0+L/200)μm	
	Z*2	(4.5+L/200)μm	
Height Meas. (Optical Probe) (Optional)	Measuring Range(X*Y)	200*200mm	300*300mm
	Max Depth/Diameter(H/Φ)	1.64	
	Dia. of Beam	Φ100μm(Φ18μm optional)	
	Resolution	0.25μm	
	Z Non-movement Range(Z)	±2mm	
	Z Non-movement Accuracy	±2μm	
	Z Movement Range(Z)	200mm	
	Z Movement Accuracy	(4.5+L/200)μm, L is Z movement height in mm	
Max Speed	XY	500 mm/s	
	Z	200 mm/s	
Size		760×1150×1650 mm	860×1300×1650 mm
Weight		560kg	700kg
Loading Capacity		25kg	
Power		1500W	2000W
Sensor Option		(1)Touch probe; (2)Optical probe	
Motion Control		Servo control system	
Software		VisionX	
Input		AC200~240V, 50/60Hz	
Working Environment		Temp. 20℃ ±2℃, Humidity 20~80%, Vibration<0.002g, Less than15Hz	

Note:
*1 In the focus position, the environment temperature is +20 °C ± 1.0 °C, and the load on the table is 5 kg or less;
L is the moving range of the table in mm.
*2 It is mechanical accuracy, and actual accuracy depends on object surface where lens focuses.

Parameters

Model No.		CHT433S	CHT432S
Travel Range	X	400 mm	400 mm
	Y	300 mm	300 mm
	Z	300 mm	200 mm
Structure Type		Column	
Base Material		Granite	
Monitor		24" LCD(1920×1080)	
Image Sensor		5MP High definition colorful industrial camera	
Resolution of Glass Scale		0.1μm	
Lens		13.3X motorized lens	
Magnification*1		Optical Zoom: 0.6~8.0X, Image Zoom: 17~380X	
Light	Back Light	Telecentric transmission illumination	
	Ring Light	6 rings and 8 segments (256 levels) surface light(or RGB surface light, Optional)	
	Coaxial Light	LED	
Accuracy*1	X/Y	(1.8+L/250)μm	
	X⊥Y	(2.2+L/250)μm	
	Z*2	(3.0+L/200)μm	
Fly-Shooting Mode		Support	
Navigation Camera		Support	
Sensor Option		(1)Touch probe; (2)Optical probe	
Max Speed	XY	500 mm/s	
	Z	200 mm/s	
Height Meas. (Optical Probe) (Optional)	Measuring Range(X*Y)	300*300mm	300*300mm
	Max Depth/Diameter(H/Φ)	1.64	
	Dia. of Beam	Φ100μm(Φ18μm optional)	
	Resolution	0.25μm	
	Z Non-movement Range(Z)	±2mm	
	Z Non-movement Accuracy	±2μm	
	Z Movement Range(Z)	300mm	200mm
	Z Movement Accuracy	(3.0+L/200)μm, L is Z movement height in mm	
Size		860×1380×1800 mm	860×1380×1670 mm
Weight		750kg	680kg
Loading Capacity		25kg	
Power		2000W	
Motion Control		Servo control system	
Software		VisionX	
Input		AC200~240V, 50/60Hz	
Working Environment		Temp. 20℃ ±2℃, Humidity 20~80%, Vibration<0.002g, Less than15Hz	

Note:
*1 In the focus position, the environment temperature is +20 °C ± 1.0 °C, and the load on the table is 5 kg or less;
L is the moving range of the table (mm)
*2 It is mechanical accuracy, and actual accuracy depends on object surface where lens focuses.

Parameters

Model No.			CHT452	CHT562	CHT682
Travel Range	X		400 mm	500 mm	600 mm
	Y		500 mm	600 mm	800 mm
	Z		200 mm	200 mm	200 mm
Structure Type			Moving Bridge		
Base Material			Granite		
Monitor			24" LCD(1920×1080)		
Image Sensor			1.6MP High definition colorful industrial camera		
Resolution of Glass Scale			0.1μm		
Lens			8.3X motorized lens		
Magnification			Optical Zoom: 0.6~5.0X, Image Zoom: 27~229X		
Light	Back Light		Telecentric transmission illumination		
	Ring Light		6 rings and 8 segments (256 levels) surface light		
	Coaxial Light		LED		
Accuracy*1	X/Y		(2.5+L/200)μm		
	X⊥Y		(3.0+L/200)μm		
	Z*2		(4.5+L/200)μm		
Max Speed	XY		500 mm/s		
	Z		200 mm/s		
Height Meas. (Optical Probe) (Optional)	Measuring Range(X*Y)		300*500mm	400*600mm	500*800mm
	Max Depth/Diameter(H/Φ)		1.64		
	Dia. of Beam		Φ100μm(Φ18μm optional)		
	Resolution		0.25μm		
	Z Non-movement	Range(Z)	±2mm		
		Accuracy	±2μm		
	Z Movement	Range(Z)	200mm		
		Accuracy	(4.5+L/200)μm, L is Z movement height in mm		
Size(mm)			1030×1400×1700	1130×1500×1700	1230×1700×1700
Weight			1100kg	1370kg	1680 kg
Loading Capacity			25kg		
Power			2000W	2500W	2500W
Sensor Option			(1)Touch probe; (2)Optical probe		
Motion Control			Servo control system		
Software			VisionX		
Input			AC200~240V, 50/60Hz		
Working Environment			Temp. 20°C ±2°C Humidity 20~80%, Vibration<0.002g, Less than15Hz		

Note:
*1 In the focus position, the environment temperature is +20 °C ± 1.0 °C, and the load on the table is 5 kg or less;
L is the moving range of the table in mm.
*2 It is mechanical accuracy, and actual accuracy depends on object surface where lens focuses.

Parameters

Model No.			CHT0810	CHT1012	CHT1216
Travel Range	X		800 mm	1000 mm	1200mm
	Y		1000 mm	1200 mm	1600mm
	Z		200 mm	200 mm	200 mm
Structure Type			Moving Bridge		
Base Material			Granite		
Monitor			24" LCD(1920×1080)		
Image Sensor			1.6MP High definition colorful industrial camera		
Resolution of Glass Scale			0.1μm		
Lens			8.3X motorized lens(13.3X Optional)		
Magnification			Optical Zoom: 0.6~5.0X, Image Zoom: 27~229X		
Light	Back Light		Telecentric transmission illumination		
	Ring Light		6 rings and 8 segments (255 levels) surface light		
	Coaxial Light		LED		
Accuracy*1	X/Y		(3.0+L/200)μm	(3.5+L/200)μm	
	X⊥Y		(4.0+L/200)μm	(4.5+L/200)μm	
	Z*2		(4.5+L/200)μm	(4.5+L/200)μm	
Max Speed	XY		500 mm/s		
	Z		200 mm/s		
Height Meas. (Optical Probe) (Optional)	Measuring Range(X*Y)		700*1000mm	900*1200mm	1100*1500mm
	Max Depth/Diameter(H/Φ)		1.64		
	Dia. of Beam		Φ100μm(Φ18μm optional)		
	Resolution		0.25μm		
	Z Non-movement	Range(Z)	±2mm		
		Accuracy	±2μm		
	Z Movement	Range(Z)	200mm		
		Accuracy	(4.5+L/200))μm, L is Z movement height in mm		
Size			1600×2020×1700mm	1830×2300×1700mm	2000×2700×1700mm
Weight			2400kg	3750 kg	4200kg
Loading Capacity			50kg		
Power			2500W		
Sensor Option			(1)Touch probe; (2)Optical probe		
Motion Control			Servo control system		
Software			VisionX		
Input			AC200-240V, 50/60Hz		
Working Environment			Temp. 20°C ±2°C, Humidity 20~80%, Vibration<0.002g, Less than15Hz		

Note:
*1 In the focus position, the environment temperature is +20 °C ± 1.0 °C, and the load on the table is 5 kg or less;
L is the moving range of the table in mm.
*2 It is mechanical accuracy, and actual accuracy depends on object surface where lens focuses.

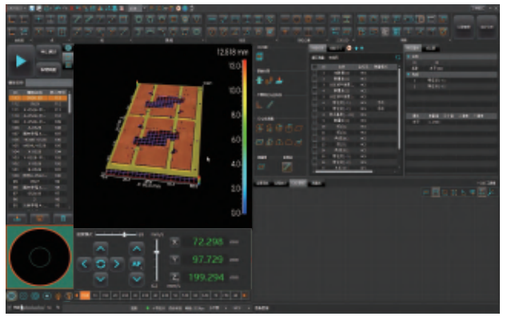
Automatic Video Measuring Machines Novator Series

Functions

1. Measurement tools: Extracting edge points by scanning, extracting edge points by multi-segment, extracting edge points by circle, ellipse extraction, extracting contour line by frame selection, focus point, nearest points, etc.
2. Measure geometric features: Point, line, circle (center coordinate, radius, diameter), arc, center, angle, distance, line width, hole site, aperture, number of holes, distance from hole to hole, hole to edge, distance from the arc center to the hole, distance from the arc center to the edge, distance from the arc high point to the other arc high point, distance from the intersection to the intersection, etc.
3. Construction features: Intersection, center point, extreme point, endpoint, two-point connection, parallel line, perpendicular line, tangent, bisector, center line, line segment fusion, drawing circle by radius, drawing inscribed circle among three lines, drawing inscribed circle by two lines & radius , etc.
4. Geometric tolerance: Straightness, roundness, contour, position, parallelism, symmetry, perpendicularity, concentricity, profile and position tolerance evaluation.

Features

Replaceable RGB surface light



Integrate 3D topography measurement

- **Stable moving stage , high measurement accuracy**
  1. Precision marble body, good stability and high precision.
  2. Precision linear slide rail and servo control system, smooth and silent movement.
  3. Three axes x/y/z programmable, realize batch inspection for complex features.
- **Laser scanning imaging, 3D composite measurement**
  1. Support spot-type laser probe to scan profile in height direction.
  2. Support 3D line-scanning laser probe.
  3. VisionX supports a variety of contour measurements and 3D spatial measurements, seamlessly connecting 2D/3D hybrid measurements.
- **Strobe lighting source, high speed fly-shooting**
  1. Equipped with strobe lighting source, support strobe and normal lighting modes.
  2. Support fly-shooting measurement mode, measurement efficiency is increased by 5~10 times.
  3. Support the stitching measurement function of the flash measuring machines.
- **Replaceable RGB surface light, independent lifting up and down**
  1. RGB and white light can be replaced to adapt to a variety of complex colors and material surfaces.
  2. The surface light can be lifted independently to better observe the sample surface.
  3. Support programmable back light, coaxial light and 6 rings and 8 segments of the surface light.
- **Automatic and fast batch measurement**
  1. The program matches the workpiece coordinate system and automatically executes the measurement process.
  2. Support importing drawing in dxf, dwg, ger, gbr, bmp, pdf.
  3. Can execute quickly and accurate batch measurement in CNC fixed coordinate system mode.
- **Easy operation, hassle-free**
  1. Equipped with a large FOV navigation camera for fast workpiece positioning.
  2. Mechanical lens anti-collision function
  3. User-friendly operation interface, anyone can easily set and measure.

Parameters

Model No.		Novator332	Novator333	Novator342
Travel Range	X	300 mm	300 mm	300 mm
	Y	300 mm	300 mm	400 mm
	Z	200 mm	300 mm	200 mm
Structure Type		Fixed Bridge		
Base Material		Granite		
Monitor		24" LCD(1920×1080)		
Image Sensor		5MP High definition colorful industrial camera		
Resolution of Glass Scale		0.1μm		
Lens		13.3X motorized lens		
Magnification		Optical Zoom: 0.6X~8.0X, Image Zoom:17X~380X		
F.O.V.		Max: 13x11mm; Min:1.0x0.8mm		
Light	Back Light	Telecentric transmission illumination		
	Ring Light	6 rings and 8 segments (256 levels) surface light(or RGB surface light, Optional)		
	Coaxial Light	LED		
Accuracy*1	X/Y	(1.4+L/250)μm		
	X⊥Y	(1.8+L/250)μm		
	Z	(3.0+L/200)μm		
3D Scanning*2 (Optional)	Z Measuring Range*3	18mm		
	Scanning Width*4	30mm		
	Repeatability*5	±1μm		
	Z Accuracy*5	±0.1%F.S.		
	Scanning Speed	10~80mm/s		
Fly-Shooting Mode		Support		
Navigation Camera		Support		
Sensor Options		(1)Touch probe; (2)Optical probe		
Max Speed	XY	500 mm/s		
	Z	200 mm/s		
Size		860×1140×1685mm	860×1350×1885mm	860×1340×1685mm
Weight		850kg	880kg	900kg
Loading Capacity		25kg		
Power		2000W		
Motion Control		Servo control system		
Software		VisionX		
Input		AC200~240V, 50/60Hz		
Working Environment		Temp. 20℃ ±2℃, Humidity 20~80%, Vibration<0.002g, Less than15Hz		

Note:
*1 In the focus position, the environment temperature is +20 ℃ ± 1.0 ℃, and the load on the table is 5 kg or less;
L is the moving range of the table (mm)
*2 Optional line-scanning probe is required.
*3 Measuring range 5mm~40mm optional.
*4 Scanning width 30mm~145mm optional.
*5 Environment temperature is +20 ℃ ± 1.0 ℃

Parameters

Model No.		Novator452	Novator562	Novator563	Novator682
Travel Range	X	400 mm	500 mm	500 mm	600 mm
	Y	500 mm	600 mm	600 mm	800 mm
	Z	200 mm	200 mm	300mm	200 mm
Structure Type		Fixed Bridge			
Base Material		Granite			
Monitor		24" LCD(1920×1080)			
Image Sensor		5MP High definition colorful industrial camera			
Resolution of Glass Scale		0.1μm			
Lens		13.3X motorized lens			
Magnification		Optical Zoom: 0.6X~8.0X, Image Zoom:17X~380X			
F.O.V.		Max: 13x11mm; Min:1.0x0.8mm			
Light	Back Light	Telecentric transmission illumination			
	Ring Light	6 rings and 8 segments (256 levels) surface light(or RGB surface light, Optional)			
	Coaxial Light	LED			
Accuracy*1	X/Y	(1.6+L/250)μm	(1.8+L/250)μm	(2.0+L/250)μm	(2.0+L/250)μm
	X⊥Y	(2.0+L/250)μm	(2.2+L/250)μm	(2.4+L/200)μm	(2.5+L/200)μm
	Z	(3.0+L/200)μm	(3.0+L/200)μm	(3.0+L/200)μm	(3.0+L/200)μm
3D Scanning*2 (Optional)	Z Measuring Range*3	18mm			
	Scanning Width*4	30mm			
	Repeatability*5	±1μm			
	Z Accuracy*5	±0.1%F.S.			
	Scanning Speed	10~80mm/s			
Fly-Shooting Mode		Support			
Navigation Camera		Support			
Sensor Options		(1)Touch probe; (2)Optical probe			
Max Speed	XY	500 mm/s			
	Z	200 mm/s			
Size		960×1545×1685mm	1120×1850×1685mm	1120×1850×1885mm	1200×2160×1685mm
Weight		1100kg	1680kg	1710kg	2120kg
Loading Capacity		25kg	25kg	50kg	50kg
Power		2000W	2500W	2500W	2500W
Motion Control		Servo control system			
Software		VisionX			
Input		AC200~240V, 50/60Hz			
Working Environment		Temp. 20℃ ±2℃, Humidity 20~80%, Vibration<0.002g, Less than15Hz			

Note:
*1 In the focus position, the environment temperature is +20 ℃ ± 1.0 ℃, and the load on the table is 5 kg or less;
L is the moving range of the table (mm)
*2 Optional line-scanning probe is required.
*3 Measuring range 5mm~40mm optional.
*4 Scanning width 30mm~145mm optional.
*5 Environment temperature is +20 ℃ ± 1.0 ℃