

3D Digital Microscope RH-2000



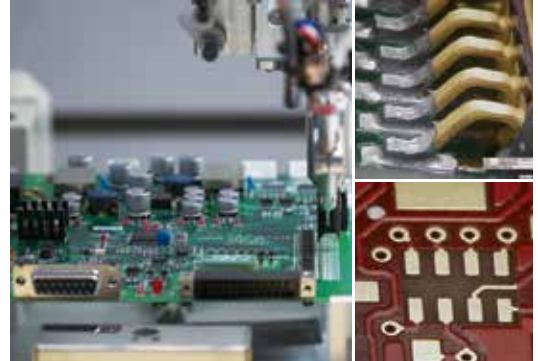
What's Digital Microscopy?



Hirox is widely used by car manufacturers and subcontractors for QC or Failure Analysis to develop and inspect a multitude of car parts: observation, height measurement and roughness for example.

From the audio system, to the airbag, from the diesel injection to the turbo system, we make your car safer and more reliable.

Automotive/Metal



Our Digital Microscopes are used for the inspection of high-end electronics and semiconductors: PCB soldering, Wire-bonding, Wafer, Through Hole,...

With Hirox's original patented 360° Rotary Head, your sample becomes alive: it's the perfect tool for documentation and you won't miss any defects.

Electronics Semiconductor



Hirox high resolution lens and lighting possibilities create the ideal tool for magnifying micro organisms: transmission, dark field, bright field, polarisation, UV and more!

With the auto XYZ axis, you can quickly have an image all-in-focus, cover large areas or even make a batch captures if you have multiple samples.

Life Science

Hirox invented video microscopy over 30 years ago by creating the first microscope system built entirely around camera and screen - without the need of an eyepiece. Rich of our experience, Hirox keeps leading the way with the latest generation of 3D digital microscopy: the RH-2000. High resolution observation, accurate and fast measurements, full motorized XYZ axis for 3D tiling and much more with just a few clicks. To make your life easier, the user is always at the center of our mind.



Hirox provide users with flexible observation for various object: powder, crystallization, emulsion,...

With the built-in time lapse recording function, create high resolution videos of transformation or save time with our auto count function.

Material Science



Hirox is used by the best art conservators worldwide! The flexibility of the digital microscope allows non-destructive detailed inspection and measurements on any work of art from jewelry to master paintings: pigments size, impasto height or cracks width. Our lighting technology will give you a multitude of choices: wrecking light, dark field, bright field, polarisation, UV and more.

Museum/Art Research



Built for multitasking, the digital microscope can be used for R&D, Production, Quality control: from the observation of defects at the reception of the goods up to dimension measurement of finished products. Original lenses and optical adapter provide smooth observation and measurements in 2D and in 3D.

Precision Device

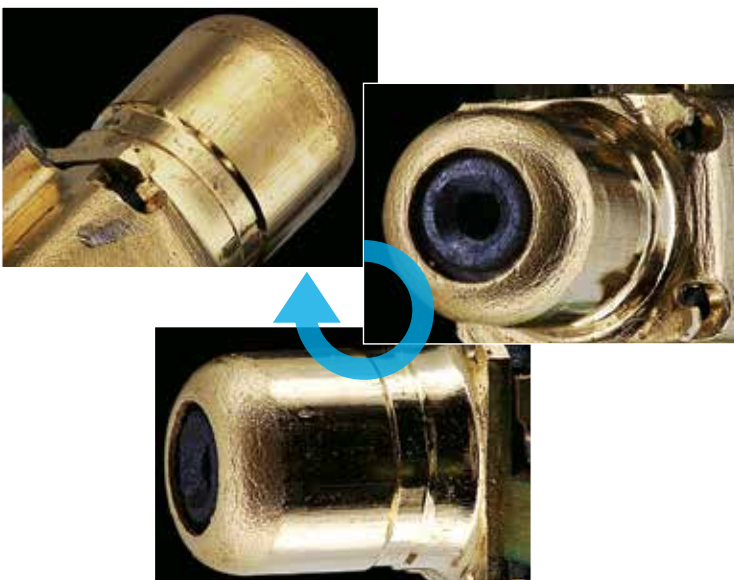
HIROX DIGITAL MICROSCOPE

RH-2000 is a system which harmonize with PC for observation, measurement and capturing image.
Capability to choose function for need and to expand function when needed.

Original Technology

360 Degree View Rotary Head

360 degree rotation of the mirror enables the side of the object to be thoroughly observed. The object shape can be freely ascertained in a limited space and in 3D without the need to tilt the lens, object or make complex focus adjustments.



New mounting system CMOS Image Sensor

State-of-the-art CMOS sensor with improved light sensitivity and very low image noise. The resolution is higher than Full HD (1920×1200), at a very fast 50 FPS (special 100FPS mode).





Super fast USB3.0 connection to any PC

Freedom to choose Fast PC, Full HD Screen, Windows 7,8 or 10, desktop or laptop*, via an ultra fast and universal USB3.0 connection.

The obsolescence is therefore limited, and offers endless future updates. And thanks to the touch screen you can enjoy an even higher comfort of use!



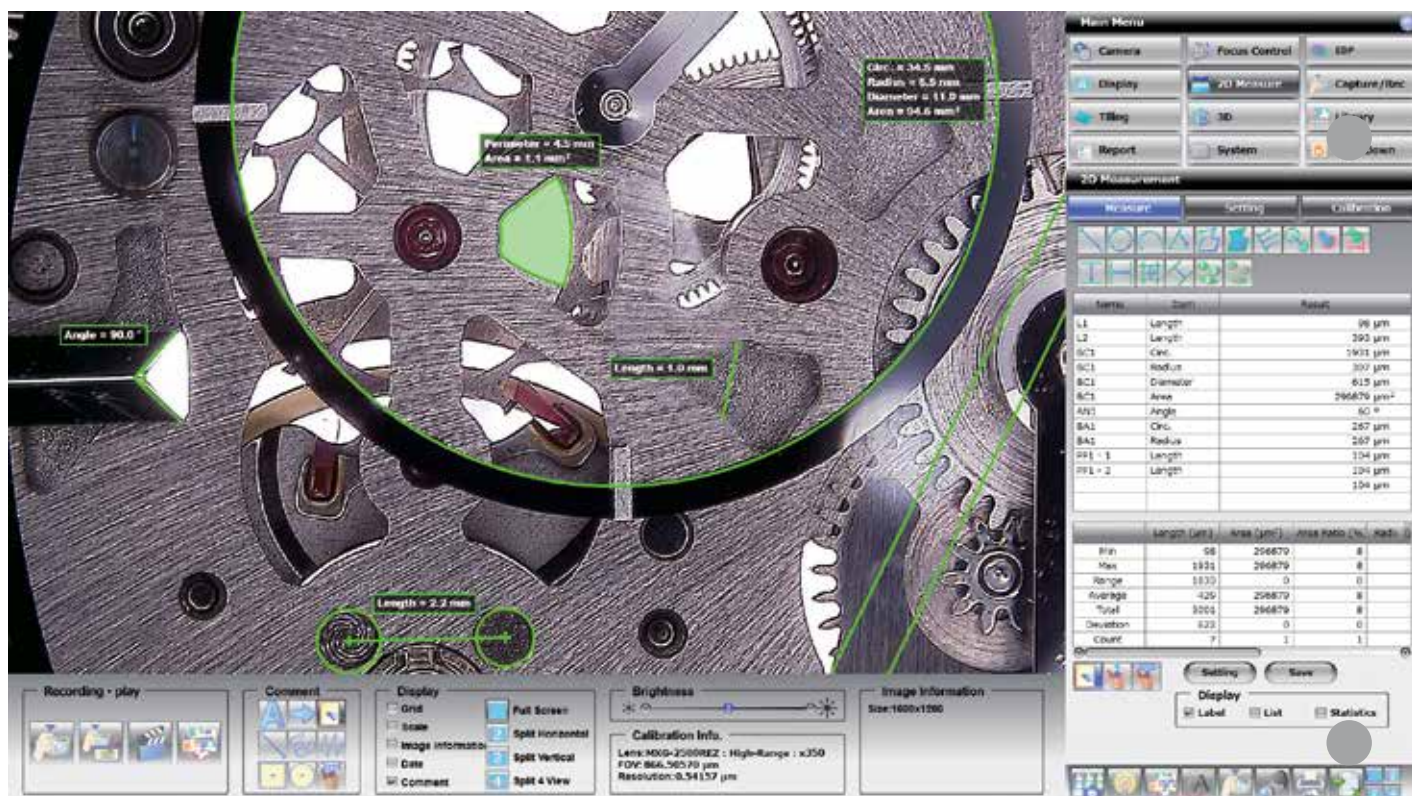
*depending on PC configuration and screen resolution

High Intensity LED Lighting

The new high intensity LED light source provides true color reproduction (5700K color temperature) and 30,000 hours lifetime.

Basic Applications

It is a standard software that contains observation, record, 2D Measurement, All-in Focus function, image processing function. Mycom integrated inside the new lenses allows two-way communication between the control unit / software and the lenses, automatically recognizing the lens and magnification which allow software to select correct calibration automatically.



With a high perceptible icon and layout of menu, intuitive operation is possible with RH-2000 basic application software. User can use various functions within on application software without exporting captured images to external software for using these functions.

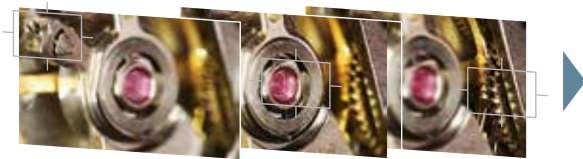
2D Measurement

Accurate and calibrated measurements in real-time, including length, area, angle, diameter or automatic surface area. The combination of encoded optics and powerful software eliminates any human errors by automatically selecting and displaying the correct lens, adapter and scale on the screen at any time.



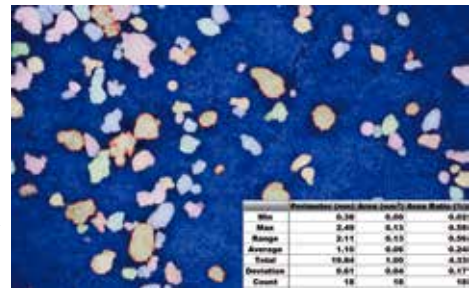
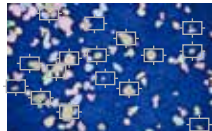
Live focus

This instantaneously creates a fully focused image of the area even for objects with differences in height. Anyone can easily perform expanded observation without being affected by the depth of field.



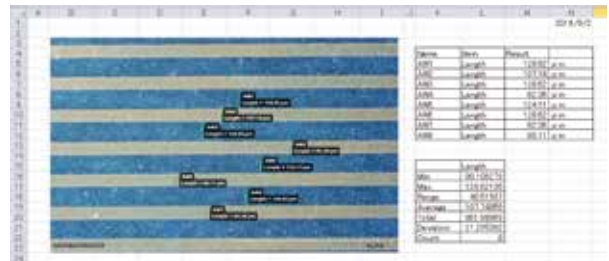
Auto count functions

Advanced software algorithm allows automatic detection and count of particles, based on contrast or color values: with 1 click the system automatically counts parts that have similar colors, with Advanced statistics.



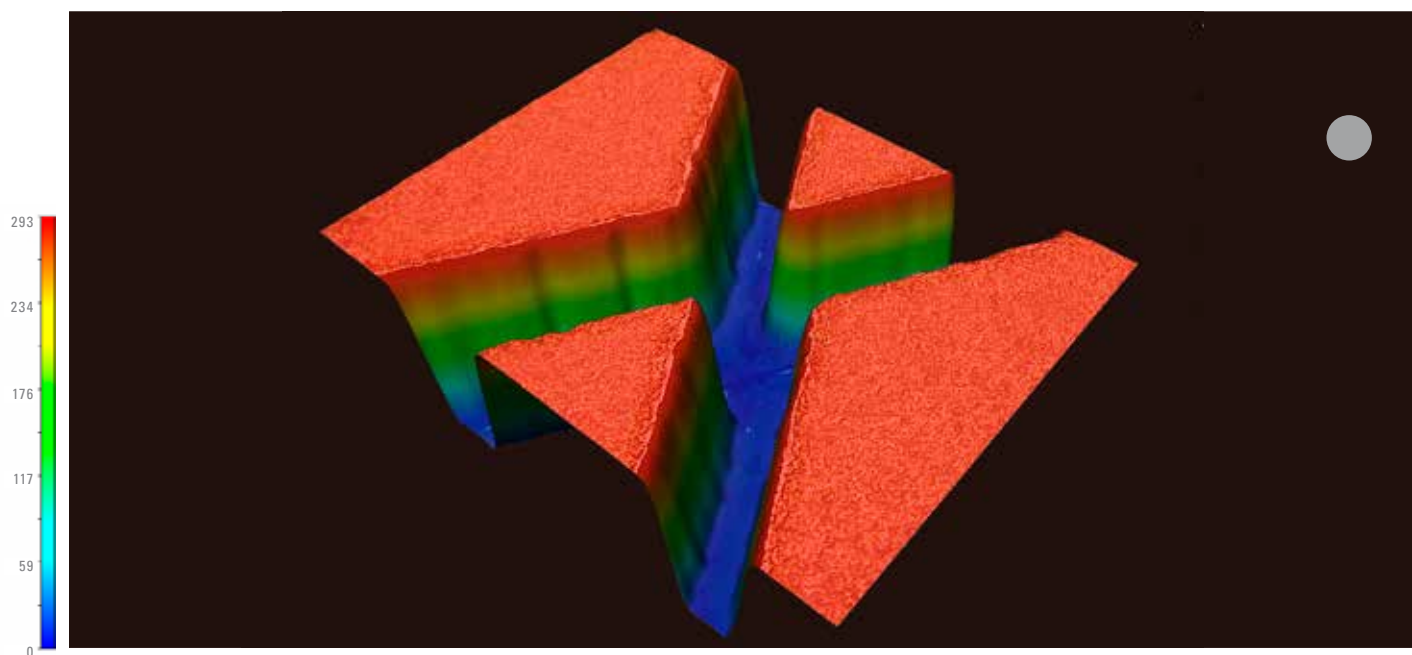
Statistics & Excel® reports

Save time by installing Microsoft® Excel® and automatically create reports including images, lens and magnification details, as well as measurement information. Several templates are available and customizable. Reports can be printed, saved, or exported to spreadsheet applications.

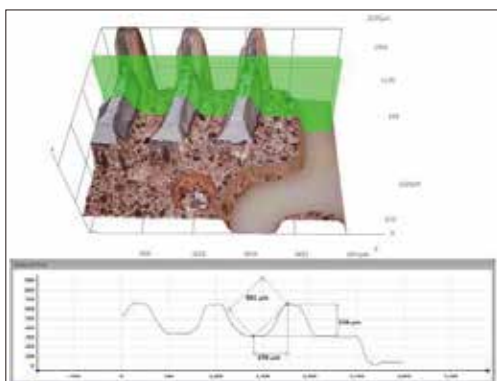


Fastest way to create 3D Model

An integrated stepping motor allows for fast and accurate scanning. Quantify 3D data by associating the profile graph with the image display area. Intuitively measure 3D height information and extract angle and radius data.



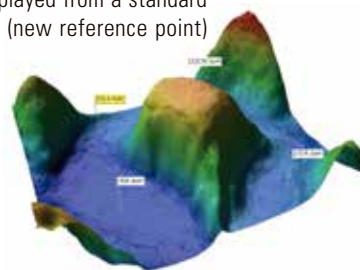
■ Profiling Angle/Radius in 3D



Simply adjust the slicer to visualize and measure any details on the 3D object: the profile created is like a virtual vertical cross section allowing precise measurements. Using the profile measurement function, it's very simple to measure any radius on a 3D object by simply "drawing" a circle with 3 points or any angle by selecting 2 lines crossing each other.

■ Point Height Measurement

Display point height by simply clicking on the 3D model. With each click, height value labels are displayed from a standard zero point or a zero point can be set (new reference point) from a specific position on the model. Point height measurements are possible in both 2D and 3D rendered images.



■ Volume and Area

Volume and area can also be measured on the 3D object by adjusting the horizontal cross section and clicking on the area of interest.

■ Roughness (Ra, Rz Rzjis)

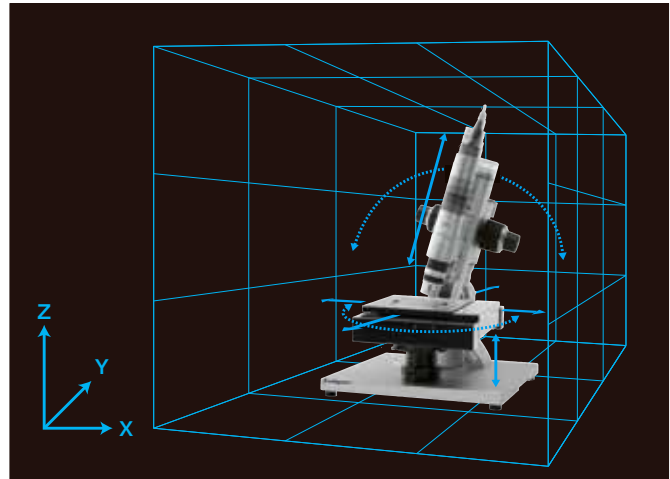
The powerful 3D software enables accurate line roughness measurement Ra and Rz (ISO4287:1997) and is compatible with optional surface roughness measurements (Sa, Sq, and many more).

Easy 2D and 3D Tiling

Combining wide-view and high-resolution images.

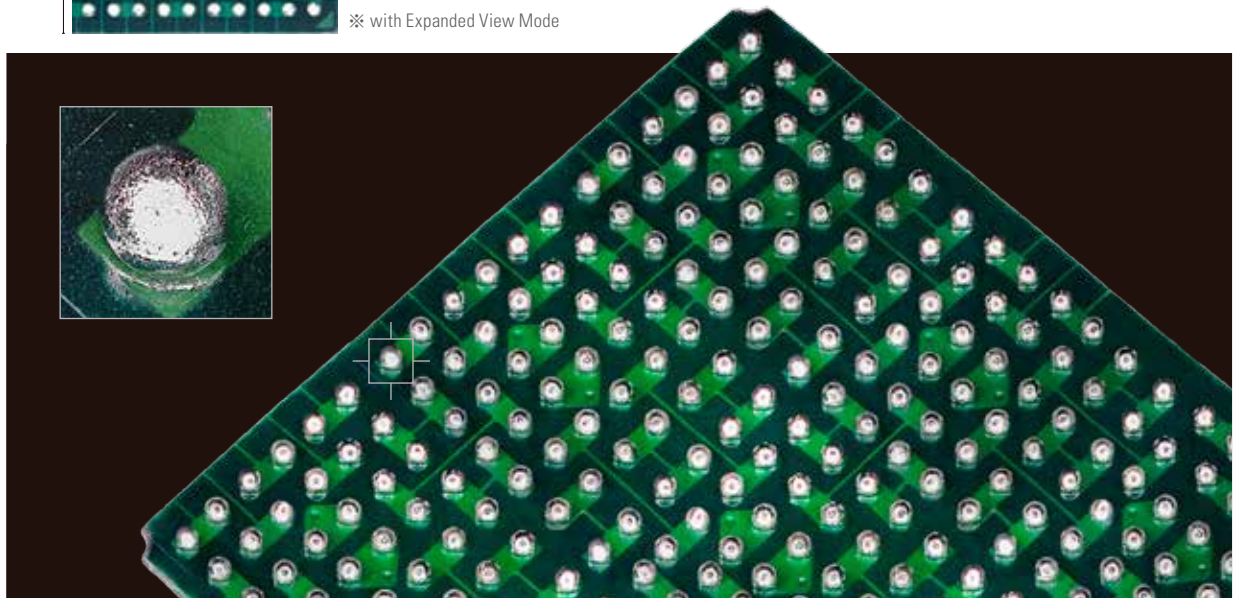
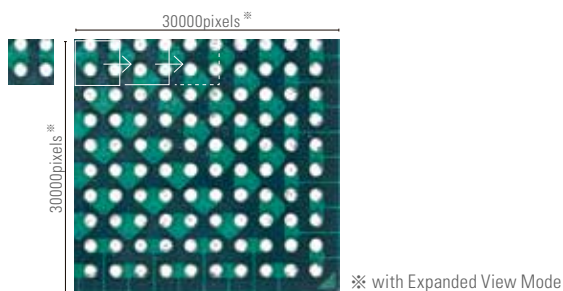
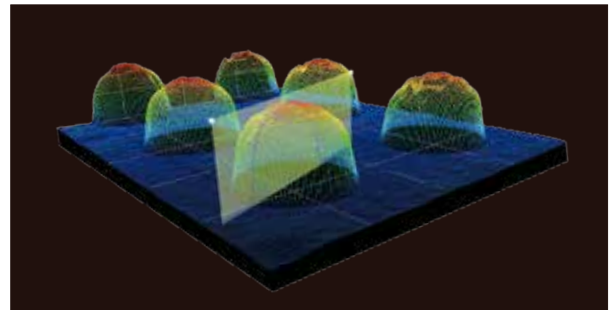
Auto 2D and 3D Tiling

Until now, it was a constant challenge for optical microscopes to capture images with a high optical resolution and a wide field of view simultaneously. Hirox's new process does not require a specified position to match tile to tile. The image will automatically begin tiling seamlessly in real-time just by moving the XY stage. This new method increases the field of view up to more than 350 times while retaining a high optical resolution.



Wide-view 3D Modeling

With combination of Tiling and 3D modeling, increase the field of view up to more than 170 times while retaining a high optical resolution.



Lens Lineup

All lenses include high-performance zoom incorporated technologies, as well as high-grade built in illumination, and precision mechanism designs, crafted with pride by the lens manufacturer, Hirox.

1.



MXB-2016Z Low Range High Resolution Zoom Lens 20-160x (6-320x)

This high-performance zoom lens has a compact body and provides a high resolution image, while offering a large optical depth-of-field and an even larger digital depth-of-field. The lens can be handheld and accommodates numerous applications through the various adapters covering a magnification range of 6-320x.

Model	MXB-2016Z		
Adapter	Normal	Low	High
Magnification	20-160x	6-48x	40-320x
Working Distance(mm/inch)	44 / 1.73"	132 / 5.2"	20 / 0.79"
Horizontal View (mm/inch)	15.4 - 2.0 / 0.61 - 0.08"	50.8 - 6.35 / 2 - 0.25"	7.62 - 0.95 / 0.3 - 0.04"
Depth of Field (mm/inch)	13.3 - 0.25 / 0.52 - 0.01"	170.45 - 4.20 / 6.71 - 0.17"	3.02 - 0.10 / 0.12 - 0.04"
ACS Function	Yes		

2.



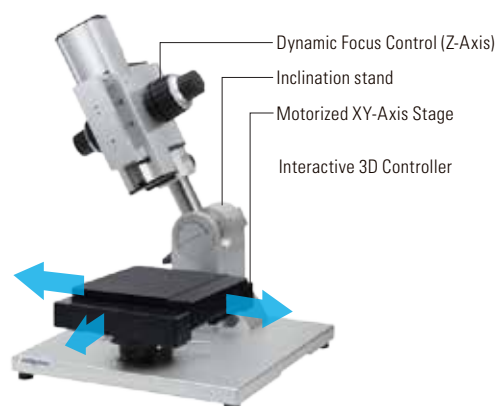
MXB-5040RZ Mid-Range High Resolution Zoom Lens with Optical 3D Rotation 50-400x (20-800x)

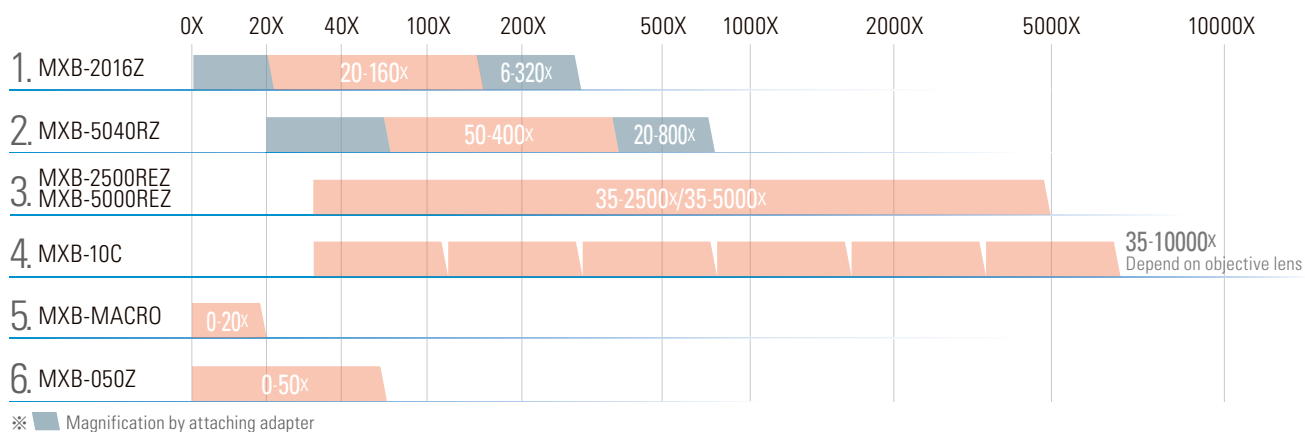
This universal lens can be equipped with a wide selection of exclusive Snap-On adapters, allowing one-touch replacement and a magnification range of 20-800x. Attaching the rotary head adapter allows 360 Degree revolution with the ability to inspect at multiple angles.

Model	MXB-5040RZ		
Adapter	Normal	Low	High
Magnification	50-400x	20-160x	100-800x
Working Distance(mm/inch)	54 / 2.13"	80 / 3.15"	20 / 0.79"
Horizontal View (mm/inch)	6.1 - 0.78 / 0.24 - 0.03"	15.4 - 2.0 / 0.61 - 0.08"	3.05 - 0.39 / 0.12 - 0.02"
Depth of Field (mm/inch)	2.7 - 0.08 / 0.11" - 3.15mil	16.81 - 0.58 / 0.66 - 0.02"	0.68 - 0.02 / 0.03" - 0.79mil
ACS Function	Yes		

High Performance Stands

A high performance lens requires a high performance stand to show its power while being operated. It is the stand that connects the lens to the operator's hand, meaning that the stand must have a high level of precision and be easy to use. Combine this stand with the optional Electronic Focus Block(0.05µm/pulse) for 3D observation and height measurements.





3.



MXB-2500REZ / 5000REZ Triple Illumination Revolver Zoom Lens 35-2500x/35-5000x

Incredibly wide zoom range with a triple objective turret and triple illumination mechanism, providing co-axial, ring and side lighting. Choose either setting or mix lighting in order to cover a multitude of applications.

Model	MXB-2500REZ / MXB-5000REZ ※			
Lighting Method	Co-Axial, Dark Field and Mixed			Co-Axial
Range	Low-Range	Mid-Range	High-Range	
Magnification	35-250x	140-1000x	350-2500x	700-5000x ※
Working Distance(mm/inch)	10 / 0.39"			3.4 / 0.13" ※
Horizontal View (mm/inch)	8.71 - 1.22 0.34 - 0.05"	2.18 - 0.31 0.09 - 0.01"	0.87 - 0.12 0.03" - 4.72mil	0.43 - 0.06 0.017" - 2.36mil
ACS Function	Yes			

4.



MXB-10C High Range / High Resolution 10x Co-Axial Zoom Lens 35-10000x

With seven interchangeable objective lenses, this optical zoom lens incorporates high expandability and the highest resolution in the series, covering a magnification range of 35-10000x. A directional lighting adapter is provided for co-axial vertical lighting to achieve intricate optical observation.

Model	MXB-10C						
Lighting Method	Co-Axial Vertical Lighting						
Objective Lens	OL-35	OL-70 II	OL-140	OL-140 II	OL-350 II	OL-700 II	OL-1000
Magnification	35-350x	70-700x	140-1400x	140-1400x	350-3500x	700-7000x	1000-10000x
Working Distance(mm/inch)	34 / 1.34"	21 / 0.83"	30.5 / 1.20"	12 / 0.47"	10.6 / 0.42"	3.4 / 0.13"	1 / 0.039"
Horizontal View (mm/inch)	9.83 - 1.05 0.39 - 0.04"	4.42 - 0.47 0.17 - 0.02"	2.46 - 0.26 0.10 - 0.01"	2.21 - 0.23 0.09 - 0.01"	880 - 90μm 30 - 3.54mil	400 - 40μm 20 - 1.57mil	300 - 30μm 11.8 - 1.18mil
ACS Function	Yes						

5.



MXB-MACRO

6.



MXB-050Z

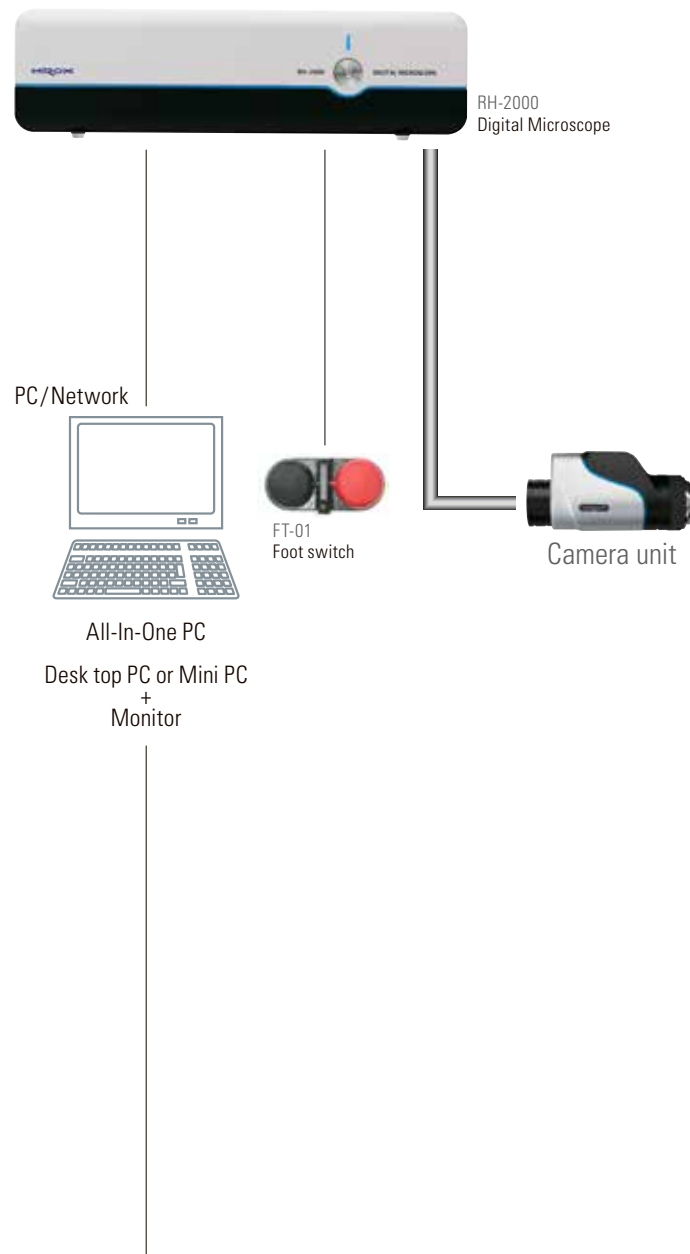
MXB-MACRO Macro Lens 0-20x MXB-050Z Macro Zoom Lens 0-50x

Model	MXB-MACRO	MXB-050Z
Magnification	0-20x	0-50x
Working Distance (mm/inch)	—	∞ - 90 / ∞ - 3.54"
Field View (mm/inch)	∞ - 15.4 / ∞ - 0.61	∞ - 61 / ∞ - 2.40"
ACS Function	—	Yes

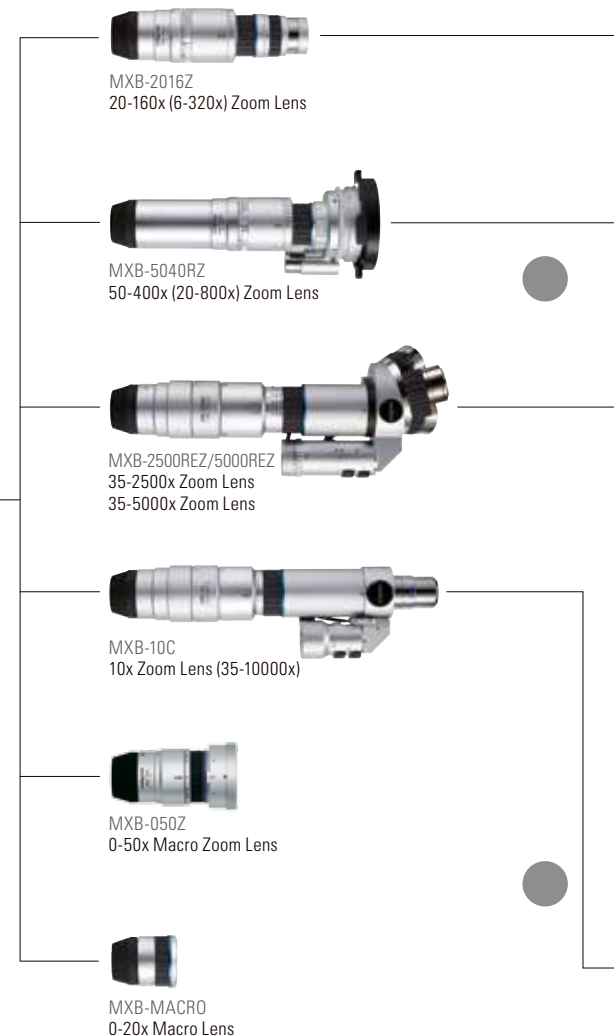
System Configuration

These are Hirox productions that respond to customer's requests, and visualize object's reality faithfully.

Main Unit



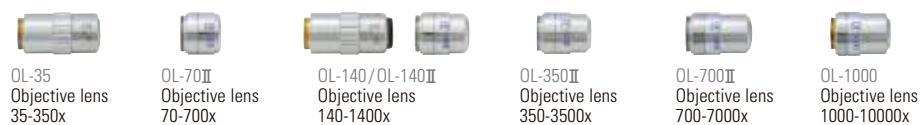
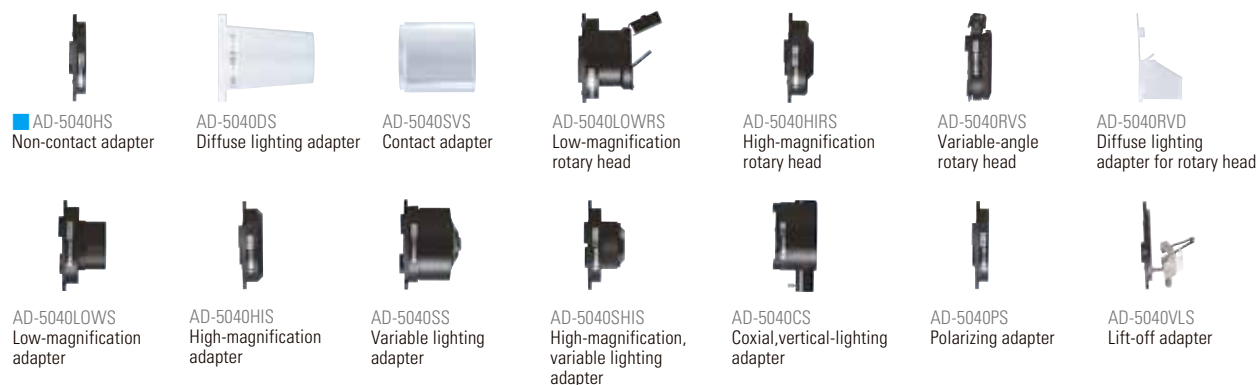
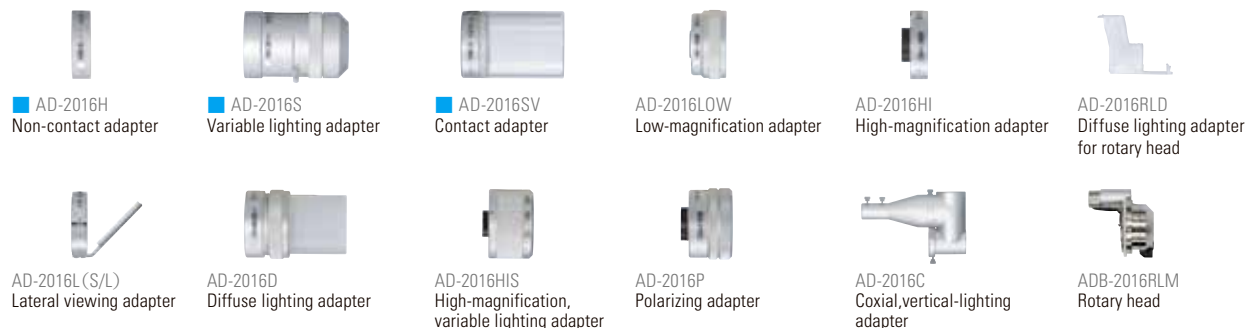
Lens/Adapter



Advanced Software

	Select.1	Select.2	Select.3	Select.4
System	RH-2000 PC(&Standard Software)	RH-2000 PC(&Standard Software) HRS-3D	RH-2000 PC(&Standard Software) HRS-TL	RH-2000 PC(&Standard Software) HRS-3D HRS-TL
Observation/Recording/2D Measurement	●	●	●	●
3D Measurement	-	●	-	●
Tiling	-	-	●	●

HRS-3D 3D Measurement soft HRS-TL Tiling soft



■ included in the microscope package.

High Precision Stands



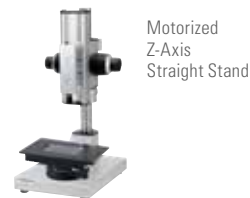
Motorized
XYZ-Axis
Free Angle Stand



Motorized
Z-Axis
Free Angle Stand



Motorized
XYZ-Axis
Straight Stand



Motorized
Z-Axis
Straight Stand

Applications

Creating a Wide Array of Applications for the Demands of Numerous Industries.

Electronics Semiconductor



Wire cable ×80

Life Science



Scaly hair of plant ×500

Forensics



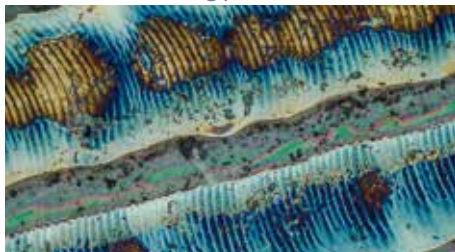
Ink ×350

Art Restoration



Detail of a painting ×160

Nano Technology



Detail of a painting ×160

Metallography



Metal crystals ×1,000

Security printing

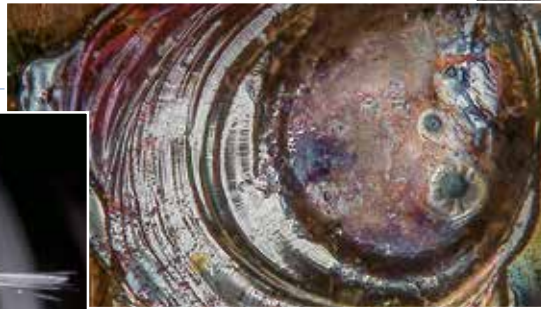


Ink pigments ×1,000

Material Sciences



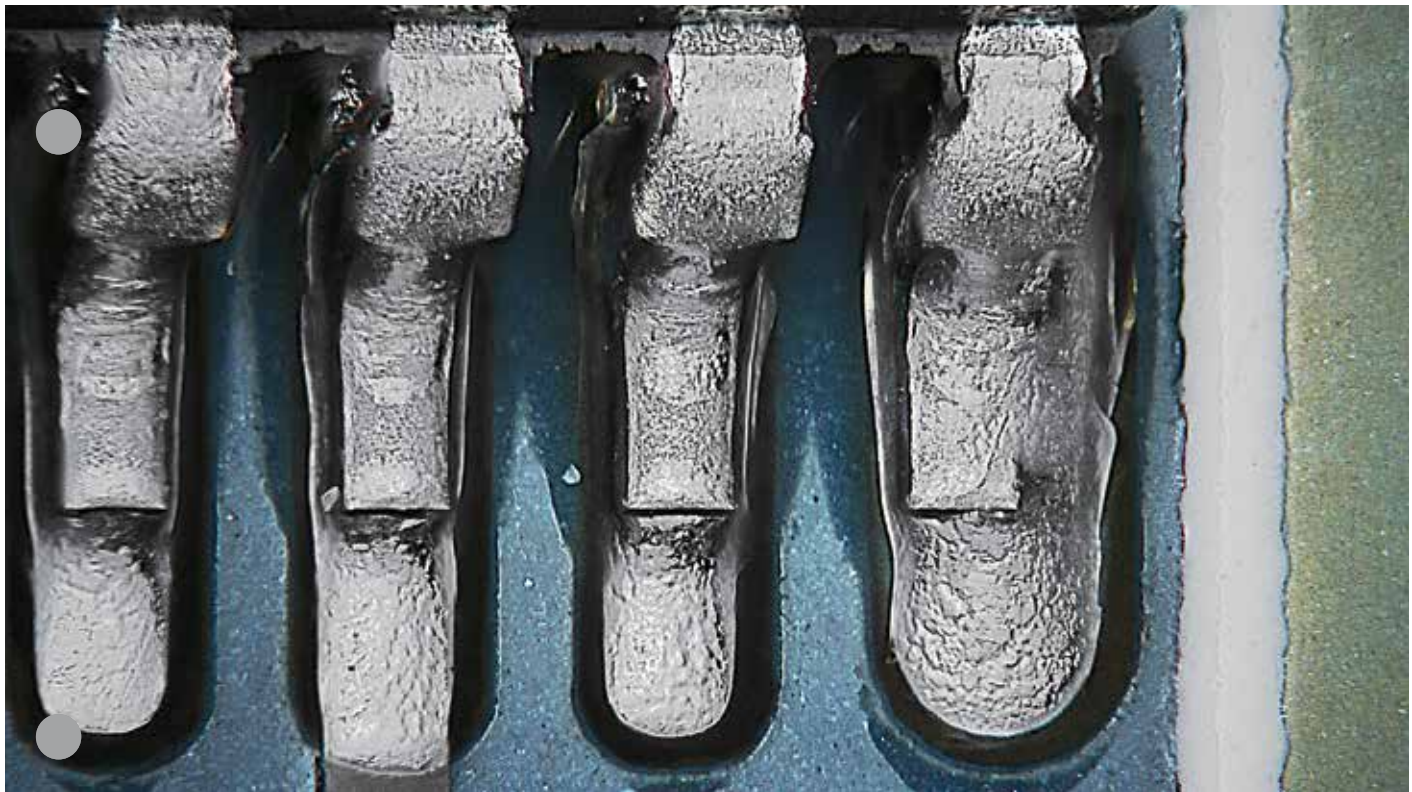
Broken composite $\times 20$



Welding $\times 100$

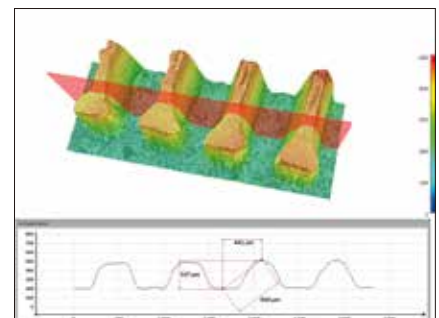
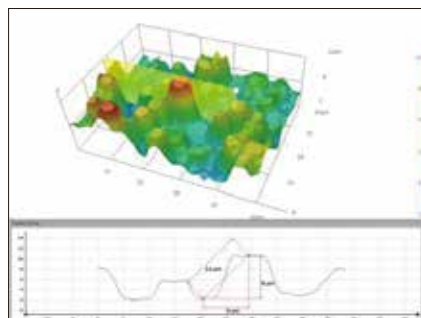
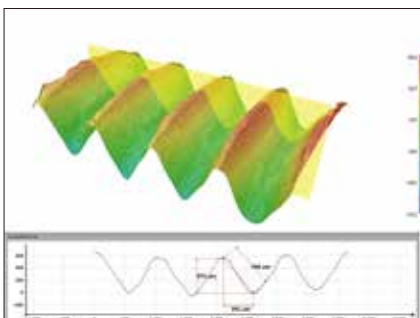


Metal fracture $\times 200$



Soldering $\times 140$

3D View and measurement



Basic Functions: Camera Control Unit			Standard Software		Advanced Software	
Camera	Imaging Device	1/1.9-inch 2.38 Mega-pixel CMOS Image Sensor	Observation Functions	Camera Setup Preview	3D Measurement Functions	3D Display (Original Color / Wireframe / Pseudo Color Display)
	Total Pixels	1952 (H) x 1241 (V)		Mode Function (save camera settings)		3D Profile Measurement (Height, Length, Angle, Radius, Others)
	Effective Pixels	1945 (H) x 1225 (V)		My Com Communication (ACS)		3D Model Illumination Simulation
	Visual Pixels	1920 (H) x 1200 (V)		Gamma Correction / Edge Enhancement		3D Profile Roughness Measurement
	Scanning Method	Progressive Scan		Hue / Chroma Correction and Chroma ON/OFF		3D Volume and Area Measurement
	Frame Rate	50 Frame/Sec (Max) at 1920 x 1200 Resolution	Observation Tool	Brightness Level		3D Image Height Point Measurement
	Electronic Shutter	Auto (1/24 ~ 1/100000)		Live Anti-Halation / HDR		HDR / Anti-Halation 3D Model
	Supercharge Shutter	Preference Setup (17 ~ 1/100000)		Camera Shake Correction		2D Image 3D Profile Measurement
	Gain	Auto / Manual 0dB~12dB		Auto Brightness / Tone Curve Adjustment		3D Image Map CSV Output (Import to Various 3D application Software)
	White Balance	AUTO (One Push), MANUAL (R, B)		Focus Control / Focus Indicator		Noise Filter and Removal
Light Source	Back Focus	NOT Required		Light Shift (Full, Partial, Lateral and Others)		3D Model Level Correction
	Lamp	High Intensity LED	Various Functions	LED Lamp ON/OFF	Tiling	2D Tiling (Up to 15000 x 15000 pixels) Expanded mode (Up to 30000 x 30000 pixels)
	Lamp Life	30,000 hours (Average)		Real-Time Digital Zoom / Rotary Head Control		Up to 25 times (V) x 18.75 times (H) FOV
Output	Color Temperature	5700K (Typical)		Grid Settings (Various Functions are available)		3D Tiling (Up to 10000 x 10000 pixels) Expanded mode (Up to 20000 x 20000 pixels)
	Camera	USB 3.0 Series B		Quick Function Key		Up to 12.5 times (V) x 16.7 times (H) FOV
	MyCom Contoller	USB 2.0 Series B		Cropping Image / Turning Over, ±180 Rotation		
Input	Motorized Z-Axis	5 Phase Step Motor Driver Integrated	Enhanced Digital Processing	Full Focus / Auto-Focus	Additional Software for Other PCs / Non-Licensed	
	External	Foot Switch (Capture / Capture Image)		Quick Extended Depth of Field	E-Z View	Refer to Standard Software Features
	USB Ports	USB2.0Series/A Typex2		Auto Multi-Focus 3D Merge Depth Composition	3D Viewer	Free 3D Image File Viewing Software
Interface	Through PC	LAN, USB 3.0 / 2.0, HDMI, Others		Auto-Positioning Depth Composition	Recommend PC	
	Supply Voltage	AC100V~240V 50/60Hz		3D Multi-Focus / 3D Model Preview Function	CPU	4th Generation Intel® Core™ i5 Processor or Higher
	Consumption	90W		High-Resolution Image (10560x6600 ~ 2560x1600)	ROM	8GB Memory or Higher
Environmental Resistance	Ambient Temperature	5~40°C(41~104°F)	Measurement Functions	High Dynamic Range (HDR) / Anti-Halation Function	HDD	500 GB or Higher
	Relative Humidity	20~80% RH (No Condensation)		Image Adjustment: Contrast, Edge, Hue/Chroma Correction	Monitor	Must be 1920 x 1080 Resolution or Higher (5:8 Ratio)
	Atmosphere	Corrosive Gas Prohibited		Image Improvement: Auto Brightness / Tone Curve, Noise Removal	OS	Windows 8 - 64 bit or Higher
	Altitude	Below 2000 Meter		Auto Calibration Select (ACS): Recognize Lens, Zoom		
	Storage Temperature	-15~50°C(No Condensation)	Recording	Distance, Angle, Radius, Diameter, Area and Other Tools		
Weight	Contamination Degree	2		Automatic Measurement: Auto-Count, Auto-Area, Auto-Edge Detection		
	Overvoltage Level	II		Scale Display (Various Setup Available in Metric/Inch)		
	Main Unit	3.6 Kg (7.94lb)		Statistic Result Data CSV or MS Office Output		
Dimension	Camera Unit	1.0 Kg (2.20lb)		Wide Image Measurement		
	Main Unit	270mm (W) x 75mm (H) x 230mm (D)	Utility	Image Format: Exif-JPEG (compressed), TIFF/BMP(non-compressed)		
		10.63" (W) x 2.95" (H) x 9.06" (D)		Capture Still Image (1920x1200 ~ 800x500)		
Basic Functions: Motorized XYZ Stage	Effective Stroke	40 x 40 mm (1.57" x 1.57")		Maximum Non-Tiled Resolution Image: 10560 (H) x 6600 (V)		
	Maximum Speed	8 mm / Sec		Maximum Tiled Resolution Image: 15000 (H) x 15000 (V)		
	Load Capacity	3.0 kg		Movie - 1920x1200, 960x600 AVI/WMV		
	Resolution / Lost Motion	0.04 um / Within 0.020 mm		Time Lapse at Specified Time Interval (Minimum 1 sec)		
	Dimension	195 mm (W) x 209 mm (D) x 53 mm (H)		Auto Coordinate Axis / Position Capture		
Z Axis	Weight	3.9 kg	Utility	Image Data Parameter		
	Effective Stroke	30 mm (1.18") Motor		Comments / Annotation / Scale / Date / Image Information		
	Resolution	0.05 um / pulse - 5 Phases Motor		Easy Report Function and Export to MS Office		
	Repeatability	0.002 Mil / pulse - 5 Phases Motor		Password Protection (Calibration)		
	Weight	1 kg		Language (ENG, JPN, FRN, GER, ITA, SPA, KOR, CHN, RUS)		
Basic Functions: Motorized XYZ Stage	Weight	1 kg		Help (Pop-up User Guide / Manual)		

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