

MIDLAND METROLOGY LTD

# VMA-5040

Manual Video Measuring System



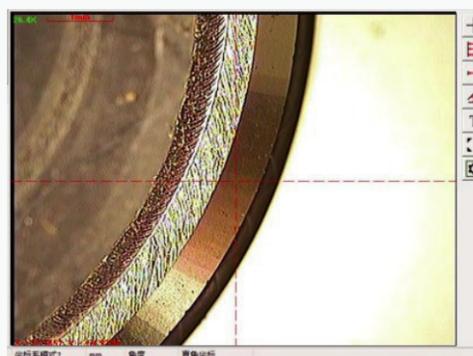
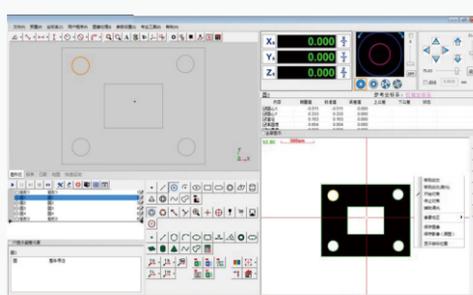
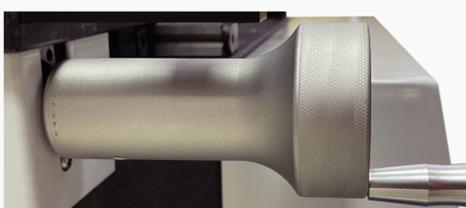
# Product Features and Application

## Product Features

- Adopting high-precision Qinghuanggangyan "00" grade workbenches and columns, which are characterized by high precision, corrosion resistance, high strength, and no stress deformation, ensuring high stability of the machine;
- The X and Y axis are equipped with high-precision toothless rods and bearings imported from Germany, Z axis is driven by a T-shaped screw with a fast moving locking device special process design ensures smooth and fast movement without any gaps, jumping or rebound errors;
- The Video Measuring System adopts imported high-quality optical components, which are coated with multiple layers of optical coating to ensure minimal optical attenuation and clear image quality without distortion;
- Surface lights paired with laser indicators, the company's patented technology makes measurement more convenient and simple;
- Independently developed VMS measurement software with automatic edge finding, powerful calculation and measurement functions, diversified output reports to meet different customer needs, and can be upgraded and maintained for free;
- Optional simple probe, coaxial lens, metallographic microscope module;

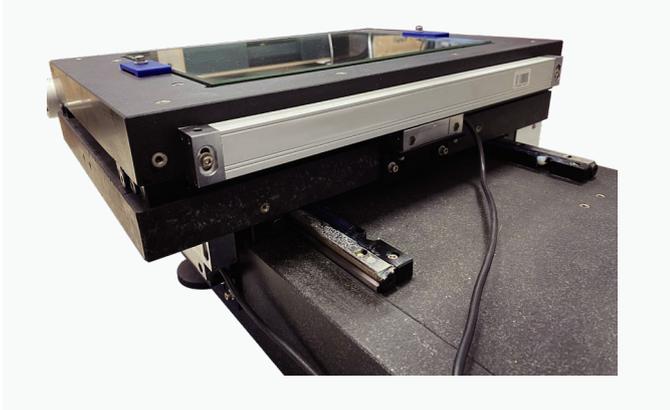
## Product Application

- Magnetic materials: The measurement of magnetic materials with large quantities and small surface shapes is complex. The automatic image registration function of this VMS does not require the positioning of workpieces and fixtures. With just one click, multiple workpieces can be measured simultaneously and the results can be output quickly;
- Mechanical processing: The VMS measuring software has automatic edge grabbing and other boundary extraction functions, combined with lens type wheel light and horizontal light scanning wheels, making the workpiece shadow free and the contour clearer, solving the problem of contour extraction for cylindrical products, and making the measurement more accurate;
- LCD display: widely used in the assembly, inspection, and related material testing and manufacturing of electronic products such as LCD TVs, computers, and mobile phones; High precision, stable measurement technology and professional expertise involve various aspects of LCD manufacturing, promoting statistical control (SPC) suitable for the production characteristics of enterprises to improve and control quality;
- Glass cutting (manufacturing of mobile phone display screens): Automatic measurement tasks can be set according to the size requirements of the workpiece for batch measurement; The automated instrument has undergone 168 hours of fatigue testing and has high reliability, providing customers with non-stop measuring equipment to ensure measurement accuracy;
- Backlight module: adopting an automatic bridge structure, designed for large-sized measurement surfaces such as back-light modules, perfectly coexisting high precision and large range;
- PCB design, manufacturing, and insulation materials: For PCB design and manufacturing, a five ring eight zone surface light source is used, with 256 level adjustable brightness and enhanced performance such as coaxial light and automatic lighting, to solve the measurement bottleneck of traditional VMS and ensure the quality of printed board design and manufacturing;
- For soft, thin, and easily foldable insulation materials, the innovative concept of fast flash measurement with a large field of view is integrated, enabling one click rapid measurement without the need for coordinate system alignment, improving measurement efficiency;
- Lead frame and terminal connectors: For the lead frame, it can be directly imported into measurement software based on CAD drawings, aligned to obtain geometric measurement values, simplify complex workpiece measurement, reduce programming difficulty and workload, and improve production efficiency;
- For terminal connectors, measurement software has developed replication functions for array arranged products, including translation replication, rotation replication, coordinate system replication, etc., greatly saving measurement time;
- Precision hardware: meeting the requirements for precision, automation, and high-speed precision hardware, adapting to the needs of continuous product updates and intensified market competition;



# Instrument Configuration

X,Y and Z axis are equipped with high-precision linear rulers



- Very high measurement accuracy, with a resolution of 0.001mm, which can meet the needs of various high-precision measurement tasks;
- Adopting advanced optical and electronic technologies, with good stability and reliability; During long-term use, the measurement accuracy of the linear ruler is not affected by environmental factors such as temperature, humidity, and vibration, can maintain stable measurement performance;
- The response speed is very fast, which can provide real-time feedback on the position information of the workbench, enabling the control system of the video measuring system to respond quickly and achieve accurate measurement and positioning of the workpiece;
- Installation and maintenance are relatively simple, without the need for complex mechanical structures and adjustment processes

# Optics System

Image sensor , objective lens , adapter 1X

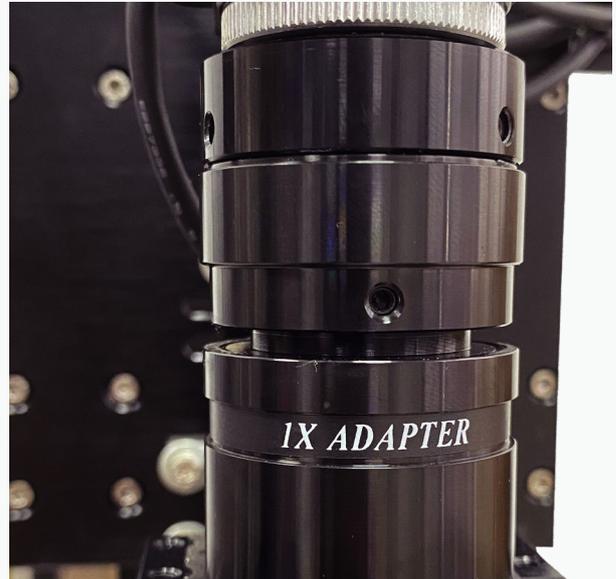
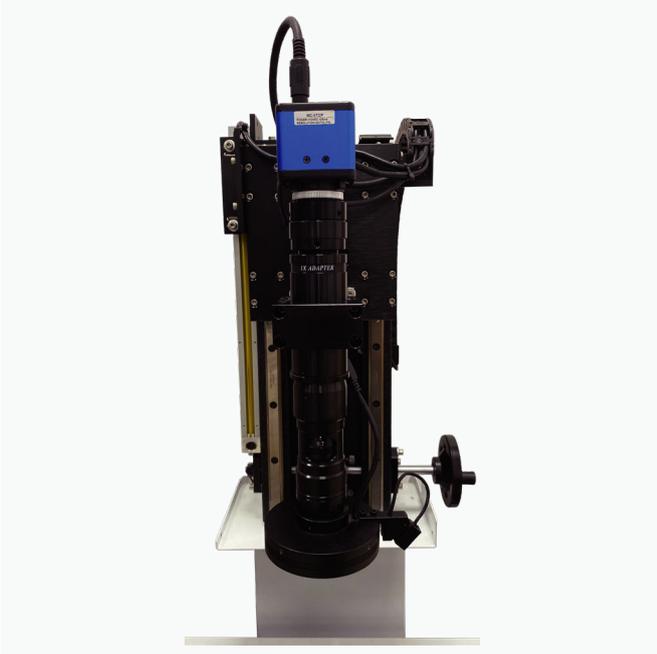
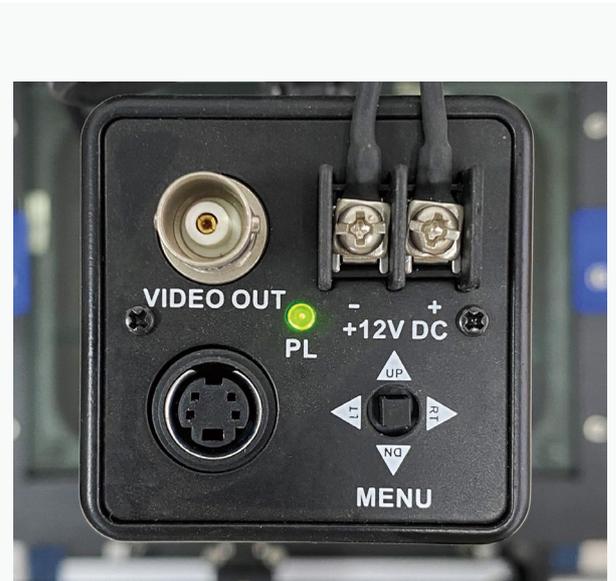


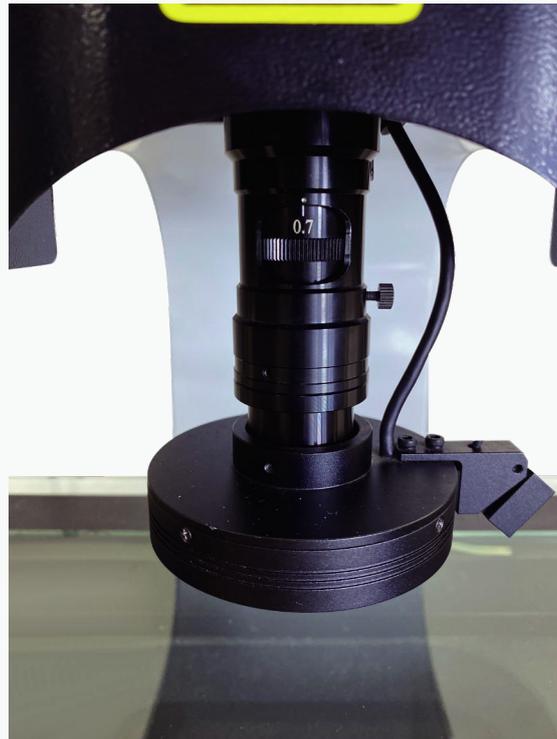
Image sensor : 1/3" color CCD industrial camera ; Image magnification : 20-148X



- Providing high-resolution images , high pixel density can capture the subtle details of the object being measured, whether it is complex geometric shapes, small surface imperfections, or fine pattern textures, all of which can be presented clearly;
- Color CCD sensors can accurately reproduce the true color of the object being measured;
- As an industrial grade camera, it has higher stability and durability; Capable of stable operation in various harsh industrial environments, such as high temperature, high humidity, high dust, and high vibration;
- The range of image magnification enables the video measuring system to adapt to various measurement tasks and workpiece sizes; both large mechanical parts and small electronic components can achieve optimal measurement results by adjusting the magnification;

# Optics System

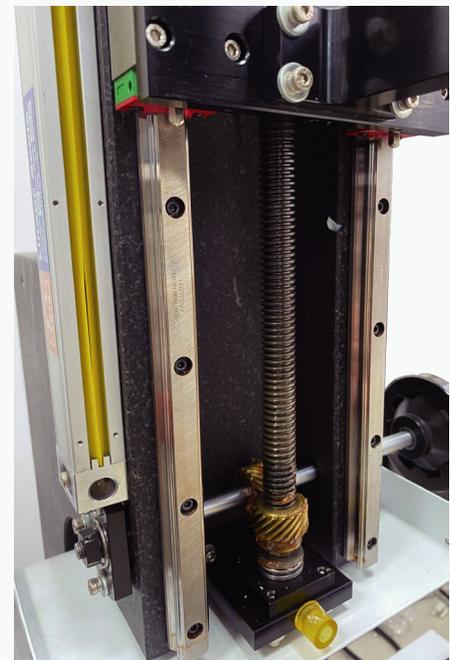
**Manual position zoom lens,optical magnification:0.7-4.5X**



- Providing clear and accurate image,measurer can observe the detail and features carefully of the tested object;
- Manual position zoom function allow users to quickly and conveniently adjust the magnification according to the actual measurement object and task requirements;
- Manual position design makes the zoom operate more directly and convenient;users can switch the needs magnification rapidly by simple rotation or toggle operation,without complexed electronic setting or software operating;
- Manual position zoom lens generally adopt high quality optical material and precise mechanical system,with excellent stability and durability

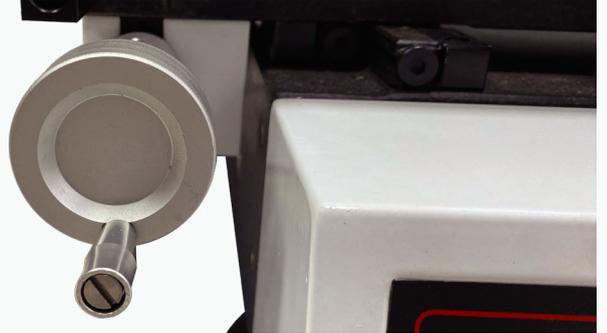
# Drive System

## X. Y-axis light rod drive, Z-axis T-shaped screw drive



- The high-precision toothless light rod imported from Germany has extremely high straightness and surface smoothness, which can ensure that the movement accuracy of the VMS in the X and Y axis directions reaches a very high level;
- The design of the toothless light rod makes the movement of the VMS in the X and Y axis directions smoother and smoother, without the stuttering and jumping phenomena that may occur in traditional screw transmission;
- The combination of imported bearings and high-precision toothless rods further improves the stability and lifespan of the VMS;
- The Z-axis adopts a T-shaped screw drive, which can achieve precise control of the height direction of the VMS;
- The equipped fast moving locking device brings great convenience to the operation of the Z-axis; The locking device can ensure the stability of the Z-axis and prevent accidental movement from affecting the measurement results.

# Working Platform



## X. Y-axis light rod drive, Z-axis T-shaped screw drive

- Handwheel adjustment allow operators to movement control more precisely ;
- Operators can feel the movement feedback of working stage when turn the handwheel ;
- According to the different measuring tasks and artifacts features to adjust the handwheel , whether it needs fast positioning or slow fine adjustment, the handwheel can meet the demand;
- Handwheel adjustment does not rely on the electronic control system, even in the case of electronic equipment failure or instability, can still be used in the measurement operation;



- The combination of fast movement and handbrake greatly improves the measurement efficiency; the operator can move the platform to the target position in a short time, then quickly fix through the handbrake, without waiting for the platform to move slowly in place, saving the measurement time;
- Handbrake can prevent efficiently the incident movement during working stage measuring process

# Illumination System



- The surface lamp is designed with the ring cold light source of LED 5 ring 8 area, which can provide all-directional and highly uniform lighting for the measured object;
- The contour light uses the LED transmission parallel light source, which can clearly outline the frame of the measured object;
- The LED transmission parallel light source has high stability and consistency, which can provide reliable lighting effect. Compared with the traditional light source, the LED light source has a longer service life, lower energy consumption and higher stability, and reduces the measurement error caused by the change of the light source;
- Paired with laser sensors, laser sensors have extremely high measurement accuracy and can achieve measurement tasks that require small sizes and high precision;
- Laser sensor adopts non-contact measurement method, which will not cause any damage to the measured object;

# Specification

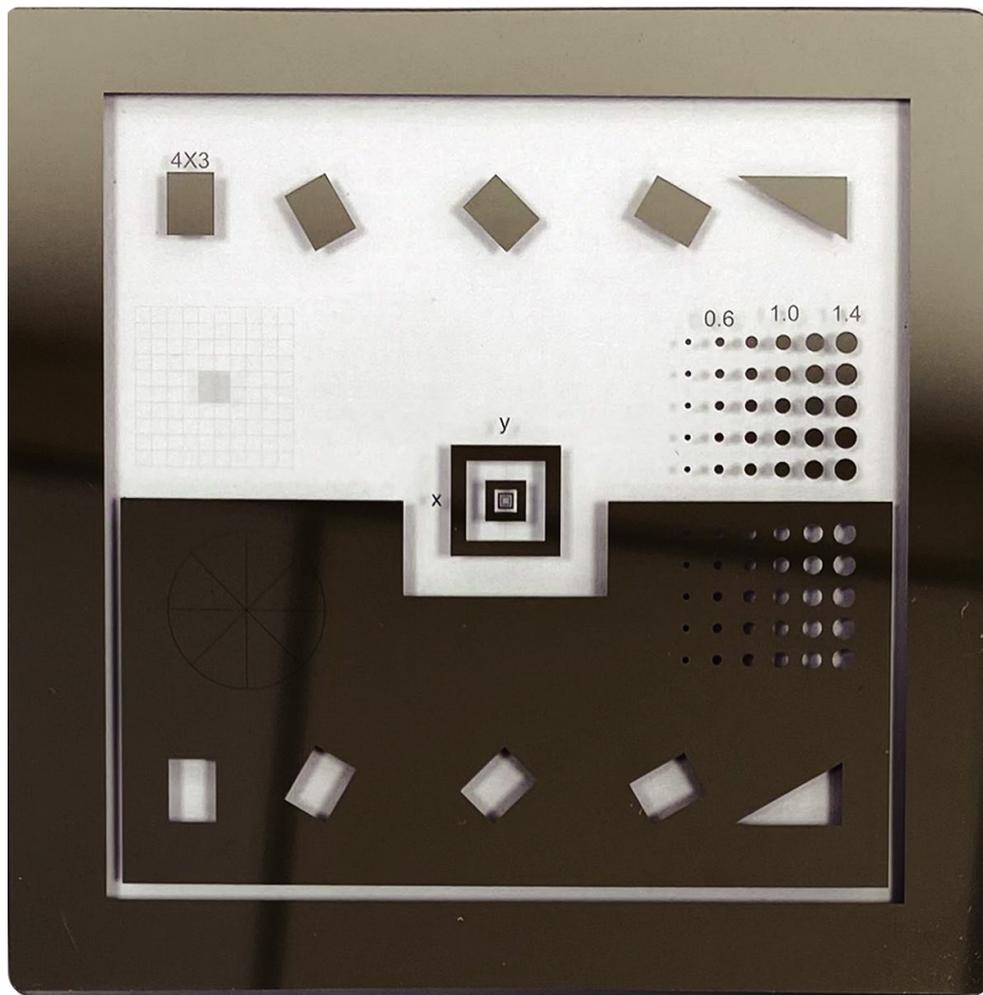
Product Name	Manual Video Measuring System
2.5D Model	VMA-5040
3D Model	VMA-5040P
X.Y.Z-axis Travel Distance(mm)	500x400x400
X,Y-axis Accuracy(um)	2.5+L/100
Image Sensor	1/3"Colorful CCD Camera
Objective Lens	Manual Position Zoom Lens
Video Total Magnification	Optic Zoom Lens:0.7~4.5x, Objective Lens:20~148x
Resolution (μm)	0.5
Standard Working Distance(mm)	92
Object View(mm)	8.1 ~ 1.3
Movement System	X,Y-axis:Polish Rod, Z-axis:T-type Screw Rod
Data Processor	RS-100
Illumination	Surface:8-division LED Cold Light Contour:Adjustable 256-grades LED Cold illumination
Measuring Software	VMA-5040 Mikromea-M 2.5D VMA-5040P Mikromea-M-P 3D Temperature: 20°C±2°C,
Working Environment	Temperature Variation<2 °C/hr,Humidity:30~80% Vibration<0.002g,15Hz
Power Source	AC 100~220V, 50/60HZ, 10A
Loading Weight of Working Stage(kg)	25
Machine Dimensions(mm)	830x1150x1600
Package Dimensions(mm)	1350x1350x1850
Net Weight (kg)	430
Gross Weight (kg)	530

# Standard Delivery

Mainframe/Dell PC System	Zoom Lens 0.7X-4.5X	LED Light Source
RS-100 Data Processor	1/3" CCD Camera	Mikrosize Measuring Software
Linear Scale	Calibration Block/Capture Card	Instruction Manual/Anti-dust Cover
Z-axis High Precision Linear Guide Rail	100mm Length Block(3D)	Renishaw Probe(3D)

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# Accessories



**Calibration Block**