MIDLAND METROLOGY LTD

VMM-3020

CNC Video Measuring System (High Precision: 2.5um)

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Product Features and Application

●VMM-3020 is a high-precision and high-efficiency optical measuring instrument composed of precision mechanical structures such as a high-resolution CCD color camera, a continuously zoom magnification objective lens, a color display, a video cross line generator, a precision optical scale, a multi-functional data processor, 2D data measurement software, and a high-precision workbench. It mainly conducts two-dimensional measurements and can also perform three-dimensional measurements.

●It is widely used in various precision industries, such as the precision processing industries of electronic components, precision molds, precision cutting tools, springs, screw processing, plastics, rubber, oil seal valves, camera parts, bicycle parts, automotive parts, conductive rubber, PCB processing, etc.

●It is one of the indispensable measurement devices in the metrology rooms, laboratories, and production workshops of industries such as machinery, electronics, instruments, watches, light industry, and plastics, as well as in colleges and universities, research institutes, and metrology verification departments

Product Features

●Fully auto control via a mouse and a joystick, simple and easy to use, highly efficient, good stability.

●It can generate tasks for fully automatic batch measurement and supports both automatic and manual interactive operations.

●Automatic lens calibration eliminates cumbersome full calibration steps.

●The light source can be automatically controlled, and automatic lighting is supported.

●Automatic control for each section of contour light
5 rings and 8 sections as for surface light .

●Quick and automatical focus and with function of measuring height by focusing .

●DXF drawings can be imported, and it can import and export with CAD, enabling graphic processing.

Product Application

●In the field of electronic manufacturing, it can measure the dimensions of electronic components with high precision and detect the quality of PCB boards, ensuring the reliability of electronic products.

●In the field of machining, it can accurately detect the dimensions of complex parts and the condition of cutting tools, contributing to the improvement of machining accuracy and effectiveness.

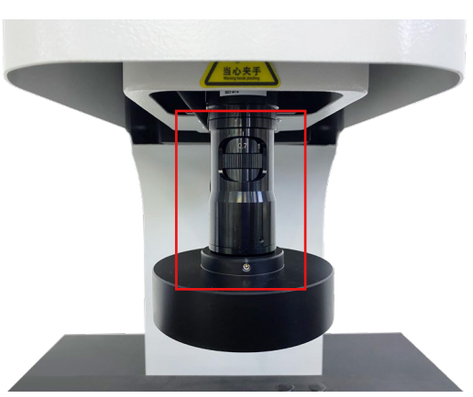
●In mold manufacturing, it comprehensively inspects the mold cavities and provides a basis for their repair and improvement, ensuring the molding quality of products and prolonging the service life of molds.

●In automobile manufacturing, it precisely measures automotive parts and the appearance of the vehicle body, guaranteeing the performance and appearance quality of automobiles.

●In the fields of scientific research and teaching, it meets the requirements of precise measurement in scientific research and can also be used for teaching demonstrations and training.

Machine Instructure

1.Automatic zoom lens 2.Upper Light Source 3.Bottom Light Source 4.Indicator Lamp
5.Instrument Switch 6.Emergency Stop Button



Automatic Zoom Lens

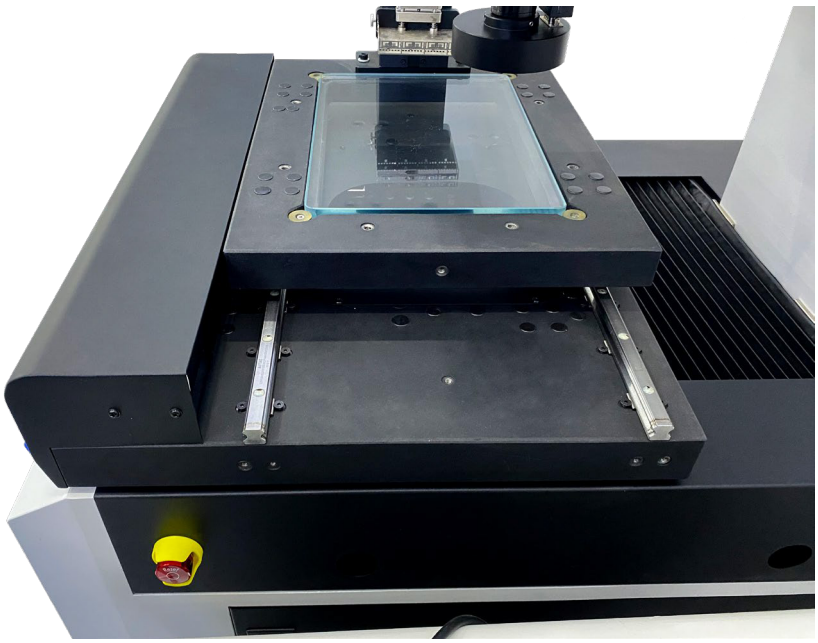
Bottom Light Source

Upper Light Source

Indicator Lamp

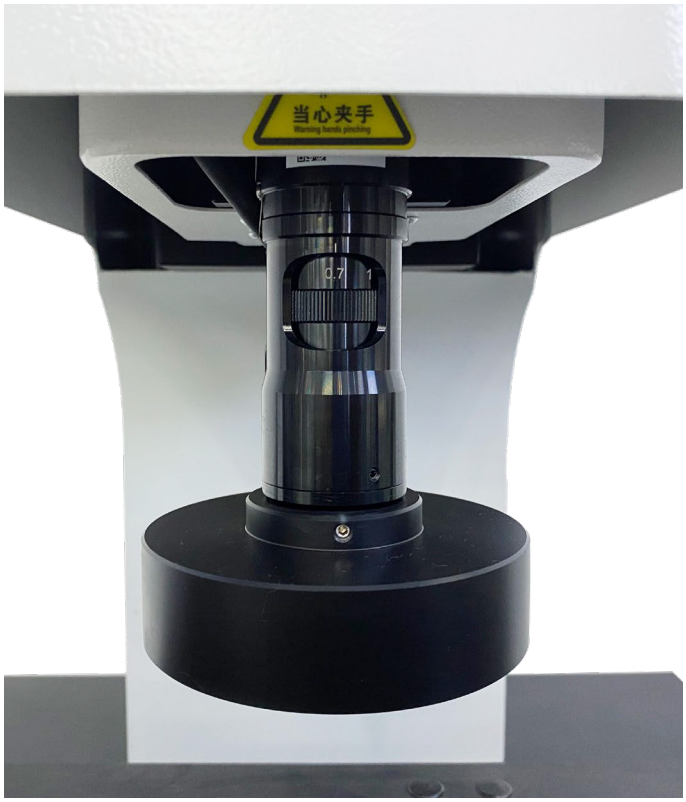
Instrument Switch

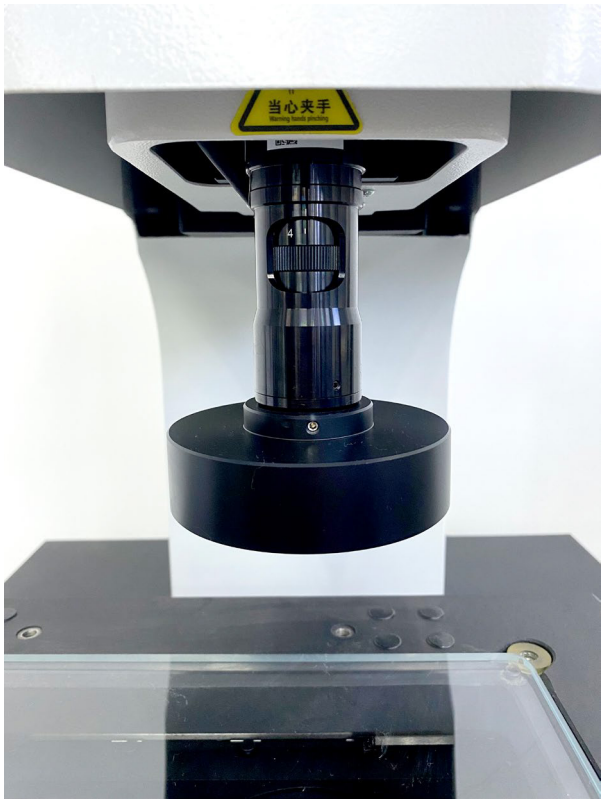
Instrument Configuration



●Equipped with a high-precision linear scale, with resolution 0.0005mm, which can meet the requirements of various high-precision measurement tasks.
●V-shaped high-balance cross guide rails effectively reduce vibrations and offsets during the movement process, ensuring the stable operation of the mounted optical measurement components.
●By adopting advanced optical and electronic technologies, it has good stability and reliability. During long-term use, the measurement accuracy of linear scale will not be affected by environmental factors such as temperature, humidity, and vibration.
●Fast response speed and can provide real-time feedback on the position information of workbench, enabling the control system to respond quickly and achieve precise measurement and positioning of workpiece.
●Simple to install and maintain, without complex mechanical structures and adjustment processes.
●The transmission adopts precision linear guide rails and grinding-grade ball screws to ensure accuracy of the movement system.
●CNC servo motor realizes high-precision control, ensuring the accuracy of the measurement data and high repeatability accuracy.
●It is easy to program and operate, can achieve auto measurement according to requirements, convenient and easy to use.
●It is driven by German Bruker DC precision servo motor (with a brake).

Observation System





●0.7~4.5X automatic zoom lens has a total video magnification of 20~180X. The wide range of image magnification enables the instrument to adapt to various measurement tasks and workpiece sizes. Whether it is a large mechanical part or a tiny electronic component, the best measurement results can be obtained by adjusting the magnification.

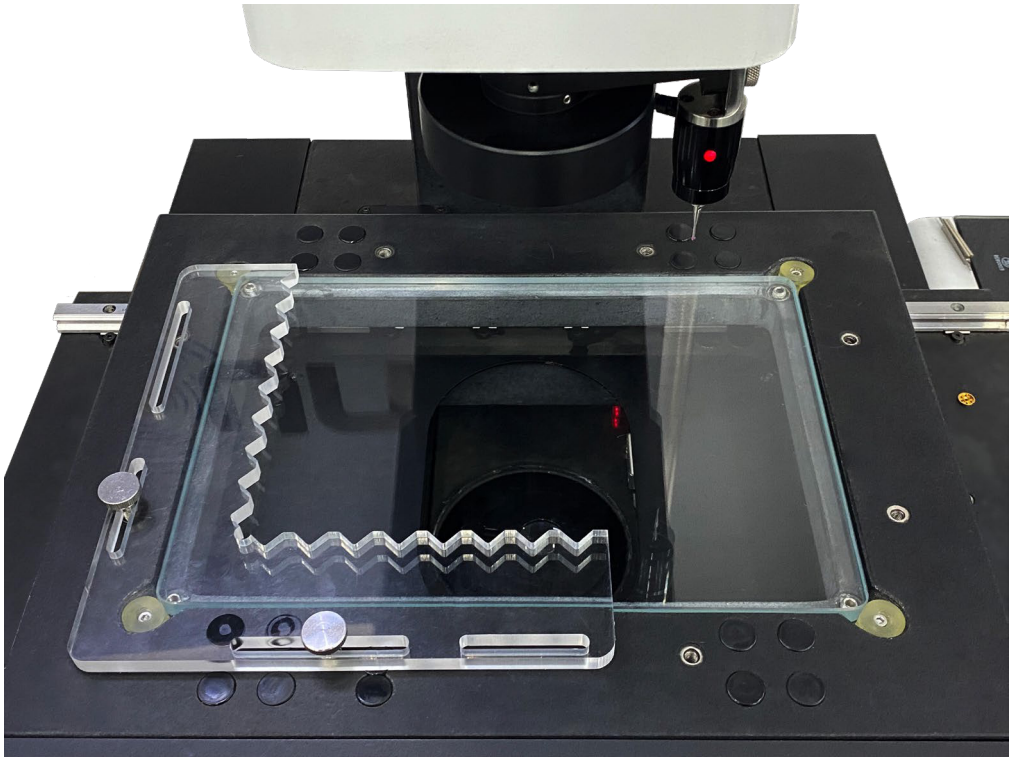
●Auto zoom lens has a rapid response, allowing for effortless zooming operations and improving measurement efficiency.

●Large zoom range meet the focal length requirements for measuring objects of different sizes and details.

●High imaging quality relying on precise optical design and coating technology

●High level of intelligence and strong stability, reducing measurement errors and maintain a stable imaging effect.

Working Stage



●Granite precision is grade 00, with a flatness of 3μm, physical stability.
●It can be adapted to a large number of types of measured objects. Small electronic components, such as mobile phone motherboards, chips, etc., or some medium-sized mechanical parts and mold samples, such as small hardware stamping parts, micro mold inserts, etc., they can all be well placed on the workbench for measurement.
●In the field of machining, for some parts with slightly larger sizes and metal mold components with higher density, as long as their weight is within the limited load range, they can be stably placed on the workbench for measurement work. There is no need to worry that the workbench will shake, deform, etc. due to insufficient load-bearing capacity, which will affect the normal progress of the measurement.

Illumination System

Surface Light

Contour Light

●Surface light adopts 5-ring and 8-zone LED circular cold light source, which can provide all-round and highly uniform illumination for the measured object.
●Contour light adopts an LED circular cold light source, which can clearly outline the contour of the measured object.
●LED transmitted parallel light source has high stability and consistency and can provide a reliable lighting effect. Compared with traditional light sources, the LED light source has a longer service life, lower energy consumption, and higher stability, reducing measurement errors caused by changes in the light source.

Instrument Accessory

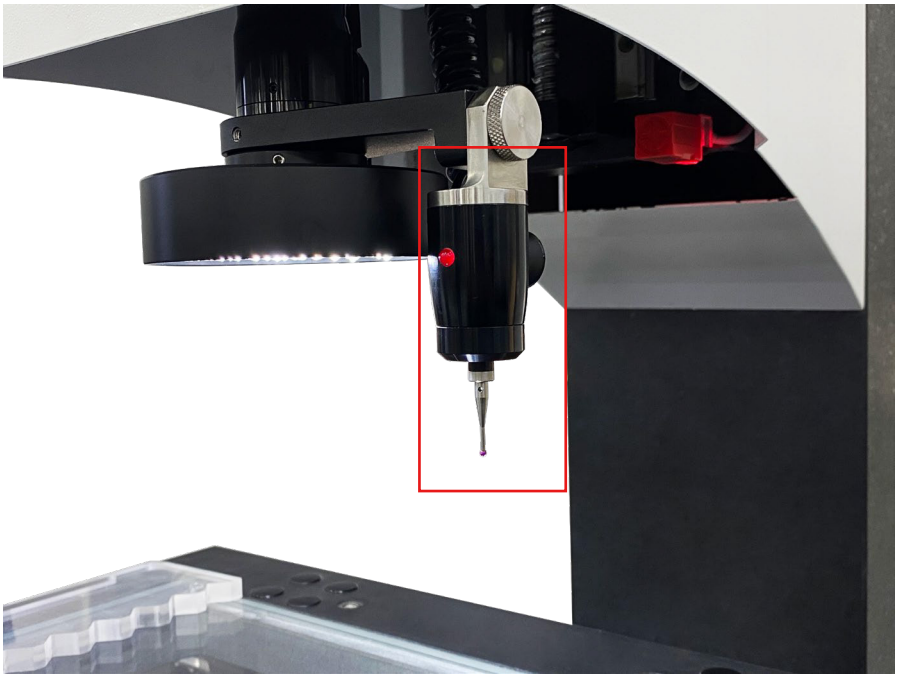
Joystick

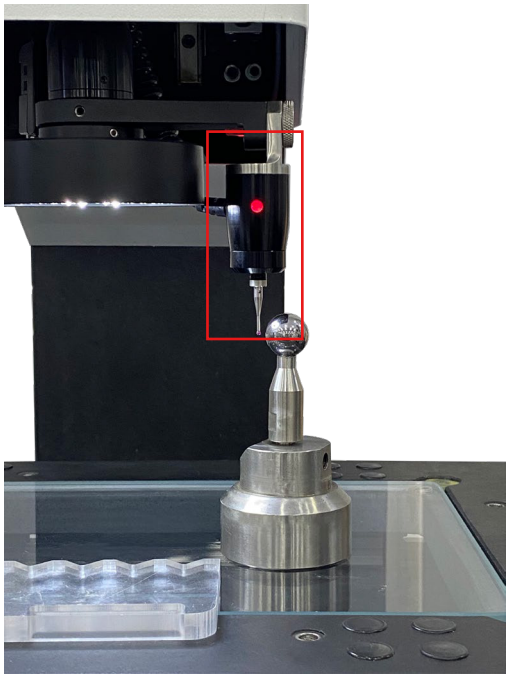
●Users can control the work platform and the Z-axis through joystick. They can also lock the X or Y axis by pressing buttons, which is convenient for users to control the platform movement in a single direction.

●The joystick enables precise operations, such as precise focusing and fine-tuning the position of the measurement point.

●By using the joystick, users can quickly switch the measurement mode and start the automatic measurement program. Cooperating with the instrument, they can rapidly complete the measurement of different parts, greatly shortening inspection time.

Instrument Accessory





Probe

●With the help of the high-precision sensing of the probe, users can measure the contours and dimensions of complex workpieces more accurately, achieving a qualitative improvement in measurement accuracy.

●It can quickly complete the measurement of multiple parts without frequent manual intervention, greatly improving the inspection efficiency.

●The measurement data of the probe and the image data of the instrument are effectively integrated. Through the analysis of the instrument's data processing system, a more comprehensive and accurate workpiece inspection report is generated.

Technical Specification

Product Name		CNC Video Measuring System(Precision 2.5um)		
2.5D Model		VMM-3020	VMM-4030	VMM-5040
3D Model		VMM-3020P	VMM-4030P	VMM-5040P
3D Measuerment		3D Module and UK Renishaw Touch Probe		
Working Stage		300x200mm	400x300mm	500x400mm
	Z-axis Travel	200mm(For Focusing and Auxiliary Measurement)		
	Driver Type	Lead-screw Drive for X,Y,Z-axis		
Digital Measuring System		Linear Resolution:X,Y,Z-axis 0.5um		
		Precision:X,Y-axis≤(2.5+L/200)um, Z-axis≤(4.0+L/100)um		
Video System		1/2" High-resolution CCD Color Camera		
		0.7~4.5X Electric Motorized Zoom Lens 6.5:1		
		Total Video Magnification is 20~180X(customizable)		
Magnification		Optical:0.7~4.5X, Video:28~182X		
Illumination	**Surface**	LED Circular Cold Light Source with Lamp Beads Made in USA5 Rings and 8 Zones, With Each Section Independently Controllable.		
	Contour	LED Circular Cold Light Source with Lamp Beads Made in USA Brightness Can be Adjusted in 256 Levels.		
Stage Max load Capacity		50kg		
Movement Speed		X,Y-axis:380mm/s Z-axis: 100m/s		
Working Distance		108mm		
Movement Control		CNC Servo Motion Control System		
Software		Mikromea-CNC 2.5D CNC Measuring Software		
Working Environment		Temperature: 20°C+2°C;		
		Humidity: 30%-80%		
		Vibration < 0.002g,< 15Hz.		
Power Supply		AC 100~220V 50/60HZ , SINGLE pHASE 700W		
		560x560x960mm	1000x620x990mm	1300x750x1000mm
Machine Net Weight		240kg	280kg	360kg

Standard Delivery

Product Name	Product Name	Product Name
Mikrosize Measuring Software	Hikvision CCD Color Camera/Video Capture Card	Auto Coaxial Zoom Lens
Mainframe/Dell PC System	Scale Transfer /Movement Control Card	48 –Division LED Illumination
0.5um Linear Scale/Calibra-tion Block	100mm Length Block(3D)	Renishaw Probe MCP-K2(3D)
Joystick	Slide Rail	X,Y,Z-axis Motor