Mikrosize®

VMA-2010

Manual Video Measuring System

Video

Contact us

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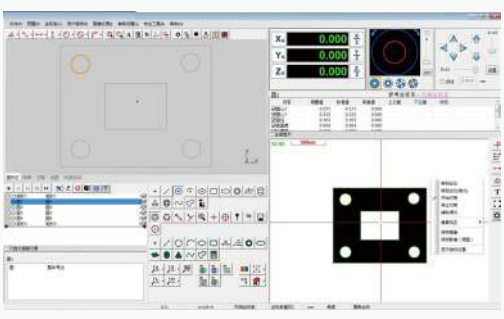
Product Features and Application

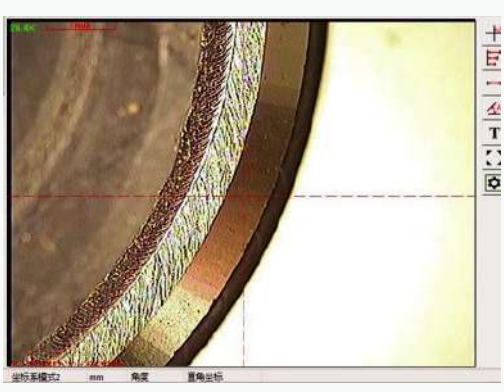
Product Features

- 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

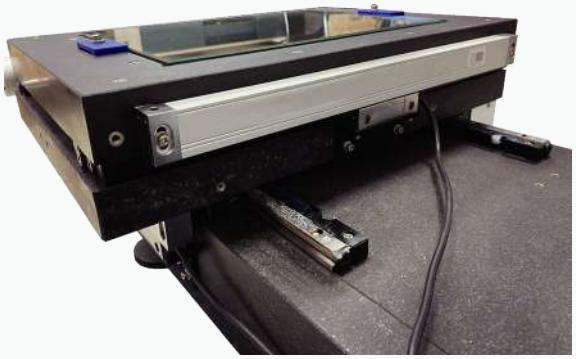
- Magnetic materials: The measurement of magnetic materials with large quantities and small surface shapes is complex. The automatic image registration function of this VMS does not require the positioning of workpieces and fixtures. With just one click, multiple workpieces can be measured simultaneously 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 backlight 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

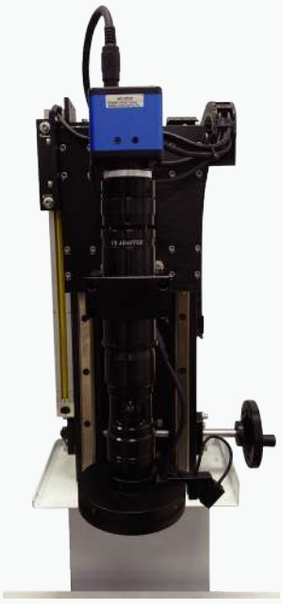
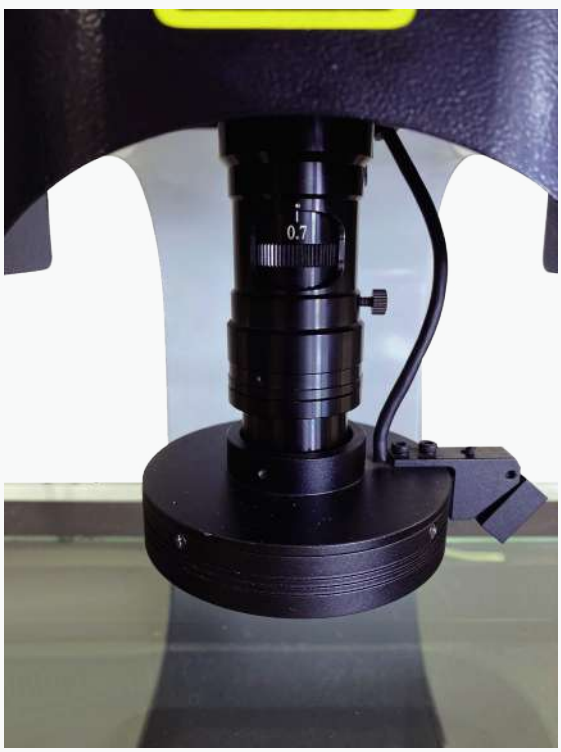


Image sensor：1/3” color CCD industrial camera；Image magnification：20-148X

- 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 wide 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

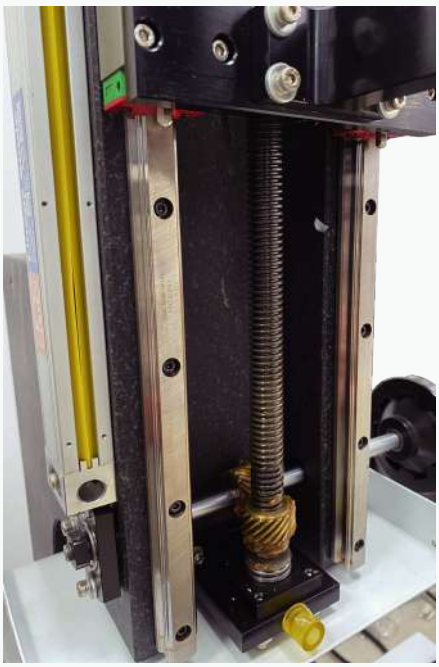
Manual position zoom lens,optical magnification:0.7-4.5X



- 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

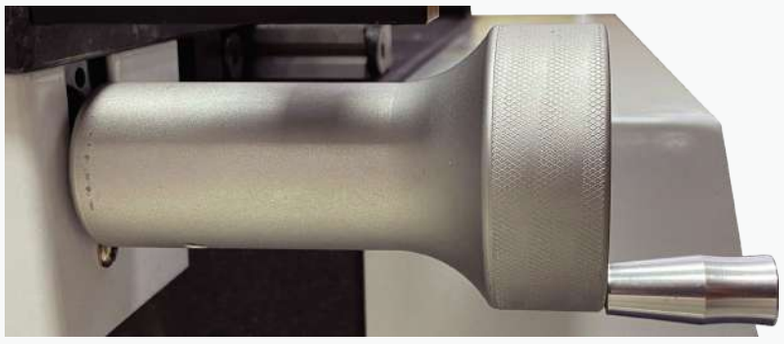
Drive system

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

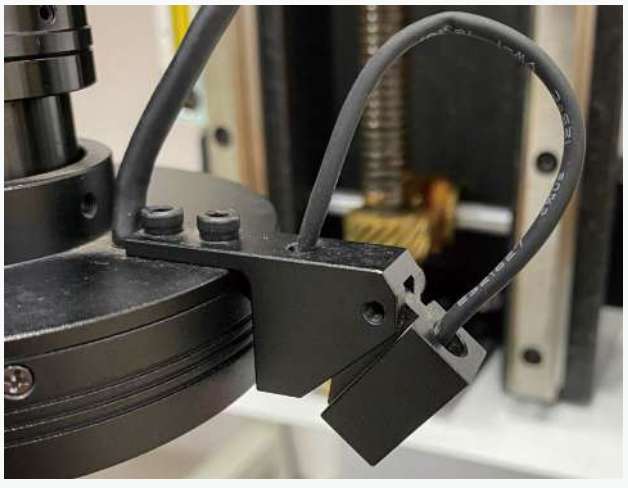


X. Y-axis light rod drive, Z-axis T-shaped screw drive

- 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-2010	
3D Model	VMA-2010P	
X.Y.Z-axis Travel Distance(mm)	200*100*200	
X,Y-axis Accuracy(μm)	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-2010	Mikromea-M 2.5D
	VMA-2010P	Mikromea-M-P 3D
Working Environment	Temperature: 20°C±2°C, 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)	550x750x1020	
Package Dimensions(mm)	1000x900x1230	
Net Weight (kg)	120	
Gross Weight (kg)	160	

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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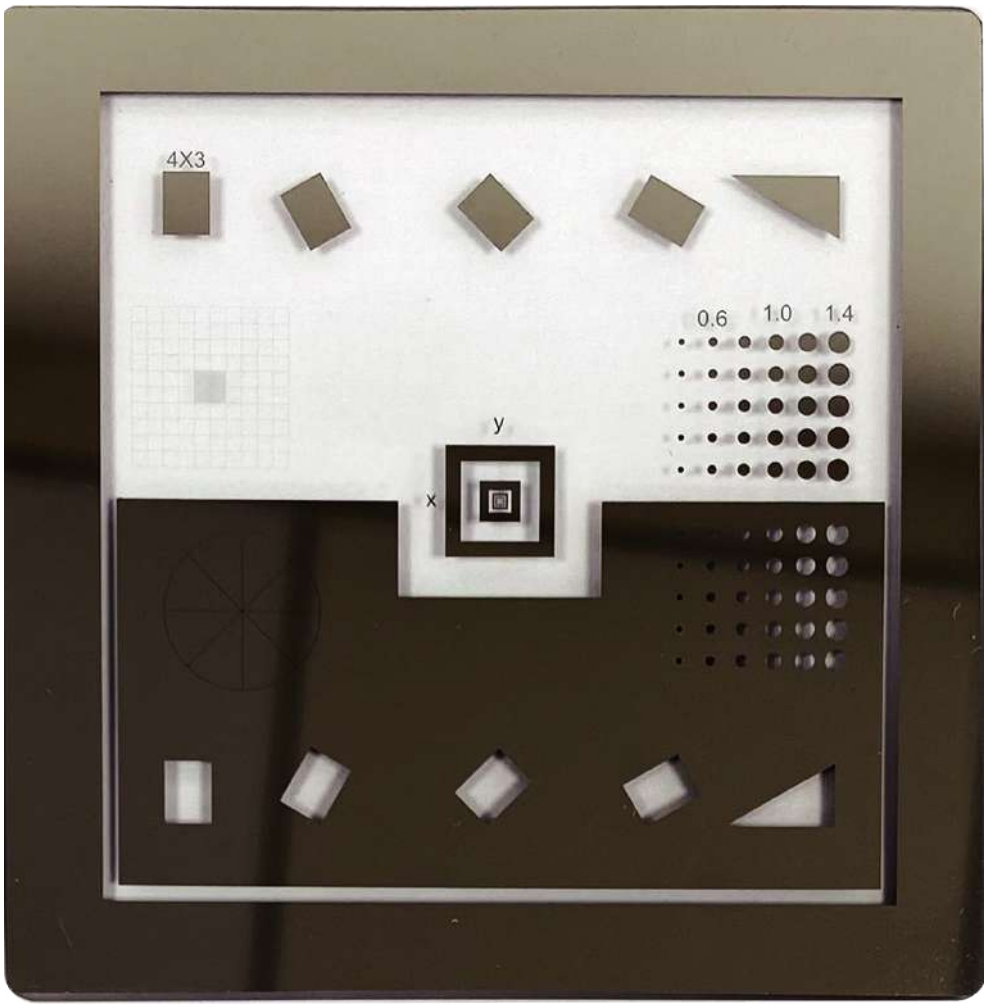
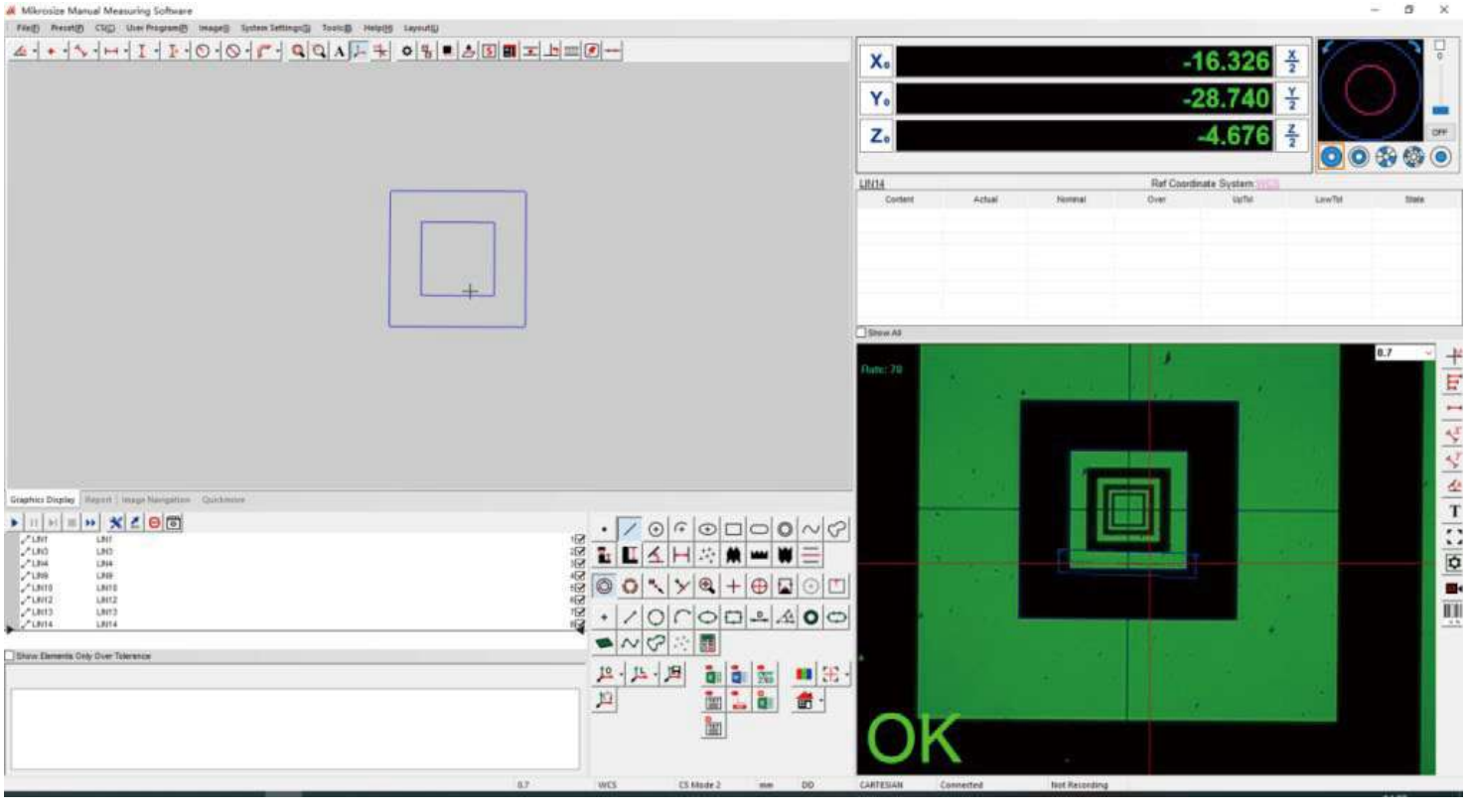
Accessory



Calibration block

Software Using



This Video Measuring System software has reasonable interface design, clear operation area, accurate focus, diverse and flexible motion control, accurate pixel correction, accurate element measurement, convenient data processing, practical element construction and preset, powerful coordinate system function, flexible user program, efficient measurement efficiency; advanced probe and laser measurement, personalized parameter setting, can meet the needs of different users, the overall function is comprehensive and practical;

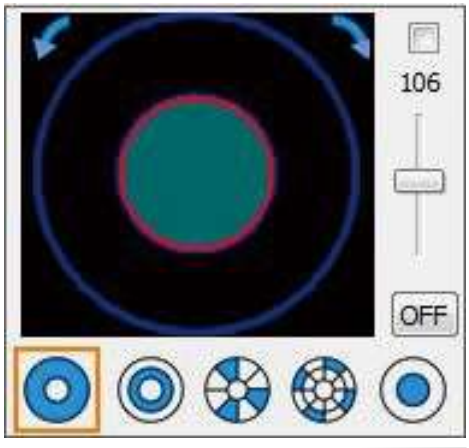
Many toolbars and functional areas are reasonable layout, such as the motion control panel is used for controller movement, the light source adjustment panel is convenient to adjust the light source, comparison inspection toolbar can be image contour feature comparison observation and measurement, users can quickly find the required functions, improve work efficiency.

Layout Introduction

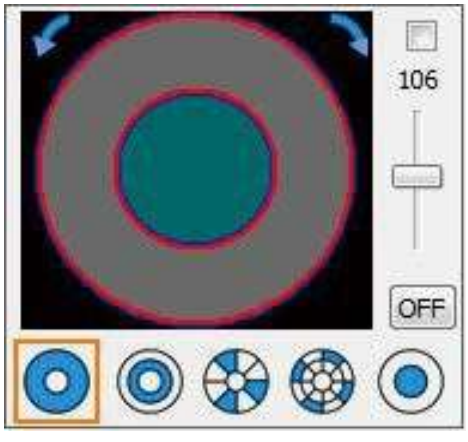
- Main menu bar: stores the main and infrequently used functions of the software; To keep the interface clean, many infrequently used functions can be found in the main menu bar;
- Image area: the area where images are displayed and element measurement operations are performed;
- Graphic area: The measurement results are displayed in a geometric manner in this area, which can support 2D and 3D graphic display, also known as the "CAD area";
- In addition, parallel to the graphics area are: map window, scanning window, report window, quad screen and fast motion, etc;
- Graphics area toolbar: a toolbar for annotating, observing, and other operations in the graphics area;
- Coordinate display area: Display XYZ three-axis grating ruler coordinate data;
- Motion control panel: controls the XYZ three-axis motion of the machine;
- Light source adjustment panel: adjust the brightness of contour bottom light, surface light, coaxial light, and turn on the laser indicator
- Comparative inspection toolbar: Compare and observe the contour features of the image area for measurement;
- User program toolbar: Users can perform operations such as running, stopping, and setting their programs on this toolbar
- Element list area: displays geometric elements extracted from measurements, such as "points", "lines", "circles", etc., also known as the "element display area";
- Result display area: Display the measurement results of each selected element in the form of specific data, such as "ruler over", "tolerance" and other information;
- Command display area: displays the composition of elements and coordinate systems, making it convenient for users to view;
- Measurement Element Toolbar: Select the type of element to be measured, such as point, line, circle, arc, etc;
- Measurement Method Toolbar: Select the measurement method for the element to be measured, such as overall edge searching, segmented edge searching, etc;
- Construction toolbar: Construct composite elements using measured elements;
- Coordinate toolbar: Create and save user-defined new coordinate systems;
- Export toolbar: Export result data in Excel, Word, CAD, TXT, and server formats;
- Image area dropdown menu: perform some simple and quick operations in the image area;
- Status bar: displays the current application parameters and program status information of the program.

Layout Introduction

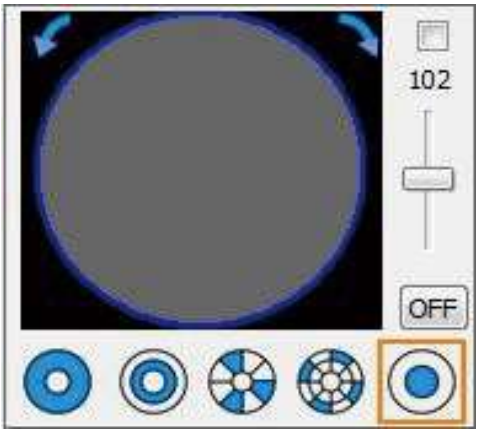
Dimming



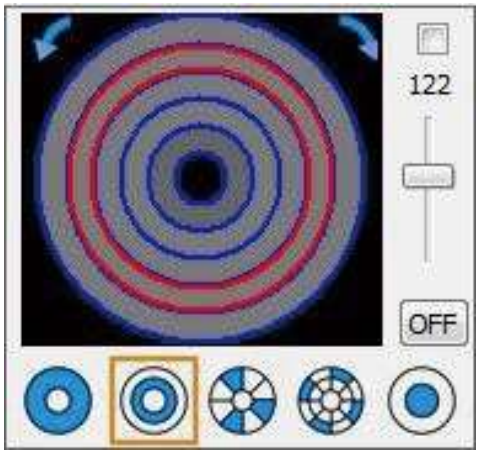
Adjust the contour backlight



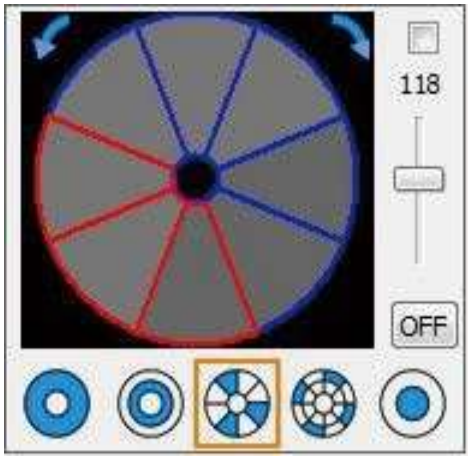
Adjust the surface light to full light



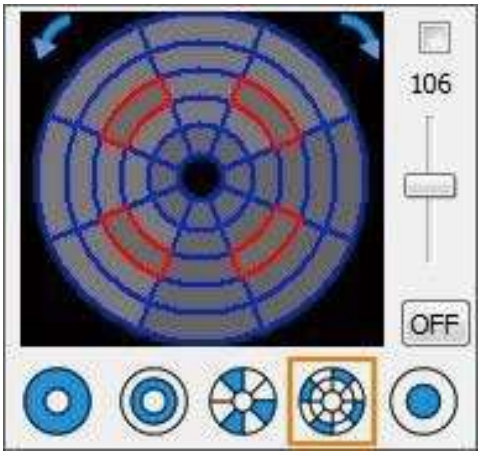
Adjust coaxial light



Adjust the surface light of a certain ring



Adjust surface light in certain areas



Adjust certain segments of surface light

Surface light is the 5-loop 8-area illumination

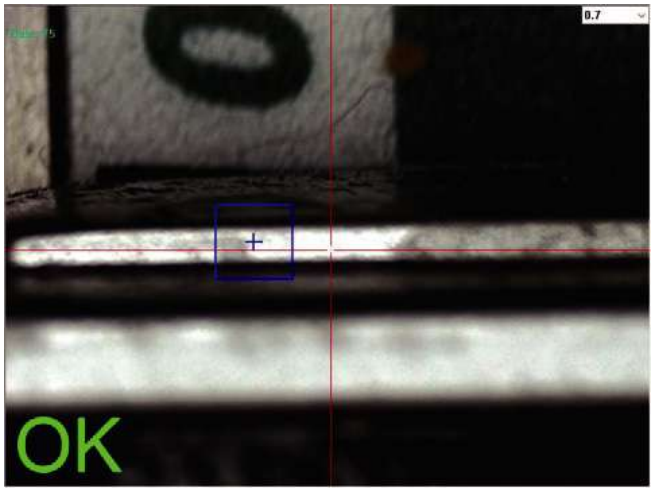
●Supports multiple lighting modes for illumination adjustment, providing detailed adjustment methods for different illumination (such as contour bottom light, surface light, coaxial light, etc.). Whether it is full light mode, ring light mode, or segment light mode, users can flexibly adjust the brightness of the light source according to their actual needs to obtain the best image effect.

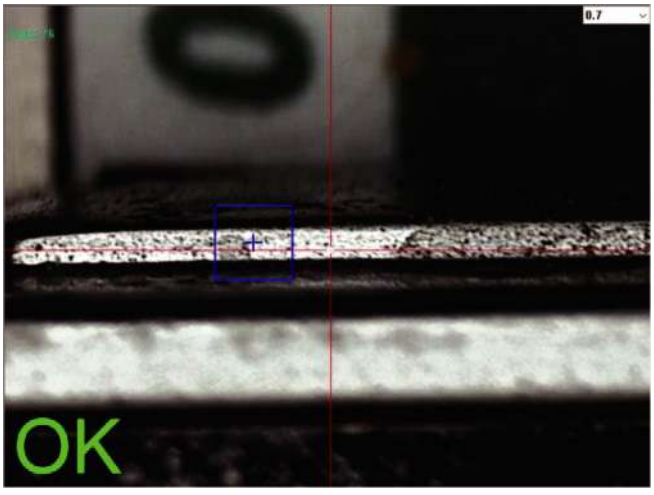
Focusing

Includes manual focusing and automatic focusing

Automatic Focusing Key

Focus chart





Move the box to the area that needs to be focused, click the left mouse button outside the focusing box, and the machine will automatically focus.

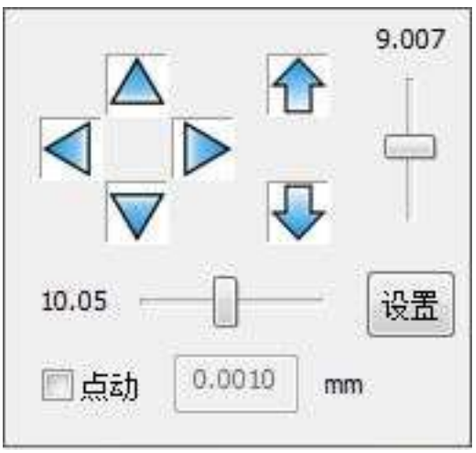
●The autofocus function is divided into manual and automatic autofocus. Manual autofocus is easy to operate, while automatic autofocus is automatically determined by software. During the autofocus process, users can adjust the position and size of the focus box, and the software can ultimately automatically move the Z-axis to find the clearest imaging position, improving measurement accuracy;

Motor Control

●The motor control panel provides a convenient operation mode for the CNC video Measuring System, which can control the XY axis movement through the arrow, the diagonal blank area, the Z axis movement, and can also adjust the three axis movement speed and point distance, to meet the needs of different users to control the movement of the machine;

●In addition to the control panel, the software also provides a variety of moving mode, such as through the image area moving (including the mouse key drag and right click "move here" operation), fixed coordinate point moving, moving to the element center, coordinate axis point and map navigation, etc., these ways make the user can choose the most suitable method according to the specific situation to locate the workpiece, improve the flexibility and accuracy of the operation;

Motor Control Panel



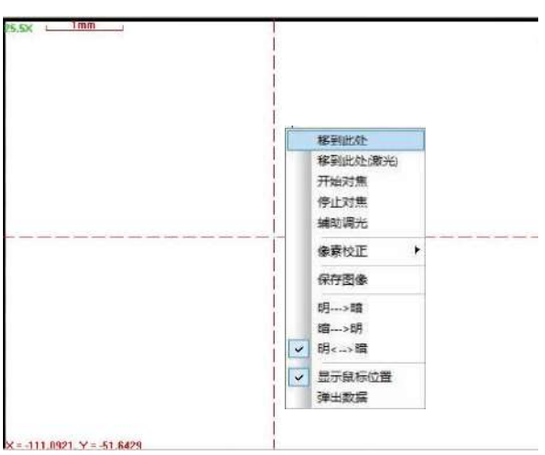
●Four arrows control the XY axis movement; two arrows control the Z axis movement;

●Four diagonal blank areas can control the oblique direction movement;

●The lower part is the Z axis motion speed adjustment; the right side is the XY axis motion speed coefficient adjustment;

●Three-axis motion speed setting; tick tick box;

Image Motion control



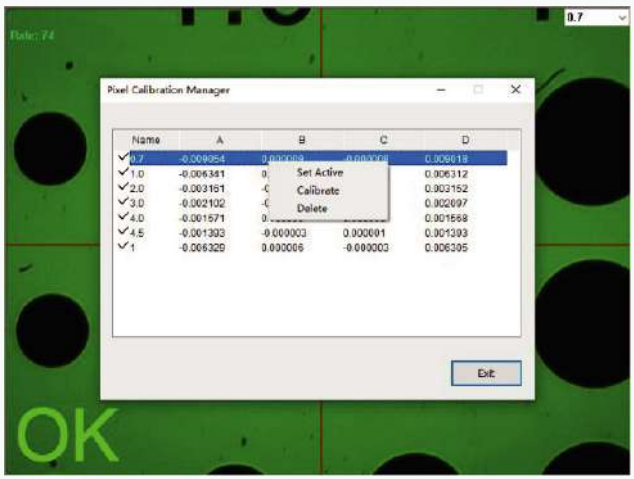
●Press the middle mouse key at any position in the image area, drag the mouse in any direction, and move the work table in the direction of the arrow;

●Right-click any coordinate point in the image area and select "Move here" in the drop-down menu, and the coordinate point will be automatically moved to the center of the crosshairs.

Pixel Correction

- The definition, necessity of pixel correction and various correction methods (such as four circles, single circle, line correction) are clarified, and corresponding correction methods are provided for different equipment conditions (such as whether the work table is mobile, whether with grating ruler, etc.) to ensure the accuracy of the measurement results;
- In the process of correction, both manual correction and automatic correction, there are detailed operation steps, including choosing the correction way, operation method, focus light, edge and save correction data,and can be for different lens magnification correction, can also manage correction data, convenient for users to call and view at any time.

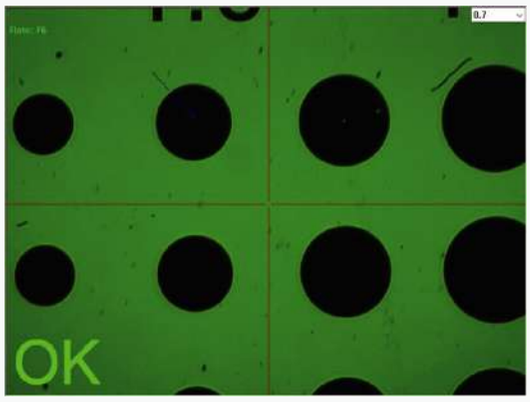
Pixel Correction



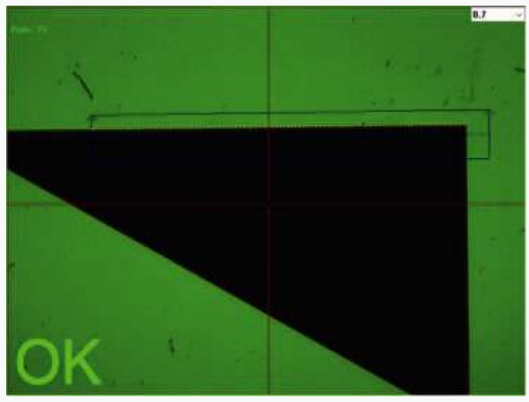
Element Measurement

- Comprehensive types of measurement elements: software supports measurement elements, covering points, lines, circles, circles, arcs, ellipses, rectangles, groove, ring, open curve, closed curve and other geometric elements; whether simple basic geometry, or complex curve and special shape, can be accurately measured, meet the requirements of different industries and measurement scenarios;
- The measurement methods are diverse and flexible;
- Data view intuition: the element list area lists the measured elements in order, click the element number to view the measurement results in the result display area, display some results by default, and select "All display" to view all the data, including the measurement value, standard value, error value, upper tolerance, lower tolerance, status and other information;
- Support multiple formats export: the software supports the measurement result data in EXCEL, WORD, TXT, DXF, IGS and other formats export, to meet the needs of different users for data processing and document format.

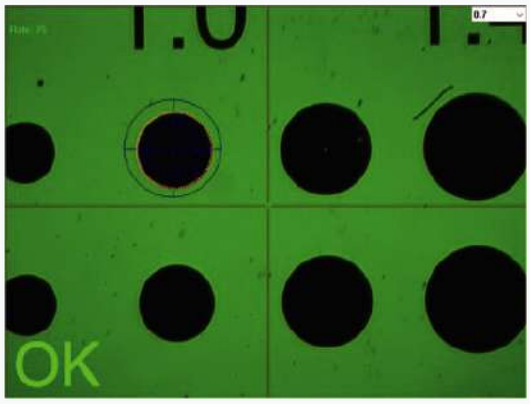
Pull line picking point



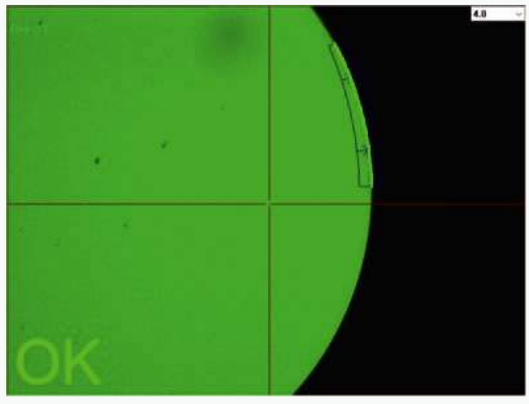
Overall edge measurement



Overall edge-finding measurement circle



Multi-segment edge-finding measurement circle

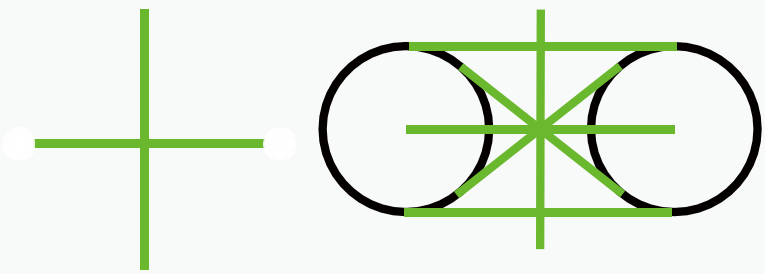


Element Structure

● Element structure powerful,users can use the extracted geometric elements to generate all kinds of geometric figures or associated elements, such as point construction line, with a circle structure distance, etc., and in the process of construction, the software provides a variety of construction methods (such as extraction, intersection, tangent, vertical, parallel, mirror, etc.), will also according to the elements to pop up construction method dialog box, convenient user according to the requirements to choose the appropriate method;

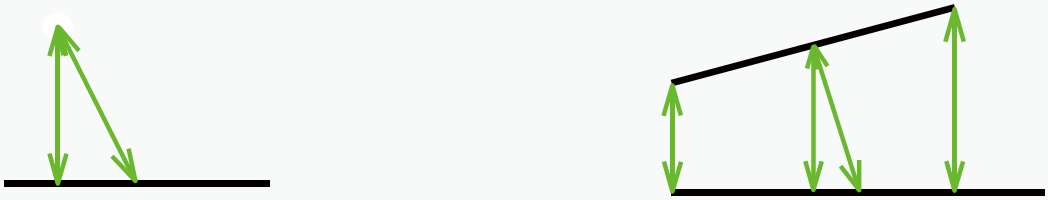
● Element preset allows the user to manually input parameters to generate elements, support points, line, circle, plane, cylinder, cone, ball and other elements preset, mainly used for auxiliary measurement or comparative measurement, to provide users with more measurement means;

Structure line



Structure circle

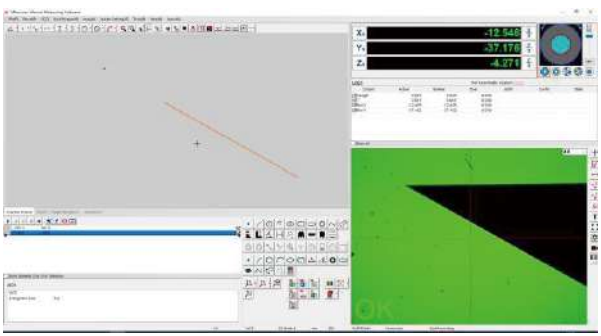
Structure distance



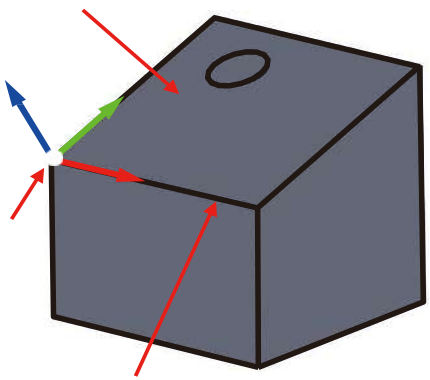
Coordinate System

- Software involves mechanical coordinate system and workpiece coordinate system, mechanical coordinate system automatically established, provide benchmark for measurement, and the work coordinate system can be changed by the user according to the demand, and various methods, including the establishment steps in the XY plane parallel or any space three-dimensional case, but also support the establishment of multiple coordinate system, convenient for the measurement of the deformable workpiece;
- Work coordinate system can be rotated, translation and mirror operation, the user can also through simple click to realize the coordinate system switch, and the software provides two coordinate system mode ("coordinate system mode 1" and "coordinate system mode 2") and rectangular coordinate and polar coordinates, meet the user in different measurement scenarios of coordinate system requirements;

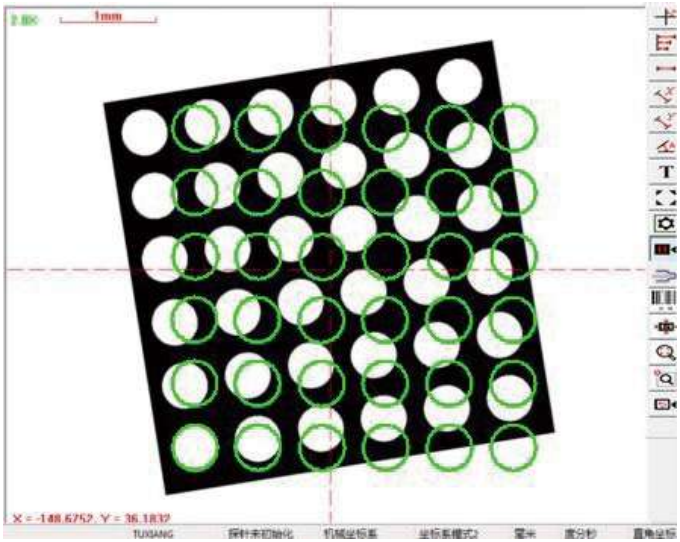
Select the datum point and extract the line elements



Establish any spatial three-dimensional coordinate system



Efficient by using the measurement function



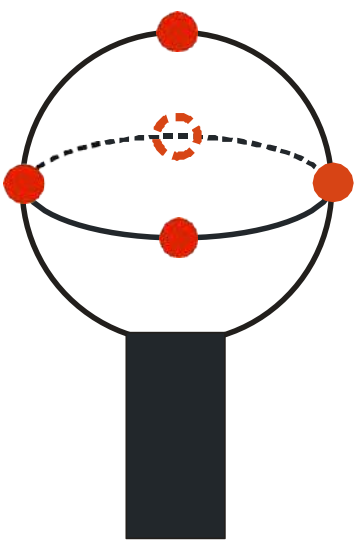
- The element translation array measurement function can reduce the edge finding measurement time of the feature elements, generate the remaining elements by measuring one element after the translation array, and align the array graph with the artifact outline coordinates, improving the measurement efficiency;
- Import CAD graph measurement function supports CAD graph as the template for coordinate measurement or comparative measurement, suitable for any contour shape workpieces, and for the entity benchmark and virtual benchmark alignment measurement respectively provide detailed operation steps, convenient for users to measure according to the actual situation;
- The scanning function is equivalent to the copy function, can be used for reverse engineering, for different sizes of workpieces (overall imaging in the image area or beyond the image area) have the corresponding scanning steps, and also provides the scanning point function can flexibly scan any contour, providing users with more measurement choices;

Probe Measurement Function

The software probe measurement function is powerful, and can measure the characteristics of 2D and 3D elements, such as height, plane, cylinder, cone, cone, ball, ring, etc.,support a variety of methods to build 3D coordinate system, and support the synchronization of image and probe. Probe measurement can be run like triple coordinate software, and programming is more convenient and fast.

probe measurement

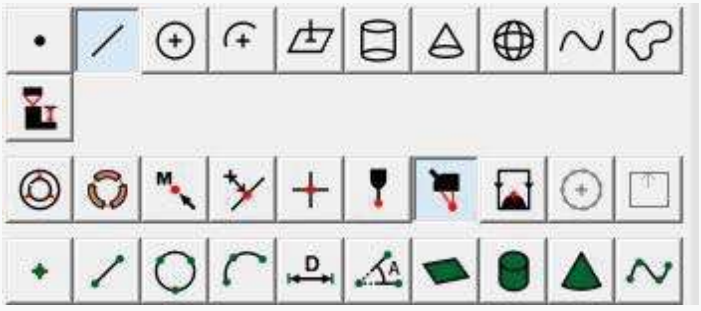
Standard ball picking point



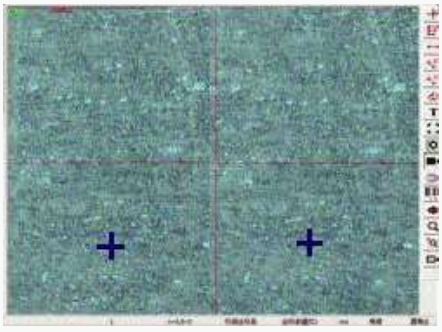
Laser Measurement

The laser measurement function has been optimized for commonly used brands of laser or white light displacement sensors. It is easy to connect and only requires selecting the corresponding brand and communication port number in the parameter settings. The laser and image synchronization function can determine the relative position relationship between the optical lens and the laser spot center, which is convenient for laser point positioning and sampling. At the same time, the method steps for laser measurement of straight lines and planes are detailed, and other element measurement methods are similar, providing users with high-precision measurement methods;

Laser measurement



Laser measurement line

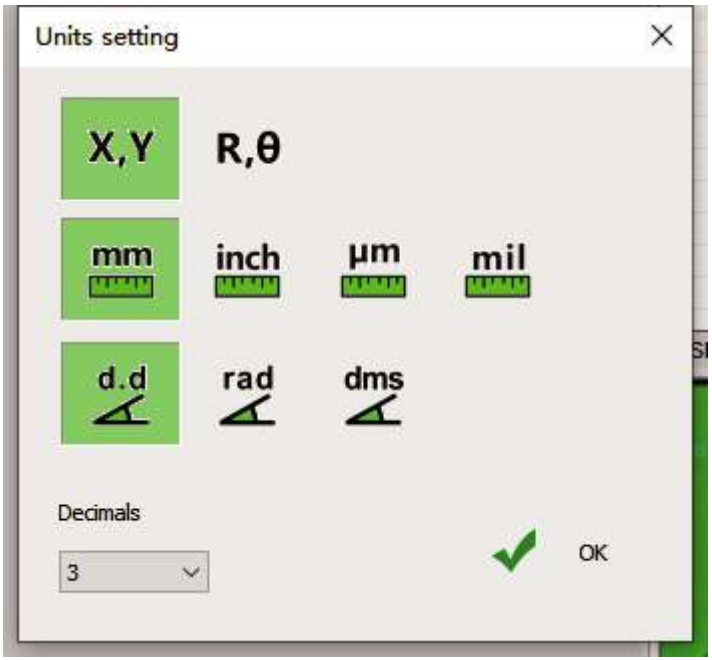


L0: the laser coordinate

Software can automatically combine the path after the two ends of the beginning and tail are selected,then measuring the straight line length

Basic Parameter Setting

Choose “parameter setting-basic parameter” in the main menu,setting the coordinate、unit、angle and decimal point number in the pop-up dialog box,
the first three items can also be double-click on the corresponding items in the status bar below the software to set up.

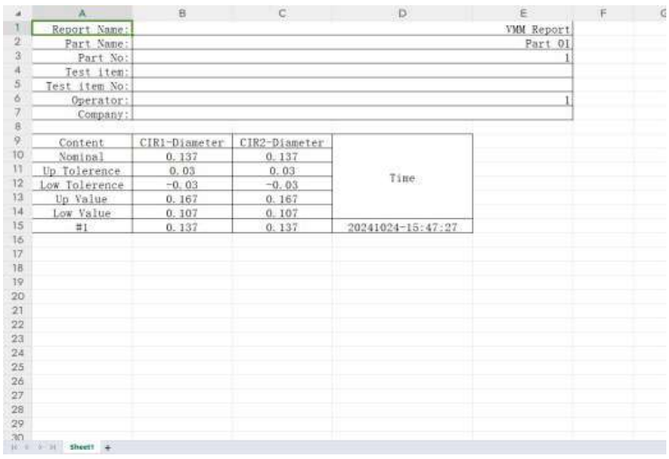


Users can set the parameters according to their own needs

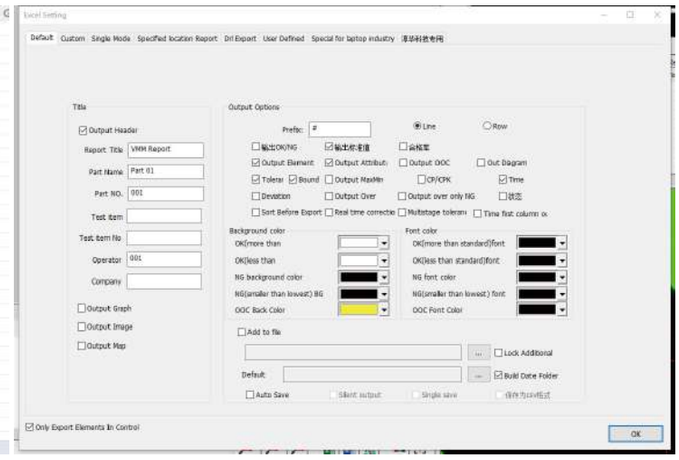
Data export

The generated Excel report data is complete and clear

Users can set the format of the export Excel according to their requirements;



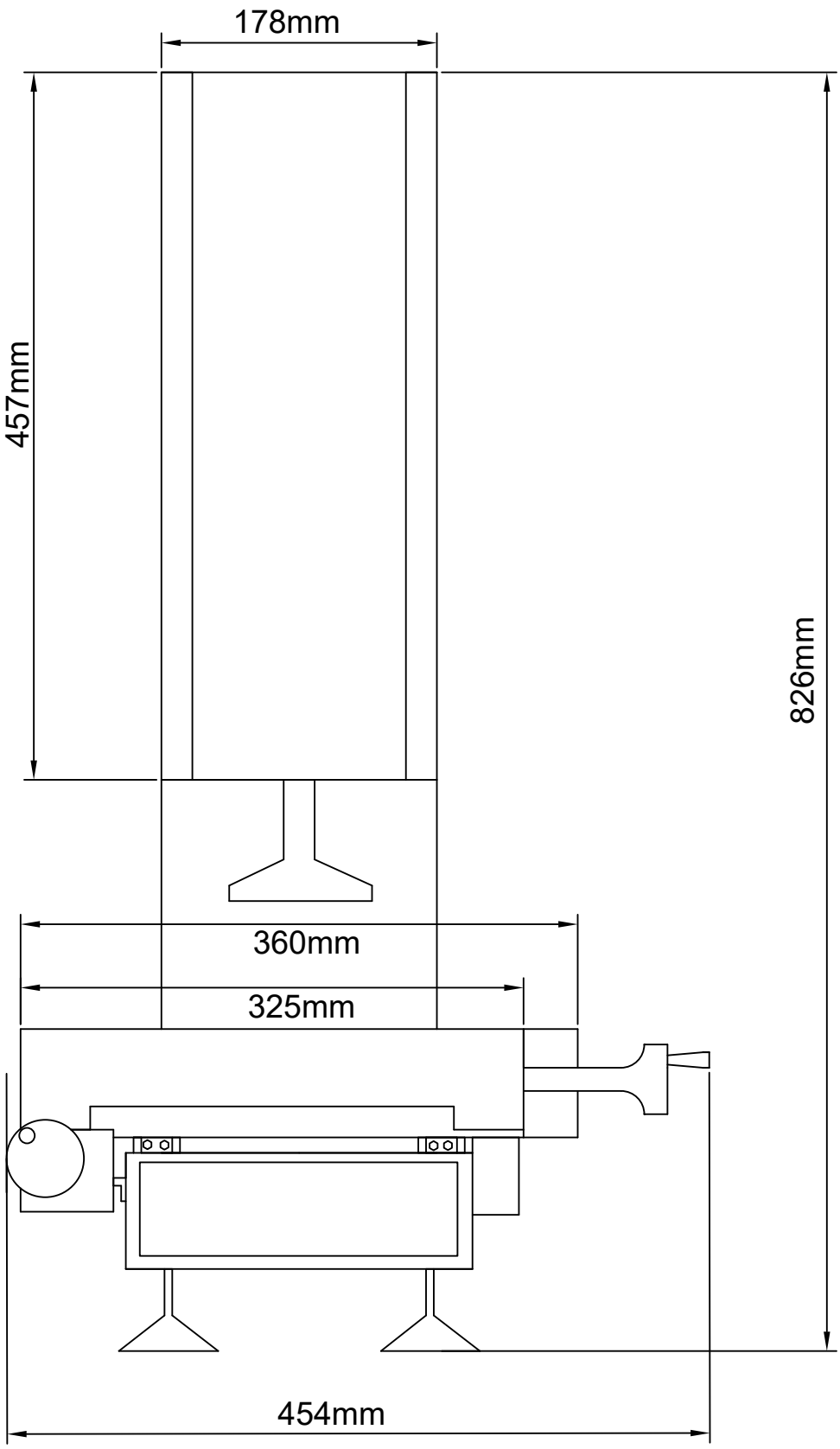
	A	B	C	D	E	F
1	Report Name:				VMM Report	
2	Part Name:				Part 01	
3	Part No:				1	
4	Test item:					
5	Test item No:					
6	Operator:				1	
7	Company:					
8						
9	Content	CIR1-Diameter	CIR2-Diameter	Time		
10	Nominal	0.137	0.137			
11	Up Tolerence	0.03	0.03			
12	Low Tolerence	-0.03	-0.03			
13	Up Value	0.167	0.167			
14	Low Value	0.107	0.107			
15	#1	0.137	0.137	20241024-15:47:27		



The PDF file can be generated, and the users can set the name, serial number, batch number, operator, date and time in advance;

Number	Content	Actual	Nominal	Over	UpTol	LowTol	State
1	CIR1-Center X	-13.380	-13.380	0.000			
2	CIR1-Center Y	-46.125	-46.124	-0.001			
3	CIR1-Diameter	0.802	0.802	0.000	0.030	-0.030	OK
4	CIR1-T	0.004	0.004	0.000			
5	CIR2-Center X	-11.374	-11.374	-0.000			
6	CIR2-Center Y	-46.097	-46.097	-0.000			
7	CIR2-Diameter	1.006	1.006	0.000	0.030	-0.030	OK
8	CIR2-T	0.009	0.009	-0.000			
9	PNT1-X	-13.689	-13.689	0.000			
10	PNT1-Y	-45.866	-45.866	0.000			
11	PNT1-Z	-4.271	-4.271	0.000			
12	PNT1-Offset	0.000	0.000	0.000			
13	LIN1-Length	2.011	2.011	0.000			
14	LIN1-T	0.000	0.000	0.000			
15	LIN1-Mid X	-12.359	-12.359	0.000			
16	LIN1-Mid Y	-46.562	-46.562	0.000			
17	LIN2-Length	0.400	0.400	0.000			
18	LIN2-T	0.000	0.000	0.000			
19	LIN2-Mid X	-13.387	-13.387	0.000			
20	LIN2-Mid Y	-46.324	-46.324	0.000			
21	LIN3-Length	2.011	2.011	0.000			
22	LIN3-T	0.000	0.000	0.000			
23	LIN3-Mid X	-14.401	-14.401	0.000			
24	LIN3-Mid Y	-45.686	-45.686	0.000			
25	DIS1-X Distance	2.006	2.006	0.000			
26	DIS1-Y Distance	0.028	0.028	0.000			
27	DIS1-Planar Distance	2.006	2.006	0.000			

Instrument Dimension



Instrument Dimension