Mikrosize®

MRC-300M/400M/500M/500A

Roundness and Cylindricity Measuring Instrument

Video

Contact us

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Features and Applications

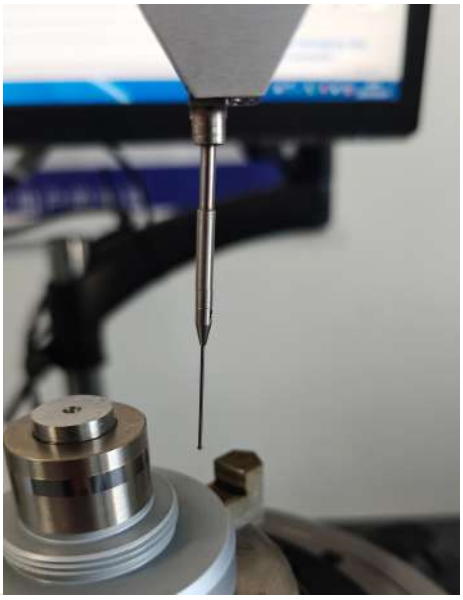
Product Features

- Adopts high-precision aerostatic spindle as the reference, which is wear-free and maintains long-term accuracy.
- Uses the radius measurement method with workpiece rotation.
- Can measure roundness, cylindricity, straightness, runout, total runout, taper, diameter, concentricity, coaxiality, flatness, parallelism, perpendicularity, eccentricity and other parameters of various regular and irregular annular workpieces.
- Can analyze surface waviness (Wc, Wp, Wv, Wt, Wa, Wq), conduct spectrum analysis and wave height analysis.
- Can measure the cross-sectional ellipticity and longitudinal profile of piston outer circles (optional).
- Column stroke options include 400/500/700mm, with support for customization of larger strokes.
- Self-centering and leveling worktable, available in manual or automatic versions.
- The spindle can bear 30kg, and customization for larger loads is supported.
- Equipped with an air filter as standard.
- Four roundness evaluation methods: Minimum Zone Method, Least Squares Method, Minimum Circumscribed Circle Method, Maximum Inscribed Circle Method.
- Roundness filter ranges: 1-500, 1-150, 1-50, 1-15, 15-500.
- Waviness filter ranges: 3-16, 17-100.
- Data collection uses imported precision circular gratings with an accuracy of up to 0.0125μm, collecting 14,400 points per circle, ensuring high accuracy and stability.
- The measurement software is a CA system-based software running on Windows operating systems, supporting WinXP, Win7, Win10 and Win11.
- Partial arcs can also be measured and processed.
- Automatically identifies contour interruptions, and has the function of automatically or manually eliminating gaps and abnormal points.
- SPC statistical analysis: conducts statistical analysis on a large number of measurement data and provides graphical analysis reports.
- Can set process requirements to judge measurement parameters, improving the visibility of quality control.
- Supports single or multiple measurement data printing on the same page.
- Equipped with a Φ2mm ruby probe as standard; ruby probes of different specifications can be optionally configured.
- Complies with industry standards such as JJG 429, ISO 1101 and ISO 12180.

Features and Applications

Product Applications

- **Automobile manufacturing**
  Inspects core components such as engine crankshafts, camshafts, piston pins, and bearing inner/outer rings to ensure power transmission accuracy and assembly tightness.
- **Aerospace**
  Verifies key components such as aircraft engine blade shafts, hydraulic system valve cores, and turbine shafts to meet precision requirements under extreme working conditions.
- **Bearing/seal industry**
  Batch inspects bearing rolling elements, seal ring grooves and other components to ensure rotation accuracy and sealing performance.



Product Details

Detail Display

- The high-precision horizontal guide rail builds a stable moving track for the sensor, ensuring the straightness and parallelism of the sensor's movement trajectory.
- The high-resolution inductive sensor perceives the part surface through probe contact and finally obtains measurement data.
- The knob below can be used to assist in adjusting the position of the workpiece, ensuring that the workpiece is clamped at the center of the worktable.

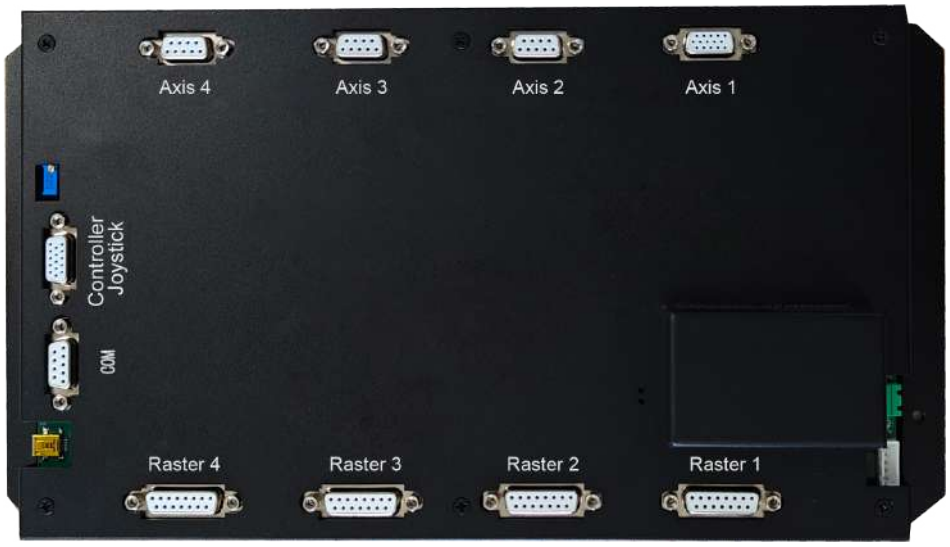
- Self-centering and leveling worktable, available in manual and automatic versions.
- Can bear a weight of 30kg; larger load-bearing capacity can be customized.
- Eccentricity adjustment: ±2mm; level adjustment: ±1°.

Product Details

Detail Display

- The emergency stop button is located on the right side for easy access by the user. In case of an emergency, the equipment can be stopped quickly.
- The joystick can control the movement of the equipment in the X-axis and Z-axis directions to adjust the probe to a suitable measurement position.

- The self-developed integrated module board centralizes all equipment interfaces in one component, which is neat and beautiful while facilitating later maintenance and replacement.



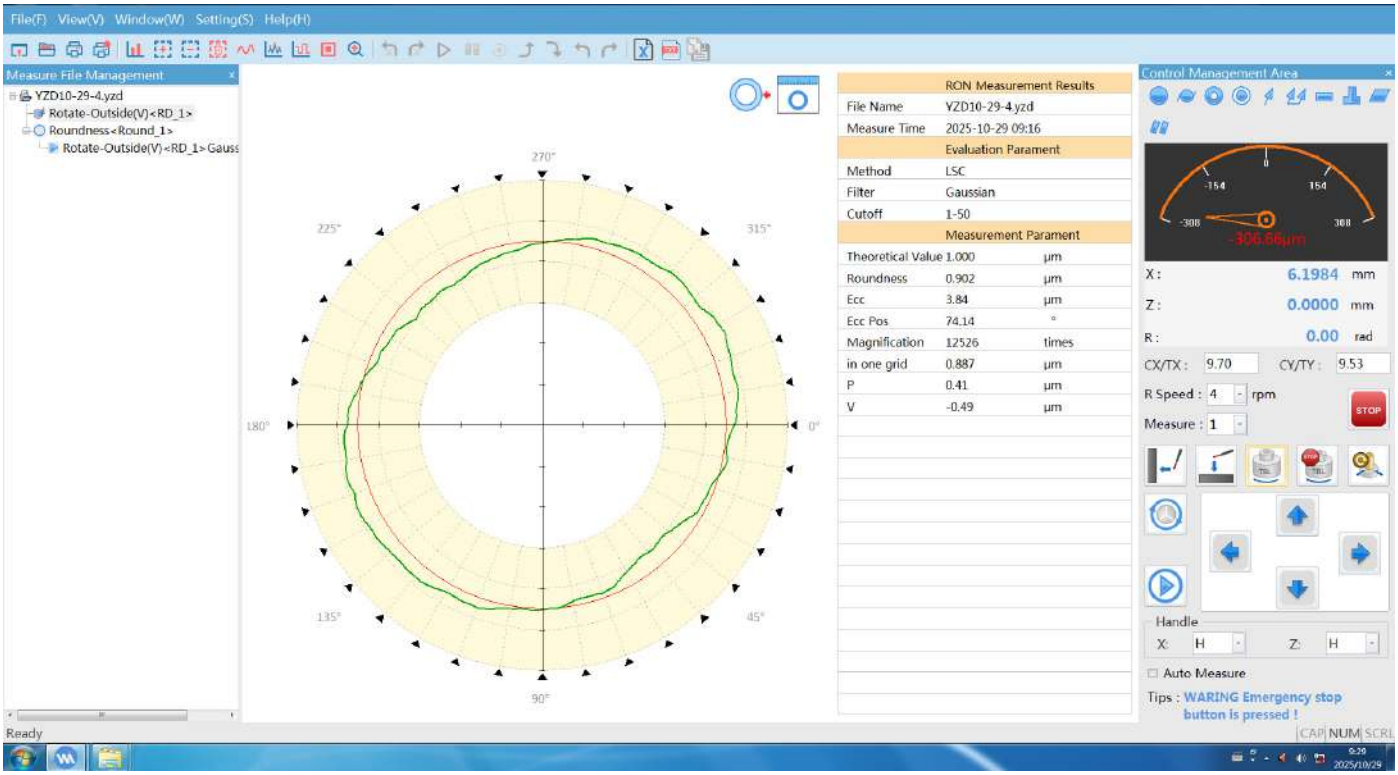
Instrument Appearance

1.Column	2. Display screen	3. Horizontal guide rail	4. Sensor
5. Probe	6. Self-centering and leveling worktable	7. Joystick	8. Printer

1. Computer Power Button	2. Reset Button	3. USB Interface

Operation Interface

Software Functions

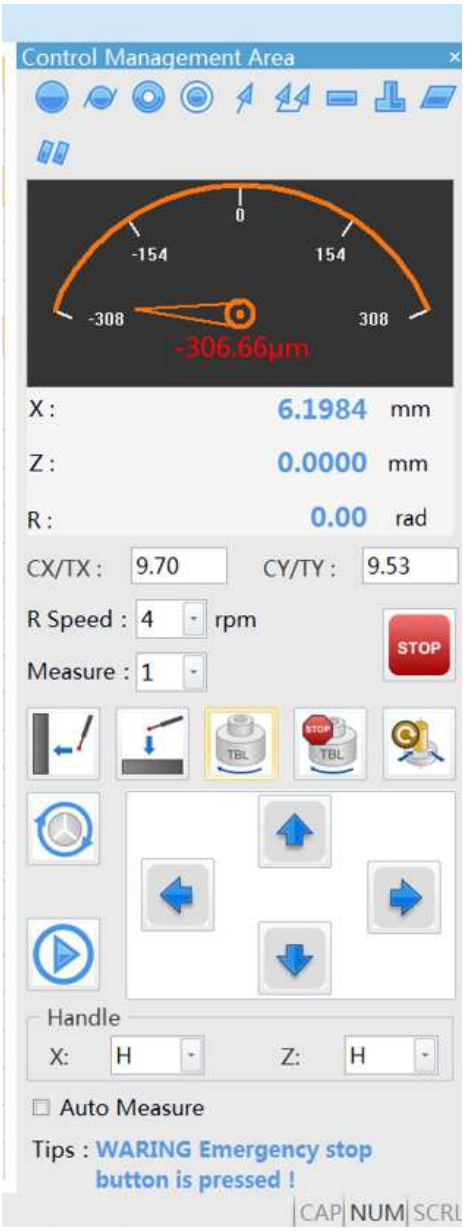


Main Interface

- Independently developed roundness and cylindricity measurement software with rich functions. Can measure parameters such as roundn ess, cylindricity, straightness, runout, total runout, concentricity, coaxiality, flatness, parallelism, perpendicularity, surface waviness (Wc, Wp, Wv, Wt, Wa, Wq), spectrum analysis, wave height analysis and eccentricity of various regular and irregular annular workpieces.

Operation Interface

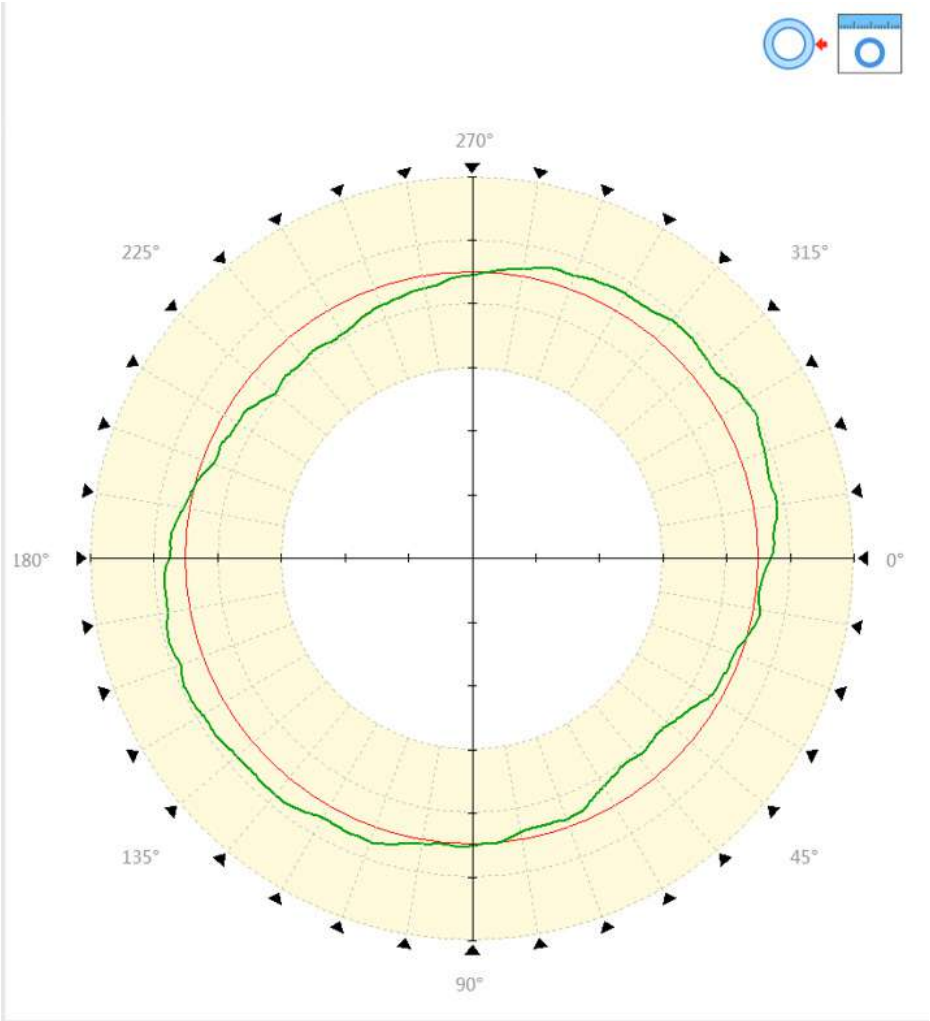
Control Management Area



- Realizes equipment control through this part of the software, including the movement control of the probe up/down/left/right, and the rotation/stop of the spindle.
  Currently, the measurement items include 11 items: roundness, cylindricity, concentricity, coaxiality, runout, total runout, straightness, perpendicularity, flatness, parallelism and taper.
  Displays the current sensor values and the coordinates of the current movement.
  The probe automatically contacts the workpiece to avoid damage to the probe.
  Starts and stops measurement, with automatic measurement function.

Operation Interface

Main View and Parameter

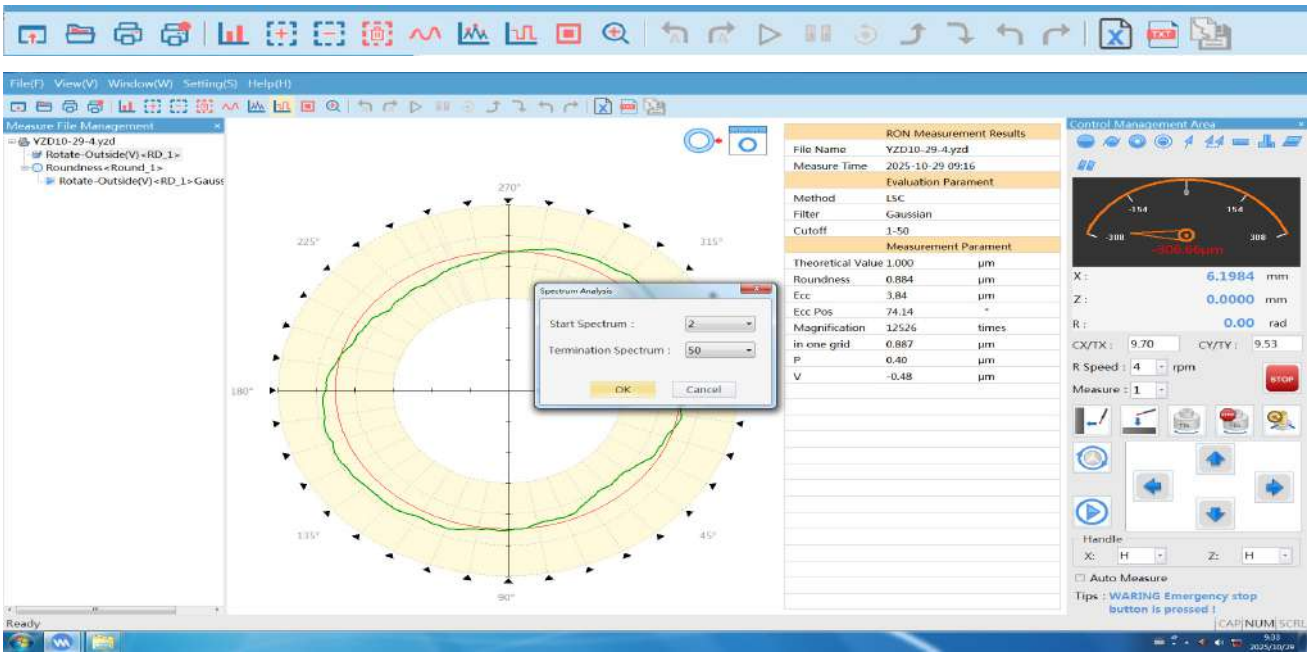


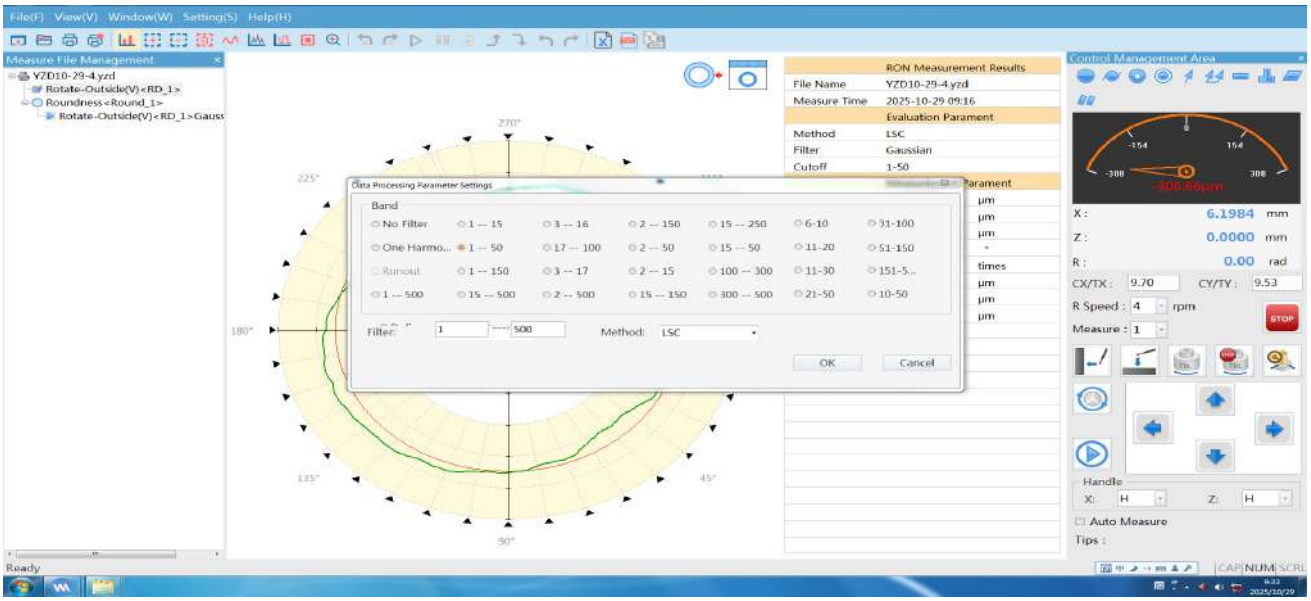
RON Measurement Results		
File Name	YZD10-29-4.yzd	
Measure Time	2025-10-29 09:16	
Evaluation Parament		
Method	LSC	
Filter	Gaussian	
Cutoff	1-50	
Measurement Parament		
Theoretical Value	1.000	μm
Roundness	0.902	μm
Ecc	3.84	μm
Ecc Pos	74.14	°
Magnification	12526	times
in one grid	0.887	μm
P	0.41	μm
V	-0.49	μm

- **Display Area**
- Displays the data graph and processing results of the current measurement item
- Parameters include.
- 1：Evaluation parameters: parameters selected and set by the user, including evaluation method, filter type and filter range.
- 2：Measurement parameters: roundness, eccentricity, eccentricity angle, magnification and so on.

Operation Interface

Toolbar

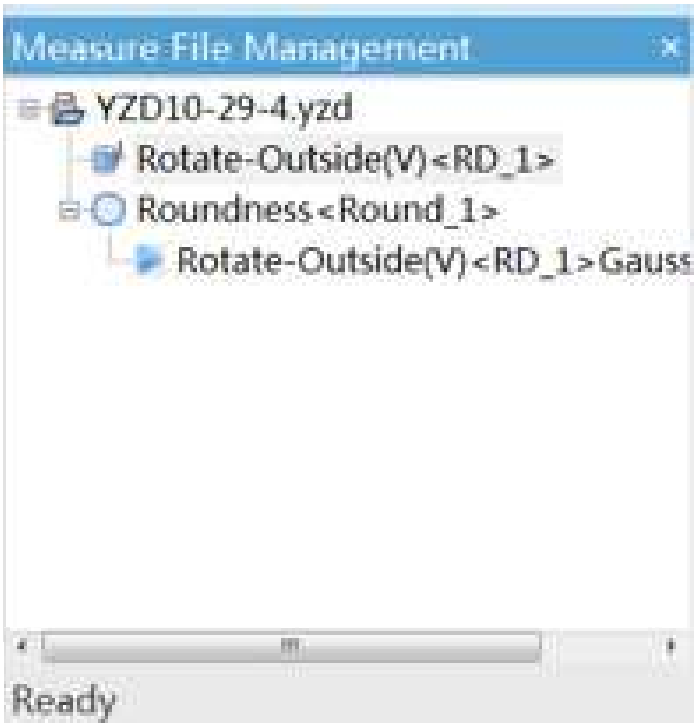




- Clear workpiece measurement files.
- Print reports.
- Select the frequency band and algorithm of roundness data.
- Process data, such as clipping and unclipping.
- Conduct wave height analysis and spectrum analysis of data.
- Select magnification.
- Perform operations such as rotating and tilting the measurement graph.

Operation Interface

Workpiece Measurement

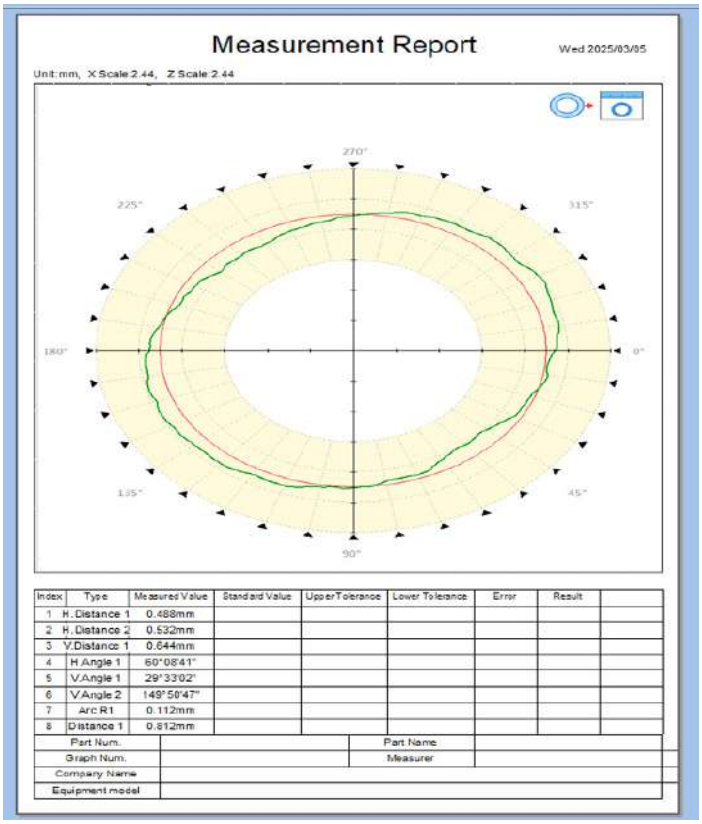


Manager

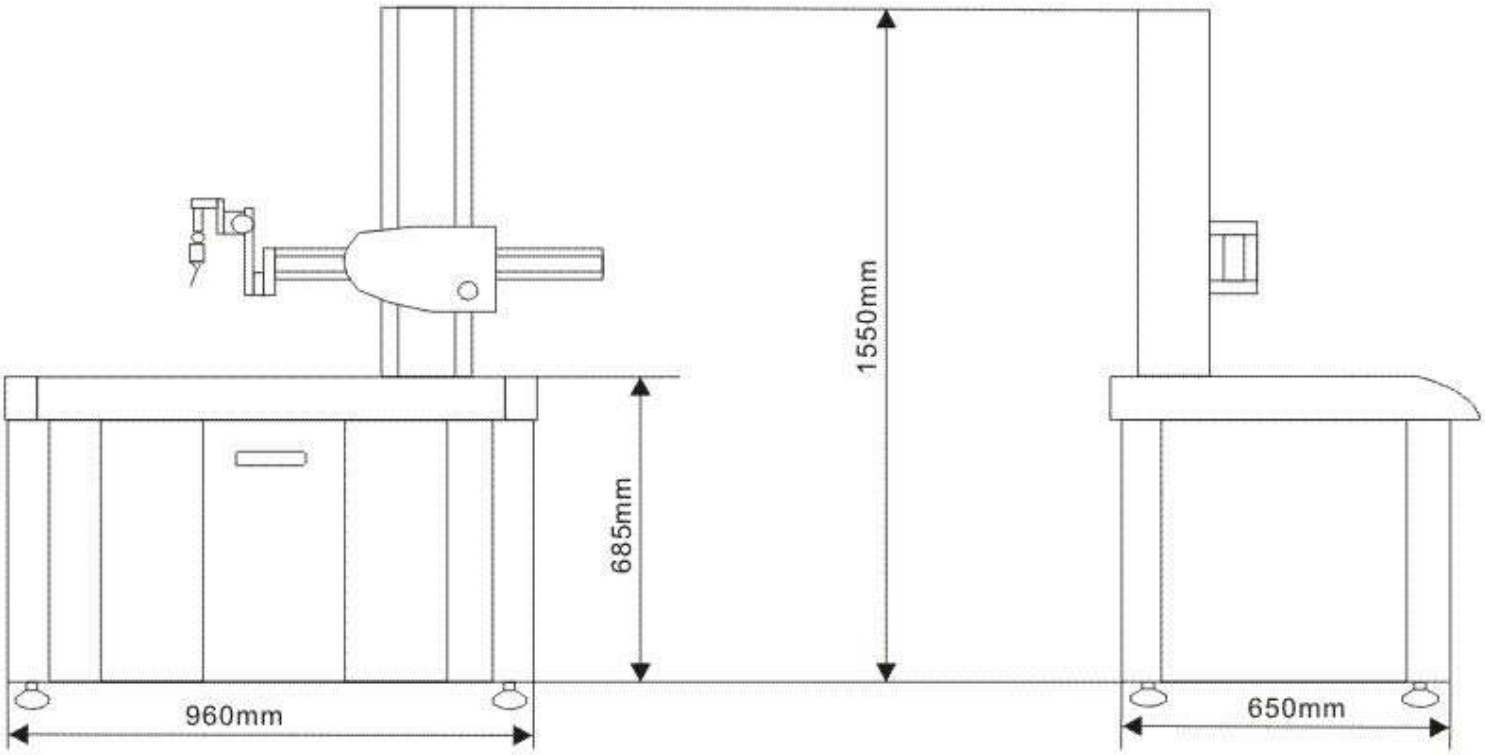
- Used to set current pending measurement items and display existing measurement files.
- Can operate the properties of measurement files, including spindle rotation and column movement.
- Set measurement conditions, including measurement direction, rotation speed, measurement speed and measurement position.
- The properties of completed measurement files can be viewed and displayed but not edited.

Output Report

- The printed report shows the evaluation results using the Least Squares Method as the evaluation method
  The report includes measurement graphs and parameters



Machine Dimension



Ordering Information

MRC-300M Roundness and cylindricity measuring instrument

MRC-400M Roundness and cylindricity measuring instrument

MRC-500M Roundness and cylindricity measuring instrument

MRC-500A Roundness and cylindricity measuring instrument

Mikrosize®

Technical Specification

Item		Roundness and Cylindricity Measuring Instrument			
Model		MRC-300M	MRC-400M	MRC-500M	MRC-500A
Measurement Range	Maximum Workpiece Rotation Diameter	320mm	420mm		
	Maximum Measurement Diameter	270mm	370mm		
	Maximum Measurement Height	300mm	400mm	500mm	500mm
	Maximum Measurement Depth	100mm（determined by probe rod length）			
	Maximum Load-Bearing Capacity	25kg	40kg	60kg	30kg
	Radial Error	（0.025+4H/10000）μm H：Measurement height from the platform			
	Axial Error	（0.025+4X/10000）μm X：Measurement radius			
Worktable	Table Diameter	Φ200mm			Φ280mm
	Adjustment Range	Eccentricity adjustment: ±3mm; Level adjustment: ±1°			
	Adjustment Method	Manual			Automatic
	Rotation Speed	0~12rpm			
Straightness		0.3μm/100mm			0.2μm/100mm
Grating	Column Grating Resolution (Optional	0.05/0.1/0.5/1μm			
	Horizontal Guide Rail Grating Resolution (Optional)	0.05/0.1/0.5/1μm			
Parallelism Between Spindle And Z-Axis		1.5μm/ 300mm	2μm/ 400mm	2.5μm/ 500mm	2.5μm/ 500mm

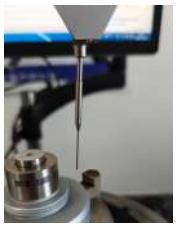
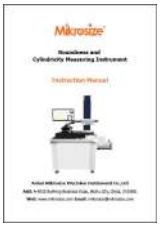
Technical Specification

Horizontal Stroke		250mm	270mm
Sensor	**Measuring Range**	±500μm	
	Resolution	0.005μm	
	Probe Shape	Φ2mm ruby ball probe（Φ1mm、Φ0.5mmprobes optional）	
	Measuring Force	1~12g	
Data Collection		Imported grating, 14,400 points/circle	
Magnification		Arbitrary up to 200,000x maximum	
Optional Modules		Bearing waviness/harmonic analysis/RTA spectrum analysis	
Air Supply Pressure		0.45~0.8Mpa	
Air Supply Flow Rate		≥0.2 m^3/min	
Power Supply		AC 220V±10% 50Hz	
Environmental Requirements		Temperature (T)：10～30℃; Relative humidity (RH)：＜85%	
Product Dimensions (L*W*H)		960*650*1550mm	
Packaging Dimensions (L*W*H)		1000*750*1650mm	
Product Weight		240kg	
Total Packaging Weight		290kg	

Standard Delivery

Name	Qty	Photo
Roundness And Cylindricity Measuring Instrument	1 set	
Self-Centering And Leveling Worktable	1 set	
Precision Three-Jaw Chuck	1 piece	
Air Filtration System	1 piece	
Computer	1 unit	
Printer	1 unit	
Measurement Software	1 set	

Standard Delivery

Name	Qty	Photo
Ellipse Standard Part	1 piece	
Cylinder Standard Part	1 piece	
Φ2mm Ruby Probe	1 piece	
Qualification Certificate	1 copy	 QUALIFIED CERTIFICATE
Warranty Card	1 copy	 Warranty Card
Calibration Certificate	1 copy	
Instruction Manual	1 copy	 Mikrosize

Optional Delivery

Optional	3d Adjustment Table
	Quick Centering Tooling
	Centering Tooling
	Steel Ball Fixture
	Other Standard Parts
	Other Probes

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