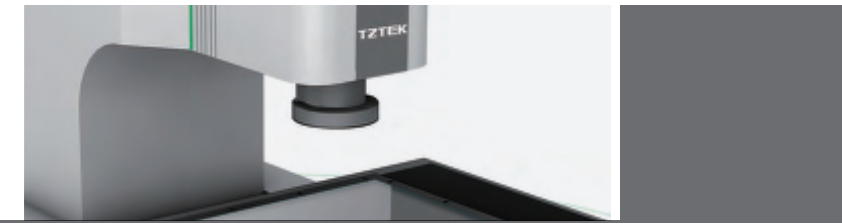


TZTEK

Video Measuring Machine



Japan

Tokyo
Kr Toyosu Bldg, 5 Chome-4-9 Toyosu, Koto City, Tokyo

Vietnam

Hanoi
BT1-B02, Splendor, Bac An Khanh Urban Area, An Khanh Ward,
HOAI DUC district, Hanoi City, Vietnam

Bac Ninh
11-12 Li Yingzong Road, Vu Keung Fong, Bac Ninh City,
Bac Ninh Province, Vietnam

Korea

Incheon
722, 194 Hogupo-ro, Namdong-gu, Incheon, South Korea

India

Nasik
G-22 Malegaon MIDC Sinnar Nasik-422113, Maharashtra , India

Chennai
Venkateswara Nagar, Kottivakkam, Chennai, Tamil Nadu 600041, India

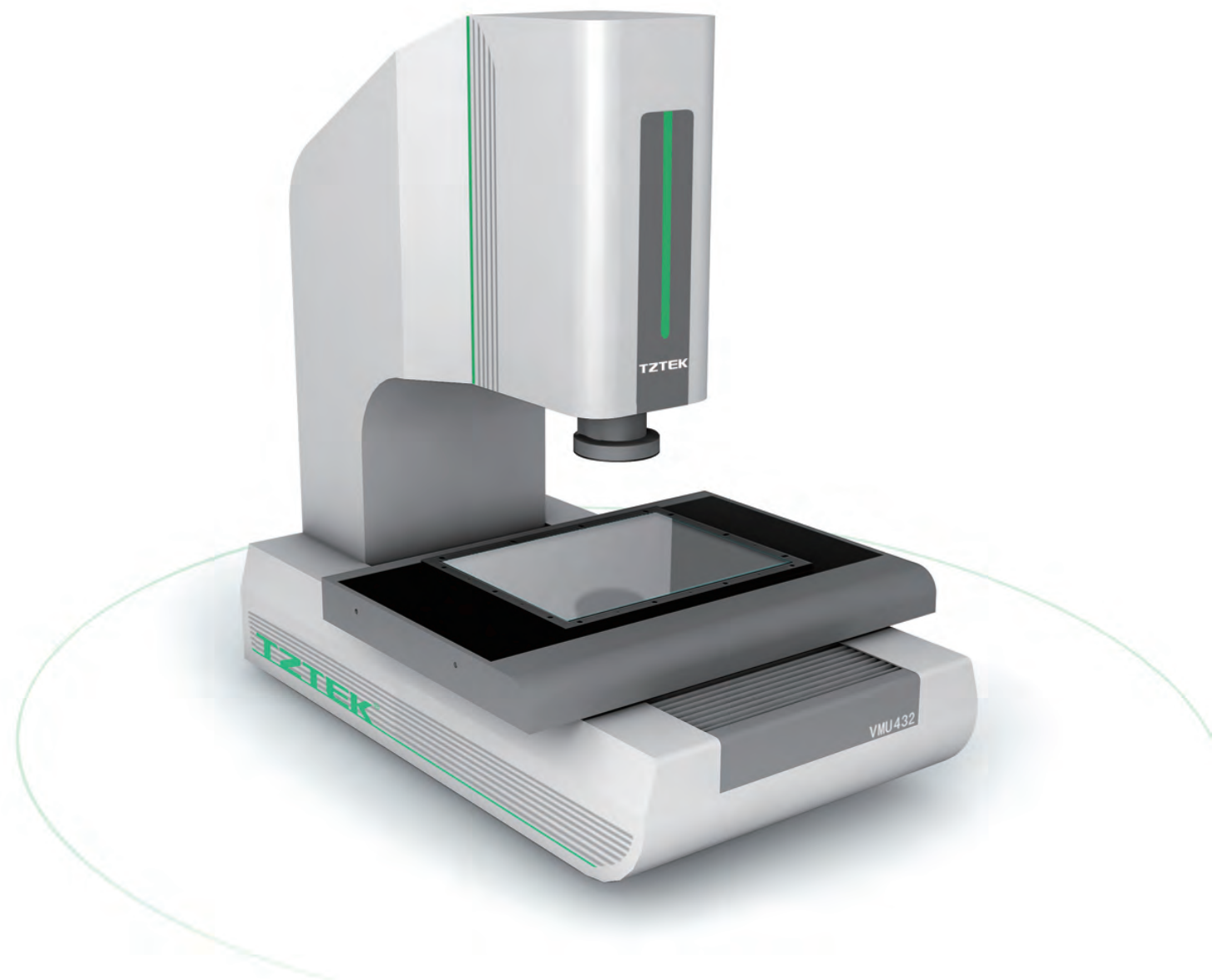
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20250207



TZTEK

Devoted to Smart Industry

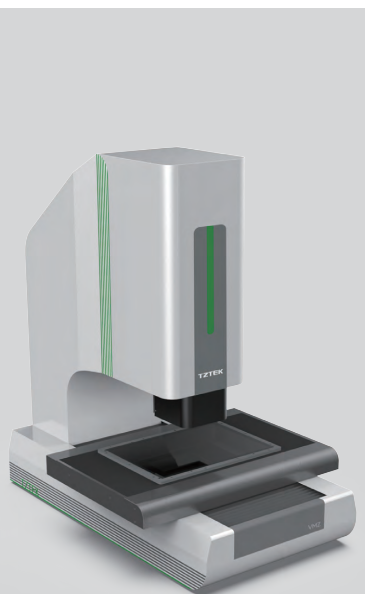
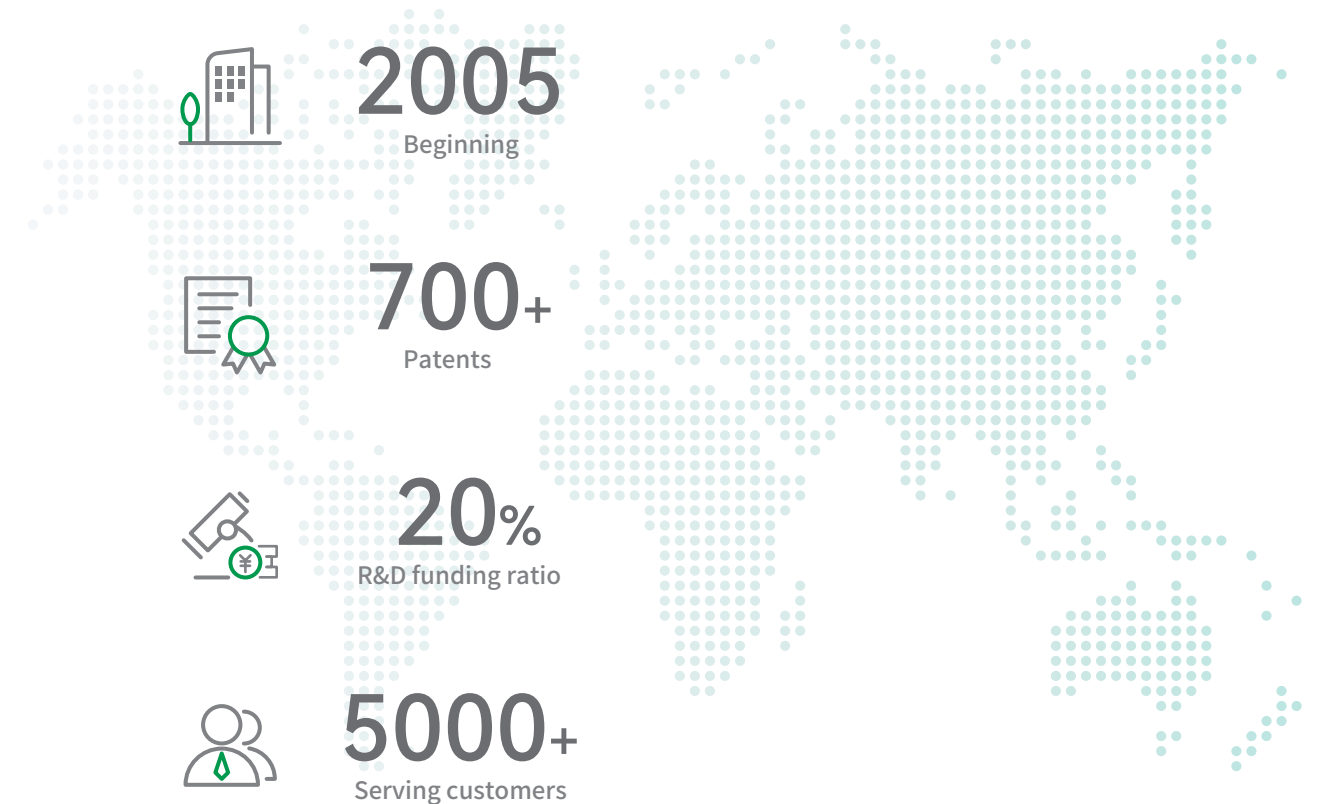
TZTEK, a leading company in high-end vision equipment, is dedicated to promoting smart industry with AI technology. Specializing in electronics, semiconductor, and new-generation vehicle industries, TZTEK provides advanced AI-driven vision equipment that sets new benchmarks for quality and efficiency in the modern industrial landscape.

As a key global supplier of vision equipment, TZTEK leads the electronics industry by delivering cutting-edge vision metrology, inspection, and processing equipment. In the semiconductor field, TZTEK focuses on wafer front-end process, and provides high-precision optical metrology and inspection solutions. For new-generation vehicles and robotics, TZTEK offers innovative autonomous driving systems, universal intelligent solutions, and intelligent equipment. Across the intelligent ecosystem, TZTEK boosts competitiveness and fosters innovation, demonstrating its commitment to driving progress in modern industries.

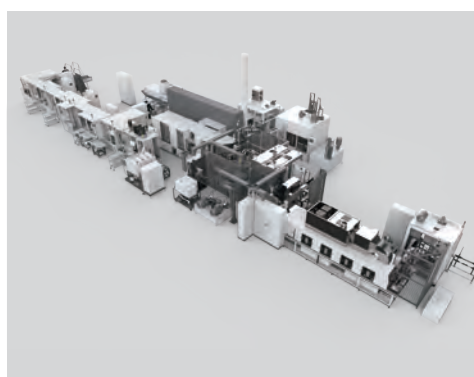
Founded in 2005 and being a pioneer listed on China STAR Market, TZTEK has consistently prioritized research and development, and has built leading technological platforms in AI and precision opto-mechatronics. Partnering with top-tier clients, TZTEK has served over 6,000 customers worldwide, offering customized solutions tailored to a variety of industrial needs. TZTEK has played a significant role in shaping national standards and industry regulations, garnering numerous prestigious awards.

Devoted to Smart Industry, TZTEK leverages AI to drive digital transformation, delivering high quality, efficiency, and human-centric innovations to modern manufacturing. Looking ahead, TZTEK will deepen its focus on electronics, semiconductor, and next-generation vehicle industries, creating enduring value for clients and building a smarter and more sustainable future with global partners.

ABOUT TZTEK



01

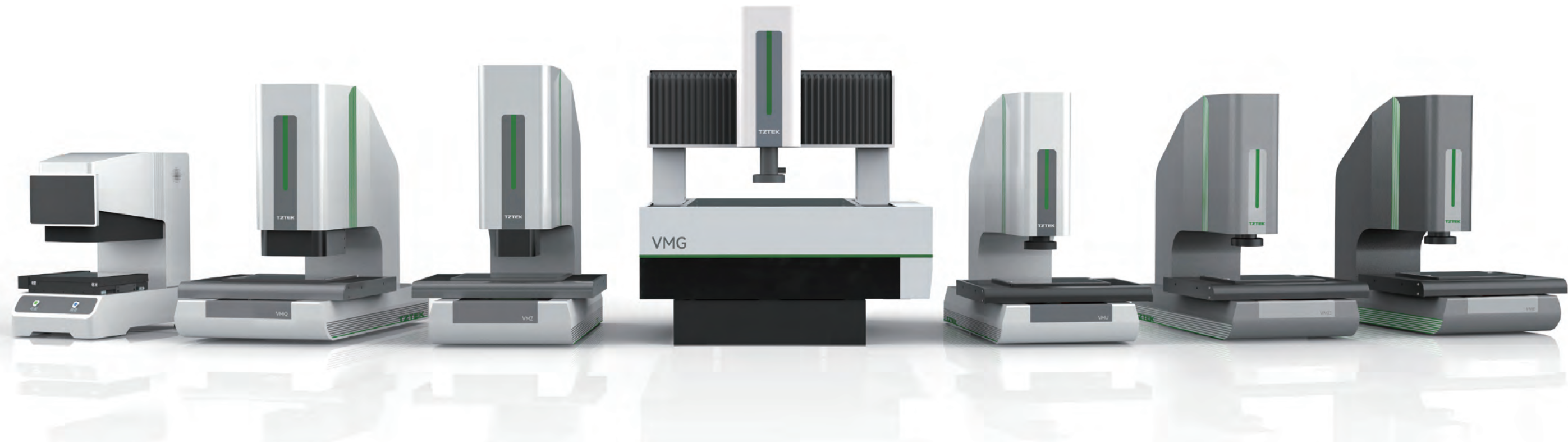


02

TZTEK Video Measuring Machine

10000+

TZTEK video measuring machines
serve in customers factories



VMQ Quick Video Measuring Machine

- large depth of view, high resolution, panoramic range of clear imaging
- Automatic image registration without the use of fixture
- Multiple workpieces can be measured, greatly improving the measurement efficiency
- Small volume and light weight
- Wide field of view(up to $\Phi 100\text{mm}$)

VMQ Quick Video Measuring Machine

- Large travel range, high accuracy, high efficiency and quick measurement
- Automatic image registration without the use of fixture
- Multiple workpieces can be measured, greatly improving the measurement efficiency
- Travel range up to $800 \times 1000\text{mm}$

VMZ Zenith Video Measuring Machine

- XY area accuracy up to $0.8\mu\text{m}$
- Microscope lens with high magnification of $25\text{-}6360\times$
- Application of nanoscale ultra-low expansion coefficient scale, ensuring high precision and stability
- Several optional optics for various measuring requirements

VMG Gantry Video Measuring Machine

- Gantry mobile bridge structure with large travel range enables silent measurement, efficiency and safety
- XY linear motor drives ensures platform stability
- Flying-snap function(optional), increasing measurement efficiency 5-10 times
- Acceleration of XY stage up to 1000mm/s^2

VMU Ultra Video Measuring Machine

- XY area accuracy up to $1.4\mu\text{m}$
- Auto zoom lens with magnification $25\text{-}338\times$
- Quick-focusing function($<2\text{s}$), increasing measurement efficiency
- Flying-snap function(optional), increasing measurement efficiency 5-10 times

VMC Classic Video Measuring Machine

- Auto zoom lens with magnification $25\text{-}209\times$
- Quick-focusing function, increasing measurement efficiency
- Smart extraction enables quick capture of features
- Optional chromatic confocal sensor, contact probe, liftable light, coaxial light, joystick etc.

VME Economy Video Measuring Machine

- Auto zoom lens with automatic focus
- Programmable 6 rings 8 segments surfacelight
- Granite structure ensures high accuracy and stability

VMQ Quick Video Measuring Machine

VMQ Quick Video Measuring Machine combines multiple technological achievements in the field of image detection, integrating advanced quick measuring concepts, and integrating wide field of view, large depth of field, and high accuracy.



Features

- High precision and high efficiency with one-button quick measuring
- Wide field of view, large depth of view and high resolution
- Accurate and quick measuring, capable of identifying multiple work pieces in one FOV, suitable for batch measuring
- Automatically load program without the need of manual search
- Automatic image registration, quick positioning of work pieces without assistance of fixture
- External ports are provided to communicate with other equipment, like integrating into production lines to realize online measurement
- Optional chromatic confocal sensor, coaxial light, ring auxiliary light etc

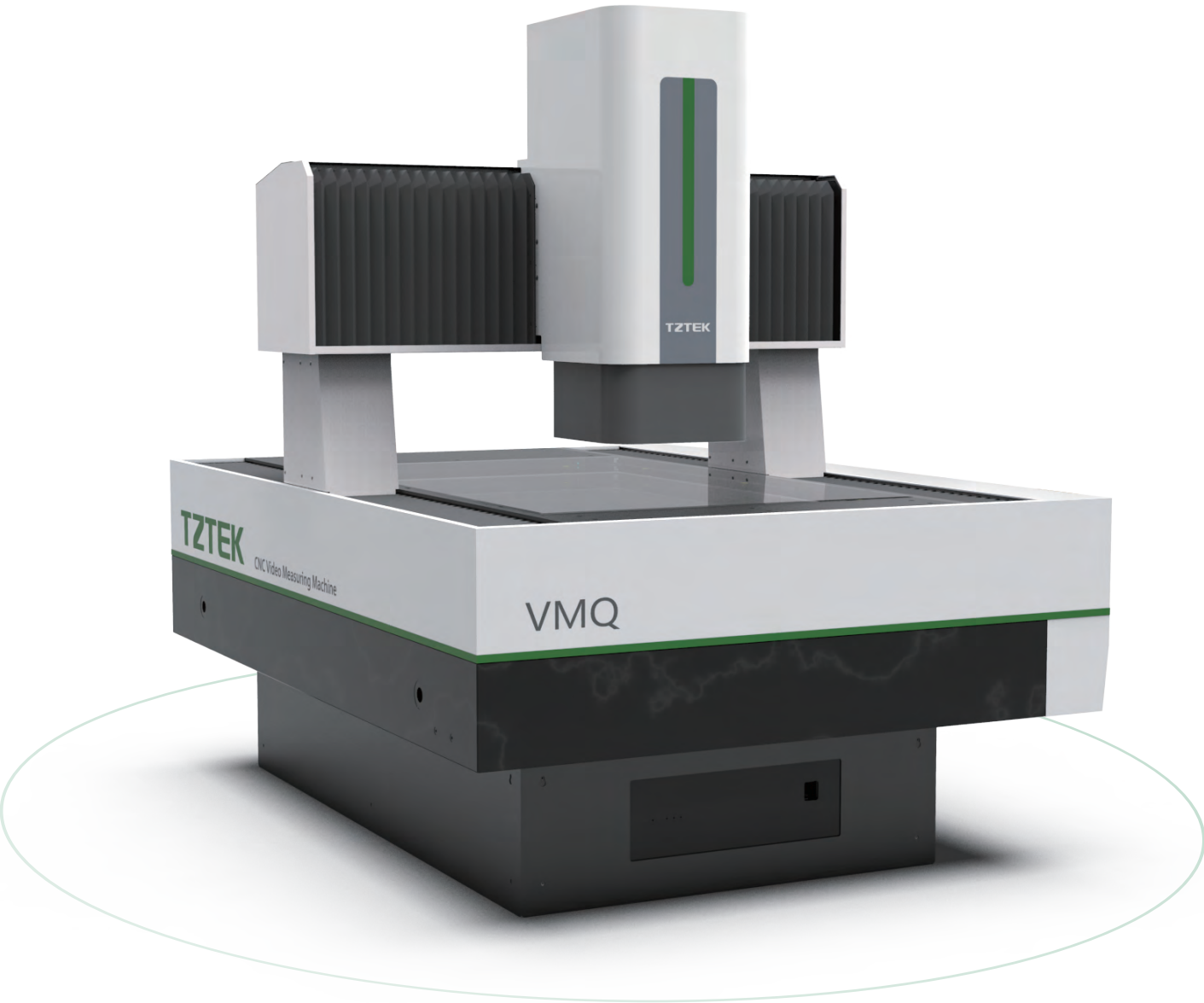
Specification

Model		VMQ222	VMQ322	VMQ432	VMQ-D432
Travel(mm)		150×120×75	300×200×200	400×300×200	400×300×200
External Dimensions (mm)		345×534×605	740×1040×1792	900×1280×1792	900×1240×1739
Mass (kg)		35	400	450	475
Max. Stage Loading (kg)		5	25		25
Optics ^[1]		Dual telecentric lens with double FOVs			Lens1: high resolution automatic zoom lens Lens2: dual telecentric lens
Measuring range (mm)		200×200/125×125	300×200	400×300	400×300
Accuracy ^[2] (μm)	FOV (mm)	φ100			Lens1: E2=(1.9+L/200) Ez=(2.8+L/200) Lens2: E2=(4.0+L/200)
	Stage unmoving	2.8			
	Stage moving ^[2]	E2=(4.0+L/200)			
	FOV (mm)	25×25			
	Stage unmoving	1.5			
	Stage moving ^[2]	E2=(2.5+L/200)			
	FOV (mm) ^[1]	8×5			
	Stage unmoving	0.7			
	Stage moving	E2=(2.0+L/200)			
Illumination	Profile	Green LED telecentric			Green LED telecentric+ white LED cold brightness
	Surface	Programmable 2 rings 4 segments LED cold light, each segment independently controlled			Programmable 6 rings 8 segmentsLED cold light, each segment independently controlled
	Coaxial	Optional, LED cold light, 256 level adjustable brightness			LED cold light, 256 level adjustable brightness
Camera		High definition black & white industrial digital camera			High definition industrial digital camera
Drive system		4-axis CNC servo control system			5-axis CNC servo control system
Speed (mm/s)	XY	200	500		
	Z	100	100		
Guide		High precise cross roller guide	High precise linear guide		
Scale		0.1 μm	0.5 μm		
The Min Unit (μm)		0.1			
Image Processing		Advanced TZTEK image processing method: 256 gray level, 20:1 sub- pixel processing technology			
Software		Vispec (VMQ Version)			
Environment		Temperature20℃±2℃,Humidity 30-80%			
		Vibration<0.002 g, below 15 Hz			
Power		200-240 vac, 50/60 Hz, 1 phase, 700 W			

[1] Optional duel telecentric lens with triple FOVs, duel telecentric magnification 16-66x, triple FOVs magnification16-165x.
[2] L is the measured length in mm, determined by TZTEK's inspection method.

VMQ Gantry Quick Video Measuring Machine

VMQ Gantry Quick Video Measuring Machine combines advantages of a large travel range from a gantry measuring machine with large field of view from a quick measuring machine, allowing for fast, high-precision measurement of large workpieces.



Features

- Large travel range, high accuracy, high efficiency and quick measurement
- Large field of view, wide depth of view and high resolution
- Automatic image registration, quick positioning of work pieces without assistance of fixture
- Joystick is provided for easy operation
- Granite structure enables high precision and stability
- Gantry mobile bridge structure with large travel range enables silent measurement, efficiency and safety
- Optional chromatic confocal sensor, ring auxiliary light, manual/automatic pressure plate etc.

Specification

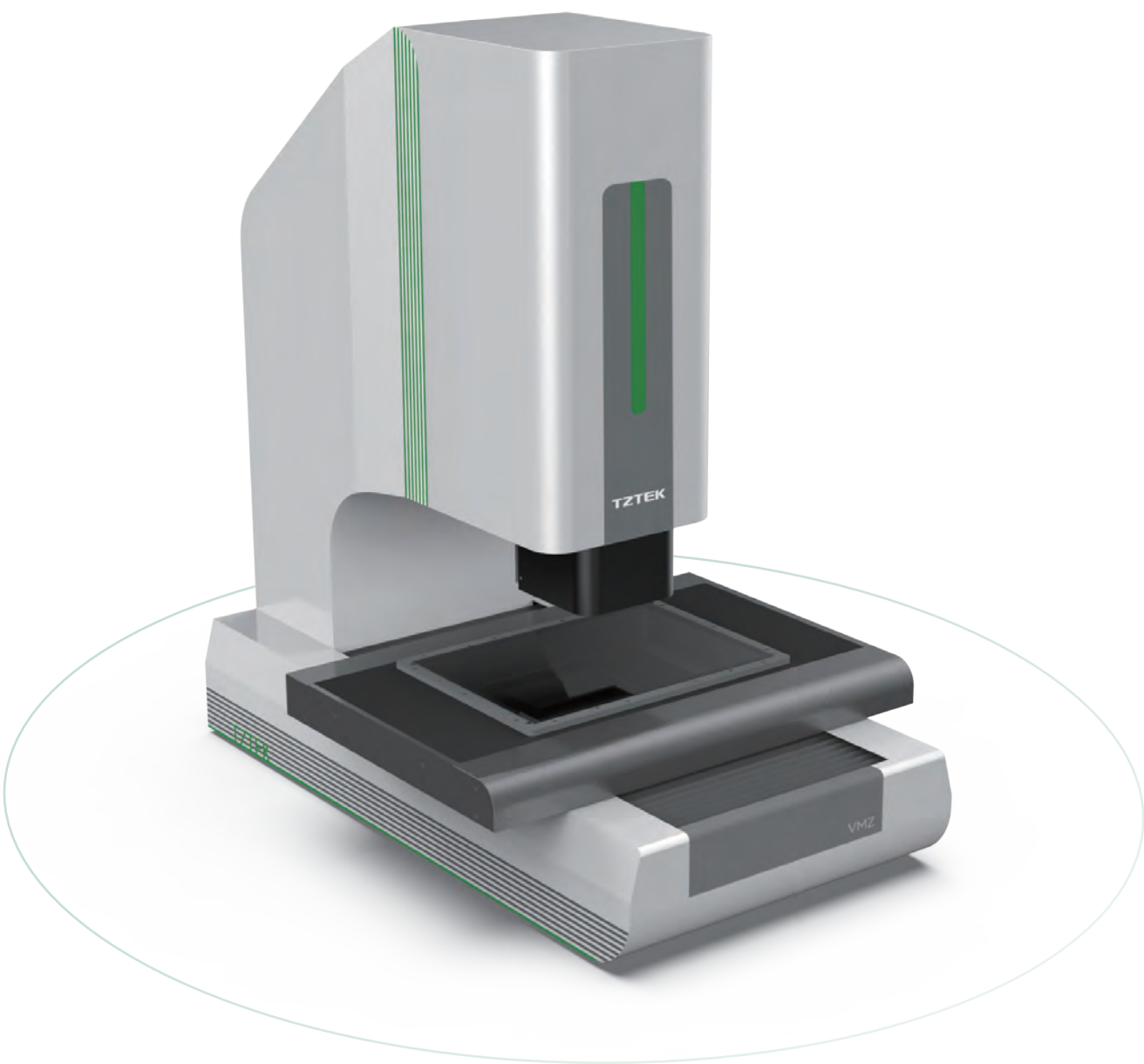
Model		VMQ452	VMQ682	VMQ8102
Travel(mm) ^[1]		400×500×200	600×800×200	800×1000×200
External Dimensions (mm)		1255 × 1532 × 1747	1455 × 1732 × 1747	1715 × 2212 × 1777
Mass (kg)		1500	1900	2900
Max. Stage Loading (kg)		80		
Accuracy (μm) ^[2]	FOV (mm)	φ100		
	Stage unmoving	2.8		
	Stage moving	E2= (4.0+L/200)		
	FOV (mm)	25x25		
	Stage unmoving	1.5		
	Stage moving	E2= (2.5+L/200)		
Optics		Dual telecentric lens with double FOVs		
Illumination	Profile	LED cold light, 256 brightness adjustable		
	Surface	Programmable 2 rings 4 segments LED cold light, each segment independently controlled		
	Coaxial	Optional, LED cold light, 256 level adjustable brightness		
Camera		High definition black & white industrial digital camera		
Drive system		4-axis CNC servo control system		
Speed (mm/s)	XY	500		
	Z	100		
Guide		3-axis precise linear guide		
Scale		0.5 μm		
The Min Unit (μm)		0.1		
Image Processing		Advanced TZTEK image processing method: 256 gray level, 20:1 sub- pixel processing technology		
Software		Vispec (VMQ Version)		
Environment		Temperature20°C±2°C, Humidity 30-80%		
		Vibration<0.002 g, below 15 Hz		
Power		200-240 vac, 50/60 Hz, 1 phase, 700 W		

[1] The height of Z-axis can be added to 400mm. Larger travels like 10120,12162,12202,16202 are customizable.

[2] L is the measured length in mm, determined by TZTEK's inspection method.

VMZ Zenith Video Measuring Machine

VMZ Zenith Video Measuring Machine with a sub-micron accuracy, is designed specially for high accuracy measurement scenarios like semiconductor, microassembly and optical communication.



Features

- Optional microscope lens with high magnification of 25-6360x
- Programmable surface light, profile light and coaxial light, available illumination configuration to meet different applications
- Several optional optics for various measuring requirements
- Application of nanoscale ultra-low expansion coefficient scale, ensuring high precision and stability
- Granite structure provides high precision and stability
- Optional chromatic confocal sensor

Specification

Model		VMZ432-T1	VMZ432-T2			VMZ432-T3	
Travel(mm)		400×300×200 ^[1]					
External Dimensions (mm)		800×1240×1762					
Mass (kg)		420	450				
Max. Stage Loading (kg)		25					
Optics		Auto zoom lens			Microscope lens	Auto zoom lens	Microscope lens ^[4]
Magnification ^[2]		25-338×			1131×/2829×	52-680×	424-6360×
Measuring Range(mm)	Single lens	380×300					
	Lens coincidence	-	325×300				
Accuracy ^[3] (μm)	X/Y linear	E1=(0.7+L/300)					
	XY area	E2=(0.8+L/300)					
	Z linear	E1=(2.8+L/300)	E1=(2.8+L/150)	E1=(0.9+L/150)	E1=(2.8+L/150)	E1=(0.9+L/150)	
Illumination	Profile	LED cold light, 256 brightness adjustable					
	Surface	Programmable 6 rings 8 segments LED cold light 256 brightness adjustable	LED cold light 256 brightness adjustable	-	LED cold light 256 brightness adjustable	-	
	Coaxial	LED cold light, 256 brightness adjustable					
Camera		High definition industrial color digital camera					
Drive system		4-axis CNC servo control system					
Speed (mm/s)	XY	100					
	Z	50					
Guide		Ultra high precision linear guide rail					
Scale		0.01μm ultra-high precision scale					
The Min Unit (μm)		0.01					
Image Processing		Advanced TZTEK image processing method: 256 gray level, 20:1 sub- pixel processing technology					
Software		Vispec (VMZ Version)					
Environment		Temperature20°C±2°C, Humidity 30-80%					
		Vibration<0.002 g, below 15 Hz					
Power		200-240 vac, 50/60 Hz, 1 phase, 700 W					

[1] Customizable for other travel range.
[2] Magnification is approximate and depends on the size and resolution of the monitor.
[3] L is the measured length in mm, determined by TZTEK's inspection method.
[4] Optional objective lens 10×、20×、50×.

VMG Gantry Video Measuring Machine

VMG Gantry Video Measuring Machine is designed especially for large dimensions, VMG adopts mobile bridge structure, the most advanced design concept and the strictest production control which ensure the accuracy and stability of the machines.



Features

- Auto zoom lens with magnification 25-209×
- Optional auto zoom lens with magnification 25-338×
- Programmable 6 rings 8 segments surface light and profile light, available illumination configuration to meet different applications
- Flying-snap function(optional) , increasing measurement efficiency 5-10 times
- Quick-focusing function, increasing measurement efficiency
- Gantry mobile bridge structure with large travel range enables silent measurement, efficiency and safety
- Joystick is provided for easy operation
- Granite structure provides high precision and stability
- Acceleration of XY stage is 1000mm/s²
- Optional chromatic confocal sensor, contact probe, coaxial light, turntable, manual/automatic pressure plate etc.

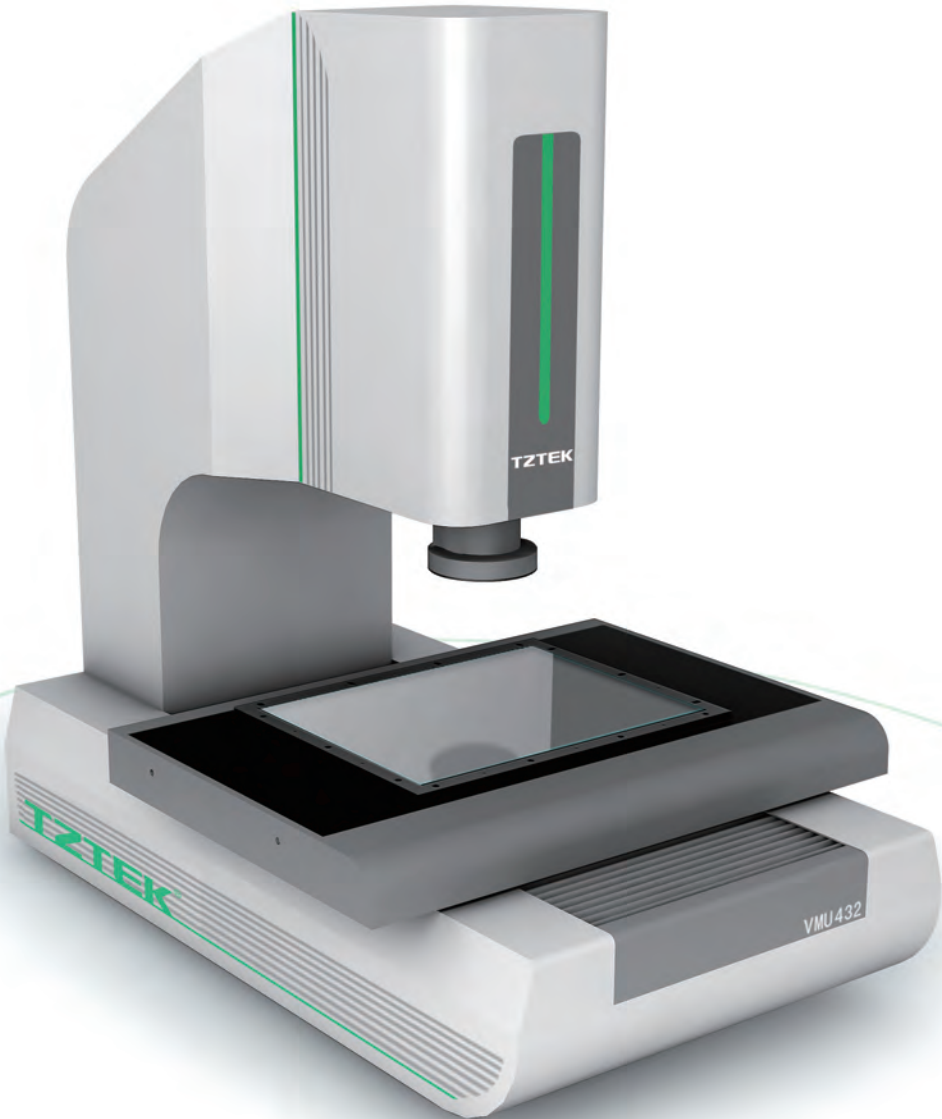
Specification

Model		VMG452	VMG682	VMG8102	VMG10122	VMG12162
Travel (mm) ^[1]		400×500×250	600×800×250	800×1000×250	1000×1200×250	1200×1600×250
External Dimensions (mm)		1255×1532×1747	1455×1732×1747	1715×2212×1777	1915×2412×1777	2115×2812×1777
Mass (kg)		1500	1900	2900	3650	4680
Max. Stage Loading (kg)		80			60	
Accuracy (μm) ^[2]	X/Y linear	E1=(2.0+L/200)			E1=(3.2+L/200)	
	XY area	E2=(2.2+L/200)			E2=(3.5+L/200)	
	Z linear	E1= (5.0+L/200)				
		E1= (2.8+L/200) (Optional 13.3:1 lens)				
Optics		8.3:1 continuous zooming(Optional 13.3:1 continuous zooming)				
Magnification ^[3]		25-209×				
Illumination	Profile	LED cold light, 256 brightness adjustable				
	Surface	Programmable 6 rings 8 segments, each segment independently controlled, 256 brightness adjustable (Movable surface light is for option)				
	Coaxial ^[4]	Optional, LED cold light, 256 brightness adjustable				
Camera		High definition industrial color digital camera				
Drive system		4-axes CNC DC servo system				
Speed (mm/s)	XY	500				
	Z	100				
Guide		3-axis precise linear guide				
Scale		0.1 μm				
The Min Unit (μm)		0.1				
Image Processing		Advanced TZTEK image processing method: 256 gray level, 20:1 sub-pixel processing technique				
Software		Vispec (VMG Version)				
Environment		Temperature 20°C±2°C, Humidity30-80%				
		Vibration<0.002 g, below 15 Hz				
Power		200-240 vac, 50/60 Hz,1 phase, 700 W				

[1] The measurement range of Z-axis is 210 mm, it can add to 400 mm.Customizable travel range 16202 12202
[2] L is the measured length in mm, determined by TZTEK's inspection method.
[3] Magnification is approximate and depends on the size and resolution of the monitor.
[4] Optional coaxial light. The specification is same as profile lighting
0.5× or 1.5× or 2.0×additional lens are available for option with the magnification 12-104× or 37-313×or 50-418×.

VMU Ultra Video Measuring Machine

VMU Ultra Video Measuring Machine integrates many advanced research achievements in the fields of vision, control, software, mechanism technology, etc.



Features

- Auto zoom lens with magnification 25-338×
- Programmable 6 rings 8 segments ring surface light, profile light and coaxial light, available illumination configuration to meet different applications
- Quick automatic focusing in 2 seconds, substantially improves measuring efficiency
- Flying-snap function(optional) , increasing measurement efficiency 5-10 times
- Smart extraction enables quick capture of features
- Joystick is provided for easy operation
- Granite structure provides high precision and stability
- AI function for feature capture, reduces manual intervention and saves labor cost
- Optional chromatic confocal sensor, contact probe, liftable ring surface light etc.

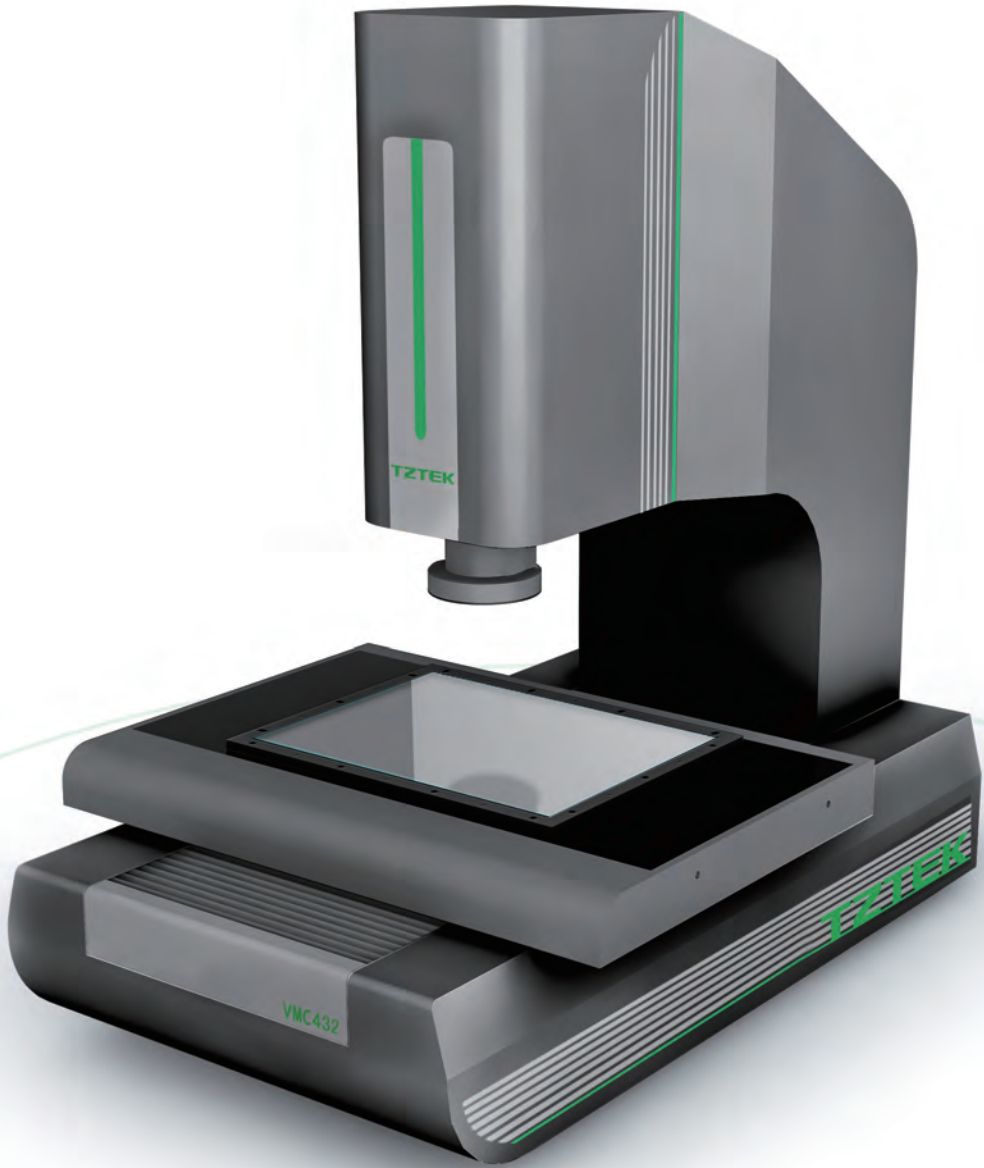
Specification

Model		VMU222	VMU322	VMU432
Travel (mm) ^[1]		200×200×200	300×200×200	400×300×200
External Dimensions (mm)		740×1040×1762		800×1240×1762
Mass (kg)		330	350	420
Max. Stage Loading (kg)		25		
Accuracy (μm) ^[2]	X/Y linear	E1=(1.3+L/200)		
	XY area	E2=(1.4+L/200)		
	Z linear	E1=(2.8+L/200)		
Optics		13.3:1 continuous zooming Lens		
Magnification ^[3]		25-338×		
Illumination	Profile	LED cold light, 256 brightness adjustable		
	Surface ^[4]	Programmable 6 rings 8 segments LED cold light, each segment independently controlled, 256 brightness adjustable (Movable surface light is for option)		
	Coaxial	LED cold light, 256 brightness adjustable		
Camera		High definition industrial color digital camera		
Drive system		4-axis CNC servo control system		
Speed (mm/s)	XY	500		
	Z	100		
Guide		3-axis precise linear guide		
Scale		0.1 μm		
The Min Unit (μm)		0.1		
Image Processing		Advanced TZTEK image processing method: 256 gray level, 20:1 sub- pixel processing technology		
Software		Vispec (VMU Version)		
Environment		Temperature 20°C±2°C, Humidity 30-80%		
		Vibration <0.002 g, below 15 Hz		
Power		200-240 vac, 50/60 Hz, 1 phase, 700 W		

[1] The measurement range of Z-axis is 135 mm, it can add to 280 mm.
[2] L is the measured length in mm, determined by TZTEK's inspection method.
[3] Magnification is approximate and depends on the size and resolution of the monitor.
[4] Movable surface light is for option. The illumination is from 45° to 75°
0.5× or 1.5× or 2.0× additional lens are available for option with the magnification 12-169× or 37-507× or 50-676×.

VMC Classic Video Measuring Machine

VMC Classic Video Measuring Machine contains the innovative design and with much measuring functions. VMC is the ideal choice in the metrology industry.



Features

- Auto zoom lens with magnification 25-209×
- Programmable 6 rings 8 segments ring surface light, profile light, available illumination configuration to meet different applications
- Granite structure provides high precision and stability
- Quick automatic focusing improves measuring efficiency
- Optional chromatic confocal sensor, contact probe, liftable light, coaxial light, joystick etc.
- Smart extraction enables quick capture of features

Specification

Model		VMC222	VMC322	VMC432
Travel (mm) ^[1]		200×200×200	300×200×200	400×300×200
External Dimensions (mm)		740×1040×1762		800×1240×1762
Mass (kg)		330	350	420
Max. Stage Loading (kg)		25		
Accuracy (μm) ^[2]	X/Y linear	E1=(2.0+L/200)		
	XY area	E2=(2.2+L/200)		
	Z linear	E1=(5.0+L/200)		
Optics		8.3:1 continuous zooming Lens		
Magnification ^[3]		25-209×		
Illumination	Profile	LED cold light, 256 brightness adjustable		
	Surface	Programmed 6 rings 8 segments LED cold light, each segment independently controlled, 256 brightness adjustable (Movable surface light is for option)		
	Coaxial ^[4]	Optional, LED cold light, 256 brightness adjustable		
Camera		High definition industrial color digital camera		
Drive system		4-axis CNC servo control system		
Speed (mm/s)	XY	500		
	Z	100		
Guide		3-axis precise linear guide		
Scale		0.5 μm		
The Min Unit (μm)		0.1		
Image Processing		Advanced TZTEK image processing method: 256 gray level, 20:1 sub-pixel processing technique		
Software		Vispec (VMC Version)		
Environment		Temperature 20°C±2°C, Humidity 30-80%		
		Vibration<0.002 g, below 15 Hz		
Power		200-240 vac, 50/60 Hz, 1 phase, 700 W		

[1] The measurement range of Z-axis is 135 mm, VMC432 can add to 280 mm.
[2] L is the measured length in mm, determined by TZTEK's inspection method.
[3] Magnification is approximate and depends on the size and resolution of the monitor.
[4] Coaxial lighting is available for option
Customers can also choose the VMC542 model according to their needs.
0.5× or 1.52× or 2× additional lens are available for option with the magnification 12-104× or 38-314× or 50-418×.

Intelligent Convenient Feature-rich



Vispec Pro passed the highest accuracy Class 1 (0.1 μm, 0.1°) certification of German PTB



Vispec Pro geometric error compensation software received certificate of registration from the National Copyright Administration

Vispec Self-developed Software Platform

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

Vispec software passed the highest accuracy level certification of German PTB

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.

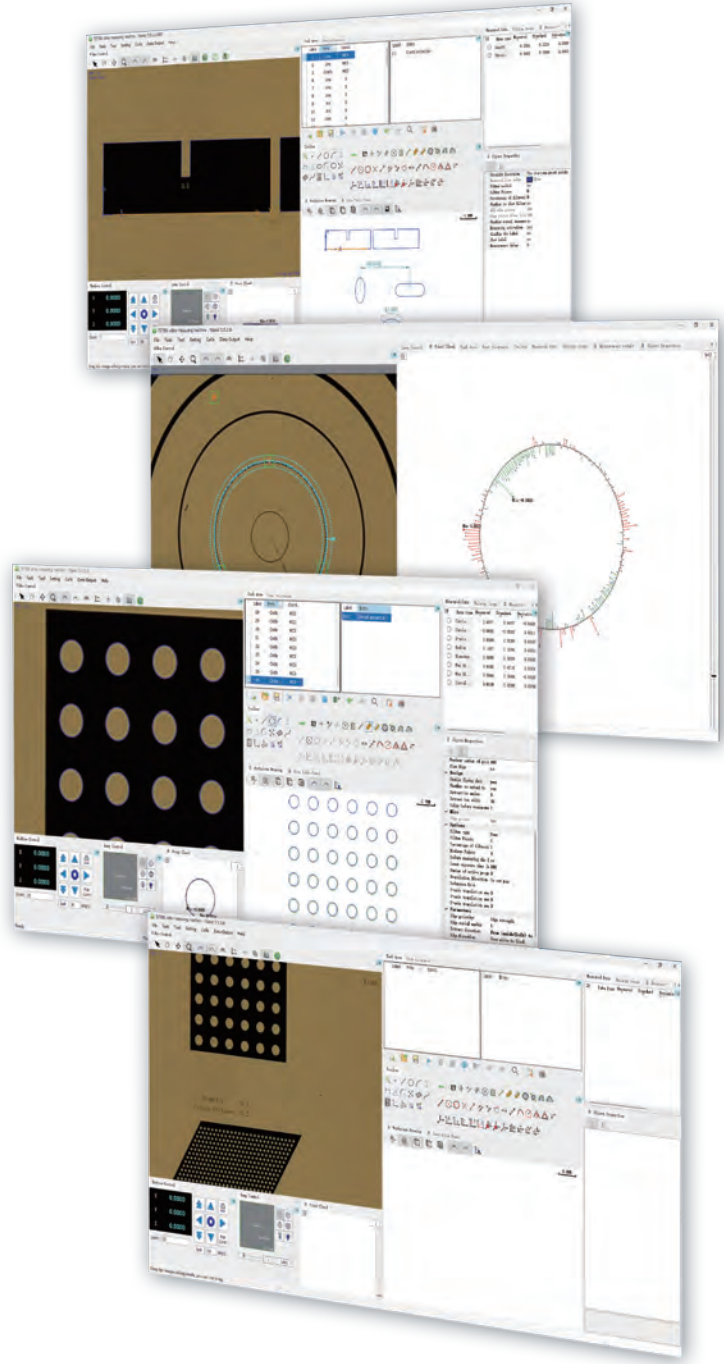
Rich Element Selection Function

Vispec detection software supports rich geometric measurement functions such as points, line and circle, as well as various methods such as manual points, optimal edge points, 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.

Super powerful feature extraction function

The super feature extraction function can adapt to the edge images of various complex scenes, improve the stability& efficiency of detection, and realize stable capture. The image pre-processing function also optimize the image, as default, before image computing, to provide sharp feature-position image and constant measurement.



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.

Description

During auto-measuring process, any text can be added as operation prompt at any link.

QR code storage

Result of measurement can be directly saved and generate a QR code that can be printed. Data can be extracted by scanning the QR code.

Animation Demonstration

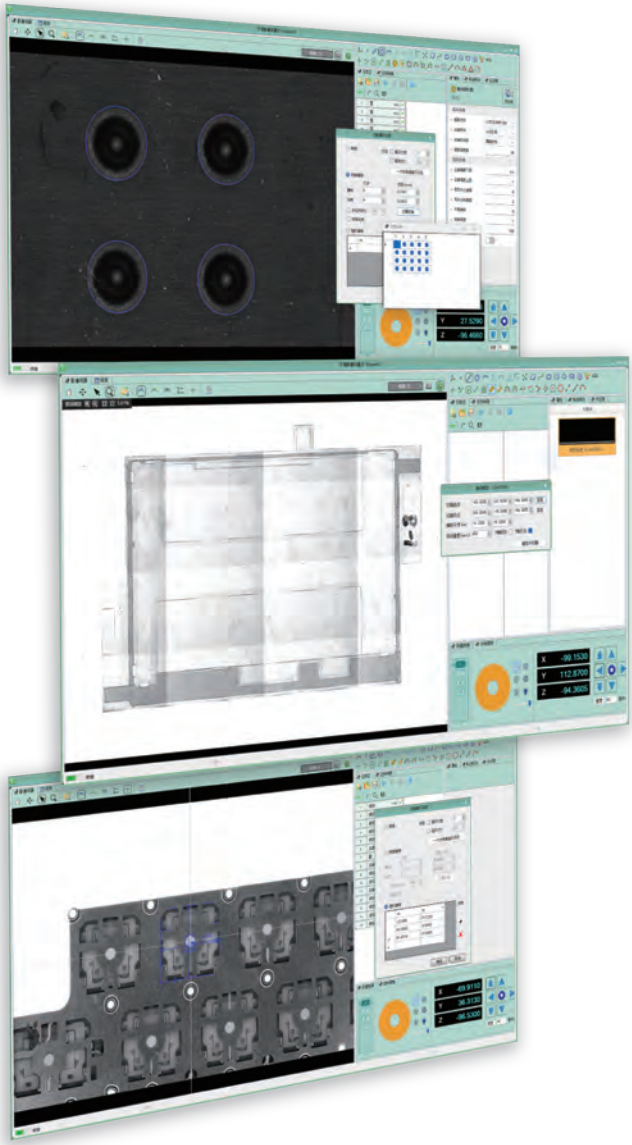
With the animation demonstration of programming, it is convenient for beginners to quickly understand the use of software.

Detection by Code Scanning

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

Intelligent Extraction

Just one click of the mouse is needed to complete the automatic identification and extraction of the features.



Software Enhancements (Optional)

Image registration

Work piece feature images are collected via automatic task loading and matching of detection items, without manual positioning, to improve detection efficiency.

Reverse Engineering

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

Introduction to 3D Features

Spectrum scanning combines high precision and efficiency, allowing for both equidistant and non-equidistant scanning, locking trigger coordinates while scanning at high speed, and measuring height, depth, flatness and other measurement items with high precision.

Character identification

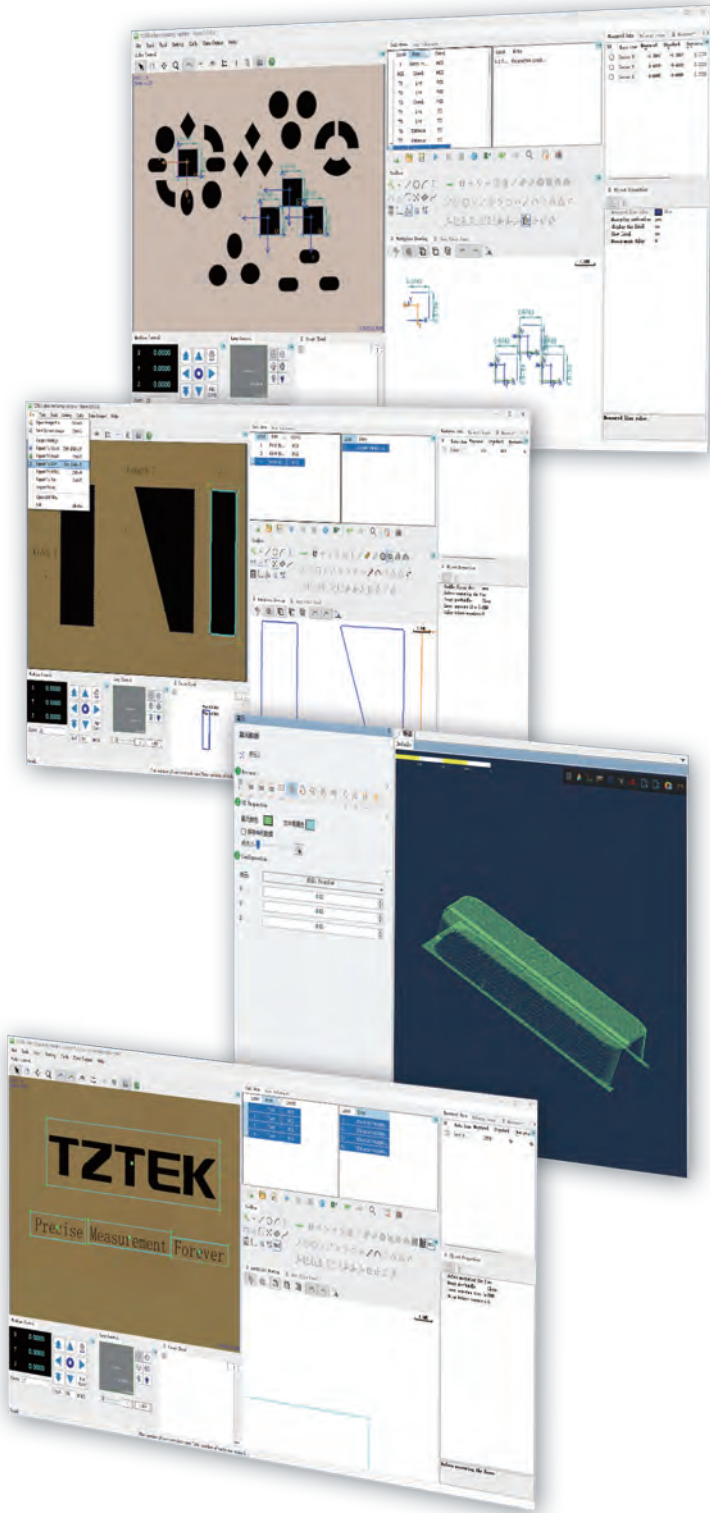
Integration of deep learning function may quickly extract and record characters (including letters and numbers) marked or printed on surface of product, and it supports output to archive.

Drawing Comparison Function

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

Information input

By scanner gun or CCD automatic reading of bar code, QR code, letters or numbers, and other characters; support output to report.



Barcode, QR Code Identification

For products marked with a barcode or QR code, it is necessary to read the coded information prior to measurement. CCD can be used to quickly read and export the coded information during automatic measurement.

Auto Texture Division Function

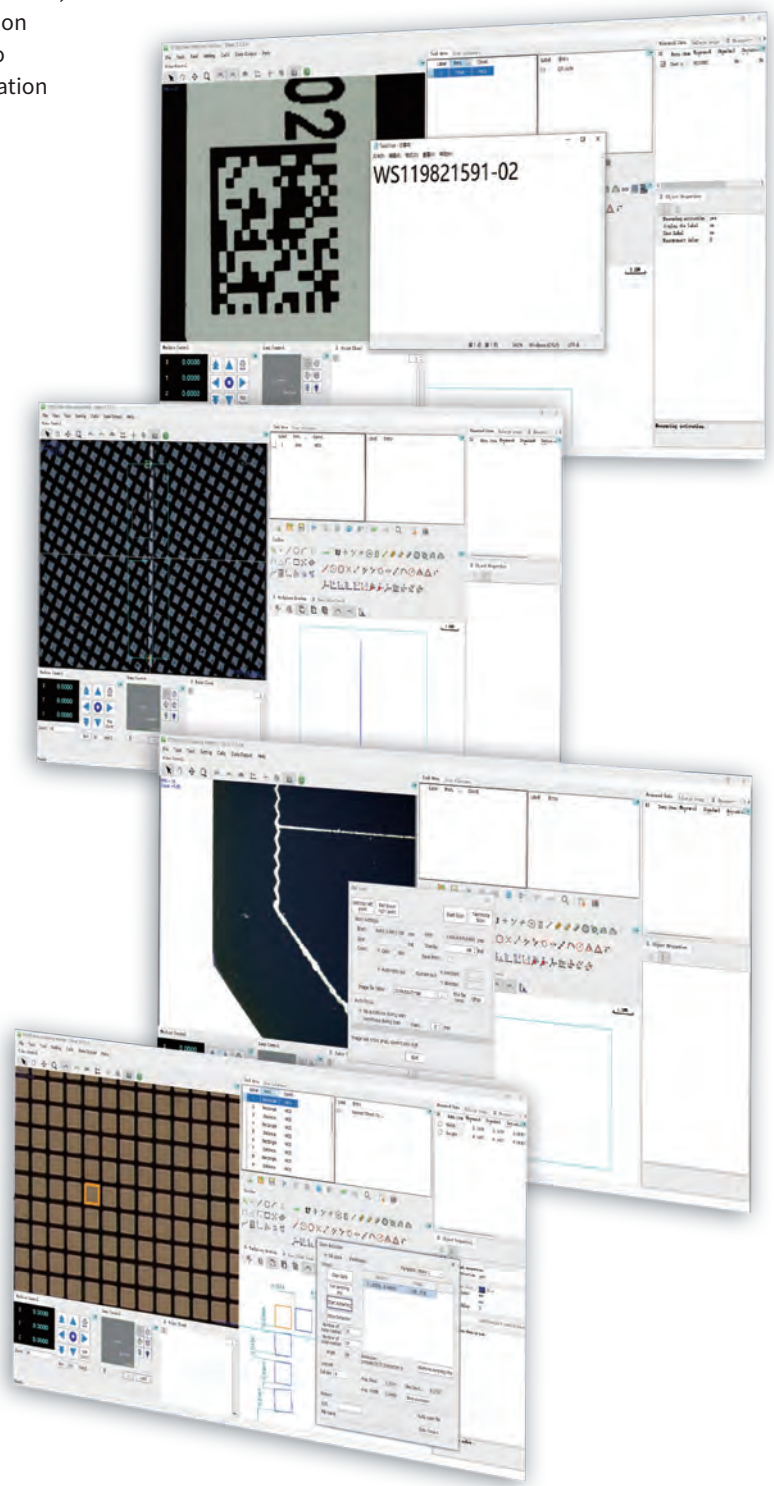
The meshes of wire mesh are in large quantity. It is difficult and slow to search the edges manually. Vispec with the function of texture division and selection measuring could eliminate the interference mesh lines to accurately select the distances between holes, which improves the measuring precision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



Rich Data Output and Analysis Function

It supports data upload and interfaces with customer MES system.

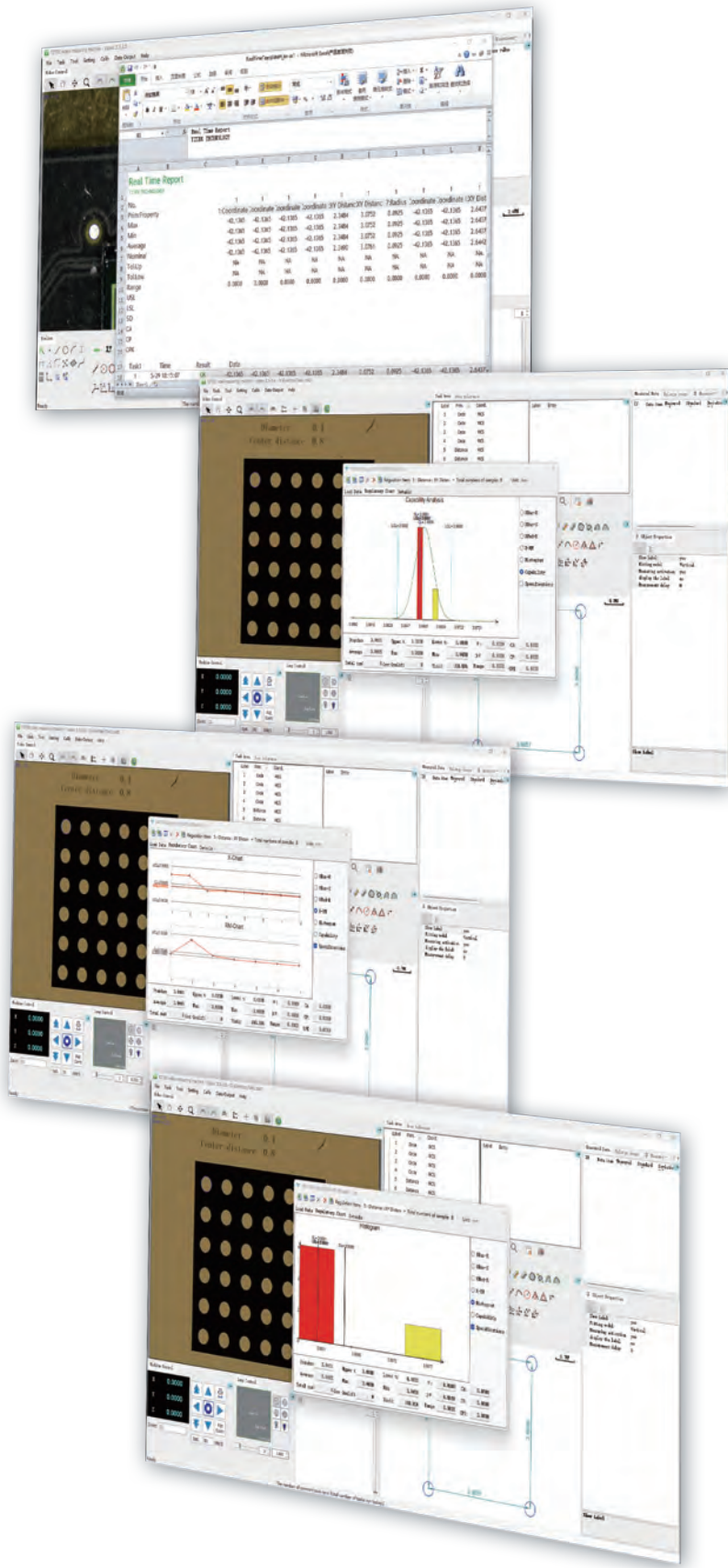
Product classification supports customer-defined classification setup to sort out products.

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 promotes 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.



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.

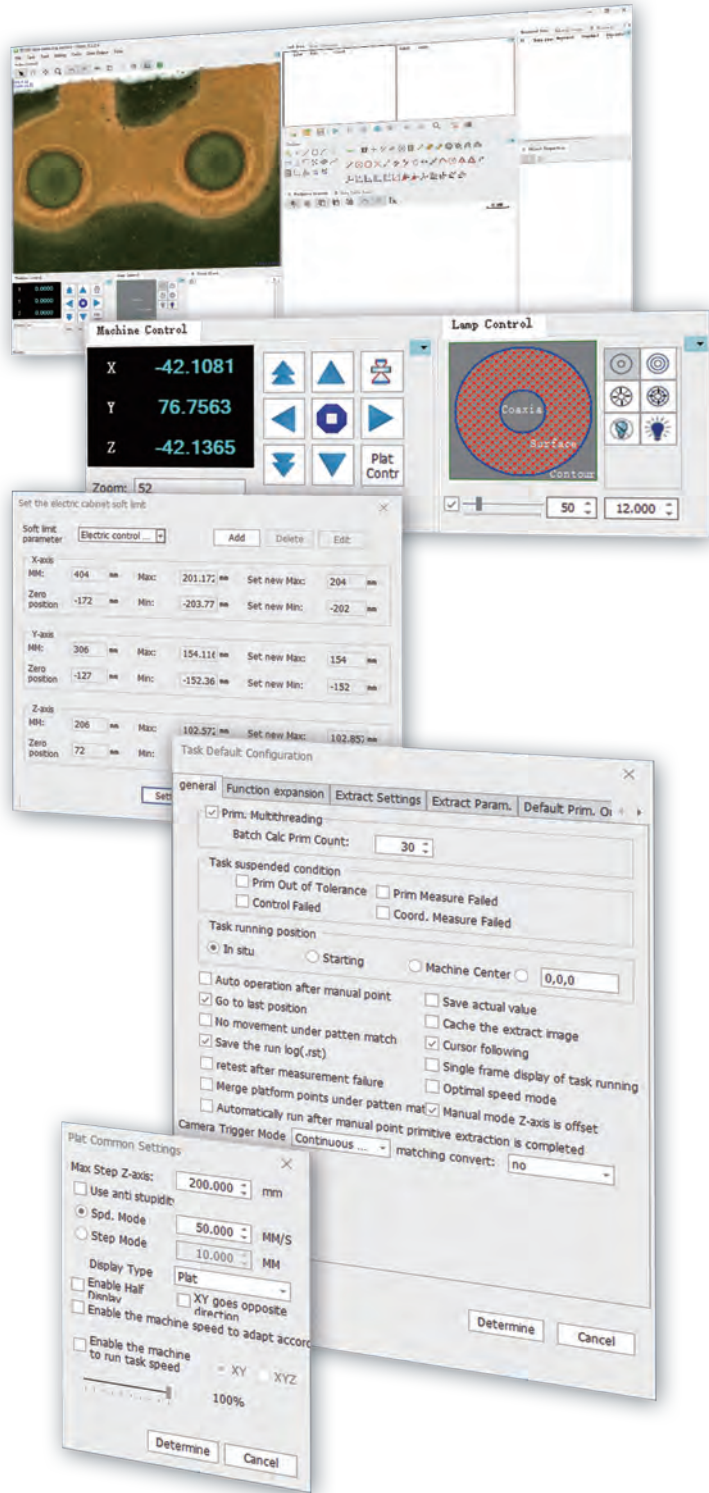
Software is allocated with kinds of platform motion control modes, such as basic 3-axis direction control mode, draggable platform control mode, moving button control mode, double-click position control mode.

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. capable of setting soft limits based on the height of the product to prevent personnel from accidentally hitting the workpiece.

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

System setting 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.



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.

- The S-curve motion control is used to achieve fast, accurate and stable positioning performance, and the positioning accuracy is as high as 2 μm.
- 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.

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 customer to choose.

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.

Optical sensors and images complement each other, using image magnification, positioning, and optical sensors to pick up points to detect height, thickness, flatness, depth of blind holes, and the thickness of multi-layer transparent materials. 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.



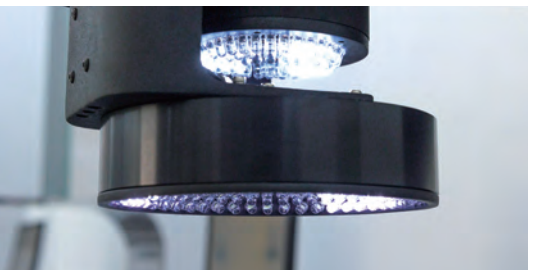
Probe

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 3μm. 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.



Optical system with elevated vertical illumination

TZTEK launches an optical system with elevated vertical illumination to address products with groove, internally-threaded hole and chamfer that are hardly illuminated with light source. The surface light is divided into 3 internal and external rings respectively, which rise and fall separately. The 3 external rings rise and fall under control of software program, with light source provided in several angles of 45°, 65° and 75°, which can be switched to freely by the customer. TZTEK elevated vertical illumination system is also provided with optional extended light source with powerful functions, for which the customer may adjust its angle manually and customize the illumination demand under different conditions in order to improve the accuracy of product detection.



Joystick control

Joystick control is provided for more natural, easier man-machine interaction. It enables more flexible control over the console so as to increase efficiency of detection.



Turntable with scale

The turntable can realize high-precision angle and position control, 360 free rotation. The rotation angle can be programmed and controlled by the measuring software, which can efficiently complete the one-time automatic measurement of different side dimensions. Different specifications of turntable and chuck can be selected according to the measurement scenario.



Zoom lens

Different additional zoom lens can be selected to increase FOV or magnification in order to increase height of detection (2x, 1.5x and 0.5x, optional).



Navigation lens

In addition to the normal image measuring window, the software screen also independently displays a large navigation image window. Users can directly click on the navigation map, and the movement of the machine makes the click position reach the center of the image measuring window, making it convenient for users to write and run programs.



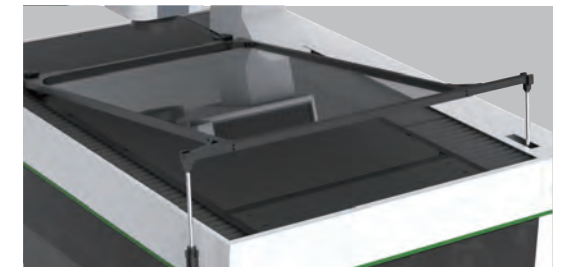
Large target surface zoom lens

The same magnification field of view reaches twice that of a conventional lens, which can effectively reduce the number of shots taken and shorten measuring time.



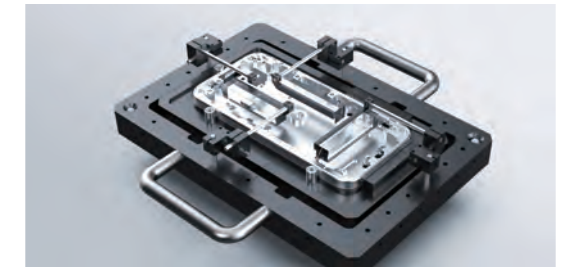
Automatic pressure plate for VMG

For large travel gantry type, it has integrated automatic pressure plate (glass), with fully automatic design of program control, which maintains flatness of the object detected and can be operated easily when measuring an easily-deformed or light product.



Fixture

Provide L-type, V-type, thimble and other standard fixtures, or customize fixtures according to different demands.



I/O communication

By combining I/O signal with production line, the automatic loading/unloading mechanism is connected. It supports automatic switching to the mission detected and the separate classification of detected results.



TZTEK also supplies laser indicator, high-depth-of-field lens, coaxial optical lens, additional lens, pedal switch, metal legs, emergency stop switch and other optional parts to cater different detection demands of customers.

Communication

With rapid development of new services such as artificial intelligence and Internet of things, which brings a sharp increase of data traffic, 5G is about to enter the commercial process, and at the same time it poses new challenges to the manufacturing and quality control of communication devices.

Intelligent network, modularized devices and high transmission rate are the orientation for future development of communication devices, while test of highly integrated hardware is always the difficulty in quality control of communication devices. With "highly precise and stable" detection technology and strength, TZTEK always strive to promote the development of the communications industry.



Optical module

The optical module is the photoelectric conversion device in the optical fiber communication system, and it is the "bridge" connecting the optical cable and the base station. Once any internal defect is found in the "bridge", it will seriously affect signal transmission, or even lead to the failure of communication. Therefore, it is essential to carry out internal detection to ensure that the optical module can achieve the expected communication state after packaging.

The high-precision detection software developed by TZTEK can quickly detect the position, angle and height of the chip and interface on the substrate, which can improve the qualified rate of products, and protect the communication.



Detection requirement

The detection of position, height and angle of optical chip and interface assembled on the substrate

Detection difficulty

- The high reflection feature of optical chip, leading to too much image noise in traditional light source
- Generally, very small chip and optical interface can only be identified when magnified to 300X
- FOV is small under high magnification. The chip under detection may deviate from center of FOV during batch detection

TZTEK solution

- Coaxial light can overcome the interference caused by the surface to diffuse light reflection, so that better picture quality can be achieved
- A 12.5X lens of high magnification up to 460 times is selected
- Automatic matching, image centering and quick computing to improve the efficiency of detection

Antenna

From communication network to terminal application, communication frequency is entire high-frequency. In the design space, the complexity of the antenna and the miniaturization of the antenna are also increasing. In order to improve the high frequency and high speed performance of the antenna and reduce the space occupation, the antenna technology of intelligent terminal is hidden in the new material housing. The size and density of the line should be strictly controlled in the initial stage of the laser-forming antenna.

TZTEK' s unique elevated light source design and high-precision quick detection scheme, with 3 external rings of surface light elevated via software programming control, provide multi-angle lighting direction that enables sharp profile of the line inconspicuously printed on the housing. In combination with TZTEK' s super powerful extraction function and image pre-processing , it is easy for customer to switch flexibly while ensuring the accuracy and efficiency of detection.

Requirement for detection

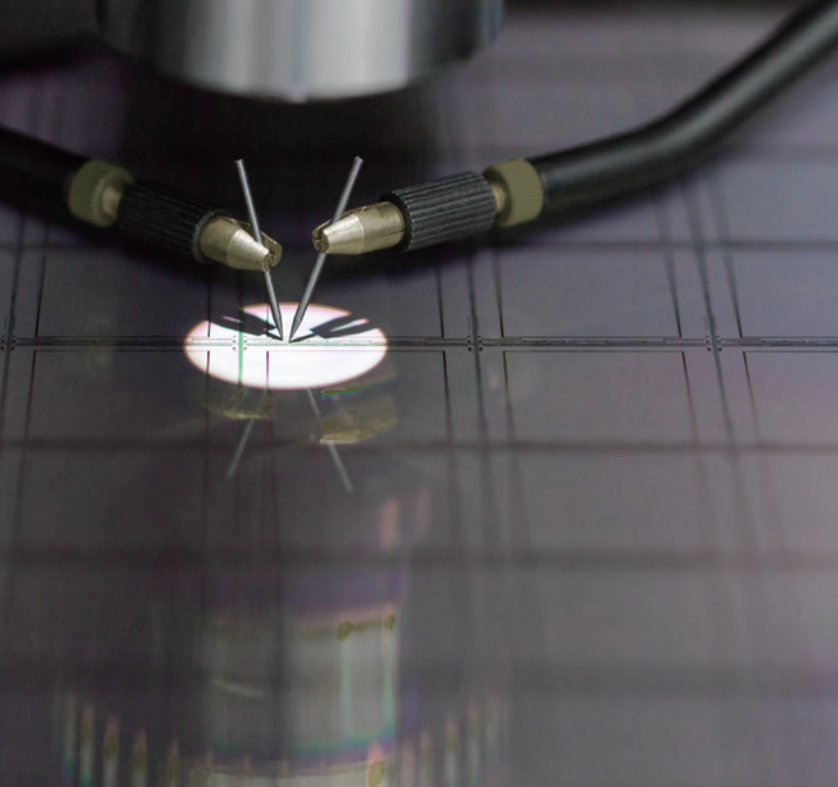
Measure the length, width and relative position of the antenna area
Line width must be more than 0.2mm
Distance between the lines is down to 0.1mm or even smaller

Detection difficulty

- Antenna scale is distributed in a narrow space in complex profile that is hardly to capture accurately.
- The antenna after laser activation is not obviously distinctive from the material body, which affects the result of extraction.
- Automatic measurement can easily lead to wrong judgment or loss.

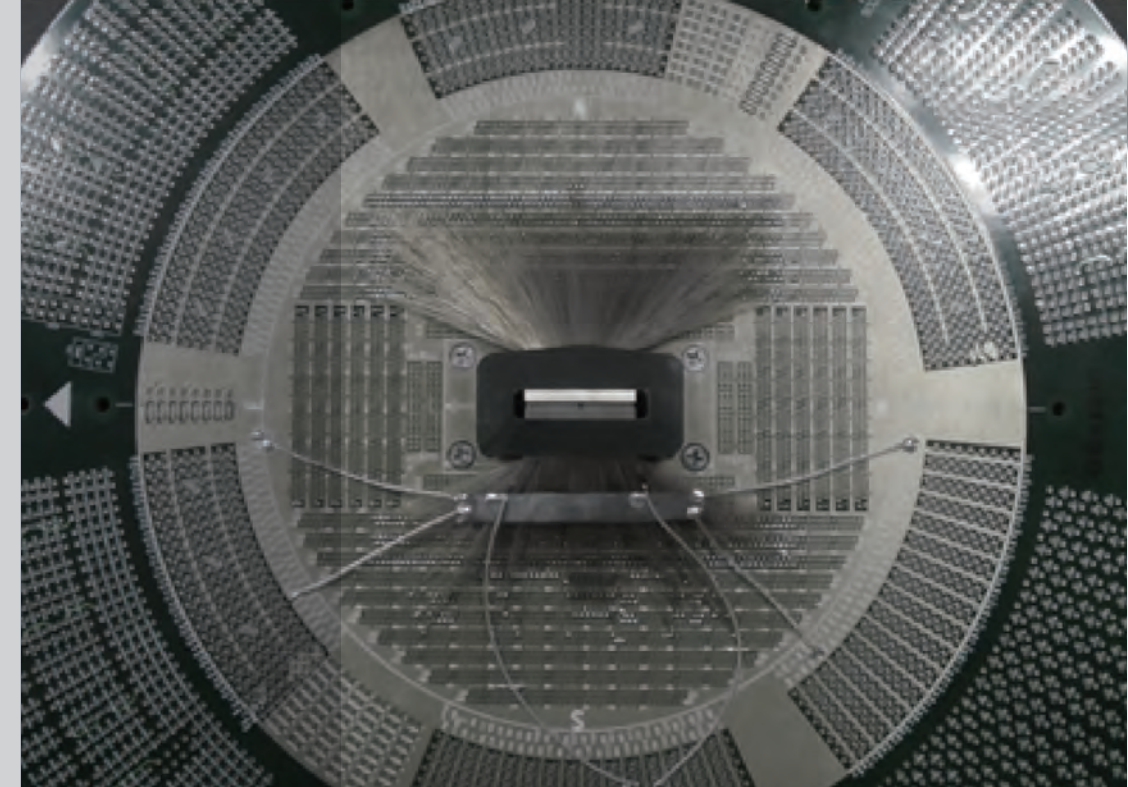
TZTEK solution

- The multi-angle designed elevated surface light source system provides illumination in multiple directions, making the scale profile sharp and obvious, which is easy for extraction of primitives
- The image pre-processing function may optimize images and is more favorable for datum acquisition and calculation
- The configured full-automatic lens may be integrated with program controlled zoom to allow accurate extraction of delicate position under large magnification



Semiconductor

Semiconductor refers to material whose conductivity is between conductor and insulator at room temperature. Semiconductor is widely used in integrated circuits, consumer electronics, communication systems, photovoltaic power generation and other fields. The new semiconductor material is characterized by its stable structure and excellent electrical characteristics.



Fan-out WLP

Fan-out WLP process is characterized with advantages such as smaller and thinner packaging, low cost, excellent electrical/thermal performance and applicability to high frequency field. It has a broad application prospect in 5G wireless communication, millimeter wave radar technology and photoelectric field.

Requirement for detection

The configuration space of each die after reorganization of the wafer in Fan-out WLP process

Detection difficulty

- Thousands of dies
- High detection speed required
- Die scratching defect detected at the same time

TZTEK solution

- Non-stopping measuring technique finishes measurement of all dies efficiently
- The autonomous defect detection algorithm completes the scratch defect detection while measuring the size

IC probe card

The probe card is the interface between the tested chip and the testing machine. It is mainly used for initial measurement of the electrical properties of chip before it is packaged piece by piece. Final packaging engineering will be carried out after sorting out defective chips.

Probe test is a must for chip development and batch production. It is widely used for precise electrical measurement of complex, high-speed devices, aiming to ensure quality and reliability and to reduce the R&D time and device manufacturing cost.

Requirement for detection

X, Y position of the pin
Pin height

Detection difficulty

- Probes in large quantities
- High measuring speed required

TZTEK solution

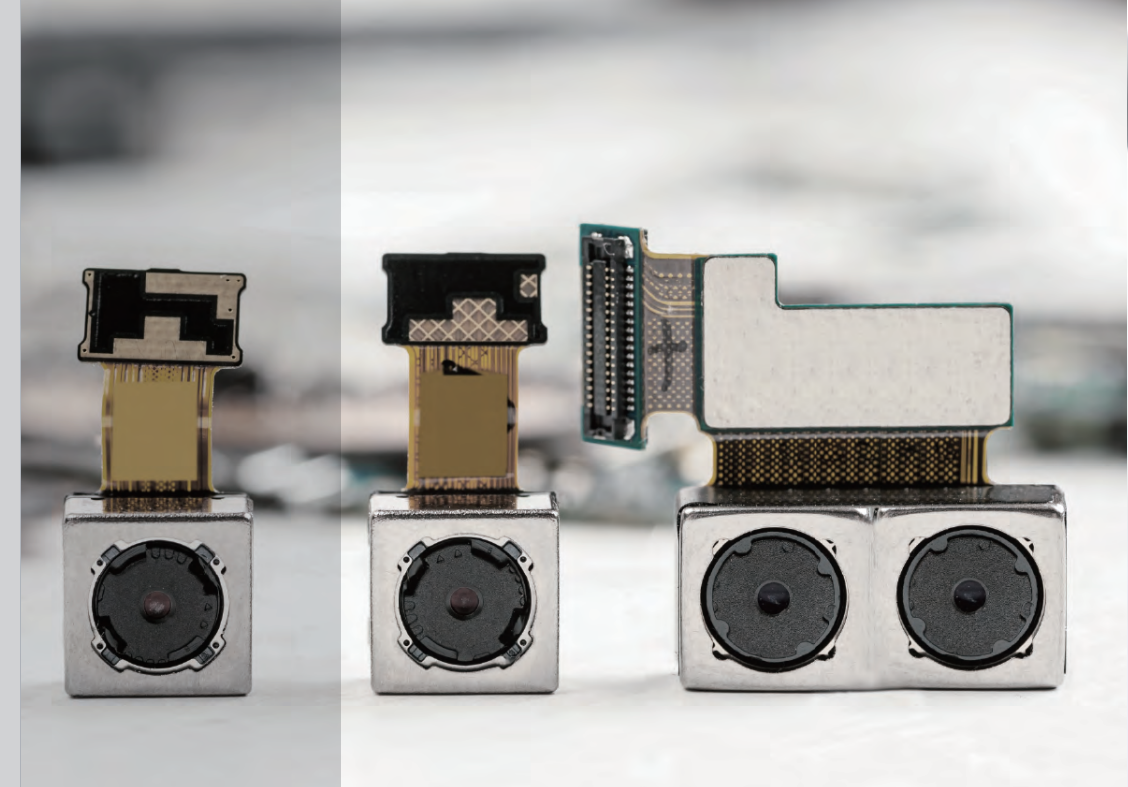
- Advanced focusing measurement technique allows measurement of multiple probes at the same time
- Automatic measurement by importing the drawing or the theoretical position of probe



3C Manufacturing

With further development of 3C manufacturing industry, to gain advantage in the fierce competition, enterprises must comprehensively improve product quality to win the market in order to survive. Quality becomes the most effective weapon in winning market share and the most powerful drive for social development. To ensure product quality, quality control must be exercised during the production process.

With high quality detection solution, TZTEK is able to considerably reduce investment and manufacture cost for the electronic manufacturing industry.



Mobile phone glass

The cover glass of digital products is gradually covered by 2.5D glass and 3D glass. Comparing with common plain glass, 2.5D glass has its edge arc-treated on the basis of 2.5D glass, while 3D glass adopts arc design in both middle and edge. 3D glass is featured with advantages such as being lighter and thinner, anti-fingerprint, anti-glare and good weather resistance. Meanwhile, its fashionable appearance brings users with better experience. With better touching feel, the glass is generally used for high-end mobile phones and terminal products of wearable equipment.

In view of the complex and sophisticated manufacturing process, 3D glass is hard to make and the percentage of good products is low, causing increase of the cost. Therefore, quick test of its 3D features completed in the detection phase for quality control may timely respond the production line so as to avoid causing a large quantity of defective goods.

Requirement for detection

Overall length and width
Height of bent edge

Detection difficulty

- The time length for detection of each piece of glass is only 1 to 2s. It is hard for a common instrument to also deal with large-size glass at the same time.
- The height of bent edge falls on the dimension of space. It is hard for a common instrument used mainly for detecting the size of plane

TZTEK solution

- Large FOV lens designed for mobile phone glass screen, with single FOV accommodating 8 inch screen glass
- Special prism fixture developed for certain purpose transforms 3D into 2D and solves the issue in multiple dimensions
- By combining the master drawing mode with the photoelectric induction switch, automatic detection is realized by a wave of hand

Mobile phone camera

From the traditional single camera to dual camera, three camera, fully hidden camera and 3D camera, mobile phone manufacturers continue to switch ideas in order to meet the needs of users for imaging effect, but their eyes are focused on the field of optics from beginning to end. According to big data statistics, China accounts for more than 70% of the global camera module shipments, and is the world's largest camera module production base.

The detection of camera components faces the problems of large amount of data and high efficiency requirements. TZTEK software has developed a variety of replication functions and random detection modes for such products, and the rapid and full inspection of small batch products can be fully automated. For example, for products arranged in columns, only a single product needs to be programmed, and the copy extraction method will greatly reduce the programming time and ensure the detection efficiency.

Requirement for detection

Flatness and depth of camera base
Position of filter glass
Applying height and position of sensor

Detection difficulty

- Routine CCD method is hard to meet the demand for overall detection due to insufficient efficiency in collecting superficial features of outline border and glass surface
- Visual light cannot penetrate the infrared filter to form images

TZTEK solution

- Integrated with sensors such as laser to achieve fast, high-precision acquisition; suitable for injection molding and glass surface at the same time
- Infrared light source in the same band with glass can be carried to produce clear image when light source pass through the glass filter
- Several duplication functions and random detection modes to achieve fully automatic detection of small batch of products quickly and completely

MORE CASES

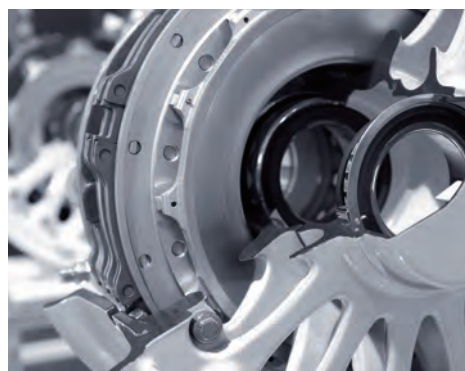


Photovoltaic

Solar cells have gradually entered the stage of mass production. As solar cell suppliers continue to improve their manufacturing technology, photovoltaic and related industries have improved production capacity and quality. In the detection of the battery pieces, TZTEK takes its advantage of optics to have integrated infrared light, multi-angle light and other designs for the size control at different process stages for such as gratings and SE scales. In the screen plate manufacturing industry, TZTEK has developed modularization function for detection of screen plates in order to achieve quick acquisition of film and distribution of screen plates.

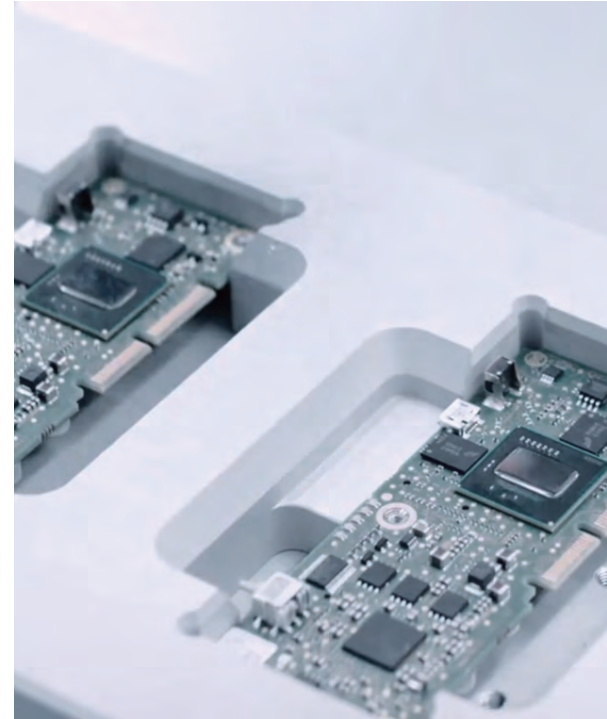
Aerospace

TZTEK flash-measuring imager is widely used in the detection of aerospace machinery parts and connectors. Combining the simple structure and high precision requirement of spacecraft components with the features of flash-measuring imager in large FOV and multiple platforms, it has the advantage of high efficiency and high precision in detecting the mechanical structure parts and connectors of spacecraft.



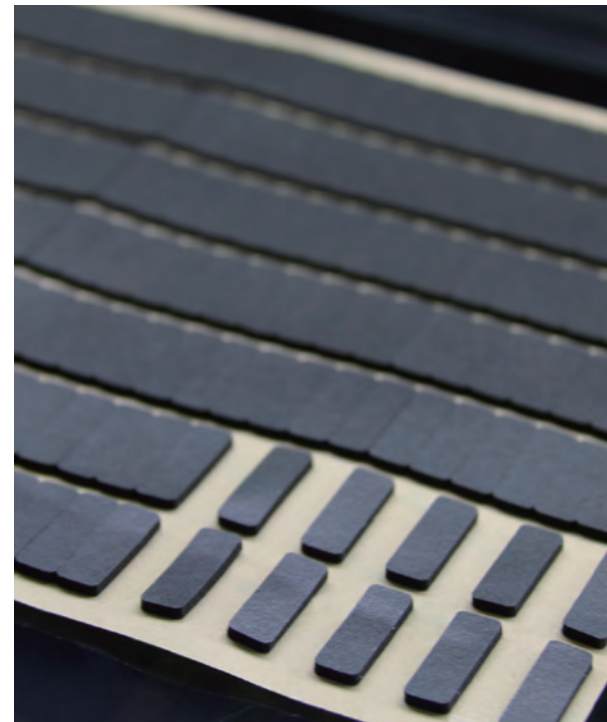
Medical treatment

In the detection of accessories of multi-angle medical CT instrument, to achieved programmed detection of the accessories in multiple views, a detection mode of integrating a scale turntable with the imager is gradually accepted by the high-precision manufacturing industry for such as medical treatment. TZTEK automatic image measuring system can be set up to communicate with other peripheral devices. By the measuring software, it can be programmed to control the scale of turntable so as to effectively achieve once-for-all quick automatic detection of data at different sides. In addition, the optional integration of laser displacement sensor can accomplish efficient data acquisition at high accuracy.



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.

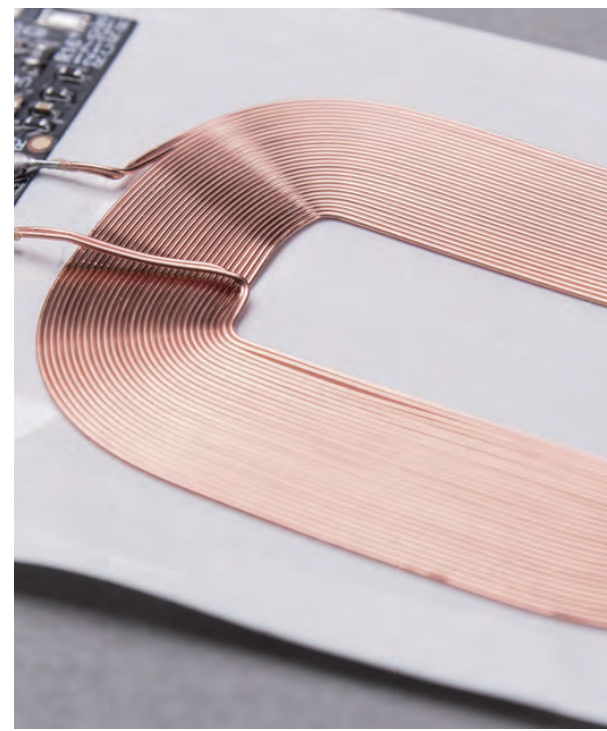


Die Cutting

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.



PARTNERS

5000+

Assistance for 5000+ business intelligence

After over a decade of intensive efforts and development, TZTEK has served 5,000+ worldwide mid-to-high-end industrial customers. In the future, TZTEK will continue its best efforts as usual to focus on the fields of industry intelligence, to provide excellent machine vision equipment and create greater value for customers with long-term philosophy.

