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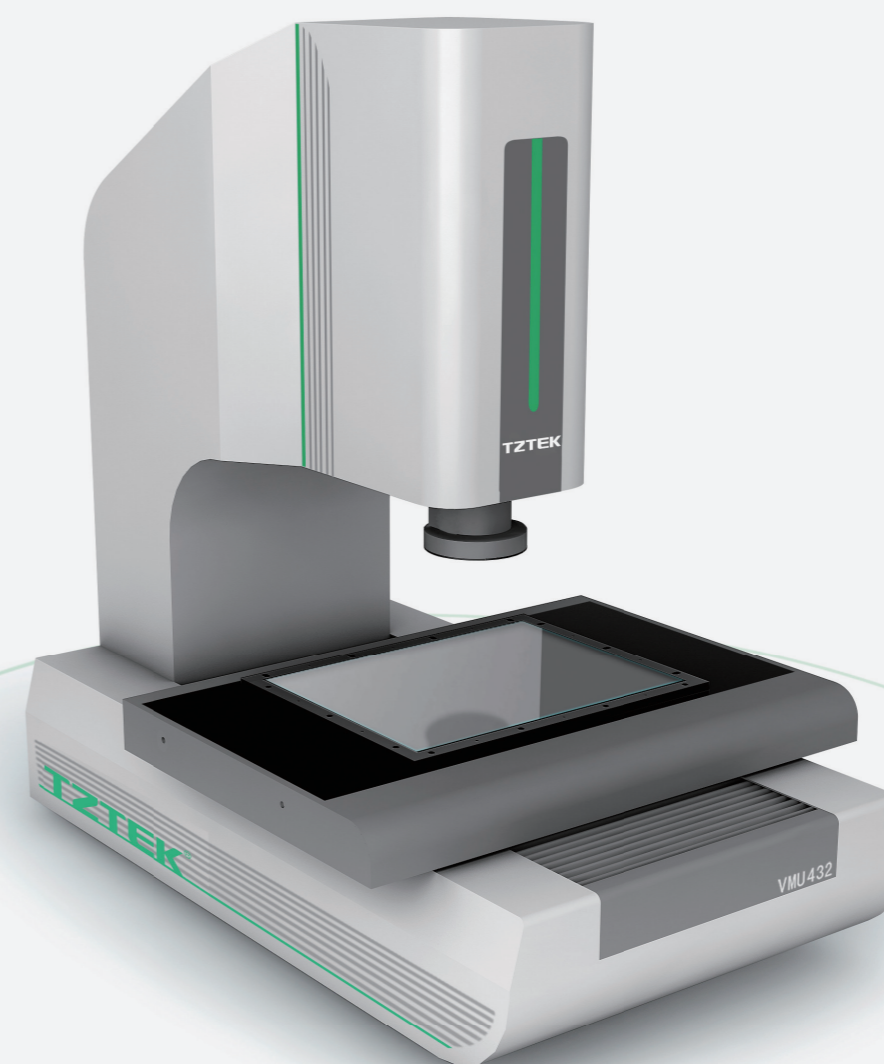
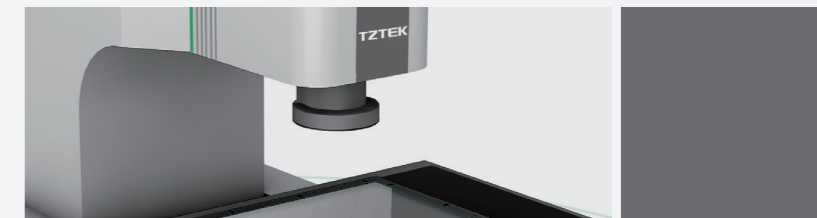
812,Whois Smart Tower,183,Hogupo-ro,Namdong-gu,
Incheon,Korea

VIETNAM

BT1,D78,SPLENDORA BAC AN KHANH,AN KHANH,
HOAI DUC,HANOI,VIETNAM

TZTEK

Video Measuring System



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TZTEK Technology Co.,Ltd.

TZTEK Technology Co., Ltd. was established in 2005, headquartered in Suzhou, Jiangsu province.

TZTEK always concentrates on the design, research and development of advanced products in the field of precision metrology systems for industrial Quality Control. TZTEK provides a series of precision video measuring machines, and customized measurement and inspection solutions, for the customers to improve the product quality.

TZTEK's mission is to improving the quality of precision manufacturing industry from a high-end position among worldwide brands by winning the acknowledgements of professors and users from technical fields based on its outstanding technology innovation, excellent integrated ability, and strict quality management.

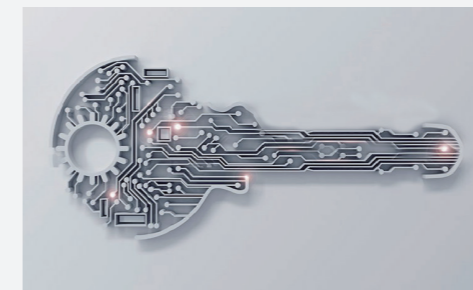
TZTEK provides value in achieving the most efficient and excellent measuring solutions with its consistent professional standard. TZTEK products measures the dimensions of line width, radian, R angle, pitch, and the form and location tolerance like flatness, location degree and concentricity, and also provides the fast, high efficient and accurate measurement on complex assembled pieces.

TZTEK serves many customers all around the world in the fields of automobile industry, aerospace, wind energy, precision tooling, and electronics as well as in universities and research institutes.



20-27

To be the Ideal Measuring Software for Customers!



02-05

Improve the Quality of Precision Manufacturing Industry!



28-29

Top Technology Makes High Quality Measuring!



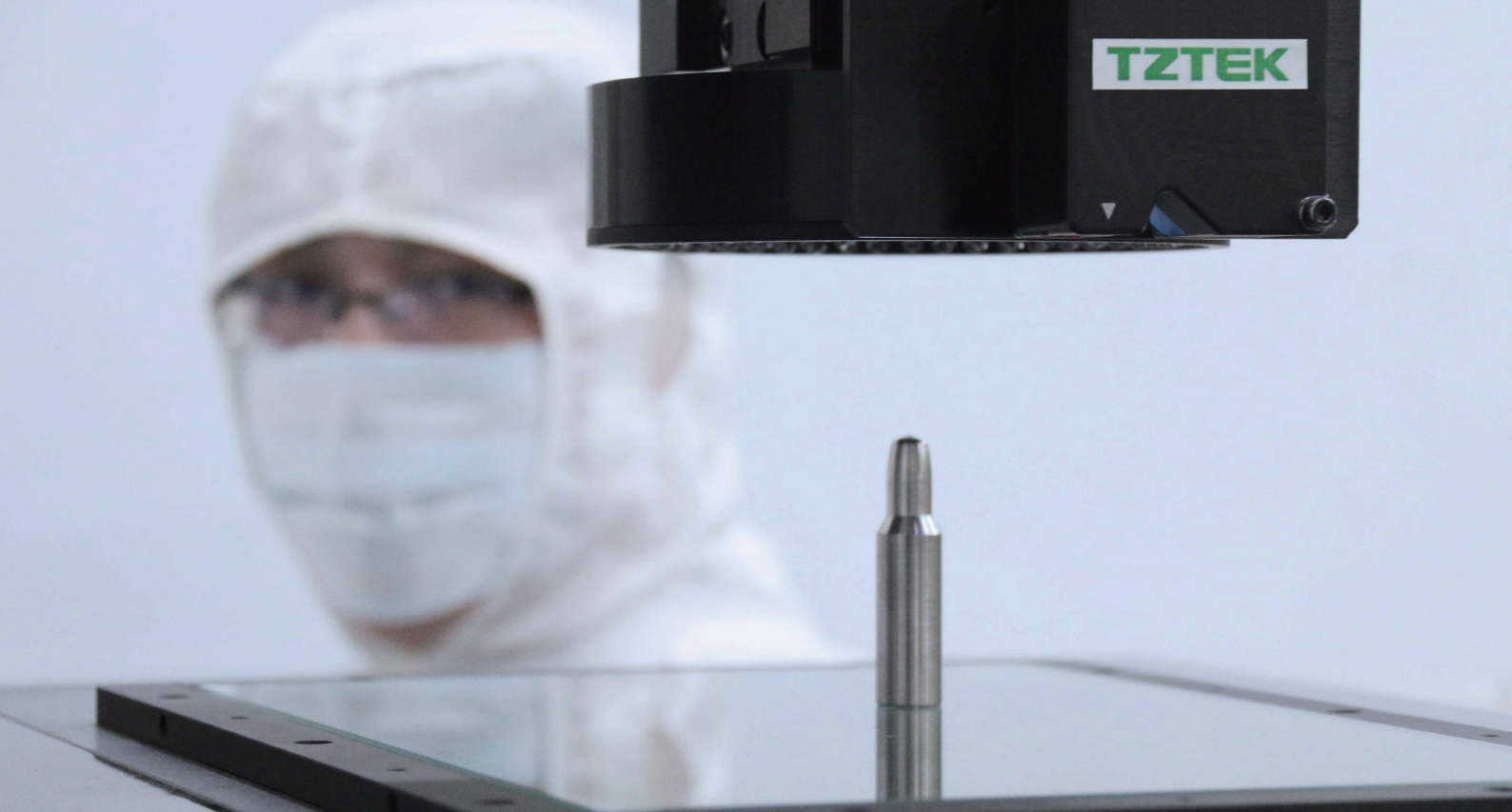
06-19

Even 0.1μm is Critical!



30-33

Providing Various Measuring Solutions!



Applications

Communication

The rapid development of new businesses such as artificial intelligence and the Internet of things has brought a sharp rise in data flow. As the commercial era of 5G is approaching, new challenges are presented to the manufacturing and quality control of communication devices.

The future development direction of communication devices includes network intelligence, device modularization and high transmission rate, and the detection of high integration hardware has always been the difficulty in the quality control of communication devices. Relying on high "efficiency", "precision" and "stability" detection technology and strength, TZTEK has always been committed to promoting the development of the communication industry.

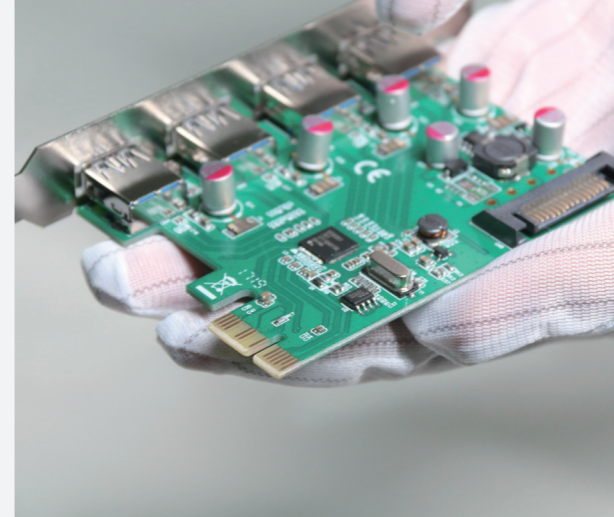
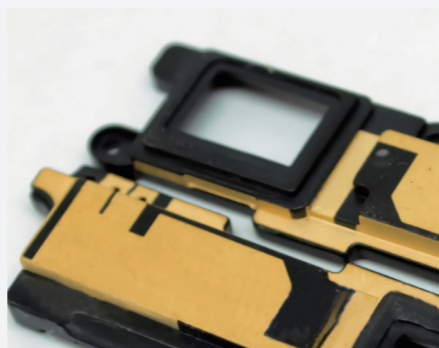
Optical Communication

The increasing growth of the optical communication industry makes the optical module manufacturers greatly increase the quality requirements and output requirements of their products. With the automatic vision measuring camera (VMC), automatic testing tasks can be set and conducted on a batch basis according to the size requirements of the workpiece. The automatic instrument has passed the fatigue test of seven days and nights before leaving the factory, and has been proven with high reliability and excellent stability.



Antenna

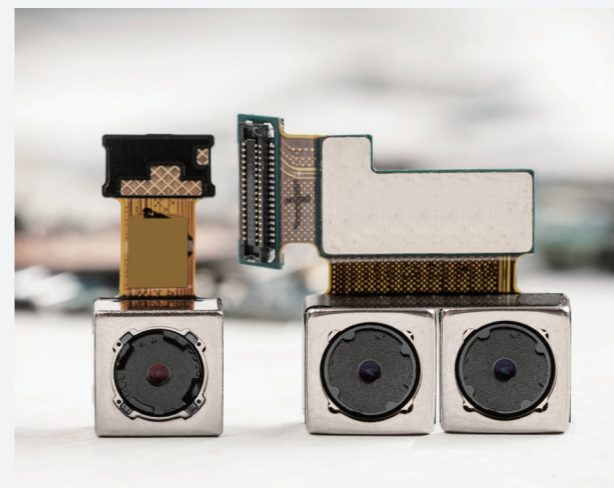
From communication network to terminal application, communication frequency is fully and drastically increased. In terms of design space, the complexity of antenna and the demand of antenna miniaturization are also increasing. In order to improve the high frequency and high speed performance of the antenna and reduce the space occupation, more intelligent terminal antenna technologies hidden are apt to be built in the new material shell. The size and density of the circuit are strictly controlled in the initial stage of the laser-shaped antenna. TZTEK adopts the unique design of elevation adjustable light source and the high-precision and rapid detection scheme to ensure the accuracy and efficiency of detection.



3C Manufacture

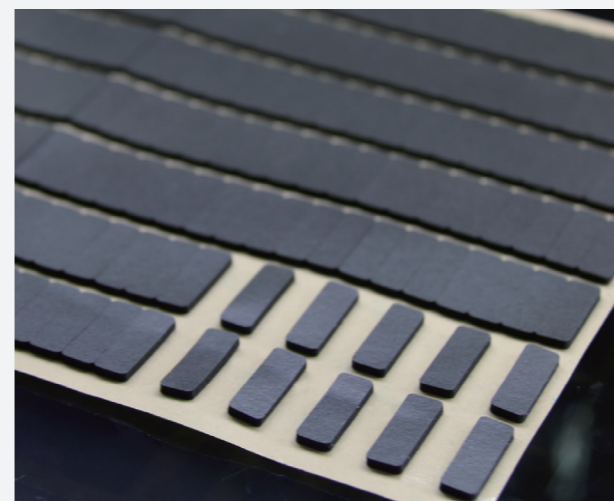
With the development of electronics manufacture, the product quality is becoming a very important factor for enterprises to be competitive in the market. To ensure the product quality, it must do some control on the quality in manufacture process.

TZTEK is able to help electronics manufacture reduce the cost by its efficient measuring solution.



PCB/FPC Design and Manufacture

During the R&D process of large electronics products, the basic success factors are PCB design, programming and manufacturing. The quality of PCB design and manufacture affects the quality of products directly. The traditional video machine with small measuring range can only measure the profile of workpiece and is not able to clearly define workpiece' s upper surface, which will cause some difficulty on measuring the upper surface. TZTEK video measuring machine with 6 cycle 8 octants surface lighting, 256 adjustable brightness, coaxial light and automatic lighting can solve this problem easily so that to guarantee the quality of PCB design and manufacture.

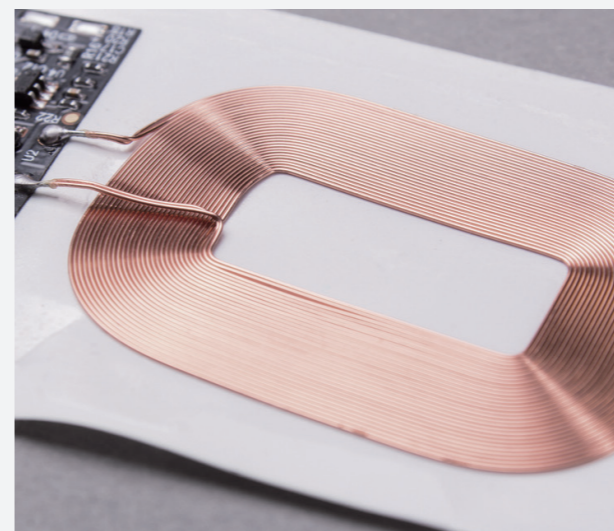


Mobile Camera

Each component of the camera faces the problems of large amount of data and high efficiency as required to detection. A variety of replication functions and random detection modes have been developed for such products. The rapid and complete inspection of small-batch products can be completely automated. For example, for products arranged in array, it is only necessary to program a single product and use the replication and extraction method to greatly reduce the programming time and ensure the detection efficiency.

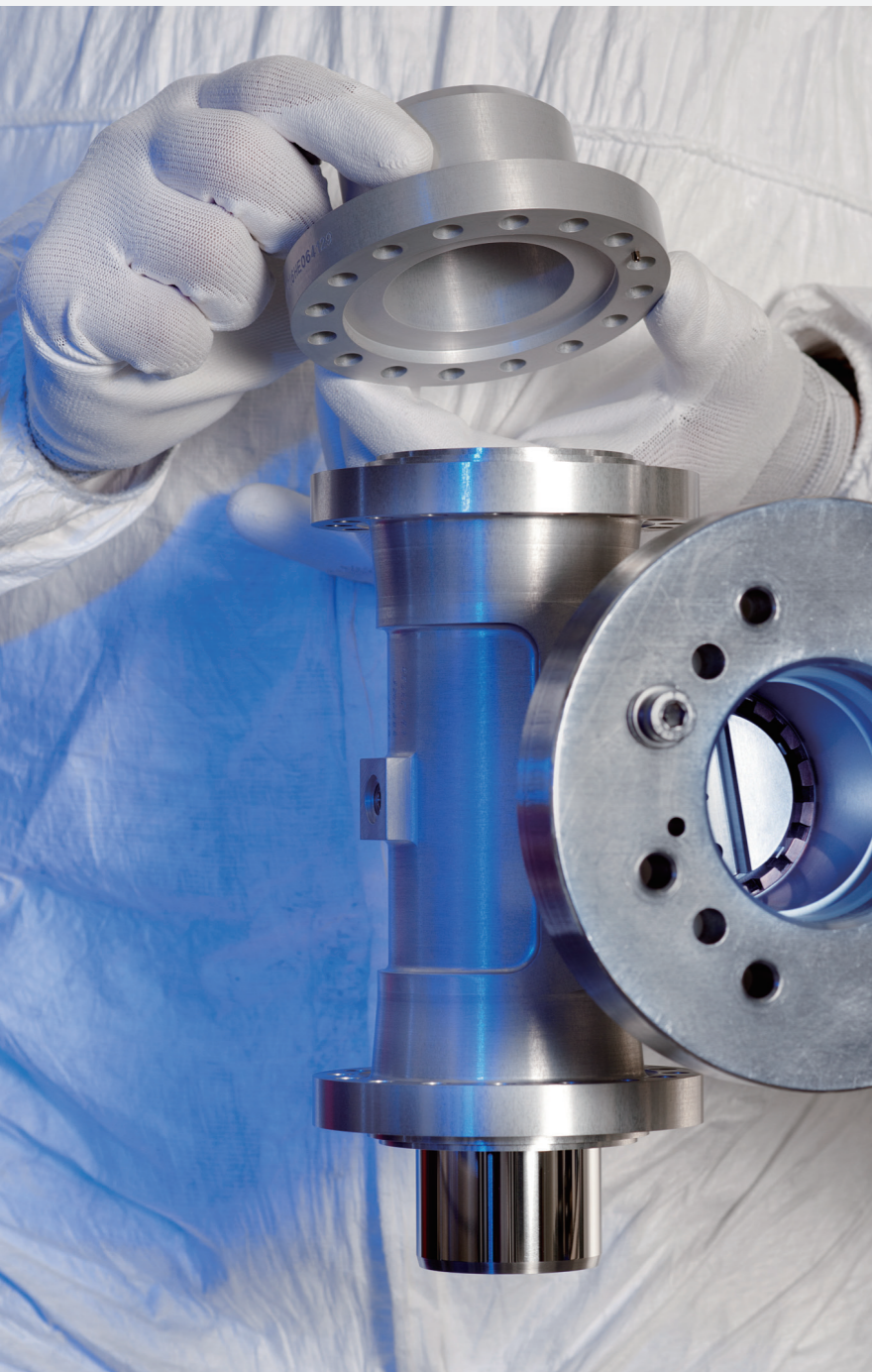
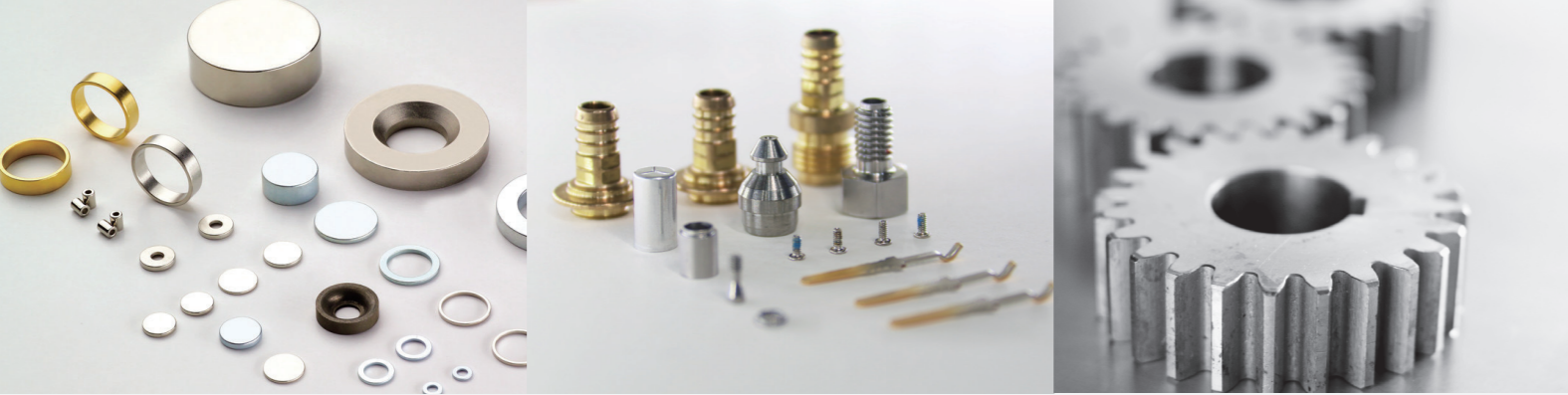
Die Cutting

Die cutting products are made of irregular translucent/opaque materials, and knife marks will be left on the lower layer after cutting. As for such products, TZTEK has developed multi-feature light source lighting system, image preprocessing, multi-coordinate positioning and other functions. Multiple products under the same program are precisely and rapidly detected.



Wireless Charging Coil

For the wireless charging coil of single pattern but dense winding and prone to deformation, the automatic VMC of TZTEK can automatically collect the outermost contour data according to the shape of the coil, and calculate the position data of the coil relative to the substrate, insulation material and shell. In addition, it is equipped with a laser meter, which can support fast scanning of the flatness and thickness of the coil, and effectively complete the full-size detection of the coil.



Precision Metals

Precision metals are more widely used in industrial manufacturing as the auxiliary products, semi-finished products and tools used during production. With continuous refinement of products, market competition is more and more intensive, resulting in demand for enterprises to automatic large production and more precise metal products.

TZTEK is able to meet the requirement of precision metals on refining, automation and high speed by relying on its advanced measuring technic and software technology.

Magnetic Materials

Magnetic material is difficult to measure due to its small shape and large quantity. Fast on-line full inspection is a tough task during its production. To solve this problem, TZTEK develops a flash video measuring machine. Without fixing the workpieces and carriers, this machine with the function of automatic image registration is able to achieve the fast measuring on multiple workpieces at the same time and output the data.

Machining

TZTEK develops proprietary Vispec video measuring metrology software including the function of R angle measurement, burring and automatically grabbing edge. In terms of the lighting, special profile lighting is used to scan the profile with parallel light, which can avoid the shade of workpieces to have a clear profile. Having a clear, accurate measuring profile of column products is not difficult anymore.



Multi-domain coverage

TZTEK has the autonomous technologies using on a series of video measuring machines to meet different customers' requirements in various fields of manufacturing not only in China but worldwide as well.

Applications include: machinery, electronics, tooling, injection molding, metals, rubber, low-voltage apparatus, magnetic materials, precision metals, precision stamping, connector, terminal, cellphone, household appliances, PCB, FPC, medical equipment, clock, instrument, etc.

The materials could be measured including: plastic, rubber, glass, ceramics, PCB, OLED, LCD, metal, etc.

The geometric senses could be measured including: line, surface, circle, hole, arc, angle, groove, etc.

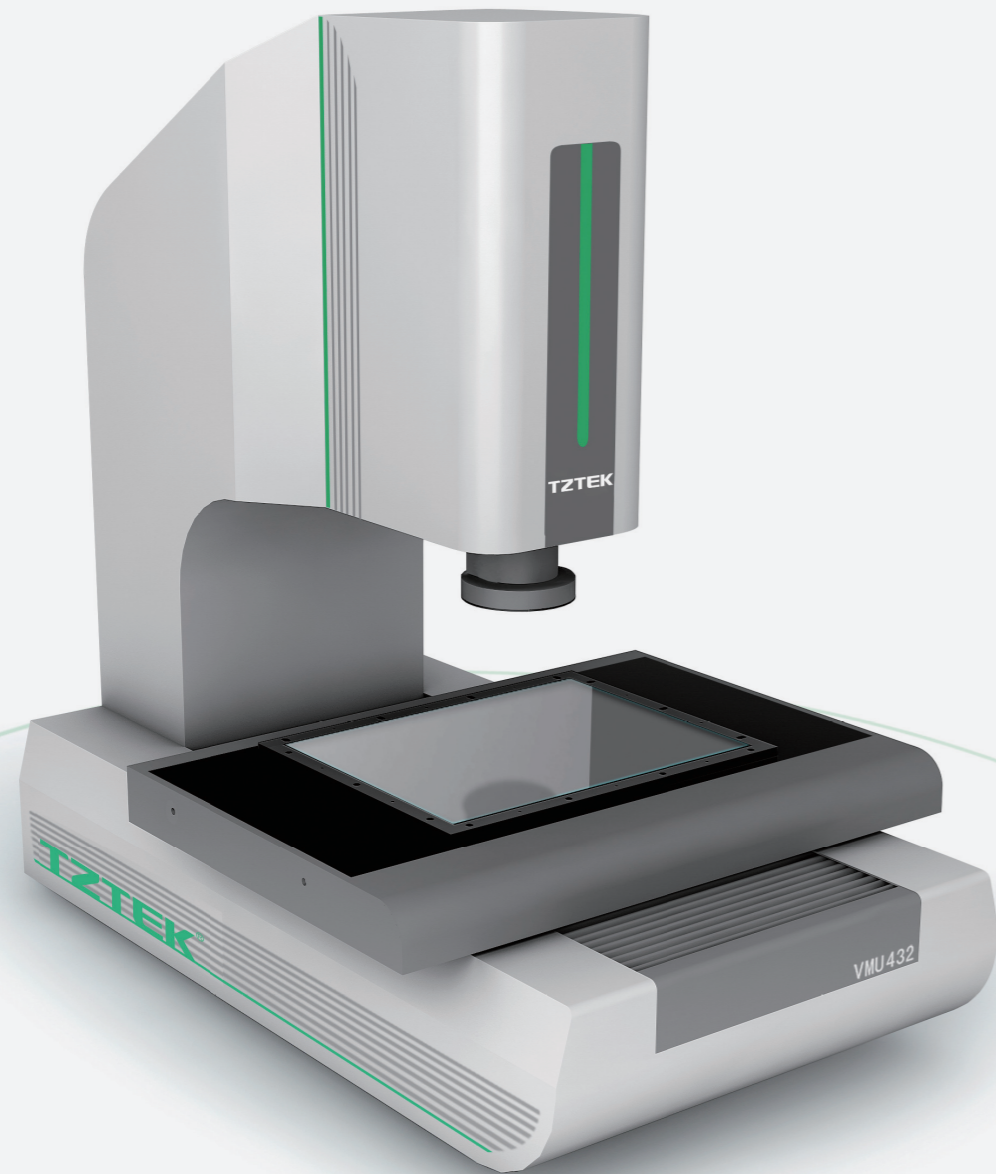
Scientific Research Institutions

Drafted as the national standard specification for video measuring machine, In March, 2010, TZTEK worked with the National Metrology Institute on the publication of the first book in domestic video measuring field <<Video Measuring Machine Technology>>, in which TZTEK shares the technology system in video measuring filed and moves forward the development of China's video measuring technology.

TZTEK measuring machines are widely used in colleges, institutions, metrology verification departments, metrology rooms and workshops. Currently almost 20 Metrology Institutes above provincial level, such as China National Metrology Institute, Jiangsu Metrology Institute, Guangdong Metrology Institute and Henan Metrology Institute use TZTEK VMU video measuring machines as their statutory standard measuring machines.

VMU High-precision Video Measuring Machine

VMU is a series of high-precision CNC video measuring machine. It integrates many advanced research achievements in the fields of vision, control, software, mechanism technology, etc.



Features

- High precision, 4-axis CNC control
- Precision granite machine body with high accuracy and stability
- 3-axis THK precision linear guide and precision drive system
- Renishaw linear scale with high accuracy and stability
- TZTEK automatic zoom optical lens achieves automatically zoom measurement
- Programmable 6 rings 8 segments surface lighting, LED profile lighting and coaxial lighting
- Automatic focus for height measurement, touch probe could be added
- Configurations with various measuring travels are available, such as 222,322,432, etc.

Model and Specification

Model	VMU222	VMU322	VMU432
Travel(mm)*	200×200×200	300×200×200	400×300×200
Dimensions(mm)	740×1040×1620	740×1040×1620	800×1240×1620
Mass(kg)	240	250	310
Max. Stage Loading(kg)	25	25	25
Accuracy	XY (μm) **	E2=(1.5+L/300)	
	Z (μm) ***	E1=(5.0+L/200)	
Speed	XY (mm/s)	500	
	Z (mm/s)	100	
Scale	0.1μm Renishaw scale		
Guide	THK		
Camera	High definition industrial color camera		
Illumination	Profile	LED cold light, 256 brightness adjustable	
	Surface****	6 rings 8 segments LED cold light, each segment independently controlled, 256 brightness adjustable	
	Coaxia	LED cold light, 256 brightness adjustable	
Optical Lens	12.5:1 continuous zooming lens		
Magnification*****	Optical zoom range: 0.6~7.5×; Video zoom range: 18~230×		
Software	Vispec software platform (VMU Version)		
Motion Control	CNC DC Servo System		
Warranty	1 Year		
Environment	Temperature 20°C±2°C, Humidity 30~80%		
	Vibration <0.002g, lower than 15Hz		
Power	200~240Vac, 50/60Hz, Single-phase, 700W		

* The standard valid measurement range of Z axis is 135mm, it can add to 300mm.

** L is the measured length in mm.

*** Mechanical accuracy of Z and focus accuracy depends on the part surface.

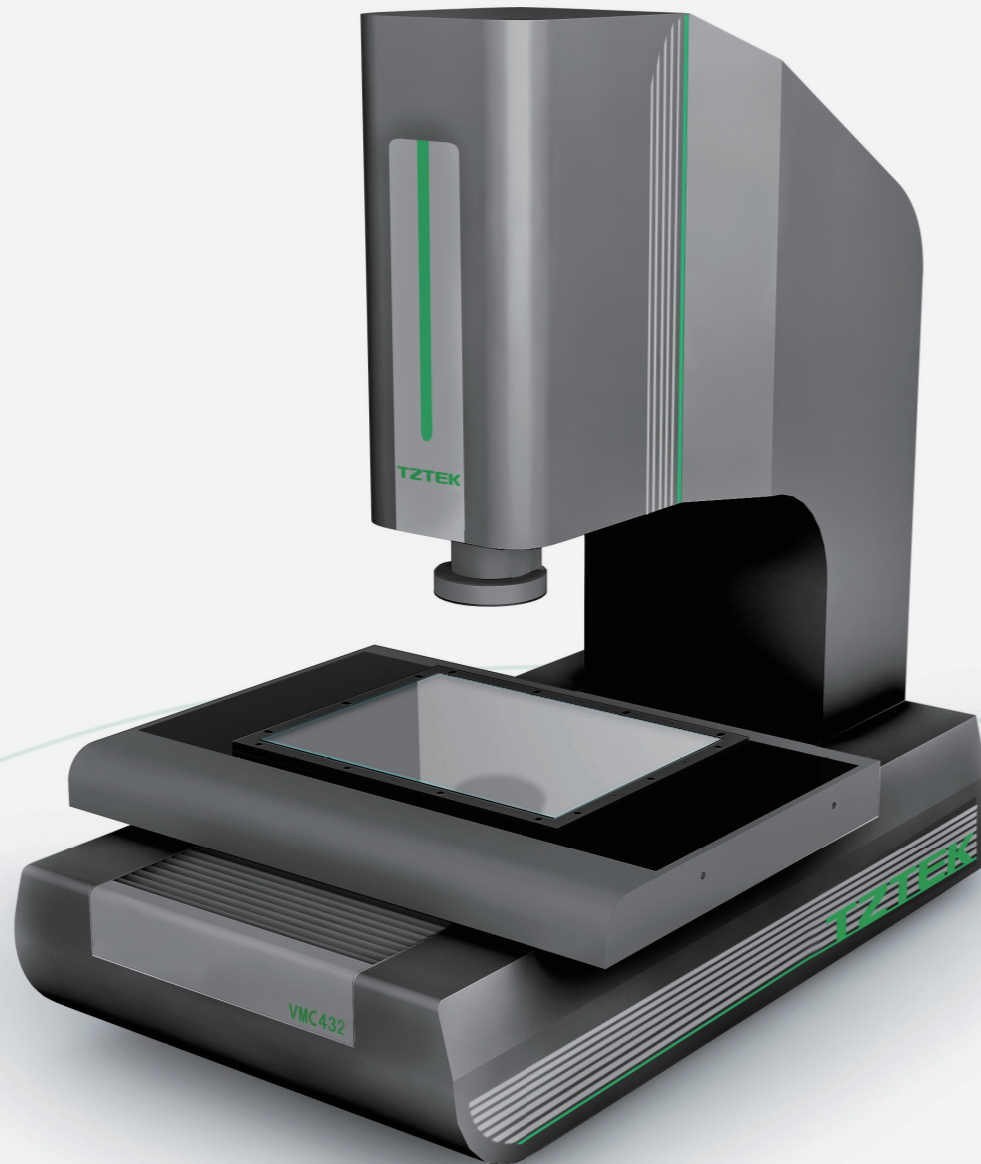
**** Movable surface light is for option. The illumination is from 45° to 75°.

***** Magnification depends on monitor size and resolution;

0.5× or 2× additional lens are available for option to achieve the magnification 9~115x or 36~460x.

VMC Classic Video Measuring Machine

VMC is a series of classical measuring machines which contains the innovative design and with much measuring functions. It is the ideal choice for manufacturing industry due to its high precision and superior stability. The qualities of products have been certified by Chinese National Institute of Metrology, which is the official authority in the metrology industry of China.



Features

- Automatic measurement with 4-axis CNC control
- 3-axis precision linear guide and precision drive system
- Precision granite machine body with high accuracy and stability
- Imported automatic zoom optical lens achieves automatically zoom measurement
- Automation control fully by mouse is easy to use
- Programmable 6 rings 8 octants circle surface lighting, LED profile lighting
- Automatic focus for height measurement, touch probe could be added
- Configurations with various measuring ranges are available, such as 222,322,432, etc.

Model and Specification

Model	VMC222	VMC322	VMC432
Travel(mm)*	200×200×200	300×200×200	400×300×200
Dimensions(mm)	740×1040×1620	740×1040×1620	800×1240×1620
Mass(kg)	240	250	310
Max. Stage Loading(kg)	25	25	25
Accuracy	XY (μm) **	E2=(2.2+L/200)	
	Z (μm) ***	E1=(5.0+L/200)	
Speed	XY (mm/s)	500	
	Z (mm/s)	100	
Scale	0.4μm Renishaw Scale		
Guide	HIWIN		
Camera	High definition industrial color camera		
Illumination****	Profile	LED cold light, 256 brightness adjustable	
	Surface	6 rings 8 segments LED cold light, each segment independently controlled, 256 brightness adjustable	
Optical Lens	6.5:1 continuous zooming lens		
Magnification*****	Optical zoom range: 0.7~4.5×; Video zoom range: 21~138×		
Software	Vispec software platform (VMC Version)		
Motion Control	CNC DC Servo System		
Warranty	1 Year		
Environment	Temperature 20°C±2°C, Humidity 30~80%		
	Vibration < 0.002g, lower than 15Hz		
Power	200~240Vac, 50/60Hz, Single-phase, 700W		

* The standard valid measurement range of Z axis is 135mm, it can add to 300mm.

** L is the measured length in mm.

*** Mechanical accuracy of Z and focus accuracy depends on the part surface.

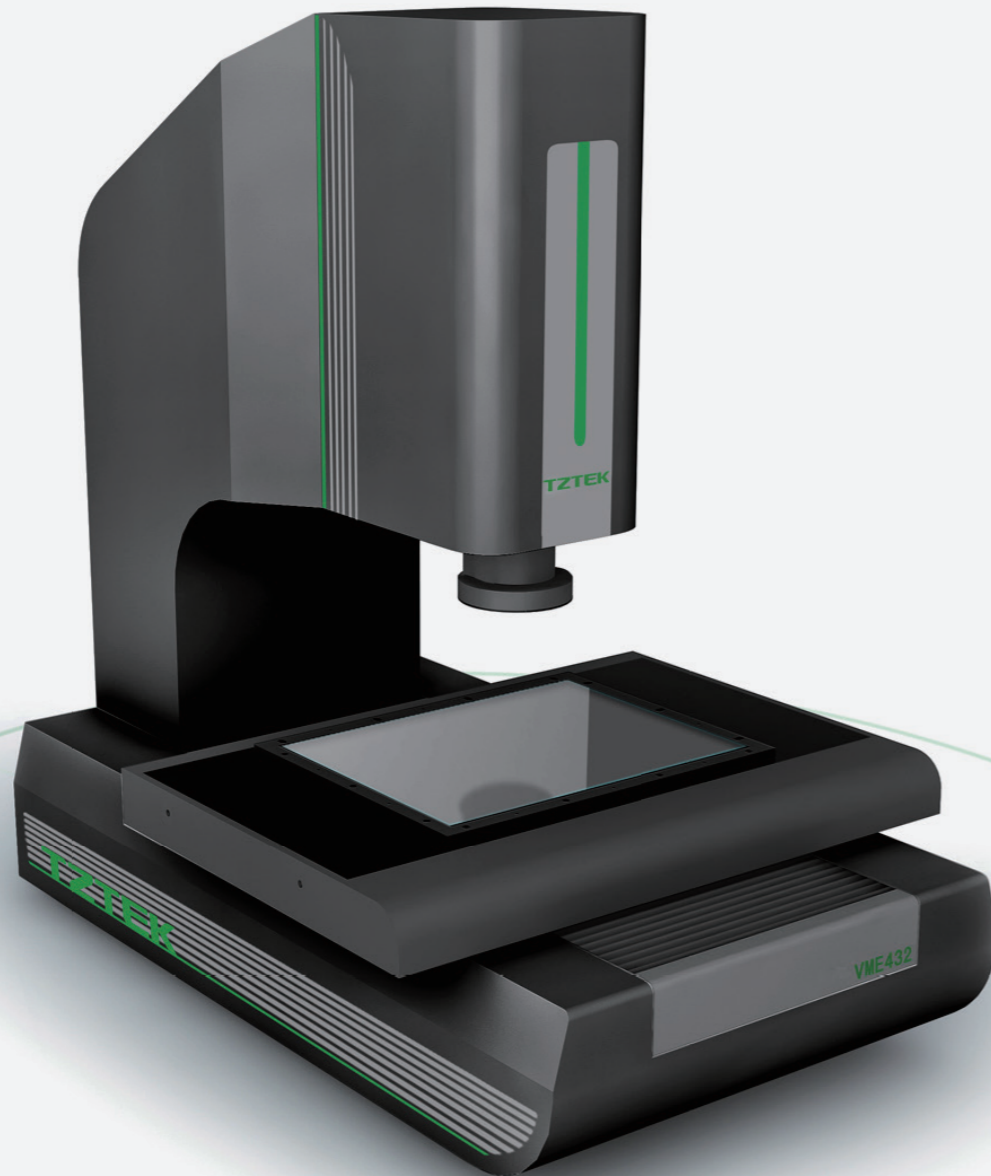
**** Coaxial lighting is available for option. The specification is same as profile lighting.

***** Magnification depends on monitor size and resolution;

0.5× or 2× additional lens are available for option to achieve the magnification 10.5~69x or 42~276x.

VME Economy Video Measuring Machine

VME is a series of economical measuring machines which is suitable for primary measuring technology. It has the Electronic positioning lens, manual zoom lens with high flexibility and the most superior configuration of hardware and software. VME can meet all the measuring requirements perfectly and is widely applied to mold, metal, mobile phone panel, mirror, touching panel industries.



Features

- CNC measurement on axis of X,Y,Z
- 3-axis CNC control makes the platform move stably and safely
- 6 rings 8 octants controlled light achieve 256 brightness adjustable
- Industrial digital color camera meets the clear observation and stable measurement
- Self-developed software platform Vispec provides full measuring functions
- Automatic measuring task could be set to achieve fast and efficient batch measurement
- The creative electronic boxout lens could cut zoom rate easily without recalibration
- Accessories like laser and probe could be added per customer requirement
- Diversified output reports, SPC data analysis

Model and Specification

Model	VME222	VME322	VME432
Travel(mm)*	200×200×200	300×200×200	400×300×200
Dimensions(mm)	740×1040×1620	740×1040×1620	800×1240×1620
Mass(kg)	240	250	310
Max. Stage Loading(kg)	25	25	25
Accuracy	XY (μm) **	E2=(2.6+L/200)	
	Z (μm) ***	E1=(5.0+L/200)	
Speed	XY (mm/s)	500	
	Z (mm/s)	100	
Scale	1.0μm Renishaw scale		
Guide	HIWIN		
Camera	High definition industrial color camera		
Illumination****	Profile	LED cold light, 256 brightness adjustable	
	Surface	6 rings 8 segments LED cold light, each segment independently controlled, 256 brightness adjustable	
Optical Lens	TZTEK electronics boxout lens, 6.5:1 continuous zooming lens		
Magnification*****	Optical zoom range: 0.7~4.5×; Video zoom range: 28~184×		
Software	Vispec software platform (VME Version)		
Motion Control	CNC DC Servo System		
Warranty	1 Year		
Environment	Temperature 20°C±2°C, Humidity 30~80%		
	Vibration <0.002g, lower than 15Hz		
Power	200~240Vac, 50/60Hz, Single-phase, 700W		

* The standard valid measurement range of Z axis is 135mm, it can add to 300mm.

** L is the measured length in mm.

*** Mechanical accuracy of Z and focus accuracy depends on the part surface.

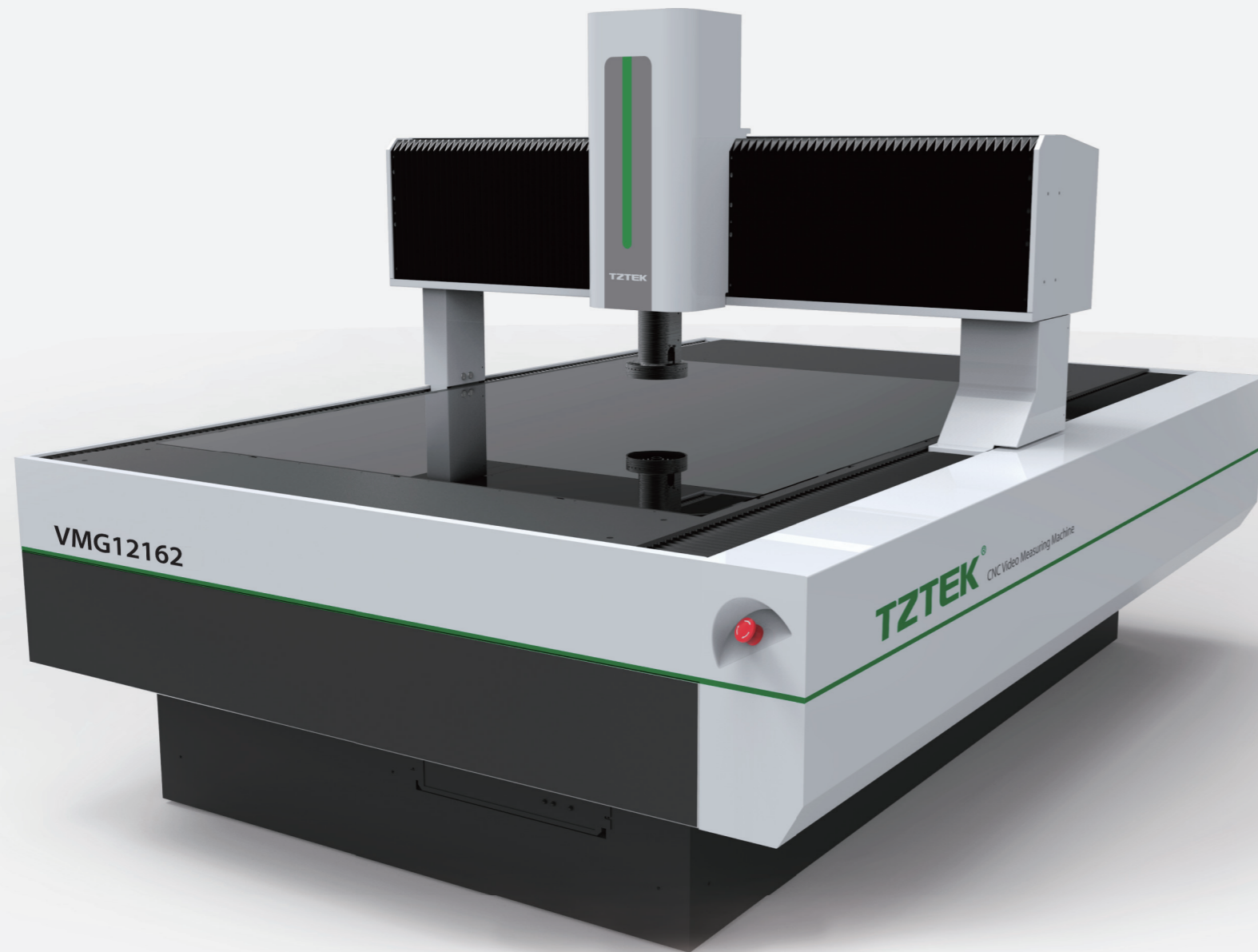
**** Coaxial lighting is available for option. The specification is same as profile lighting.

***** Magnification depends on monitor size and resolution;

0.5× or 2× additional lens are available for option to achieve the magnification 14~92x or 56~368x.

VMG Gantry Video Measuring Machine

VMG is a series of Gantry CNC video measuring machines, which are specially designed for large size measurement. The largest measurement range can reach 2550 × 2050mm, and can be applied in the industries of PCB, LCD, sheet metal, civil aviation and space industries, etc. VMG integrates the industry's most advanced design concepts. The accuracy and stability of the machine can be ensured well on account of the most perfect design and strict controls during production.



Features

- Shifting bridge construction, large range CNC measuring, 4-axis CNC control
- Granite machine body with high accuracy and stability
- Operation by mouse and joystick easy to use
- Linear scale with high accuracy and stability
- TZTEK automatic zoom optical lens achieves automatically zoom measurement
- Programmable 6 rings 8 octants circle surface lighting, LED profile lighting and coaxial lighting
- Automatic focus for height measurement, touch probe could be added
- Vispec CNC video measuring software
- Standard configurations of various specifications are provided and customization is available per requirement

Model and Specification

Model	VMG452	VMG672	VMG8102	VMG10122	VMG12162
Travel(mm)	400x500x250	600x700x250	800x1000x250	1000x1200x250	1200x1600x250
Dimensions(mm)	1255×1532×1747	1455×1732×1747	1715×2212×1777	1915×2412×1777	2115×2812×1777
Mass(kg)	1465	1890	2550	3650	4660
Max. Stage Loading(kg)	80			60	
Accuracy	XY (μm) *	E2=(2.5+L/200)		E2=(3.0+L/200)	
	Z (μm) **	E1=(5.0+L/200)			
Speed	XY (mm/s)	400			
	Z (mm/s)	100			
Scale	0.1μm Renishaw Scale				
Guide	THK				
Camera	High definition industrial color camera				
Illumination	Profile	LED cold light, 256 brightness adjustable			
	Surface	6 rings 8 segments LED cold light, each segment independently controlled, 256 brightness adjustable			
	Coaxial***	LED cold light, 256 brightness adjustable			
Optical Lens	6:5:1 continuous zooming(Optional 12:5:1 continuous zooming lens)				
Magnification****	Optical zoom range:0.7~4.5x;Video zoom range:21~128x				
Software	Vispec software platform (VMG Version)				
Motion Control	CNC DC Servo System				
Warranty	1Year				
Environment	Temperature 20°C±2°C, Humidity30~80%				
	Vibration<0.002g, lower than 15Hz				
Power	200~240V,50/60Hz, Single-phase,700W				

* L is the measured length in mm.

** Mechanical accuracy of Z and focus accuracy depends on the part surface.

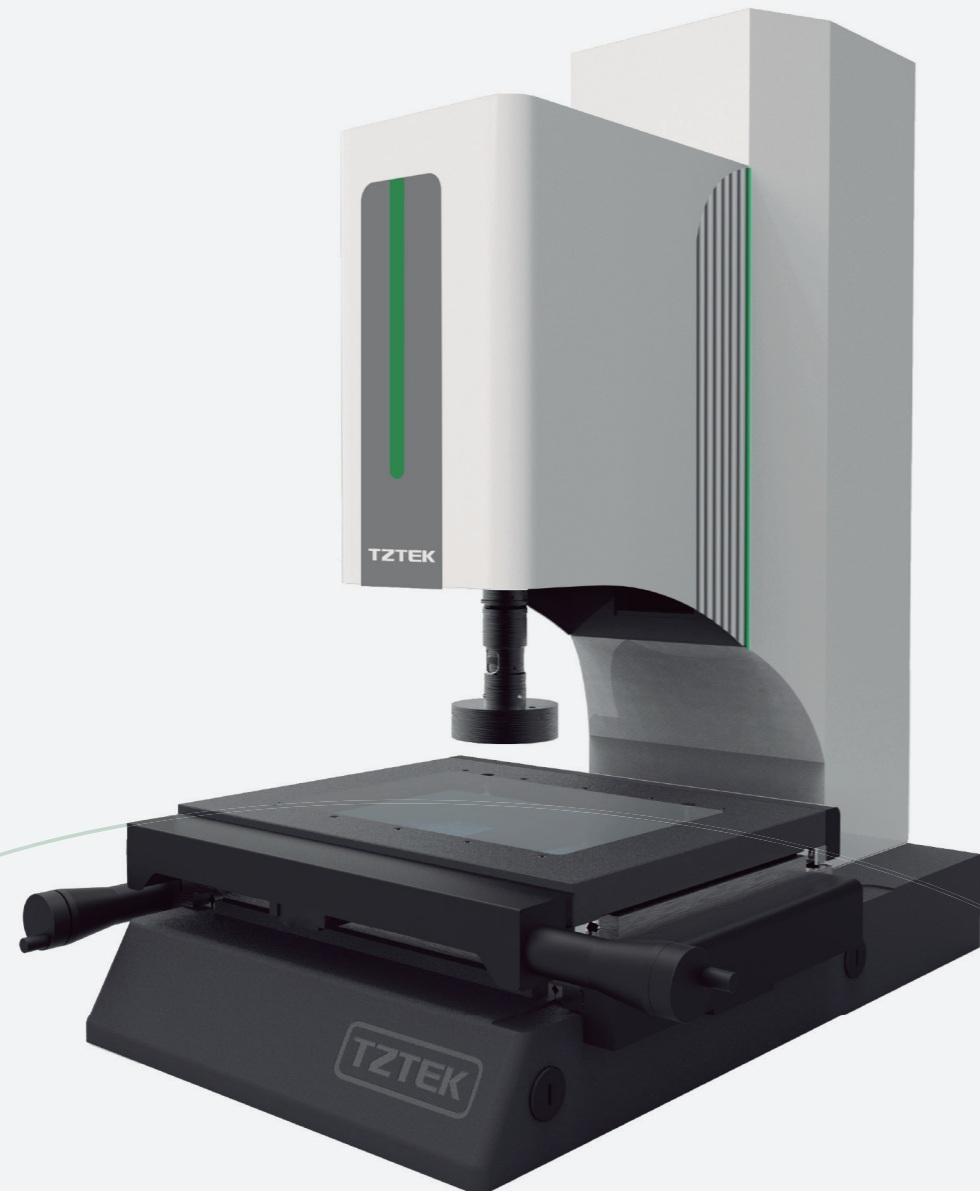
*** Coaxial light can be selected.

**** Magnification depends on monitor size and resolution.

0.5×or 2× additional lens are available for option;Optical zoom range:0.6-7.5x; Video zoom range:18-230x

VMA Manual Video Measuring Machine

VMA is a series of manual video measuring machines, which derives from TZTEK CNC Video Measuring Machine. It provides the most powerful manual video measuring software, which can measure point, line, circle, etc. It can Auto-focus, Auto lighting, Auto-finding edge and has a powerful function of output report. VMA is especially suitable for multi-type, small-batch product measurement, and have been widely used in mould, machinery, electronics and other precision metal industries.



Features

- Precision transmission equipment achieves the fast movement
- Granite machine body with high accuracy and stability
- Auto focus, auto lighting, auto edge-searching
- The creative electronic boxout lens could cut zoom rate easily by software automatic identification
- DXF file could be imported for fast measurement
- The measuring data could be imported into Word, Excel, AutoCAD
- Report output function with pictures and words easily exports inspection results
- 3-axis precision cross roller guide ensures the accuracy and lifetime of the machine
- High-definition lens and high-resolution CCD achieve the high-definition measurement

Model and Specification

Model	VMA2515	VMA3020	VMA4030
Travel(mm)	250×150×150	300×200×200	400×300×200
Dimensions(mm)	663×880×1430	683×880×1580	841×1037×1580
Mass(kg)	160	220	355
Max. Stage Loading(kg)	25		
Accuracy(μm)*	E2 (X/Y) = (3.0+L/200)		E2 (X/Y) = (3.5+L/200)
Scale	1.0μm scale		
Guide	Cross roller guide		
Camera	High definition industrial color camera		
Illumination**	Profile	LED cold light, 256 brightness adjustable	
	Surface	LED cold light, 256 brightness adjustable	
Optical Lens	TZTEK electronics boxout lens, 6.5:1 continuous zooming lens		
Magnification***	Optical zoom range: 0.7~4.5×; Video zoom range: 28~184×		
Software	Vispec software platform (VMA Version)		
Warranty	1Year		
Environment	Temperature20°C±2, Humidity30~80%		
	Vibration<0.002g, < 15Hz		
Power	100~240Vac, 50/60Hz, Single-phase, 100W		

* L is the measured length in mm.

** Coaxial lighting is available for option. The specification is same as profile lighting.

*** Magnification depends on monitor size and resolution;

0.5× or 2× additional lens are available for option to achieve the magnification 14~92x or 56~368x.

VMQ Fixed Platform Video Measuring Machine

VMQ100 is a series of quick measuring machines which designs for requirements of quick measurement. VMQ not only integrates many advanced achievements in measuring industry but also utilize the innovated quick measuring concept. Complex parts can be measured quickly by just pressing one key.



Features

- Accurate quick measurement by pressing one key
- Big caliber, high depth of field, can do full view measurement without distortion
- Double CCD can meet more measurement requirements
- Automatic image registration, no need to fix workpieces, adjust focus points and manually operate the platform. accuracy rate:99.99%
- Multi workpieces could be measured at the same time with result output
- Quick speed, high efficiency, fit for batch measurement
- Easy to use. The whole measuring process could be finished with result output just pressing one key
- Focus within 2S, high focus repeatability without error
- The platform does not need to move during measuring process
- Measuring result could be output in Word, Excel, CAD, etc.

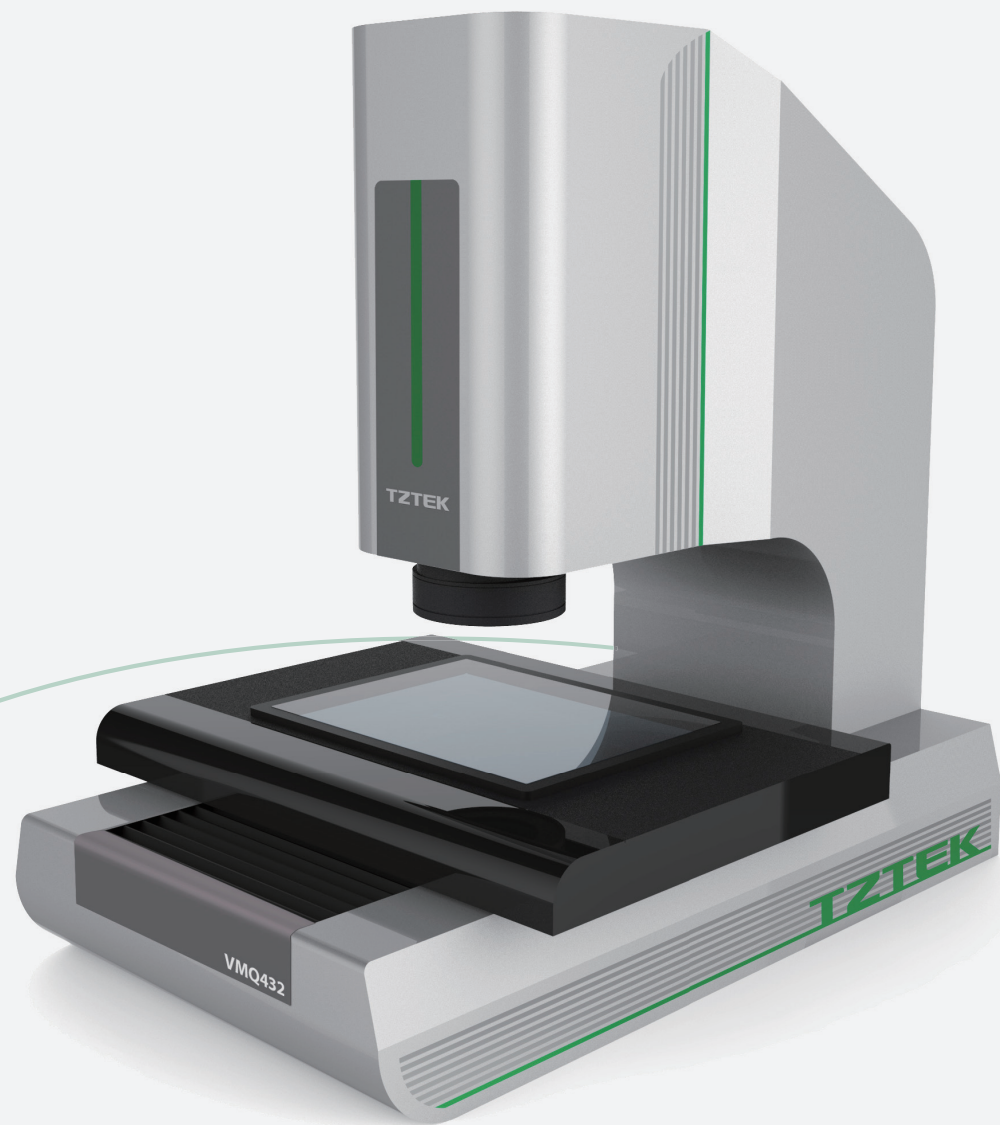
Model and Specification

Model		VMQ100
Travel(mm)		100×100
Dimensions(mm)		235×480×563
Mass(kg)		30
Max. Stage Loading(kg)		3
Camera		Industrial high resolution camera
Lens		Double telecentric double vision optical lens
FOV(mm)		Φ100/20×20
Accuracy(μm)		5/2
Scale		0.5μm Import scale
The Min Unit (μm)		0.1
The Depth of Field(mm)		24/1.4
Effective Range of Z(mm)		47/35
Illumination	Profile *	Profile profile light (green LED)
	Surface	Movable 2 ring, 4 zone LED cold light(White) controlled by program, multi orientation illumination, each segment independently controlled, 256 brightness adjustable
	Coaxial	Optional part, FOV: 50×50mm
Image Processing		TZTEK applies the advance method: 256 gray scale, 10:1 sub-pixel processing technology
Movable range (mm)		35
Software		Vispec software platform (VMQ Version)
Environment		Temperature 20°C±2°C, Humidity 30~80%
		Vibration <0.002g, <15Hz
Power		100~240Vac, 50/60Hz, Single-phase, 100W

* Profile light option: diffusion light (green LED)

VMQ Moving Platform Video Measuring Machine

VMQ432 is unique in the industry a highly efficient video measuring machine. The machine is a traditional and integrating video measuring machine with excellent measuring technology, combined with the advanced concept of instantaneous measurement and development of a precision measurement products. In inheriting the traditional automatic video measurement machine, on the basis of advantages such as large view, large range large depth of field in the integration of technology innovation. Measuring efficiency more than 20 times.



Features

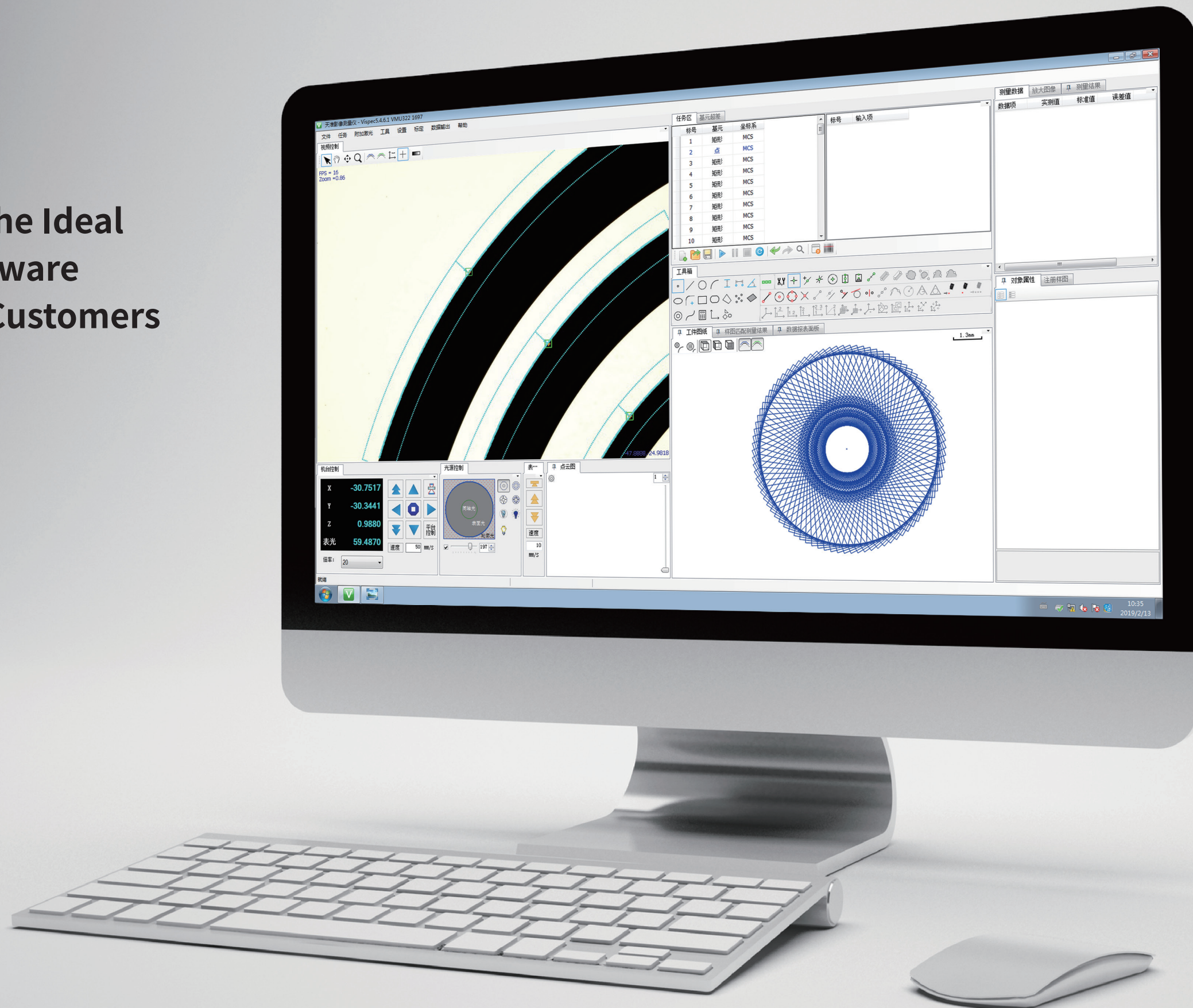
- Accurate quick measurement promotes the measuring efficiency above 20 times
- Double telecentric lens achieves large view measurement
- Extended depth of field achieves the one-time measurement within different heights
- 3-axis automatic programmable measurement on large range
- Multi-tasking parallel measurement improves the measuring efficiency greatly
- The creative coordinate system matching function is able to match the coordinates with workpieces automatically
- Precision granite machine body with high accuracy and stability
- Shifting platform breaks through the limitation of traditional quick measuring machine's fixed range
- 3-axis imported precision liner guide, precision drive system and CNC control system
- Measuring result could be output in Word, Excel, CAD, etc.
- Outer connectors are allocated which could be customized onto kinds of production lines to achieve quick on-line measurement.

Model and Specification

Model	VMQ432	
Travel(mm)	400×300×200	
Dimensions(mm)	900×1284×1792	
Mass(kg)	430	
Max. Stage Loading(kg)	25	
Camera	Industrial high resolution camera	
Lens	Double telecentric double vision optical lens	
FOV (mm)	Φ100	20×20
Accuracy(μm)	5 / (6+L/200)	2 / (3+L/200)
Scale	0.4μm Import scale	
The Min Unit (μm)	0.1	
The Depth of Field (mm)	24	1.4
Effective Range of Z (mm)	212	200
Illumination	Profile*	Parallel profile light (green LED)
	Surface	2 ring, 4 zone LED cold light(White), each segment independently controlled, 256 brightness adjustable
Image Processing	TZTEK applies the advance method: 256 gray scale, 10:1 sub-pixel processing technology	
Move Control	CNC DC servo system	
Software	Vispec software platform (VMQ Version)	
Environment	Temperature 20°C±2°C, Humidity 30~80%	
	Vibration < 0.002g, < 15Hz	
Power	200~240V, 50/60Hz, Single-phase, 700W	

* Profile light option: diffuse profile light (green LED)

Be the Ideal
Software
for Customers



Vispec Self-developed Software Platform

Vispec software platform created based on TZTEK many years' top measuring technical theory and practice with constant improvement. This software provides professional support and authoritative measuring reports on geometric senses and form and location tolerance for precision manufacture industry.

Concise and Clear Software Operation Interface

Vispec metrology software persists in the concept of humanization and facilitation. The Interface, program and operation control are all with the features of convenience, efficiency and concision.

Rich Element Selection Function

Vispec detection software supports rich geometric measurement functions such as point, line and circle, as well as various methods such as manual point, optimal edge point, overall extraction, texture segmentation and multi-segment extraction.

It is convenient to construct a variety of virtual elements, including points, lines, circles, arcs, etc., to provide multi-faceted technical support for automated inspection.

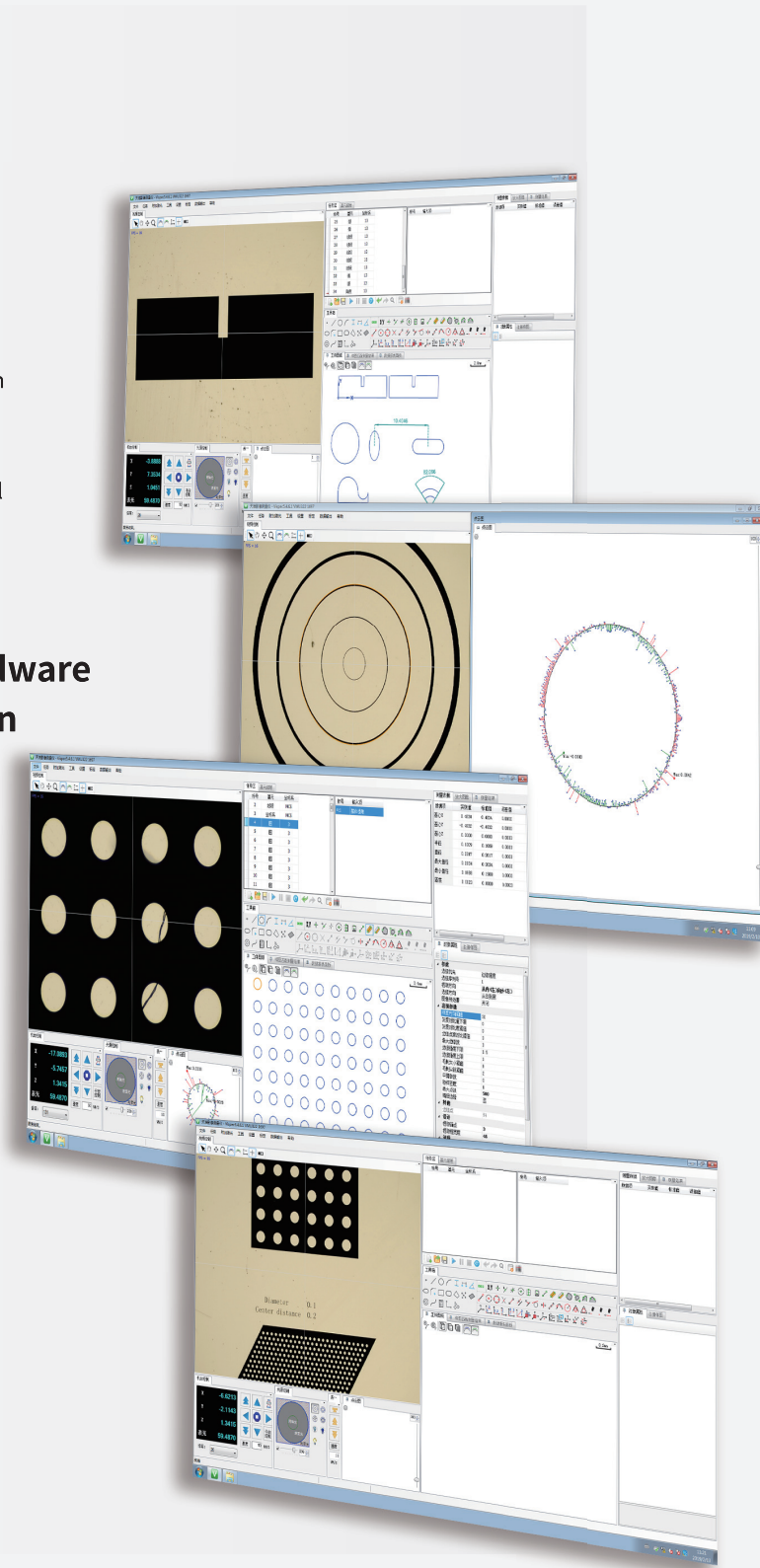
Accurate Detection by Hardware and Software Configuration

It supports the preparation of automatic detection tasks, along with automatic focusing, automatic lighting, automatic edge-tracing, achieves rapid detection of products of the same specifications.

It provides surface light, contour light, and coaxial light to realize 256-level brightness control for multiple sections.

The CAD drawing imported into the software could be programmed to setup and run tasks.

Support manual barcode scan gun and inputting barcode manually, barcode will output with measurement data together.



Software Enhancements (Standard)

Grid Testing

For multiple workpieces arranged in grid, automatic batch detection can be realized by only compiling the detection task of one workpiece, and the detection results can be visually displayed in the grid detection panel.

Image Enhancement

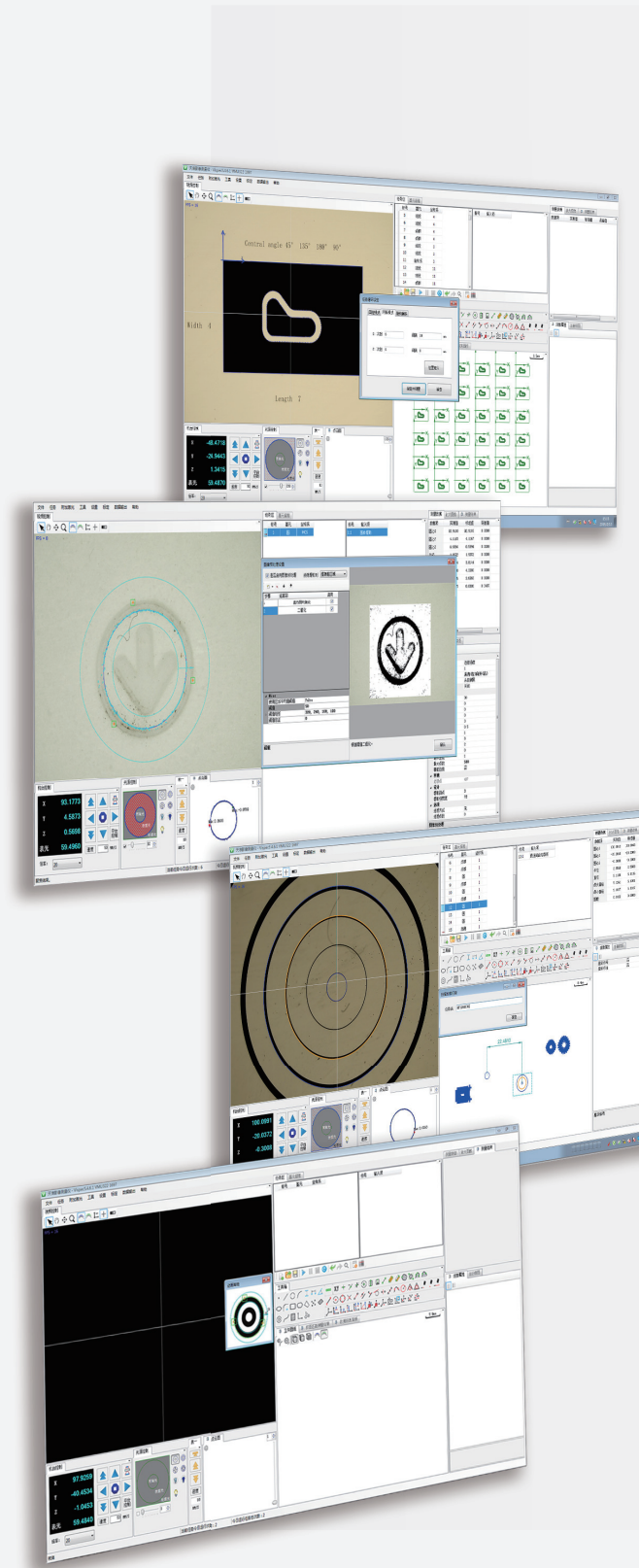
The acquired images are subject to feature filtering and enhancement to eliminate the irrelevant information, improve the signal-to-noise ratio, simplify the image and improve the detection reliability.

Detection by Code Scanning

Through scanning barcode and QR code for automatic identification, the automatic detection task can be called and realized.

Animation Demonstration

With the animation demonstration of programming, it is convenient for beginners to quickly understand the use of software.



Software Enhancements (Optional)

Sample Plot Matching

The software can collect the feature images of the workpiece, automatically load tasks and match detection items, eliminating the need for manual positioning to improve the detection efficiency.

Product Grading

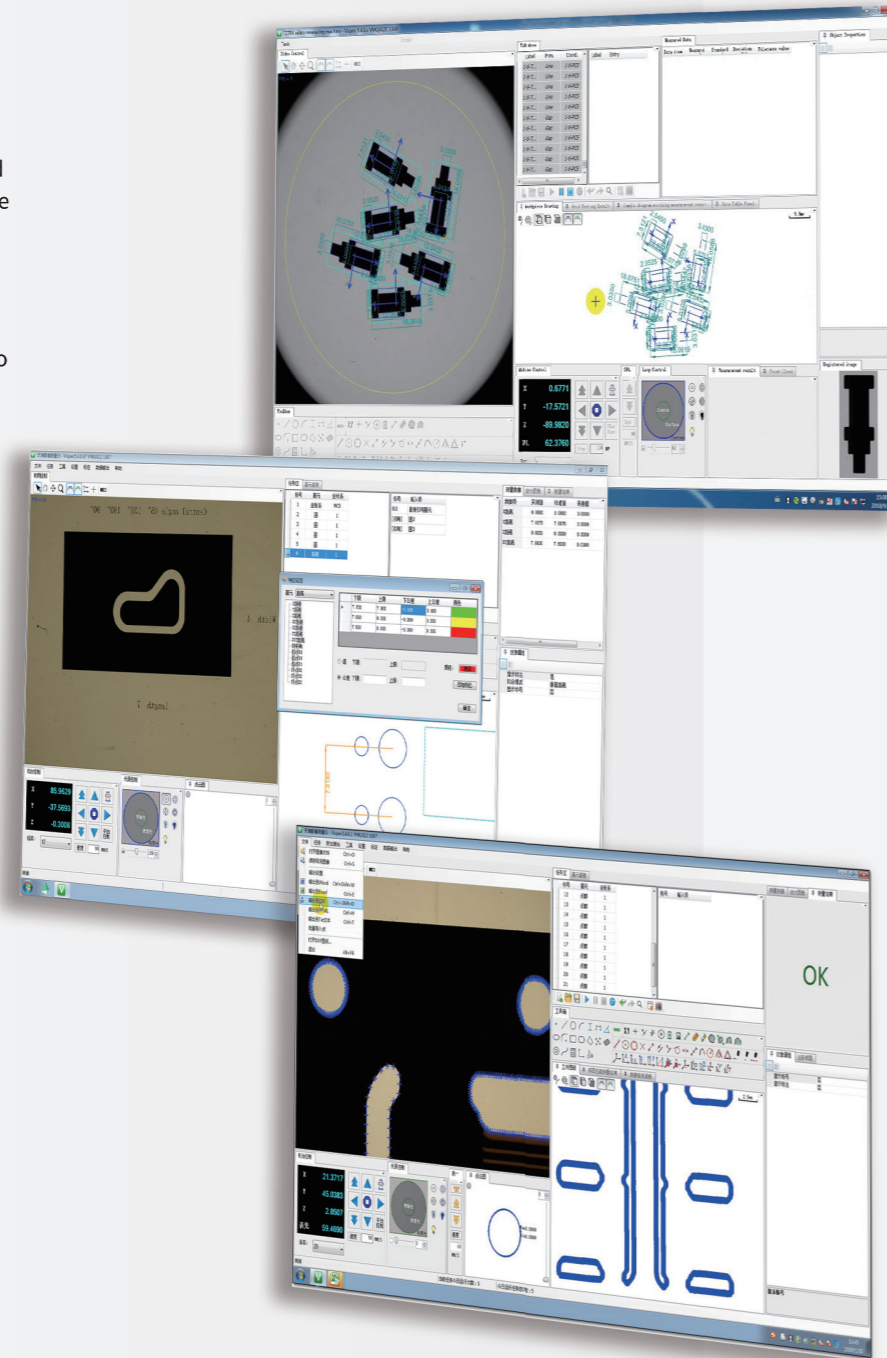
It supports custom grading settings to achieve product sorting.

I/O Communication

By combining the I/O signal with the production line, the software can interface with the automatic feeding and unloading mechanism, and support automatic switching of testing tasks and grading of testing results.

Reverse Engineering

The contour scanning function allows the product contour to be extracted and DXF drawing files to be exported.



Drawing Comparison Function

Importing the CAD drawing makes the comparison with real workpieces to get the tolerance.

Auto Texture Division Function

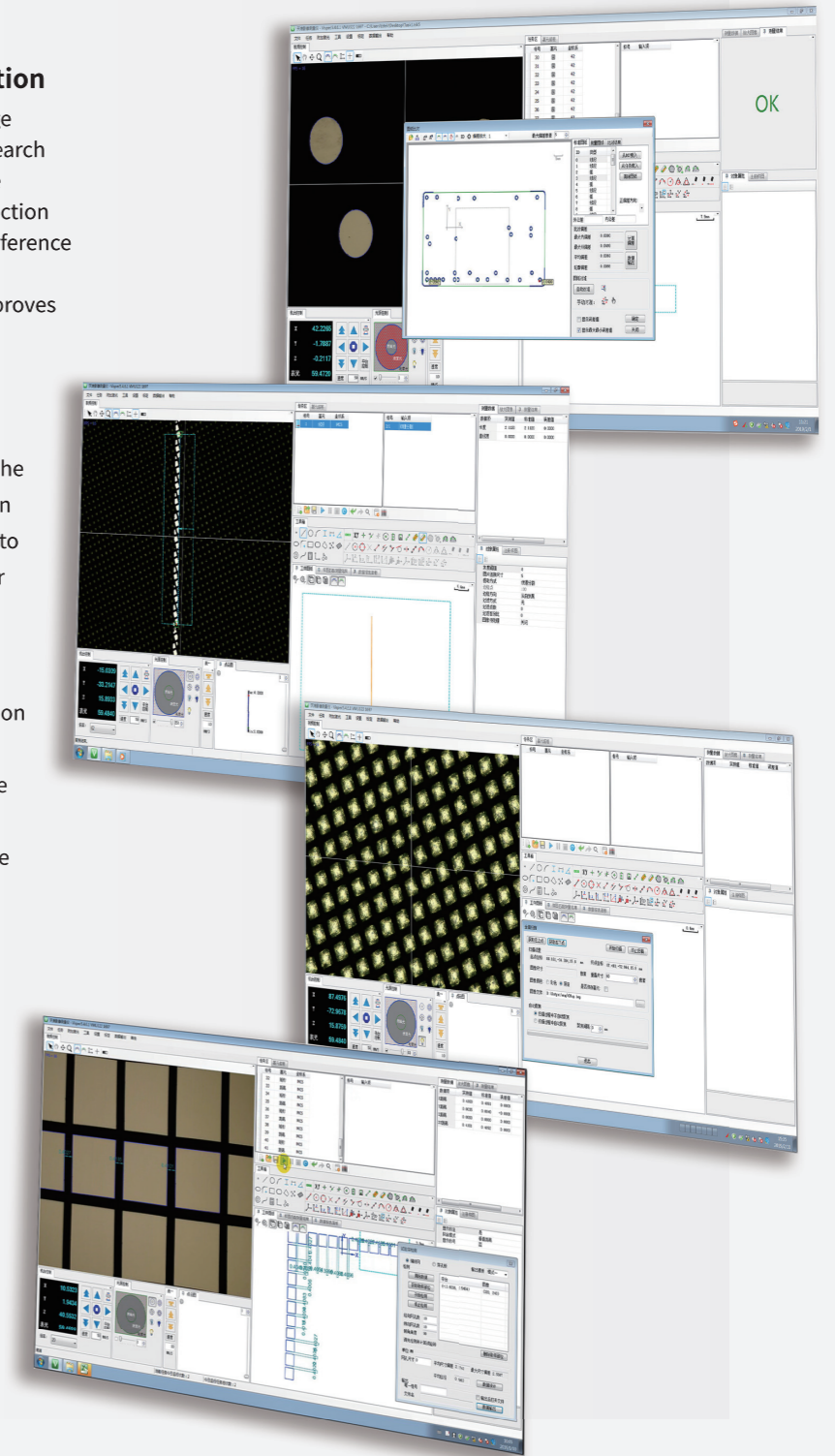
The meshes of wire mesh are in large quantity. It is difficult and slow to search the edges manually. Vispec with the function of texture division and selection measuring could eliminate the interference mesh lines to accurately select the distances between holes, which improves the measuring precision greatly.

Panoramic Scanning

Just by selecting the bright spot of diagonal line, software could scan the designated area position by position and joint the picture automatically to get the whole image of the whole or part of workpiece.

Calibration on Test Sieve

Software has the test sieve calibration function. Two standard sampling locations inspected by the test sieve could fast measure the area and perimeter of the test sieve crosswise and lengthwise.



Stable and Safe Control

Motion control includes scale data area, platform control area and lighting control area. These three areas collaborate to control the platform and do video measurement under stable and safe measuring process.

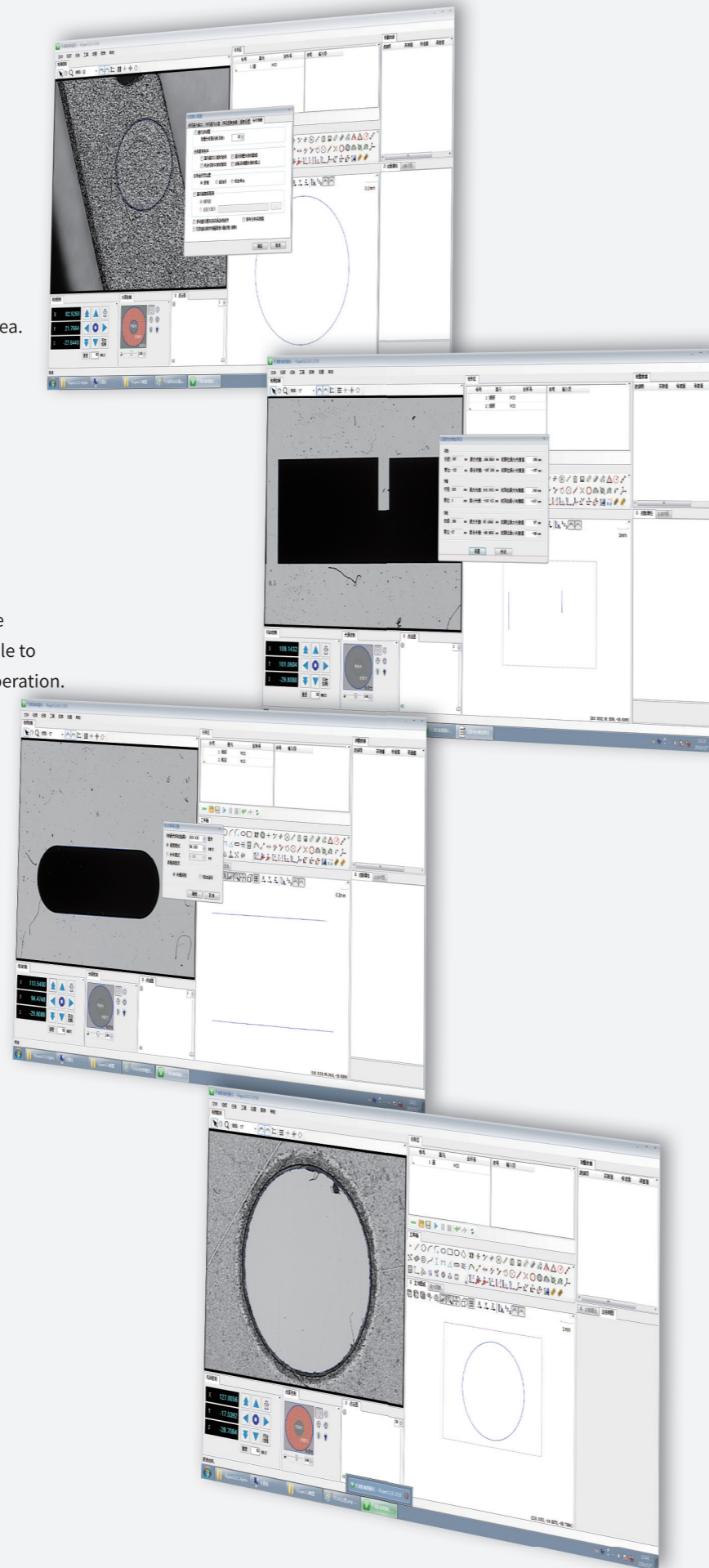
Software is allocated with kinds of platform motion control modes, such as basic 3-axis direction control mode, draggable platform control mode, moving button control mode, double-click position control mode.

3 axis could set the step length to control the platform moving safely and stably, meanwhile to avoid the machine damage caused by misoperation. It is facility for minor adjustment.

Scram function could quickly stop during the operation process to guarantee the safety and lifetime of machines.

System with some settings could intelligently control the operation in case that machine control failure, element measurement failure, element out of tolerance, etc.

EMC design passing CE certification has strong ability of anti-EMI.



Rich Data Output and Analysis Function

The measuring data shown with pictures and words are orderly indicated in the drawing.

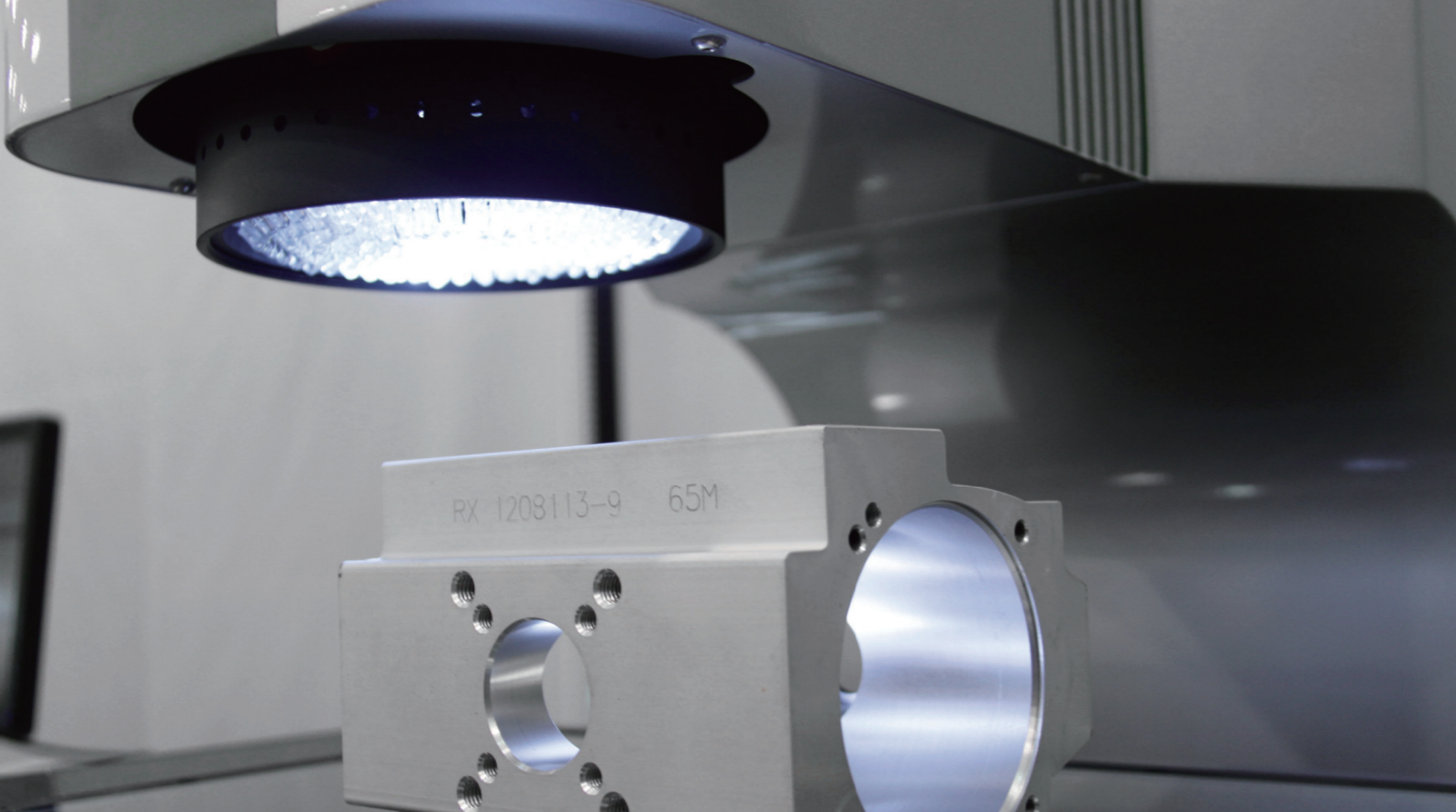
Vispec software could output the measuring data in various formats, such as Word, Excel, Html, Txt and DXF.

Vispec software with SPC data analysis function could promote detection efficiency greatly by exempting manual statistical analysis process.

It supports customization of output report, and automatically fills in and processes data as per the format required by customers, making data management more convenient and faster.

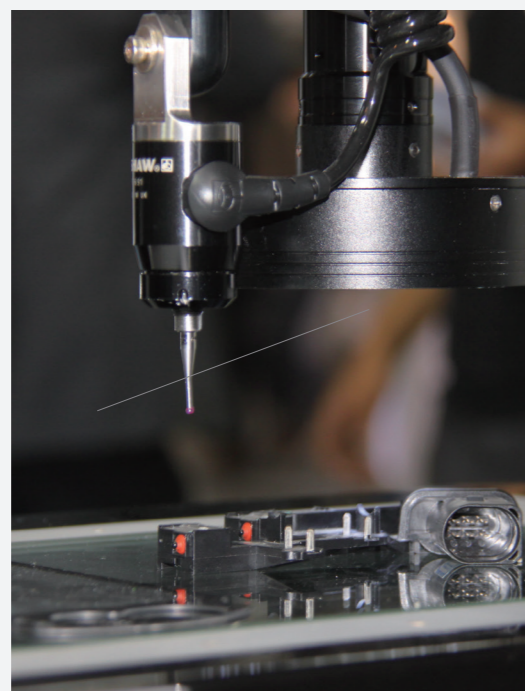
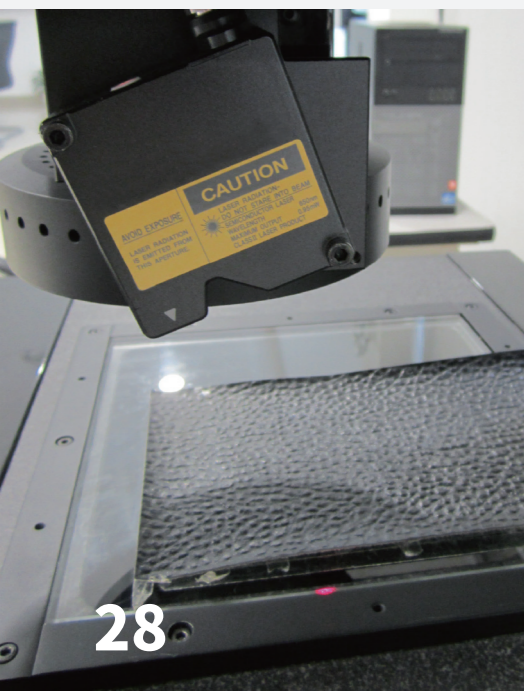
It supports data upload and interfaces with customer MES system.





Quality of Detection, from Innovative Technology

TZTEK video measuring machine is able to achieve the accurate measurement integrated with the top technology of precision machinery, detection system, software algorithm, probe system and optical design.



Electronic Control System

In precision metrology industry, TZTEK is the only domestic company with the R&D ability on controller. TZTEK electronic control system is divided into manual machine control system and CNC machine control system which can meet the requirements for kinds of models.

- S curve motion control has fast, accurate and stable positioning performance. The positional accuracy is as high as $2\mu\text{m}$.
- Passing CE certification, with high ability of anti-EMI and shielding effect.
- Monitor the platform position and lens status. Get the accurate 3-axis coordinate figure by the best theoretical position and zoom rate. Output the professional data at the same time.
- The combination of drive and motion control make the video measuring machine high-accurate, high-speed and integrated.

Optional Accessories

Optical Ranging Sensor

Laser is mainly applied to the non-contact measurement on cellphone panel, LCD backlight module, auto and tooling parts. It can achieve the measuring tasks that regular video can't inspect. Laser and video cooperate and complement. Video is used to enlarge image for inspection and positioning. Laser is used to capture the measuring point. Both cooperate to measure the depth of narrow groove, small-bore diameter and blind hole. For example, in auto and tooling industry, the assembly is requested under the condition of dust prevention and waterproof, which asks for a high flatness. Laser measurement is able to meet the high efficient, high accurate and non-contact measuring request.

Joystick

Joystick control is provided for more natural and convenient man-machine interaction. The more flexible operation promotes the measuring efficiency.

Barcode Scanning Gun

It can scan the barcode before measuring, and then output or print the barcode and its corresponding date of the measuring parts, which can great improve the measuring efficient.

Jig

L-type jig, V-type jig, top clamp and other standard jig can be provided; it can also customize the jig.

TZTEK also provides rotating table, laser pointer, high depth-of-field lens, coaxial optical lens, foot switch, metal foot, as options to meet the different needs of customers.

Optical System

TZTEK video measuring machine provides three lightings: profile, surface and coaxial. Different workpiece could use different lighting to get the clearer and more accurate measurement.

- LED cold light: 50,000-hours continuous lighting and the bulb's heat will not be transmitted to the workpieces, which guarantee the measuring accuracy.
- Auto lighting technology provides the best lightness adjustment.
- Auto focus is adjusting the height of lens to achieve accurate focus and clearer image.
- TZTEK auto zoom lens has 11 kinds of zoom rate for option.

Adjustable Surface Light

TZTEK has developed the adjustable surface light for the elements which are difficult to illuminate during the measurement, such as groove, screw inner hole, chamfer, etc. The outer 3 rings and inner 3 rings, can be operated separately. The outer 3 rings can be moved up and down by programming control and it can provide the illumination angle of 45° , 65° and 75° , which is flexible for customer to switch. The external light is optional for the adjustable surface light, customer can manually adjust the angle to meet difference illumination requirement, improving the measurement accuracy.

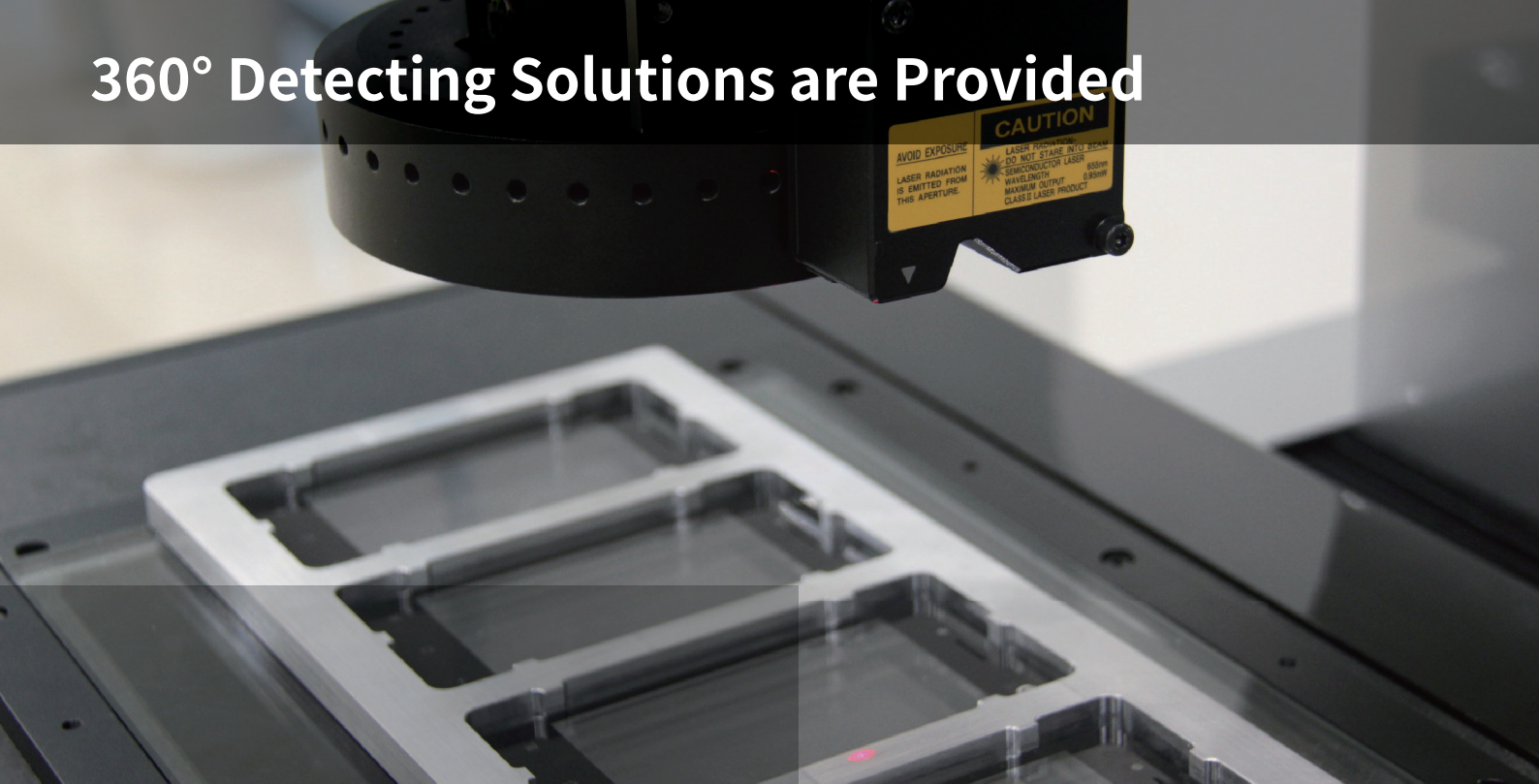
Probe

Probe is mainly applied to the contact measurement especially in auto and tooling parts for the un-regular products like ellipse, height, flatness, etc. The accuracy is as high as $3\mu\text{m}$. Probe and video cooperate and complement. Software calculates the basic dimensions and features of point, surface, etc., combining with the contact positioning to meet the high accurate measuring request.

Front Lens

Different front lens can be selected to widen the detection field or increase magnification, 2x, 1.5x, and 0.5x are optional.

360° Detecting Solutions are Provided



High Measuring Accuracy on Large Dimensions is No Longer A Tough Task



Optical Module

Optical modules are the photoelectric conversion device in the optical fiber communication system, and the bridge between the optical cable and the base station. Once the "bridge" has internal defects, it will seriously affect signal transmission and even cause communication failure.

Therefore, it is essential to conduct internal detection so as to guarantee that the optical module achieves the expected communication state after it is installed.

The high-precision detection software independently developed by TZTEK can quickly detect the position, angle, height and other dimensions of chip and interface on the substrate, improve the product qualification rate, and escort the communication.

Test Requirements

Position and height, angle measurement and gold line elevation measurement after optical chip and optical interface are assembled on the substrate

Detection Difficulties

- Optical chip features with high reflection, and the image produced by traditional light sources has too much noise
- The chip and optical interface are small in size, and can only be clearly distinguished by magnification above 300X
- With high magnification, the field of view is small, and the measured chip will deviate from the center of field during batch detection
- The highest points of the goldline free bend are difficult to collect

TZTEK Solutions

- Coaxial light can overcome the surface interference caused by diffuse light reflection, so that the image quality is more transparent
- Choose 12.5X lens with high magnification range, up to 460 times
- Such functions as automatic matching, image alignment and fast calculation can improve the measurement efficiency
- Goldline Elevation Detection by 3D Layered Scanning



Precision Accessories for Mobile Phone

Since the birth of smart phones, people have increasingly high requirements on their mobile phones. Mobile phones are no longer simple "mobile phones", but "good-looking", "portable", "high pixel" and other demands flood the market, bringing huge business opportunities and challenges to the mobile phone manufacturing industry.

To meet the market demand, base on a combined detection method of image and laser, TZTEK can quickly detect the height, radian and other dimensions of the mobile phone cover plate and curved screen made of 3D composite materials, and carries out the high-precision detection of the shape and position tolerances such as dimensions and relative position degree after the mobile phone camera module is reassembled, so as to improve production efficiency and product quality.

Detection Requirements

Mobile phone cover made of 3D composite materials: Arc edge height, various dimensions, etc

Base of mobile camera module: 2D dimensions of each layer, height/depth, relative dimensions after assembly, etc.

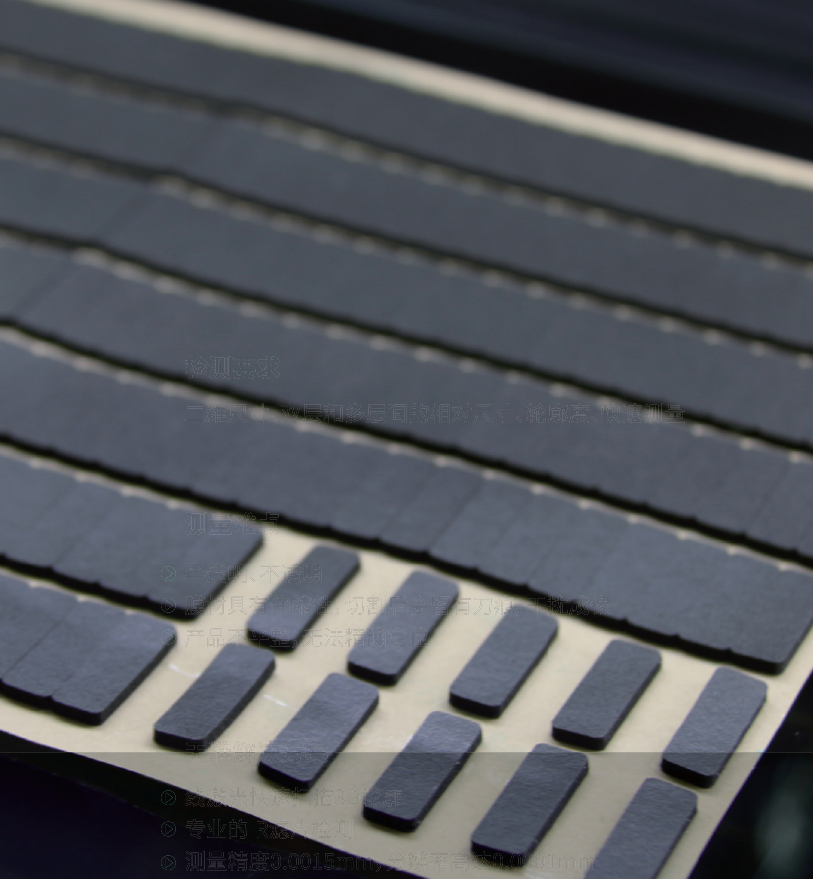
Detection Difficulty

- Mobile phone cover made of 3D composite materials: The highest points of arc edges are difficult to collect, and the precision and efficiency of dimension measurement are highly demanding.
- Base of mobile camera module: IR filter has poor imaging effect, and batch measurement of dimensions such as flatness and depth has a low efficiency

TZTEK Solutions

- Quickly scanning of 3D contours by line laser
- Professional IR Filter Detection
- Detection precision 0.0015mm, resolution up to 0.0001mm





Die Cutting

Traditional die cutting refers to a cutting process for post-processing of presswork and electronic materials. With the continuous and rapid development of the electronic industry, die cutting has become one of the production methods of auxiliary materials for electronic products. Due to flexibility and other features of films, how to control die cutting, is an important guarantee for enterprises to improve their competitiveness.

The product images are collected with image preprocessing function and various light source systems, so that TZTEK has the ability to quickly measure two-dimensional sizes, multi-layer relative sizes and profile of the products, to ensure the accuracy and repeatability of the detection and improve the detection efficiency.

High Standard Requests High Accuracy

Test Requirements

2D dimensions, relative dimensions between layers, profile, and rapid detection

Detection Difficulty

- Semitransparent & Opaque
- The film materials are flexible and will present knife marks after being cut, thus interfering with imaging
- The product is not smooth and cannot be accurately positioned

TZTEK Solutions

- Semitransparent product adopt the high-power bottom light source design
- Opaque products adopt coaxial light, six ring & eight zone surface light, lifting surface light and other light source systems
- Image preprocessing is carried out before image acquisition to stabilize the preset edges of acquisition
- The product can be flattened with glass clamps, while the space under the clamps can be adjusted according to film size (adjustment range: 0.5~7.5mm)

High Quality is Achieved Through Attention to the Details



Connectors

As a component connecting two active devices, connector is widely applied to the industries like aerospace, national defense, car industry, computer internet, etc. With the development of these industries, the market of connectors is growing.

The technology innovation of connectors is mainly focus on micromation technology and precision connection. To meet the development of micro miniature connector, high precision tooling, automatic production and assembly, TZTEK video measuring machine is developing to high accurate and high efficient on the control of dimension, location degree, profile tolerance, etc.

Test Requirements

Spacing, Position, Height of Feeler Pin/Sheet Length, Width, or Diameter of Sockets Secure Buckle

Detection Difficulties

- The feeler pin is reflective and has a pointed or chamfered top
- The contacts of FFC/FPC Connector are small
- Length and Width of the Inner Root of Injection-molded Part

TZTEK Solutions

- Automatic magnification lens is used to extract tiny features
- Four-axis CNC moving bridge structure is used to realize high-speed and high-precision detection with large range
- The optical glass clamp of high precision is adopted to ensure optical performance and measurement accuracy
- High-power profile Light & Multi-angle Surface Light