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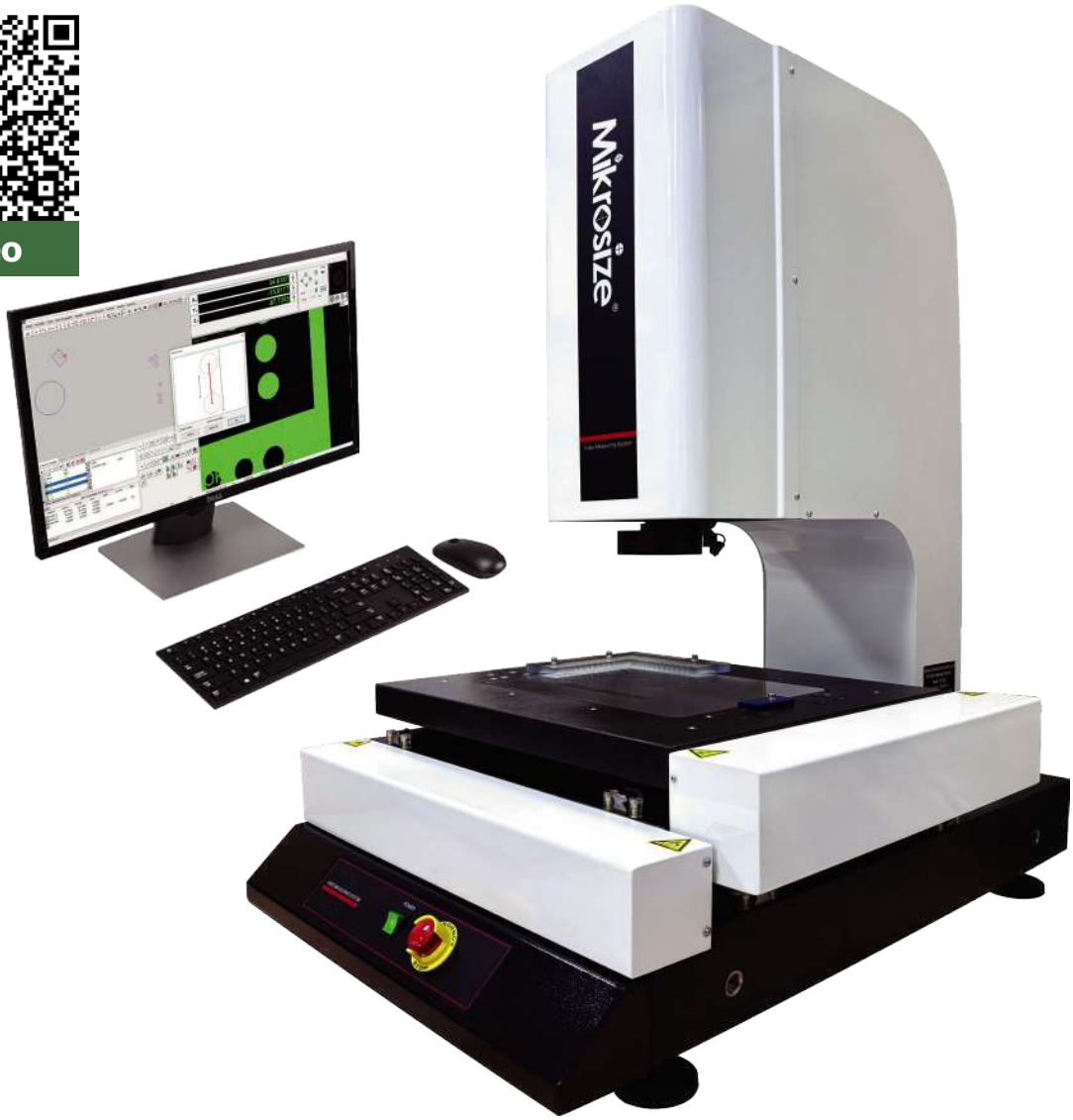
VMK

CNC Video Measuring System

Video



Contact us

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Product Features and Application

●The VMU-3020 imager is a high-precision, high-efficiency photoelectric measuring instrument composed of precision mechanical structures such as a high-resolution CCD color camera, a continuously variable magnification objective lens, a color display, a video crosshair generator, a precision optical ruler, a multi-function data processor, 2D data measurement software, and a high-precision workbench.
●It is mainly used for two-dimensional measurement, but can also perform three-dimensional measurement.
●It is widely used in various precision industries, such as electronic components, precision molds, precision tools, springs, screw processing, plastics, rubber, oil seal valves, camera parts, bicycle parts, auto parts, conductive rubber, PCB processing and other precision processing industries.
●It is one of the indispensable metrological testing equipment in the measurement rooms, laboratories and production workshops of the machinery, electronics, instrumentation, clocks and watches, light industry, plastics and other industries, colleges, research institutes and metrology and verification departments.

Product Features

●The integrated ergonomic design of the whole machine makes operation and measurement convenient;
●Using high-precision blue granite "00" grade workbench and columns, its notable features are high precision, corrosion resistance, high strength, and no stress deformation, ensuring high stability of the machine;
●X, Y, Z three-axis CNC fully automatic precision control and accurate positioning, the transmission adopts precision linear guides and grinding-grade ball screws to ensure the accuracy of the motion system;
●The imaging system uses imported high-quality optical components, which have undergone multi-layer optical coating and have minimal optical attenuation, ensuring clear image quality without distortion;
●Programmable 5-ring 8-zone LED surface light source and parallel LED contour light source system, intelligently achieving 256 levels of brightness adjustment;
●Independently developed measurement software, with fast focusing, automatic edge finding and diversified output reports, realizes online SPC data processing and analysis, can set automatic measurement tasks, and efficiently complete batch inspections;

Product Application

●In the field of electronic manufacturing, it can measure the size of electronic components with high precision and detect the quality of PCB boards to ensure the reliability of electronic products;
●In the field of mechanical processing, it can accurately detect the size of complex parts and the condition of tools, helping to improve processing accuracy and effect;
●In mold manufacturing, it can comprehensively detect mold cavities and provide a basis for their repair and improvement to ensure product molding quality and extend mold life;
●In automobile manufacturing, it can accurately measure automobile parts and body appearance to ensure automobile performance and appearance quality;
●In the field of scientific research and teaching, it meets the needs of scientific research precision measurement and can also be used for teaching demonstrations and training.

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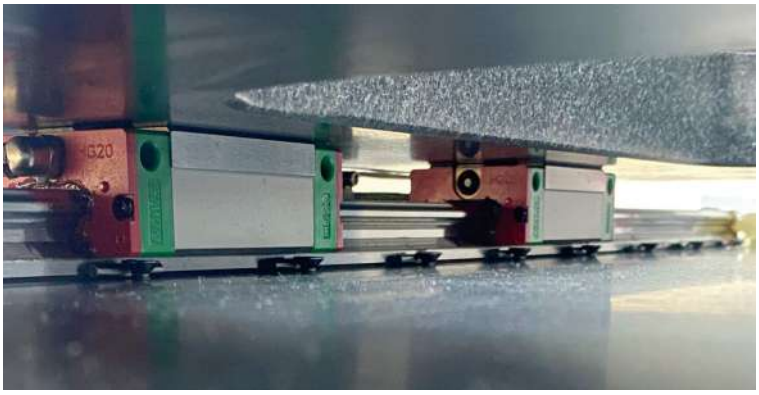
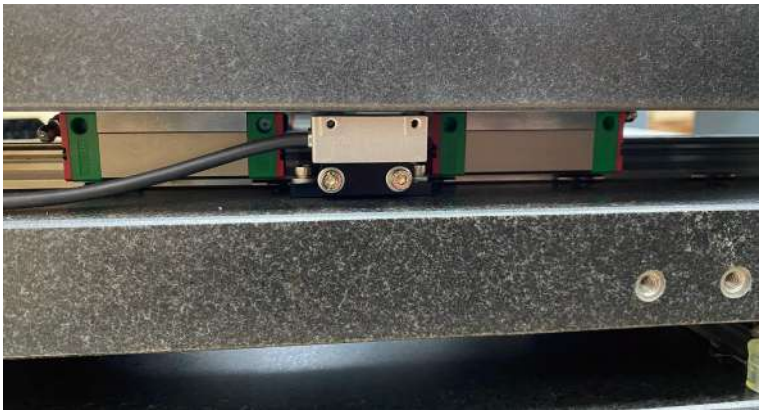
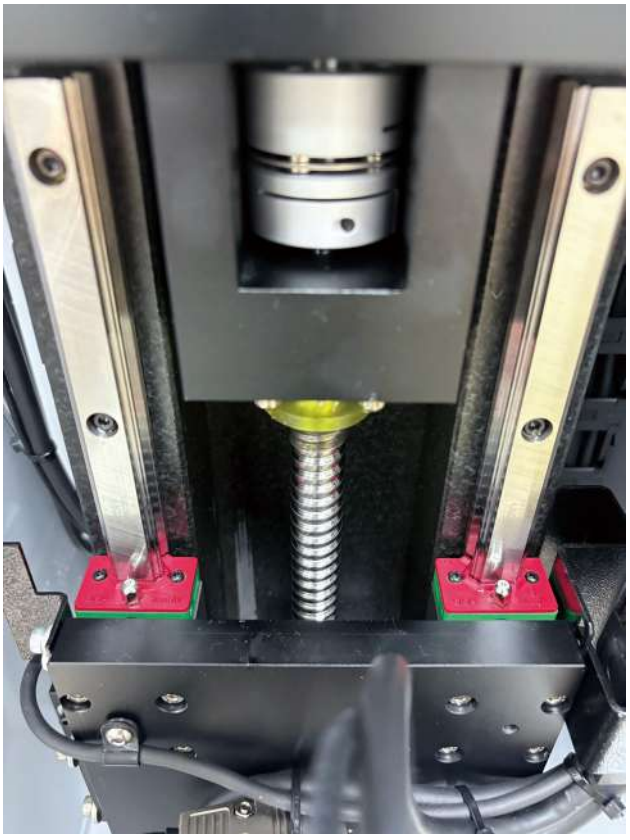
Instrument Configuration

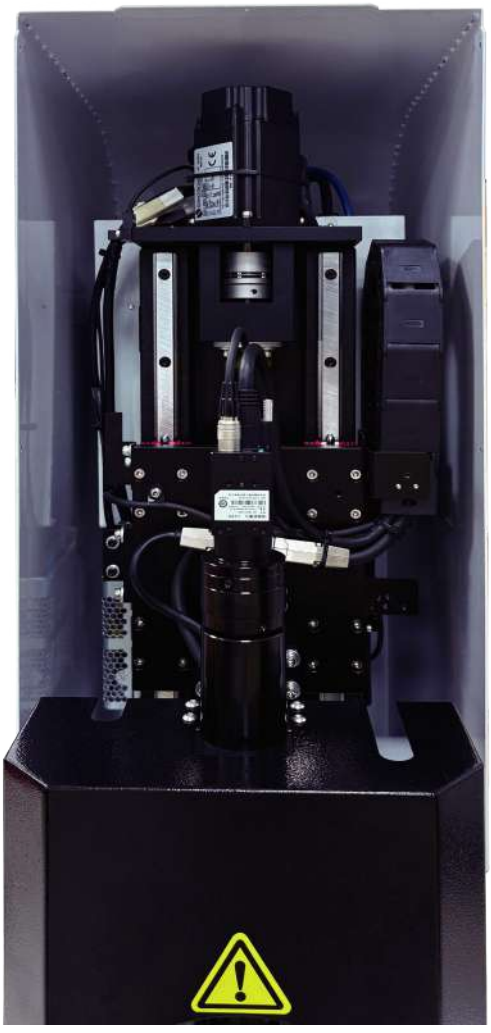


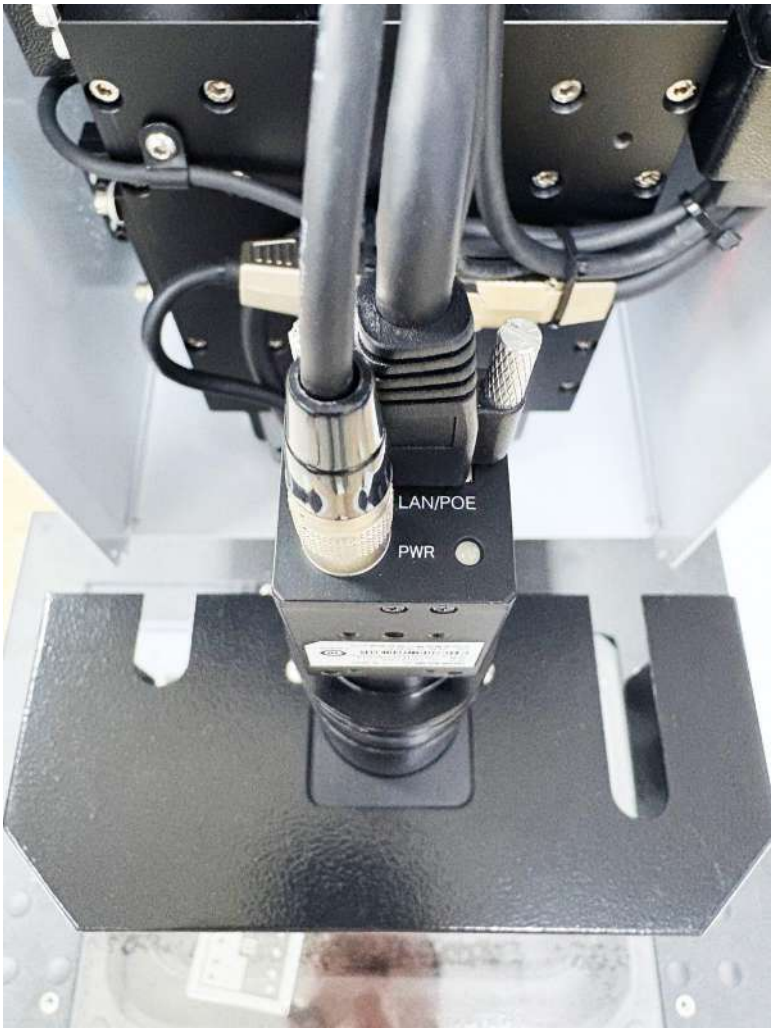




- Equipped with high-precision grating ruler, the resolution reaches 0.001mm, which can meet the needs of various high-precision measurement tasks;
- Adopting advanced optical and electronic technology, it has good stability and reliability; during long-term use, the measurement accuracy of the grating ruler will not be affected by environmental factors such as temperature, humidity, vibration, etc., and can maintain stable measurement performance;
- The response speed is very fast, and the position information of the workbench can be fed back in real time, so that the control system of the imager can respond quickly and achieve accurate measurement and positioning of the workpiece;
- Installation and maintenance are relatively simple, and do not require complex mechanical structure and adjustment process.

Image System





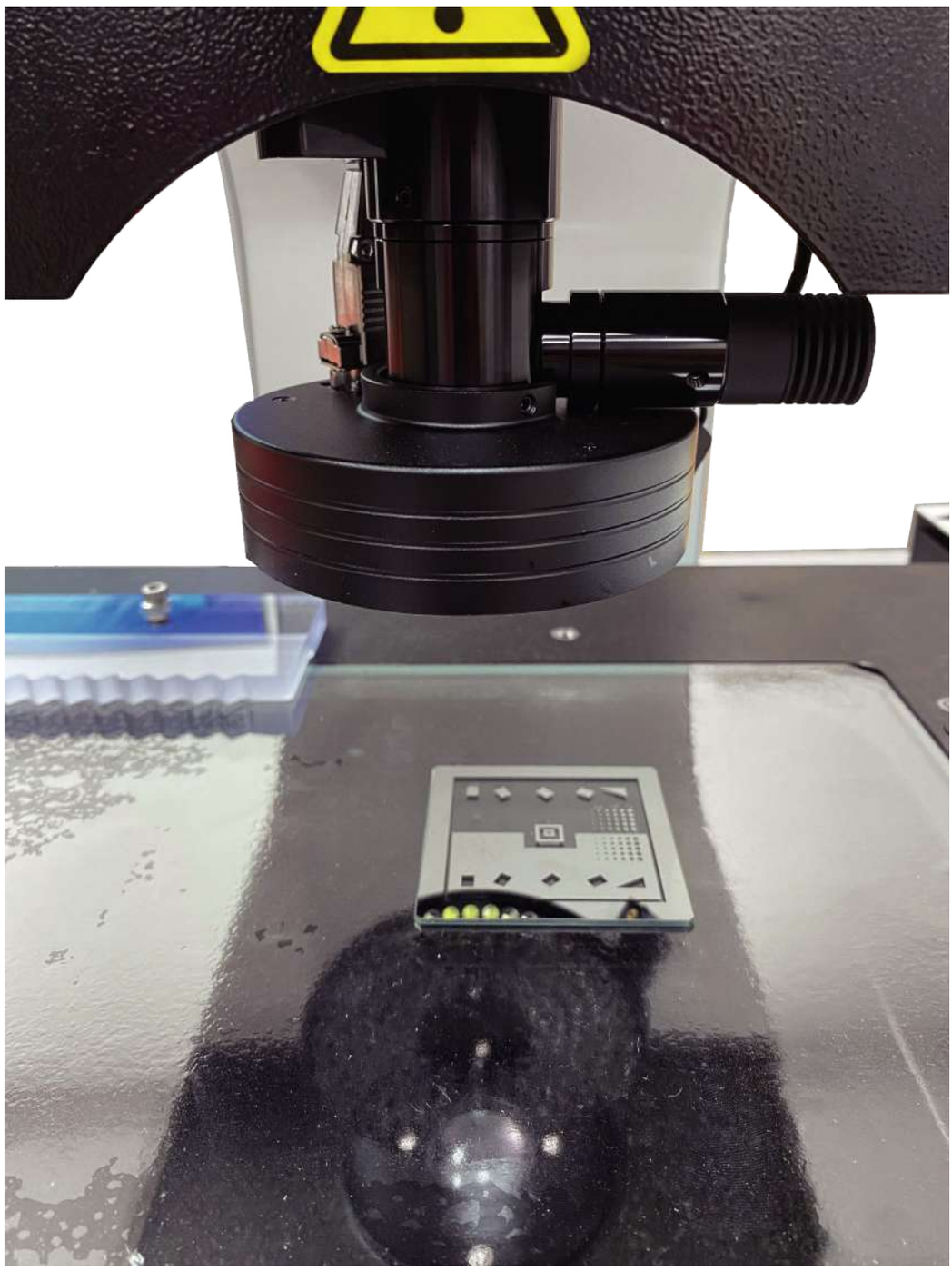
●It can provide high-resolution images; its high pixel density can capture the subtle details of the measured object, whether it is complex geometric shapes, tiny surface defects or fine pattern textures, it can be clearly presented;

●The color CCD sensor can accurately restore the true color of the measured object;

●As an industrial-grade camera, it has higher stability and durability; it can work stably in various harsh industrial environments, such as high temperature, high humidity, dust, and high vibration environments;

●0.7~4.5X automatic zoom lens, the total video magnification is 23.5~148X, and the wide range of image magnification enables the imager to adapt to various measurement tasks and workpiece sizes; whether it is large mechanical parts or tiny electronic components, the best measurement effect can be obtained by adjusting the magnification.

Viewing System



Automatic zoom lens

- Easy to operate, electric drive zoom and fast response, can easily complete the zoom operation, improve measurement efficiency;
- Large zoom range, can meet the focal length requirements of objects of different sizes and details measurement;
- High imaging quality, with precise optical design and coating technology, to ensure clear and accurate images;
- High intelligence and stability, conducive to reducing measurement errors and maintaining stable imaging effects;

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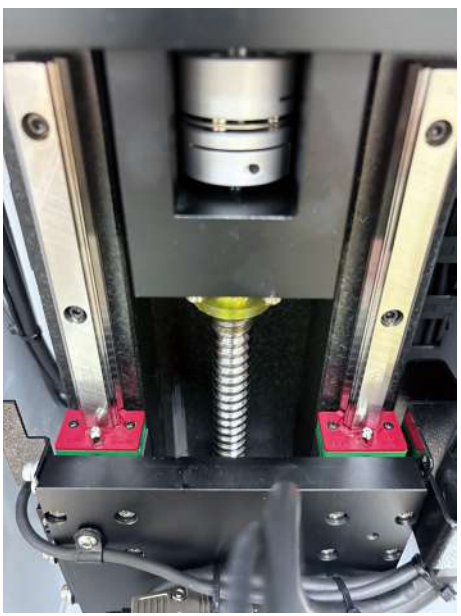
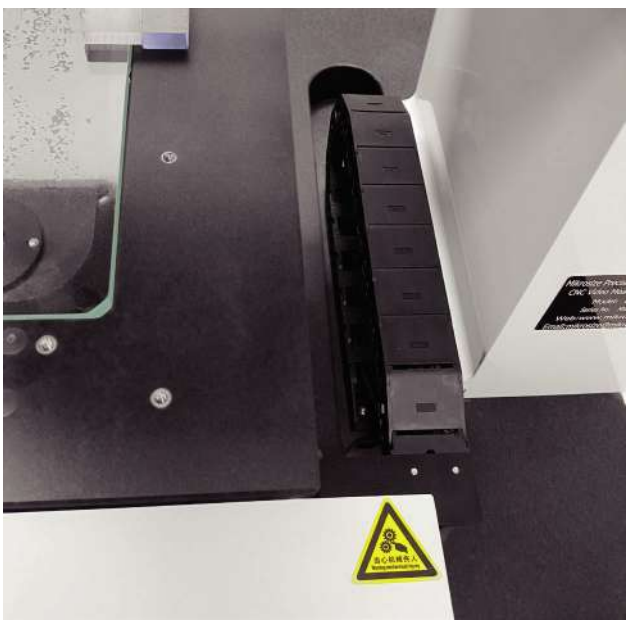
Drive System

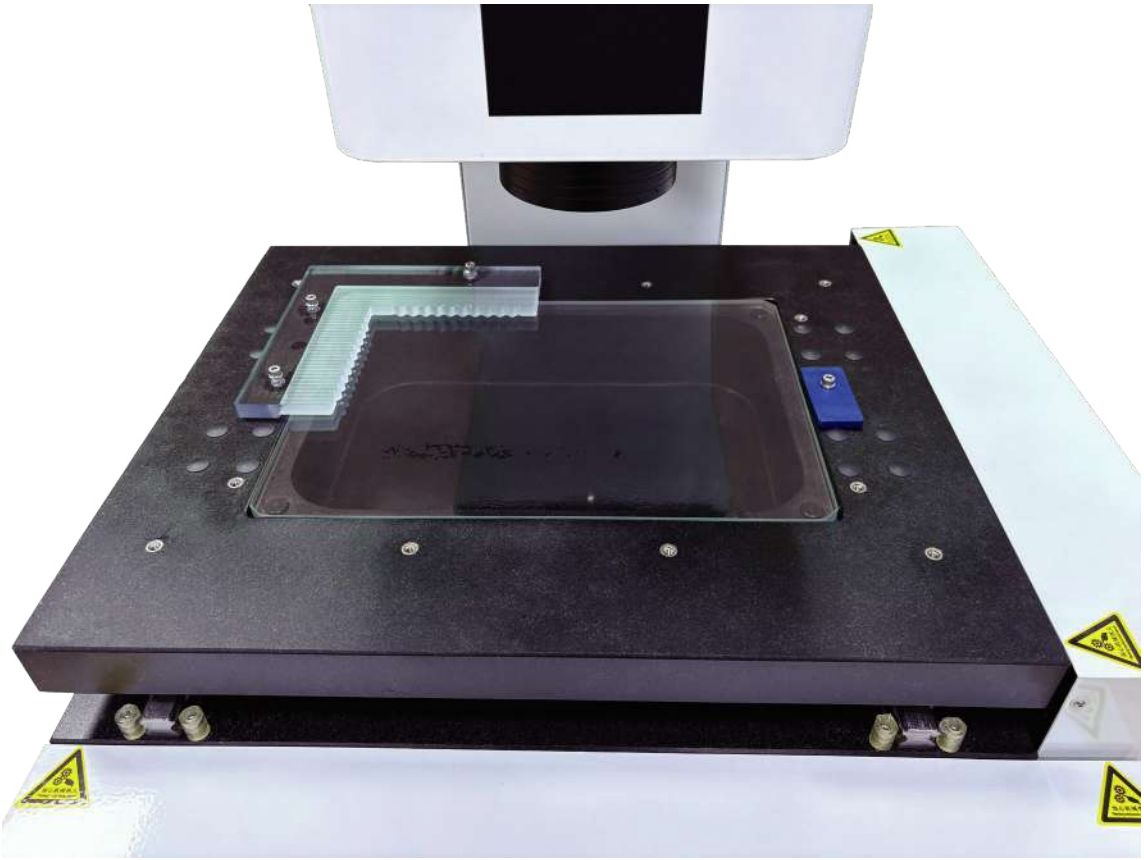




Independent patented CNC servo motion control system

- The transmission adopts precision linear guide rails and ground ball screws to ensure the accuracy of the motion system;
- CNC servo motor achieves high-precision control to ensure accurate imager measurement data and high repeatability;
- With fast response capability, it can quickly switch measurement positions to improve measurement efficiency;
- Good stability and reliability ensure that the imager can run stably for a long time and adapt to various working environments;
- Easy to program and operate, can realize automated measurement as required, and is easy to operate.

Workbench



Workbench size: 360*260mm Workbench load: 25kg

●It can adapt to many types of objects to be measured, whether it is small electronic components, such as mobile phone motherboards, chips, etc., or some medium-sized mechanical parts, mold templates, such as small hardware stampings, micro mold inserts, etc., can be well placed on the workbench for measurement;

●In the field of mechanical processing, some slightly larger parts, high-density metal mold parts, etc., as long as their weight is within the limited 25kg range, can be stably placed on the workbench for measurement, without worrying about the workbench shaking, deformation, etc. due to insufficient load-bearing, affecting the normal measurement.

Light Source System

- The surface light adopts LED 5-ring 8-zone annular cold light source design, which can provide all-round and highly uniform lighting for the object to be measured;
- The contour light adopts LED transmission parallel light source, which can clearly outline the outline of the object to be measured;
- The stability and consistency of LED transmission parallel light source are high, which can provide reliable lighting effect. Compared with traditional light sources, LED light sources have longer service life, lower energy consumption and higher stability, reducing measurement errors caused by changes in light sources.

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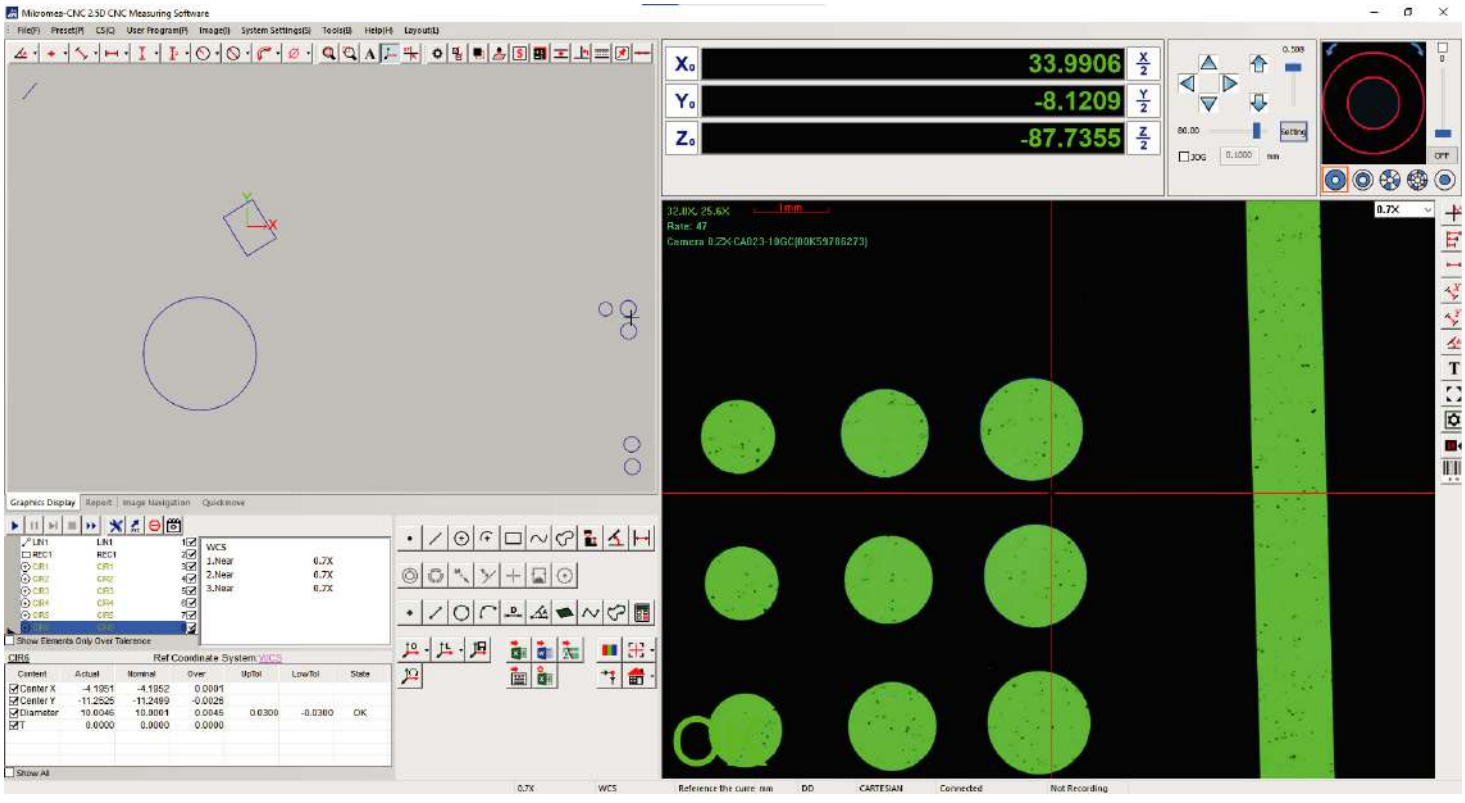
Measuring Software



●The software supports the measurement of various geometric elements, including points, lines, circles, arcs, ellipses, rectangles, etc. For each element, it provides a variety of measurement methods, such as overall edge search, segmented edge search, and multiple point collection methods, which can meet different measurement needs;

●It has both mechanical coordinate system and workpiece coordinate system, and users can freely establish and switch workpiece coordinate system according to their needs;

●It provides a variety of motion control methods, such as motion control panel, image area operation, fixed coordinate point movement, etc., which can flexibly control the movement of the machine;

●The map navigation function is powerful and suitable for positioning large-size workpieces or work-pieces with a large number of similar features;

●The pixel correction methods are diverse, such as four-circle correction, single-circle correction, etc.;

●The software supports light sources with various lighting modes, and provides manual and automatic focus functions to obtain clear images for measurement;

●It has practical measurement functions, such as element translation array measurement, imported CAD graphics measurement, scanning function, etc., which can improve measurement efficiency and scope of application.

Accessory

Control handle: Users can control the working table and Z axis by the handle, and can also lock the X or Y axis through the button, which is convenient for users to control the platform movement in a single direction.

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Technical Specification

Model	**Manual Zoom Lens**	VME-3020	VME-4030
	Auto Zoom Lens	VMK-3020	VMK-4030
2.5D Model		VME-3020/VMK-3020	VME-4030/VMK-4030
3D Model		VME-3020P/VMK-3020P	VME-4030P/VMK-4030P
Workbench	**X, Y axis travel**	300x200mm	400x300mm
	Z axis travel	200mm (focusing and auxiliary measurement)	
	Workbench size	360x260mm	460x360mm
	Transmission type	X, Y, Z axis screw drive	
Digital Measuring System		Optical scale resolution: X, Y, Z axis 0.001mm	
		RS100, connect with PC via USB	
		Professional software for data processing (standard)	
Imaging System		High resolution CCD color camera	
		0.7~4.5X zoom lens, total video magnification is 23.5~148X	
Light Source System		The light adopts 8-zone LED cold light source, and each section is independently controlled. The contour light is LED transmission parallel light source, and 256 levels of brightness can be adjusted.	
Optical System	**Image Sensor**	1/2" color CCD industrial camera	
	Objective	Automatic zoom lens	
	Magnification	Optical magnification: 0.7-4.5X	
	Working distance	Image magnification: 20-148X	
	(standard)	92mm	
Object Field		11.1~1.7mm	
Motion Control		Patented CNC servo motion control system	
Speed	**X, Y axis(mm/s)**	200	
	Z axis(mm/s)	50	
Measurement Software		Mikromea-CNC 2.5D CNC Measuring Software	
Working Environment		Temperature 20°C±2°C, temperature change <2°C-hr, humidity 30~80%	
		Vibration <0.002g, less than 15Hz	
Power Supply		AC 100~220V 50/60HZ 10A	
Machine Dimension(L×W×H)		750x520x980mm	1000x620x990mm
Net Weight		240kg	280kg

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Technical Specification

Product Name	Measuring Software
	Mainframe/Dell PC System
	Linear Scale/Calibration Block
	CCD Camera/Video Capture Card
	Scale Transfer/Movement Control Card
	100mm Length Block(3d)
	Manual Coaxial Zoom Lens
	48-Division Led Illunination
	Renishaw Probe MCP-K2(3D)