

HiROX

<https://www.hirox.com>

Digital Microscope HRX-02

Hirox Co.,Ltd. <https://www.hirox.com>
2-15-17 Koenji Minami, Suginami-ku, Tokyo 166-0003, Japan
Tel: (+81) 3-3311-9911 E-mail: tokyo2@hirox.com

Hirox-USA Inc. <https://www.hirox-usa.com>
700 Kinderkamack Road, Oradell, NJ 07649
TEL: +1-201-342-2600
E-mail: info@hirox-usa.com

Hirox China Co., Ltd. <https://www.hirox.com.cn>
Room 809, 8th Floor, Fortune International Plaza,
No. 43 Guo-Quan Road, Shanghai 200433, China.
Tel: +86-21-6564-7772 E-mail: info@hirox.com.cn

Hirox Korea Co., Ltd. <https://www.hiroxkorea.co.kr>
B-501 Acrotower Bldg, 1591 Gwanyang-dong, Dongan-ku, Anyang-city,
Gyeonggi-do, 431-908, Korea
Tel: +82-31-385-1130 E-mail: yoona@hiroxkorea.com

Hirox Asia Ltd. <https://www.hirox-asia.com>
Unit 827, 8/F, Ocean Centre, Harbour City, 5 Canton Road,
Tsimshatsui Kowloon, Hong Kong
Tel: +852 8198-9679 E-mail: info@hirox-asia.com

Hirox Europe Ltd. <https://www.hirox-europe.com>
Jyfel, 100 Allée des Frères, 69760 Limonest, France
TEL: +33 482 31 41 20 E-mail: info@hirox-europe.com

Contact

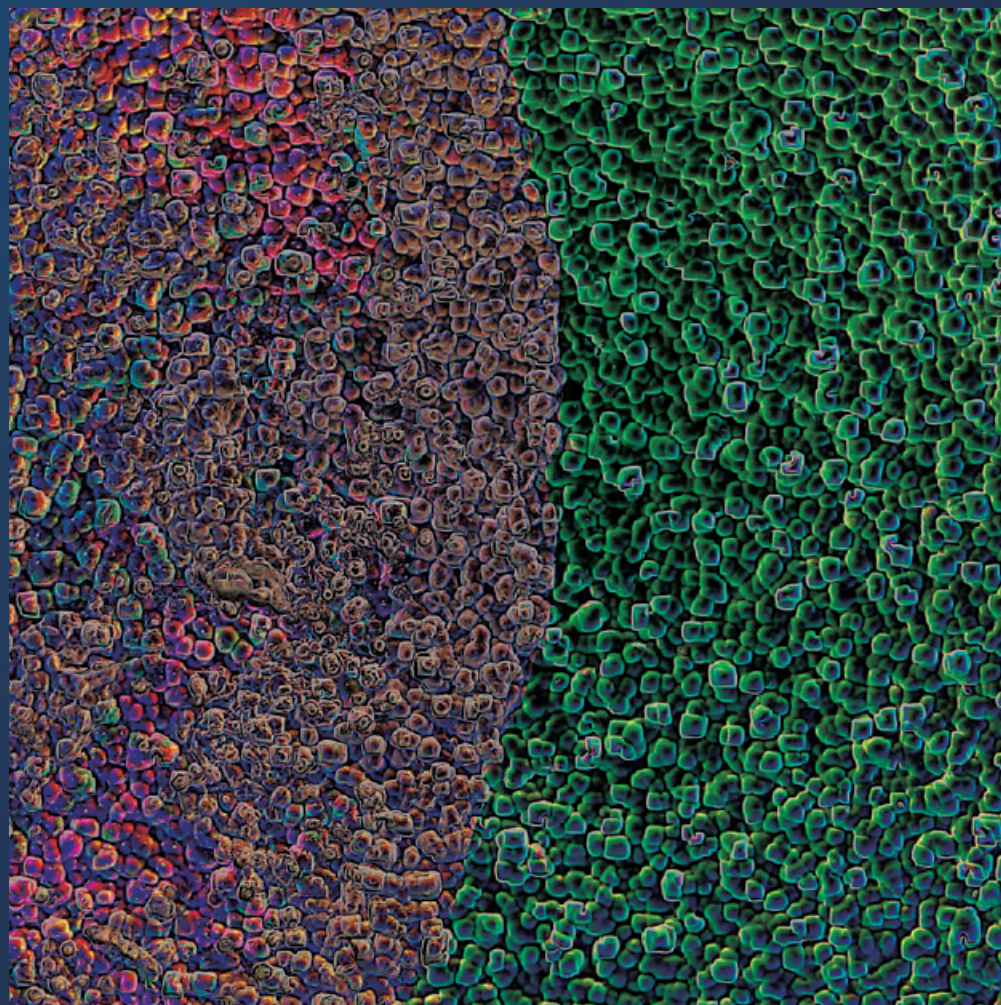
The products in this catalog may be changed at any time, without notice.

PHP-2503-C069-A
APP-P2503-0125

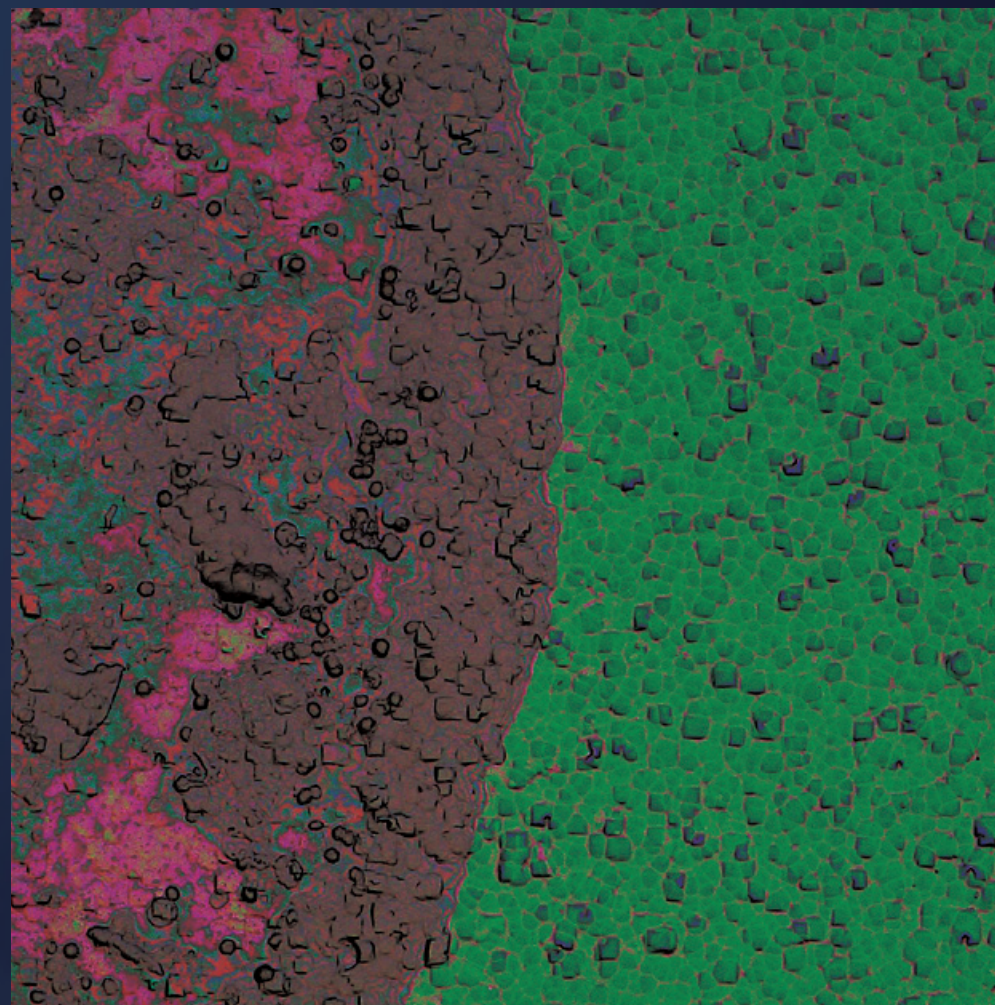


Superior Imaging Observation, Capturing, and Measuring Seamless Enhanced Magnified Experience

Beyond just delivering sharp and vivid images, Hirox has achieved true-to life imaging that faithfully represents the object's natural appearance.



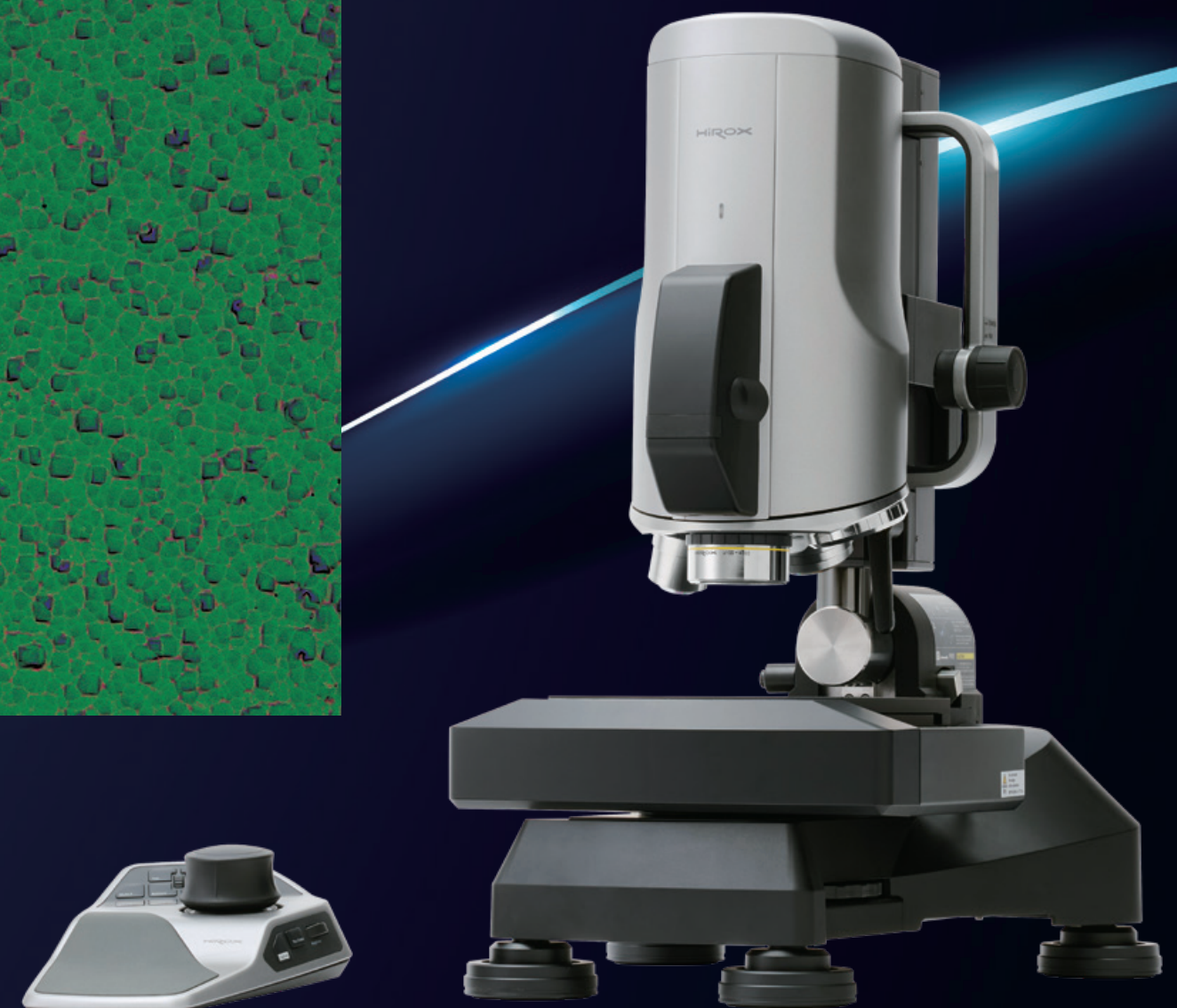
Solar Panel (Emphasizing unevenness)



Solar Panel (Standard)

Intuitive Operation with a Newly Designed Lens & Innovative Controller

As a lens manufacturer, Hirox has expanded magnification range of a single lens and introduced motorized functionality, continuously pushing the boundaries of lens development. This time, Hirox has elevated the standard by designing an entirely new lens. Also, developed a dedicated new controller that simplifies system operation.



Hirox Digital Microscope

The universal system for all your applications



Digital Microscopes made by Hirox
optical manufacturer and inventor of video microscopes
since 1978.

From the time of our founding until now, we have three fundamental concepts that we continue to protect:

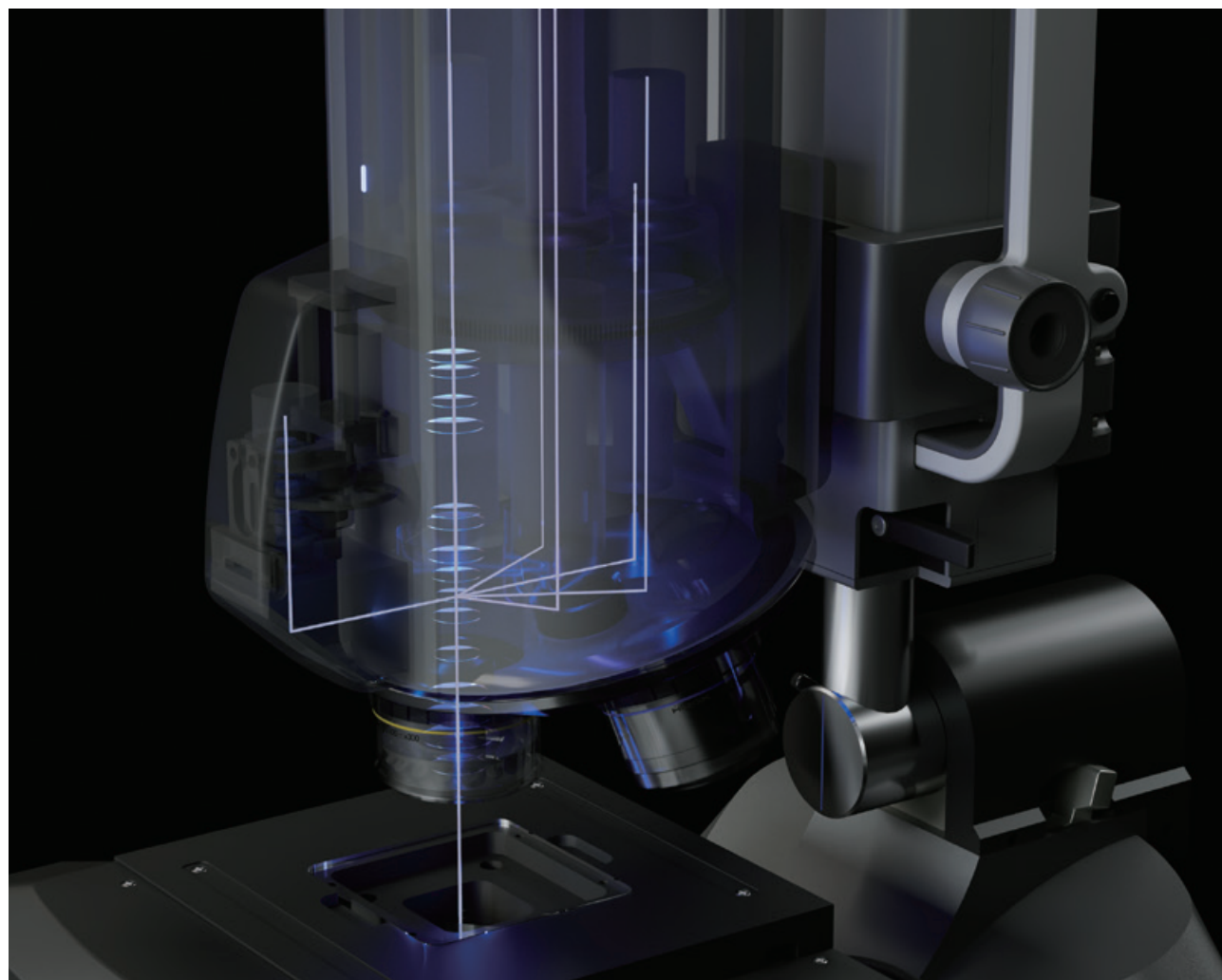
- 1: Comfortable, stress-free observation environment. We aim to develop user-friendly equipment that is easy to handle so that it will become part of the body of the viewer.
- 2: Absolute reality. With the lens technology cultivated over many years as the core, we pursue true imaging to the fullest.
- 3: Sincerity to meet user expectations and produce results. Being able to produce high quality custom made products are one of the strengths of Hirox, our technical expertise enables us to adapt to the most demanding requests.

Manufacturing that does not allow compromise. It is our mission as a pioneer in the video microscopy industry.



Ultra Performance Camera/Lens Integrated Unit 10-500x HRX-RVOMAX

- Even higher resolution with high magnification.
- Crystal clear resolution with a longer working distance.
- Supports a magnification range from 10x to 7000x.
- Lighting options include ring, coaxial, and mixed illumination.
- Multiple integrated lighting and filter options.

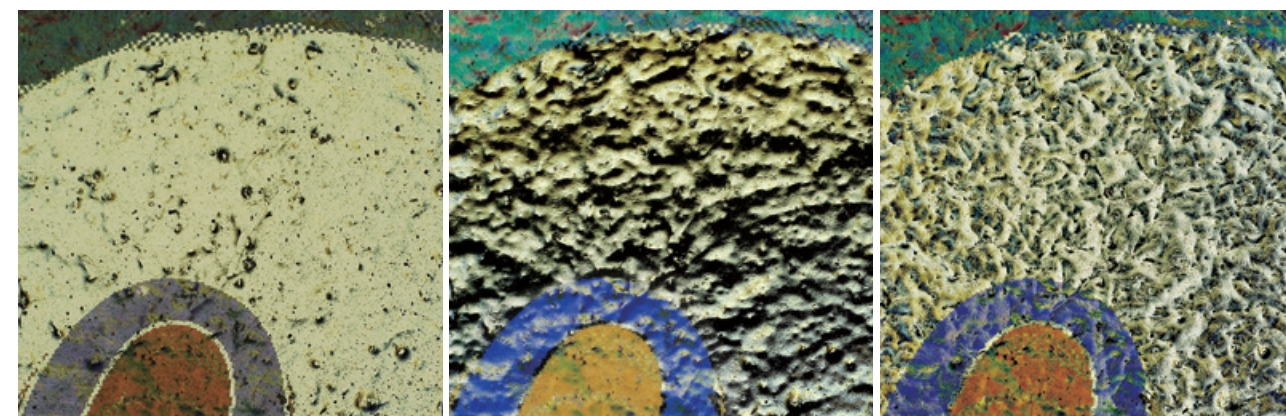


A newly designed and developed camera/lens is integrated into a single compact unit, achieving 10x-500x magnification standard, with additional objective lens options, reaching up to 7,000x.

Variety of Lighting

Illumination Filter

Under coaxial illumination, Hirox offers lighting modes, including polarization, oblique lighting, fixed aperture, and center aperture, allowing for optimal observation.



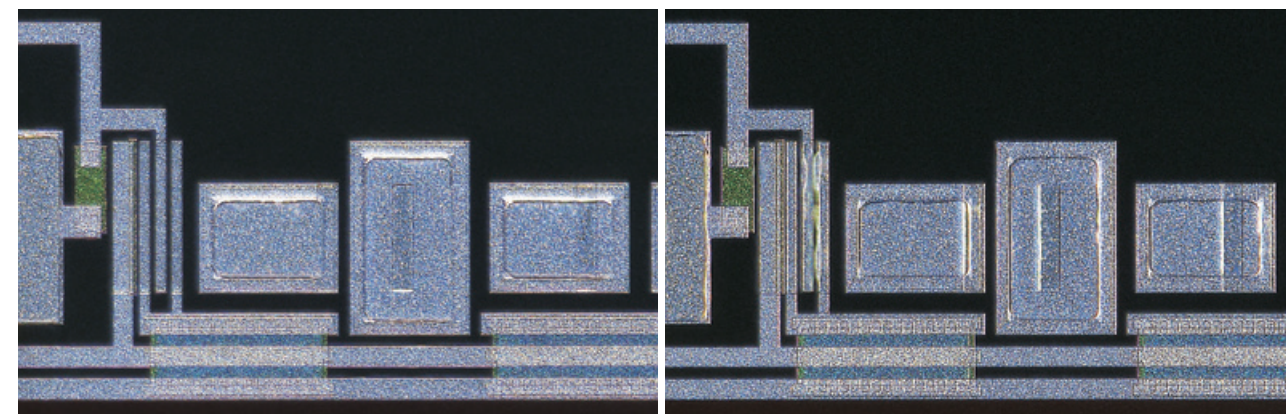
Print (Standard)

Print (Directional lighting)

Print (Emphasizing unevenness)

Directional Lighting Function

With ring illumination, light can be directed from multiple selectable angles, ensuring flexible observation conditions. All settings can be intuitively controlled via a handheld controller for seamless operation.



IC Pattern (Illuminated from Top of Screen)

IC Pattern (Illuminated from Right Side of Screen)

A Wide Range of Objective Lenses - Magnification from 10x to 7,000x-

The included objective lens, along with optional lens variations, provides a magnification range from 10x to 7,000x. High-magnification lenses are designed for higher resolution, while low-magnification lenses offer a longer working distance, ensuring adaptability to various specimens and observation scenarios.

Digital Microscope Control Unit HRX-02

- Camera Control Unit for HRX-RVOMAX and Remote Head Camera
- Integrated High-Intensity LED Illumination
- Additional 2/3-inch 5MP Remote Camera Available for HR Series Lenses
- Customizable Function Selection

The HRX-02 seamlessly integrates the lens, magnification, adapter, camera, motorized stand, and motorized stage. By synchronizing all the components, the HRX-02 delivers high-definition imaging and intuitive operation, providing a smooth and comfortable magnified observation experience.



Customizable Digital Microscope

This is a PC-based digital microscope system. Users can configure the system freely, installing a full set of features from the start or gradually adding functions over time to meet their specific needs. Offering exceptional expandability, including support for custom software solutions.

Camera Switching Function

The HRX-02 supports a dual-camera signal input. Using a combination of HRX-RVOMAX and HR series lenses, users can seamlessly switch between lenses via the application software's switching function, without the need to physically detach or reattach the cameras.



High Precision Motorized Z-Axis Free Angle Stand ST-AS2

- Compatible with all HR series lenses.
- Z-axis motorized precision with a resolution of 0.05 μm .
- New high-intensity transmitted lighting for low to high magnification.
- Improved anti-vibration performance.

The new Z-Axis focus block with improved course and fine focus control results in sharper image composition. Supporting 50 x 50mm or 100 x 100mm automated XY stages, and two types of LED options for transmitted illumination.



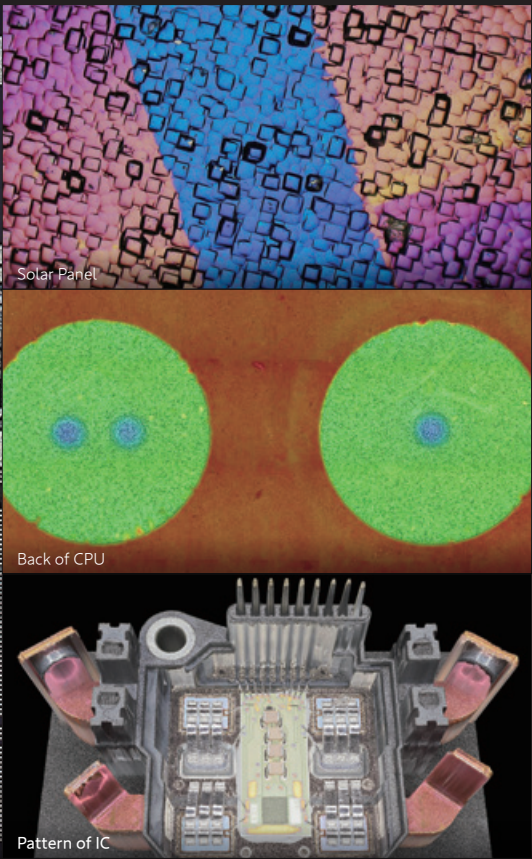
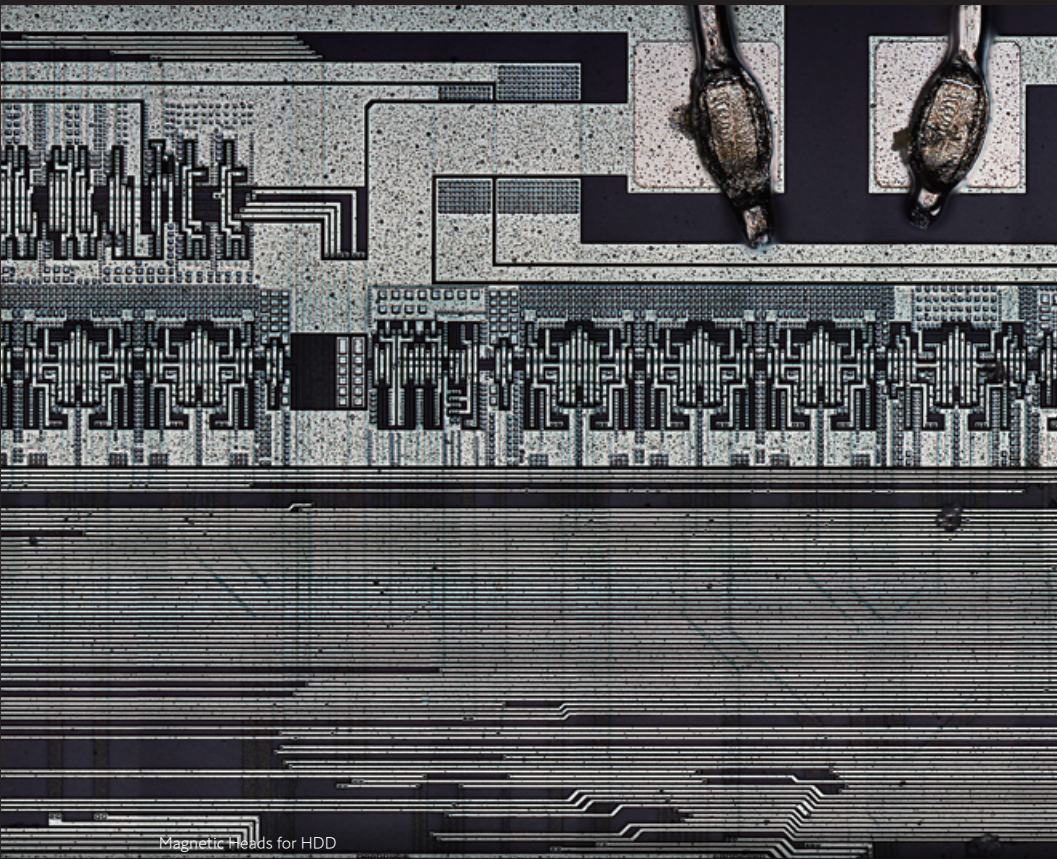
Remote Device CT-R02

- Complete control over magnification, illumination, XYZ movement, and imaging.
- Results in an optimized user interface for the shortest path to the desired function.
- Ergonomic design for enhanced comfort and usability.

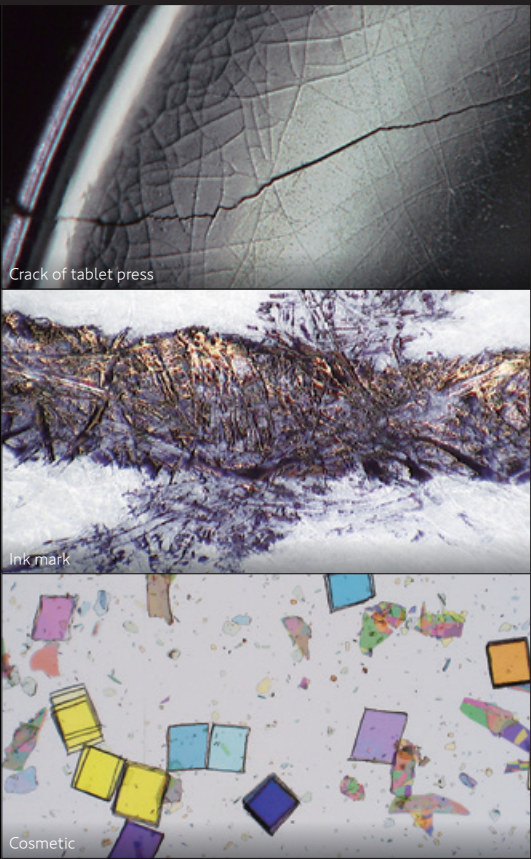
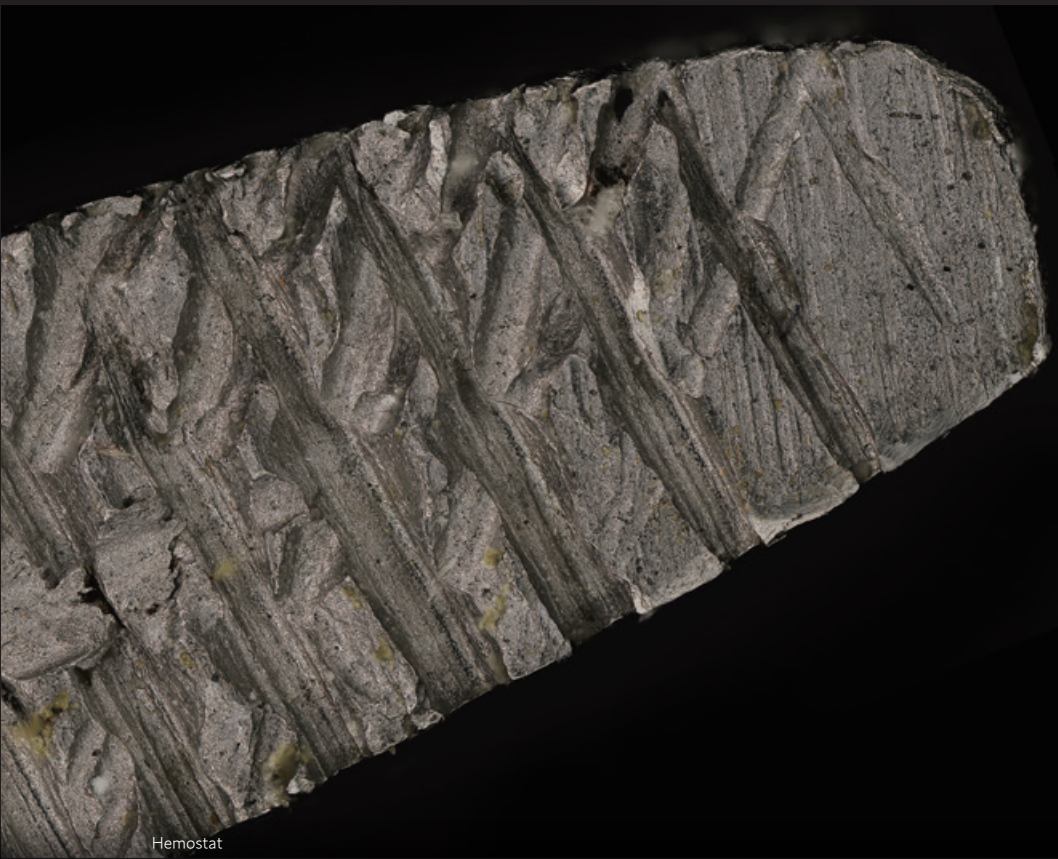
A dedicated controller that enables seamless switching of magnification, illumination, and filters, as well as motorized XYZ stage operation. The 15 customizable buttons allow users to assign functions for effortless and intuitive observation tasks.



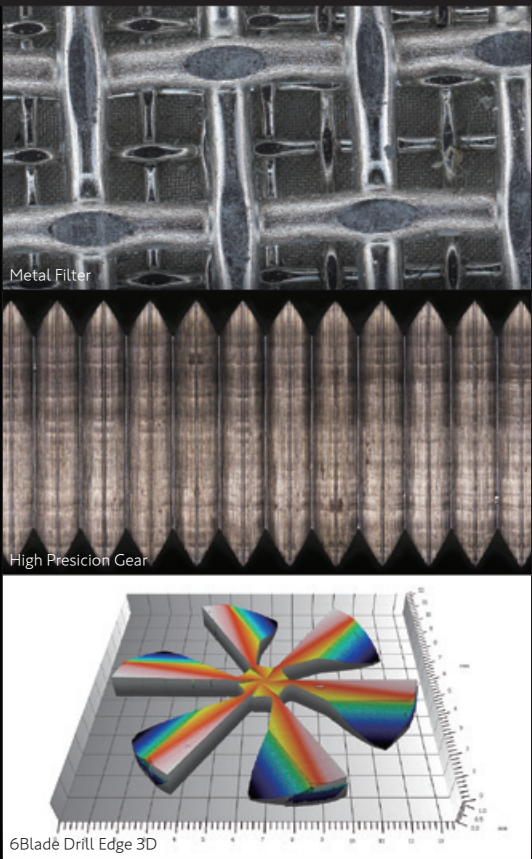
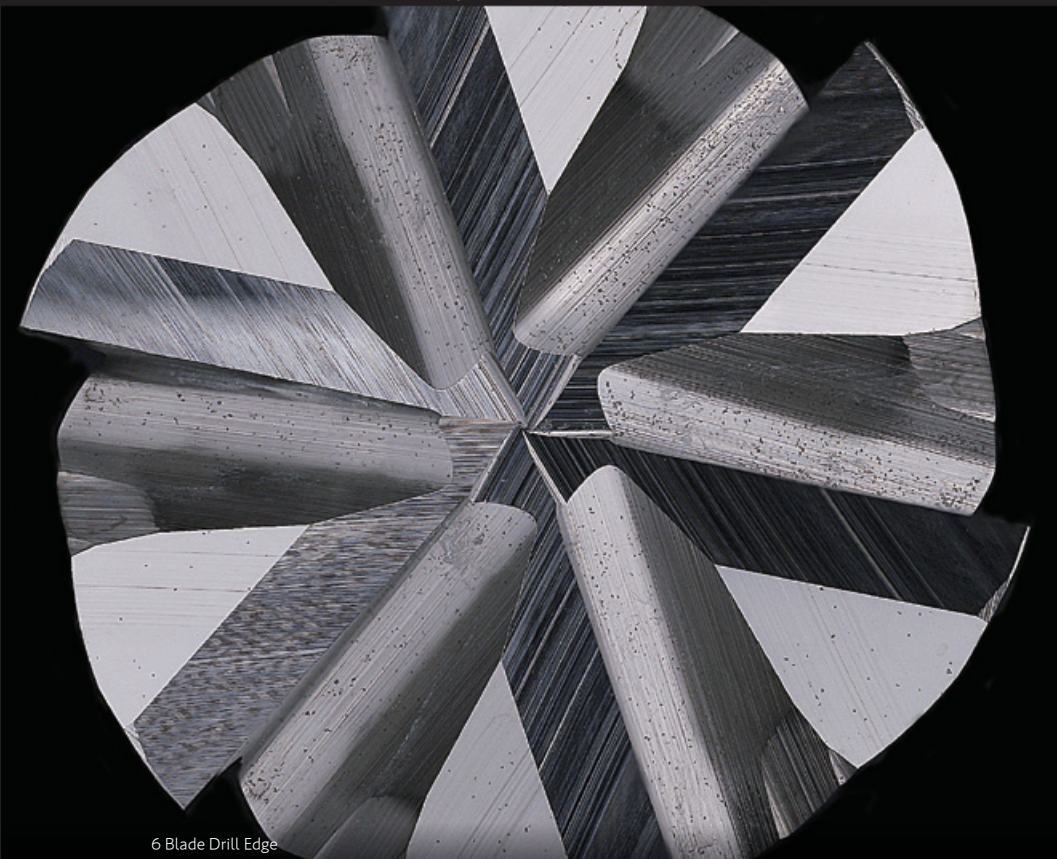
Electronics / Electric / Semi



Chemical / Medical / Pharma



Automotive / Metal / Machinery

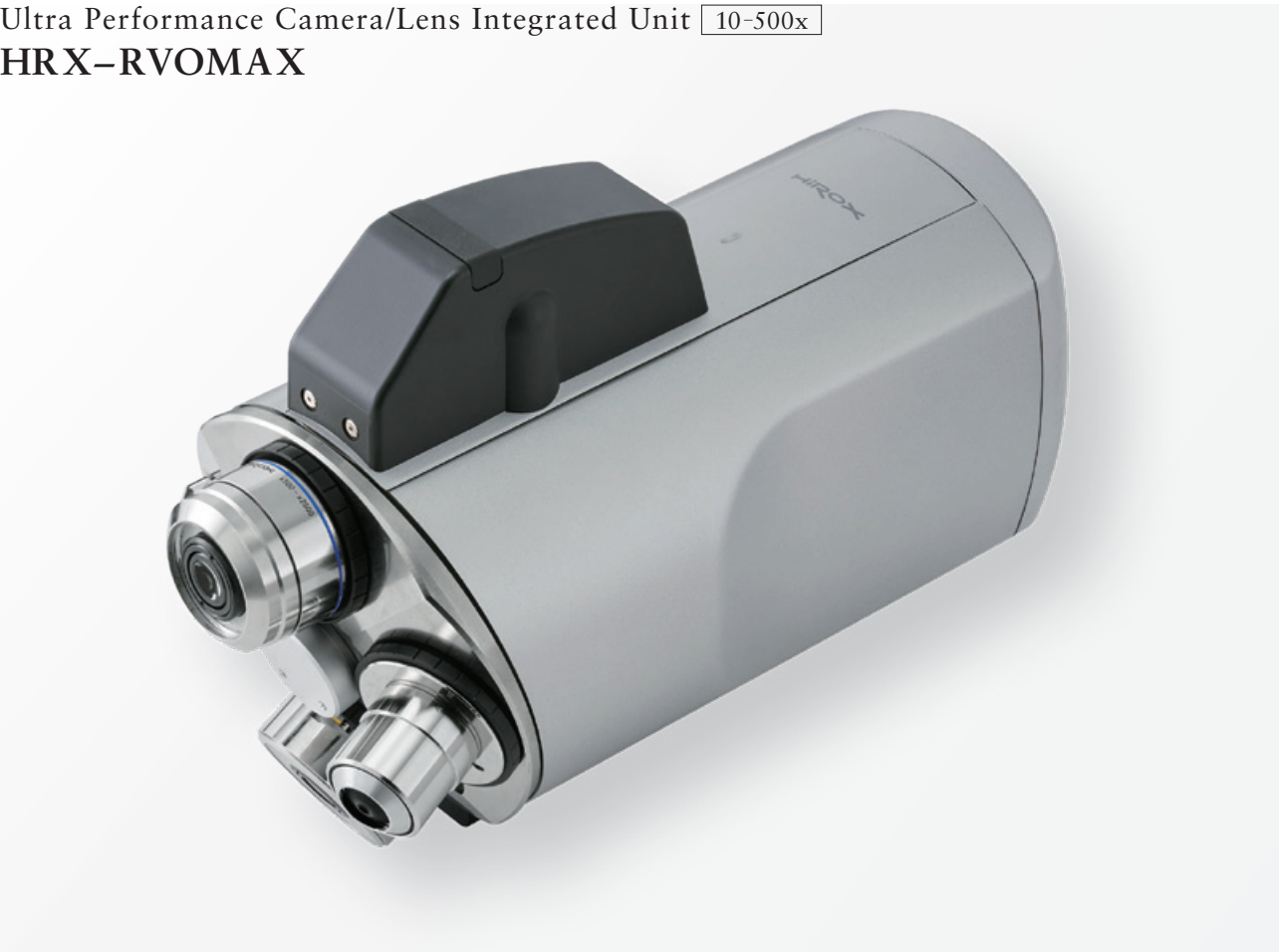


Bio / Agriculture / Food



Hirox Lens Series

Ultra Performance Camera/Lens Integrated Unit 10-500x
HRX-RVOMAX



Objective Lens (default)



Item Number		HRX-RVOMAX
Magnification	Macro	10 / 20 / 30 / 50 / 80
	OLE-100	100 / 150 / 200 / 300 / 400 / 500
	OLE-350 *	350 / 500 / 700 / 1000 / 1400 / 2000
	OLE-500 *	500 / 700 / 1000 / 1500 / 2000 / 2500
	OLE-700 *	700 / 1000 / 1500 / 2500 / 3000 / 3500 / 5000
	OLE-1000 *	1000 / 1500 / 2000 / 3000 / 4000 / 5000 / 7000
Horizontal View(mm/inch)		30.5 (1.2) ~ 0.04 (1.18mil)
Working Distance(mm/inch)		Macro: 33 (1.30) / OLE-100: 18 (0.71) / OLE-350*: 10 (0.39) / OLE-500*: 5 (0.20) / OLE-700*: 3 (0.12) / OLE-1000*: 1 (0.04)
Lighting Select		Dark Field / Mixed / Bright Field (MACRO : Dark Field only OLE-1000 : Bright Field only)
Motorized Control		Zoom / Turret / Adapter Filter
Weight		4.8kg

※Optional Objective Lens

Telecentric Ultra High Resolution
Motorized Zoom Lens 10-200x
HR-1020E



Item Number		HR-1020E
Magnification	Wide-Range	10 / 20 / 30 / 50 / 90 / 100 / 120 / 150 / 200
	Mid-Range	30.5 (1.2) ~ 1.52 (0.06)
	High-Range	54 (2.13)
Working Distance(mm/inch)		54 (2.13)
Lighting Select		Dark Field / Bright Field (By Attaching adapter)
Motorized Control		Zoom
Weight		1.5kg

High Range Turret (Motorized)
Zoom Lens 20-2500x
HR-2500(E)
Super High Range Turret (Motorized)
Zoom Lens 20-5000x
HR-5000(E)



Item Number		HR-2500E	HR-2500	HR-5000E	HR-5000
Magnification	Wide-Range	20 / 30 / 50 / 80 / 120 / 140	20 / 30 / 50 / 80 / 120 / 140	20 / 30 / 50 / 80 / 120 / 140	20 / 30 / 50 / 80 / 120 / 140
	Mid-Range	140 / 200 / 400 / 600 / 800 / 1000	140 / 200 / 400 / 600 / 800 / 1000	140 / 200 / 400 / 600 / 800 / 1000	140 / 200 / 400 / 600 / 800 / 1000
	High-Range	350 / 500 / 1000 / 1500 / 2000 / 2500	350 / 500 / 1000 / 1500 / 2000 / 2500	700 / 1000 / 2000 / 3000 / 4000 / 5000	700 / 1000 / 2000 / 3000 / 4000 / 5000
Horizontal View(mm/inch)		15.4 (0.61) ~ 0.12 (4.72mil)	15.4 (0.61) ~ 0.12 (4.72mil)	15.4 (0.61) ~ 0.06 (2.36mil)	15.4 (0.61) ~ 0.06 (2.36mil)
Working Distance(mm/inch)		Wide-Range : 18 (0.71) / Mid-Range & High-Range : 10 (0.39)	Wide-Range : 18 (0.71) / Mid-Range & High-Range : 10 (0.39)	Wide-Range : 18 (0.71) / Mid-Range : 10 (0.39) / High-Range : 3 (0.13)	Wide-Range : 18 (0.71) / Mid-Range : 10 (0.39) / High-Range : 3 (0.13)
Lighting Select		Dark Field / Mixed / Bright Field	Dark Field / Mixed / Bright Field	Dark Field / Mixed / Bright Field	※High-Range : Bright Field only
Motorized Control		Zoom / Turret / Light Select	—	Zoom / Turret / Light Select	—
Weight		1.5kg	1.45kg	1.6kg	1.55kg

Low Range (Motorized)
Zoom Lens 20-160x
HR-2016(E)



Item Number	HR-2016E	HR-2016
Magnification	20 / 30 / 40 / 50 / 80 / 100 / 130 / 160	
Horizontal View(mm/inch)	15.4 (0.61)~2.0 (0.08)	
Working Distance(mm/inch)	44 (1.73)	
Lighting Select	Dark Field	
Motorized Control	Zoom / Rotary-Head	Rotary-Head
Weight	0.7kg	0.65kg

※By Attaching Low-Magnification / High-Magnification Adapter to lens, it covers magnification range of 6-320x, changes field of view and working distance.

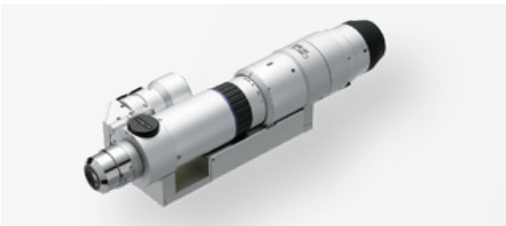
Middle Range (Motorized)
Zoom Lens 50-400x
HR-5040(E)



Item Number	HR-5040E	HR-5040
Magnification	50 / 100 / 150 / 200 / 250 / 300 / 350 / 400	
Horizontal View(mm/inch)	6.1 (0.24)~0.78 (0.03)	
Working Distance(mm/inch)	54 (2.13)	
Lighting Select	Dark Field	
Motorized Control	Zoom / Rotary-Head	Rotary-Head
Weight	0.95kg	0.9kg

※By Attaching Low-Magnification / High-Magnification Adapter to lens, it covers magnification range of 20-800x, changes field of view and working distance.

High Resolution (Motorized)
10x Zoom Lens 35-10000x
HR-10C(E)



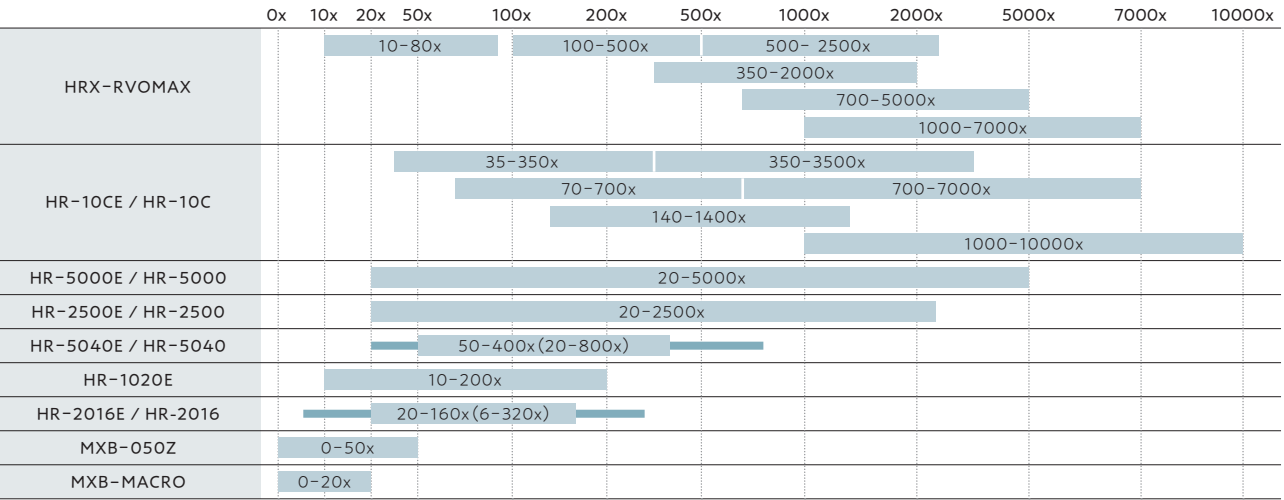
Item Number		HR-10CE	HR-10C
Magnification	OL-35	35 / 50 / 75 / 100 / 125 / 150 / 200 / 250 / 350	
	OL-70 II	70 / 100 / 150 / 200 / 250 / 300 / 400 / 500 / 700	
	OL-140	140 / 200 / 300 / 400 / 500 / 600 / 800 / 1000 / 1400	
	OL-140 II	140 / 200 / 300 / 400 / 500 / 600 / 800 / 1000 / 1400	
	OL-350 II	350 / 500 / 750 / 1000 / 1250 / 1500 / 2000 / 2500 / 3500	
	OL-700 II	700 / 1000 / 1500 / 2000 / 2500 / 3000 / 4000 / 5000 / 7000	
		OL-1000 II	1000 / 1500 / 2000 / 3000 / 4000 / 5000 / 6000 / 8000 / 10000
Horizontal View(mm/inch)		9.83 (0.39)~0.04 (1.18mil)	
Working Distance(mm/inch)		OL-35:34 (1.34) / OL-70 II :21 (0.83) / OL-140:30.5 (1.2) / OL-140 II :12 (0.47) / OL-350 II :10.6 (0.42) / OL-700 II :3.4 (0.13) / OL-1000 II :1.0 (0.04)	
Lighting Select		Bright Field / Dark Field (By Attaching adapter) ※OL-700 II :Bright Field only	
Motorized Control		Zoom	—
Weight		1.0kg (Excluding objective lens)	0.95kg (Excluding objective lens)

Macro Zoom Lens 0-50x
MXB-050Z

Macro Lens 0-20x
MXB-MACRO



Item Number	MXB-050Z	MXB-MACRO
Magnification	0~5 / 5 / 10 / 20 / 30 / 40 / 50	0~20
Horizontal View(mm/inch)	infinity~61 (2.40) 61 (2.4)mm~6.1 (0.24)	infinity~15.4 (0.61)
Working Distance(mm/inch)	infinity~90 (3.54)	—
Lighting Select	Dark Bright	—
Weight	0.35kg	0.15kg



※ Observation magnification by attaching adapter.

Hirox Lighting Lens Adapters

Rotary - Head



It enables observation of an object in 360 degrees of rotational inspection, with a 45 degree and various viewing angle. Through the observation of the moving object, the object's shape is better understood.



Mounted Parts

Polarized Lighting



This adapter helps to reduce the reflection of the surface from the observed objects through polarizing filters. It is particularly effective for printed matters, substrates, coatings and other objects that are highly reflective.

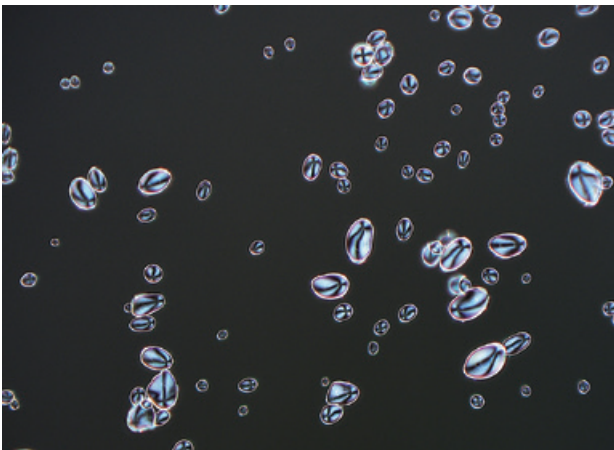


Weld Penetration

Transmitted Polarized Lighting



Using a filter with the condenser, light can be restricted to a single direction of vibration. This filter can enhance an image by reducing light intensity and glare. This is especially useful with transparent biological samples, as different elements/features of the sample can be observed by changing the direction of the light.

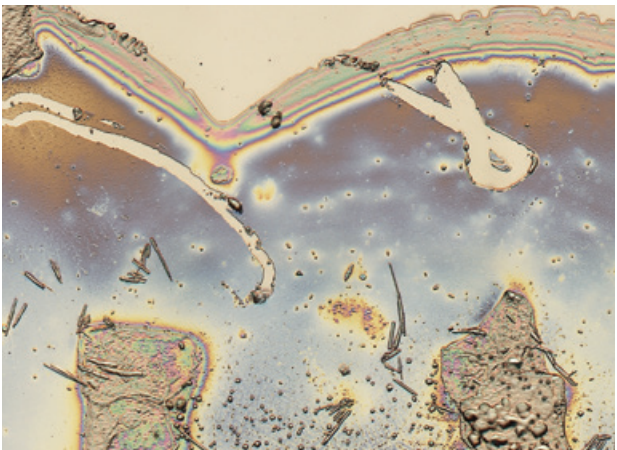


Starch Particles

Co-Axial Lighting



Observation through lighting that is parallel with the lens axis can be difficult to ascertain and inspect intensely reflective surfaces. With this adapter, the light is reflected perpendicular to the lens axis.



Dirt Of HDD Platter

Variable Lighting



This adapter allows the illumination angles to change freely from epi-illumination to side illumination. It helps to find the optimal illumination angle for the best observation. This is an original Hirox design.

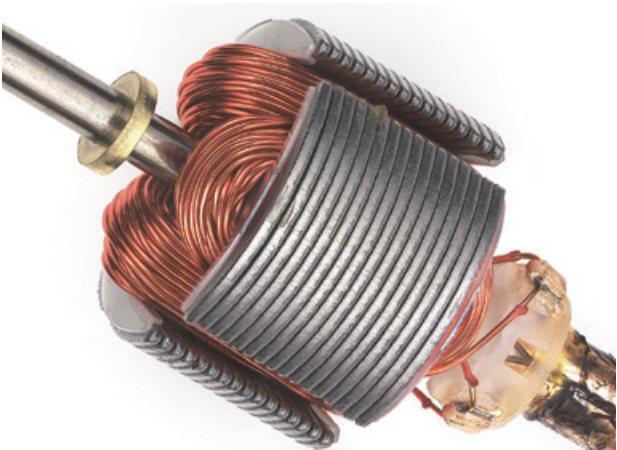


Fabric

Diffused Lighting



This adapter diffuses the light in all directions and creates soft illumination. Thanks to the multi directional lighting, the light is evenly distributed on the objects, reducing strong reflections. It is suitable for observing metal surfaces for example.



Motor

Low/High Magnification Adapter



Low-magnification Adapter reduces the lens magnification while increasing the working distance enabling the inspection of larger objects/area. High-magnification Adapter doubles the lens magnification, enabling the inspection of smaller objects/ area.



Magnetic Head for HDD

Handheld Observation



Sometimes it is necessary to observe a large object that cannot be placed on the stage, such as inspection of wheels, paint on the car body surface, or a person's skin.

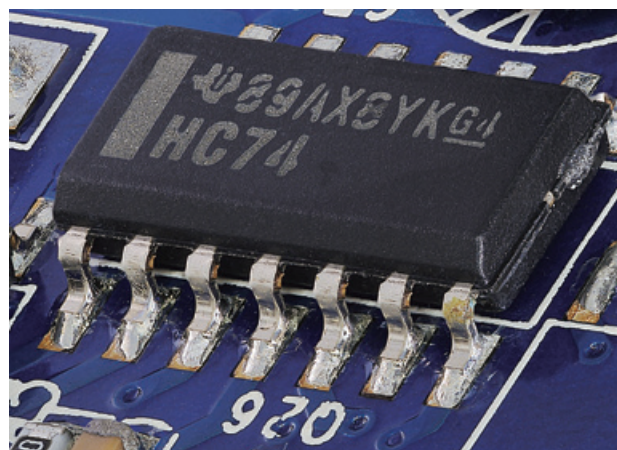


Front Bumper Of Automotive

Observation

Ultimate Observation Performance Pursued With a New Camera and Lens

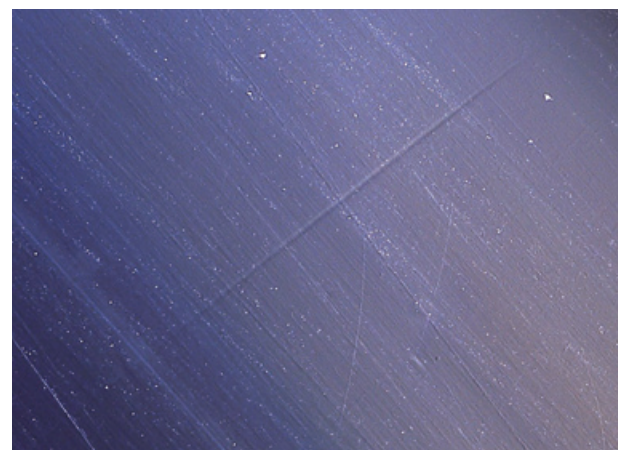
Patented Motorized 360°Rotary Head Inspection



PCB Soldering

Switch the optimal camera settings for real-time images with one click. We also provide detailed shooting settings for users who need subtle color adjustments.

Light-Select



Resin Plate

With a light source mounted on the tip of the lens, it is possible to irradiate light from any direction. The irregularities on the object's surface are emphasized, making it easier to grasp the shape.

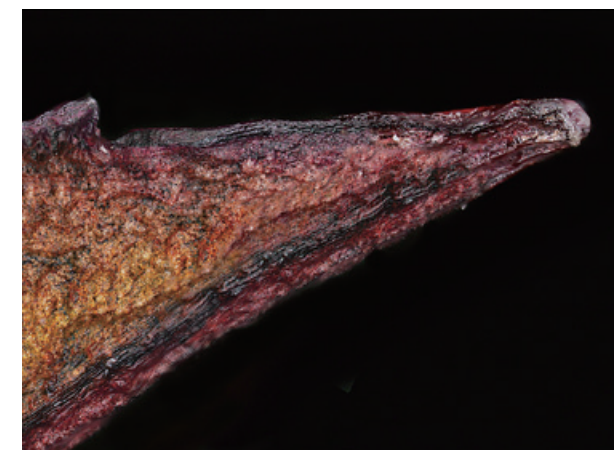
Live HDR



Connector

Previously, HDR processing involved merging contrast-adjusted images into a still image. Now, real-time HDR-processed video can be observed for enhanced clarity and efficiency.

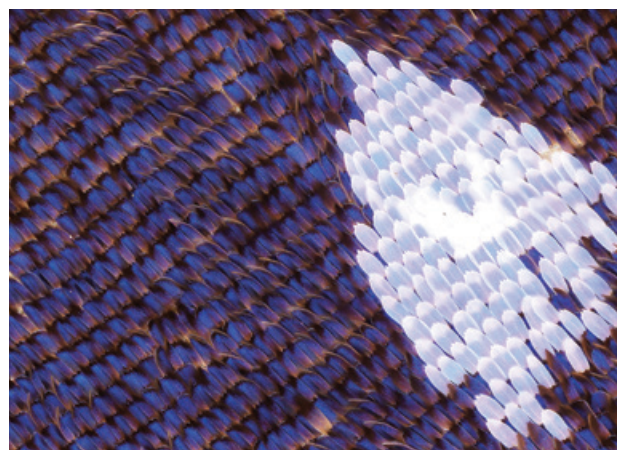
Automatic Optimization of Live Images



Leaf

Effortlessly switch to the best camera settings for real-time video with a single click. For users needing precise color adjustments, advanced and customizable shooting options are provided.

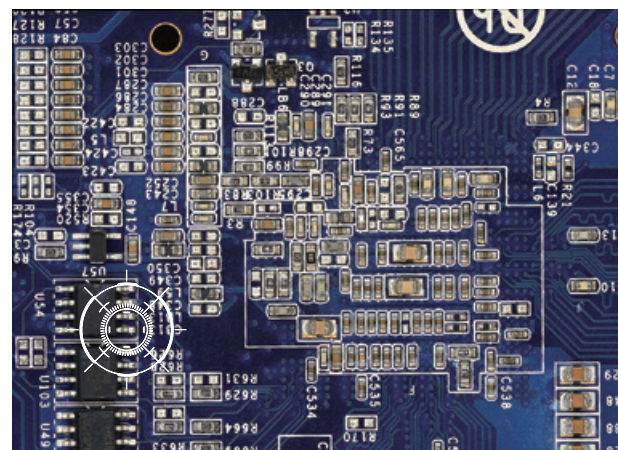
Live - Focus



Butterfly Wings

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

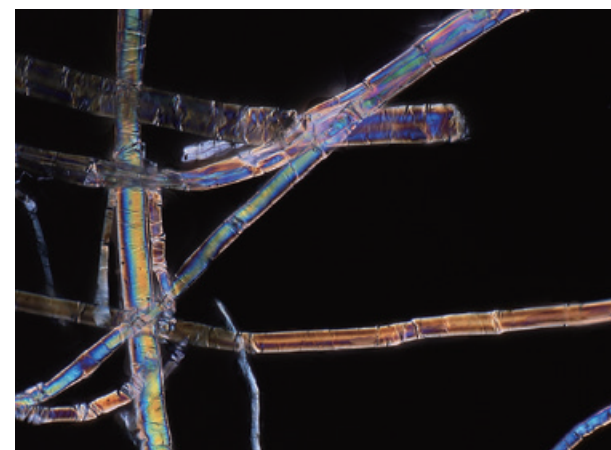
Guide Map



Mounted Board

The captured image becomes a guide map linked with the position information of the electric XY stage. By using a low-magnification image as a map, you can see at a glance which position you are observing even when the field of view is narrowed at high magnification.

Reproducible Shooting Settings



Blond Hair

The shooting conditions of a saved image can be applied to real-time video settings. This ensures consistent observation and shooting conditions for objects of the same type as those previously captured.

Remote Observation

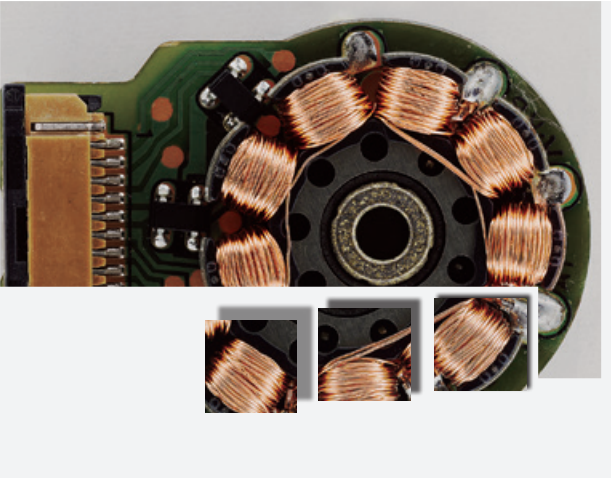


Experience a new era of observation enabled by a motorized zoom lens and stand system. With remote desktop software installed on networkconnected PCs, you can seamlessly observe, measure, and record in real time from anywhere.

Recording

High-quality Recording the shape and texture of an object as it is

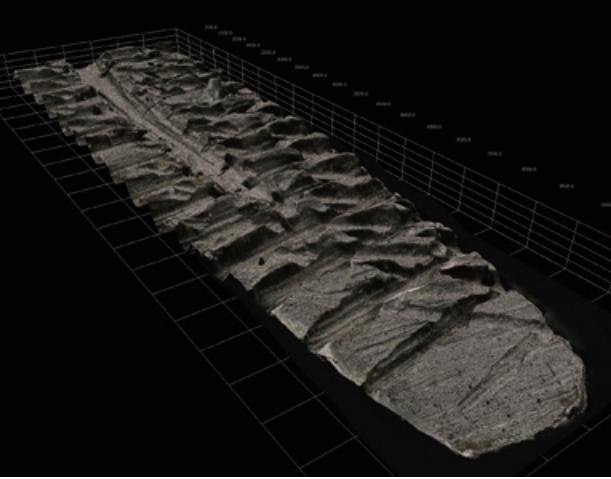
Auto 2D Tiling



Coil Base

Hirox' 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. When using the create map function, the tiled wide image is displayed on screen and when you click on the map, the stage moves to the clicked position.

Auto 3D Tiling



Scratches On Metal

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. By combining 3D synthesis and tiling, it is possible to create a wide field of view 3D image. With the automated XY stage, this 3D tiled image can be created automatically.

Coordinate Capture



Embossed Part of Card

It automatically moves to the XY coordinate values registered in advance and record one after another. The auto-focus function makes it possible to take pictures with clear focus.

Image Capture

Supports 6 types of save formats: TIFF, BMP, and JPEG. Image Because information is also recorded*, details of image data taken in the past You can check the shooting conditions at any time.
*When saving as JPEG

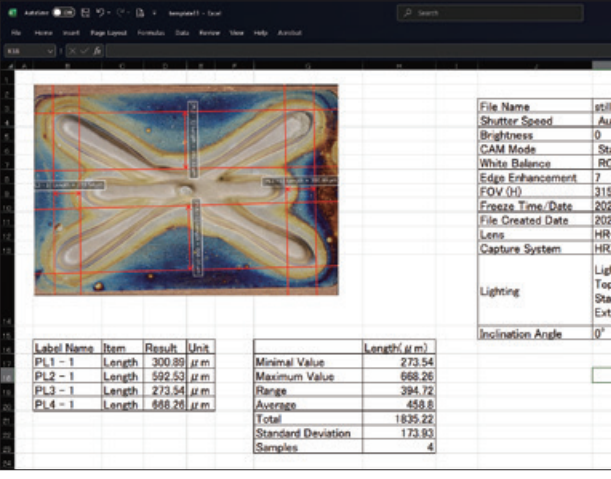
Video Shooting

Supports saving in 3 types of WMV format. Up to 240 minutes in one shoot Recording is possible. Recorded video data can also be played on a computer.

Time Lapse Recording

The HRX-01 and RX-100 can automatically take a sequence of images at a specified interval to record changes over a set duration. To help reduce energy consumption, the LED lamp is only turned on when necessary.

Excel Reports with One Click



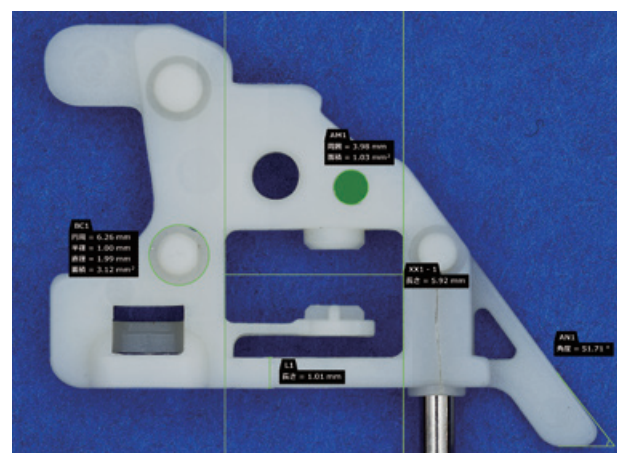
Copper Plate

This feature enables data such as images, image information, measurement results, and statistics to paste into an Excel sheet with one click. Since the report format can be customized, compatibility with PC is further enhanced.

Measurement

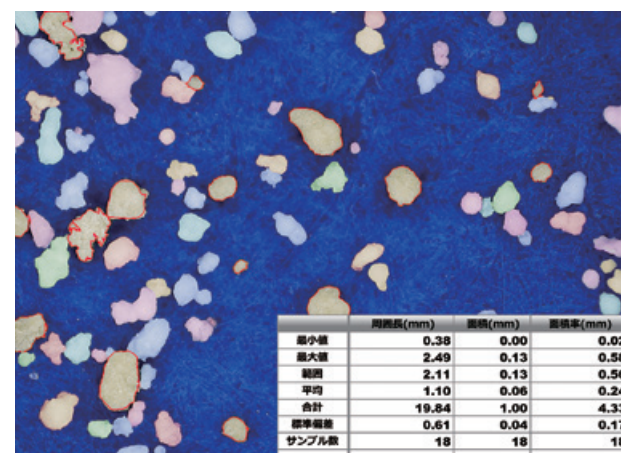
Intuitive Measurement Software enables accurate results
in a wide range of applications

2D Measurement



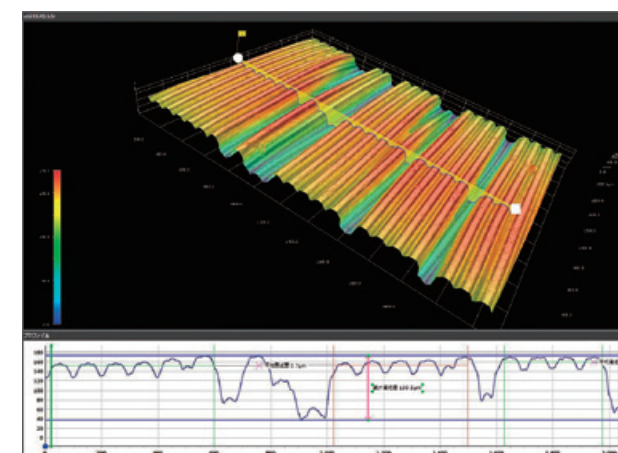
The standard-equipped 2D measurement feature enables not only observation but also precise measurement-based approaches, such as evaluating the size of foreign objects, scratches on objects, and finished dimensions. It supports various measurement tools, including lines, circles, angles, vertical lines, automatic area, and automatic width.

Automated Measurement



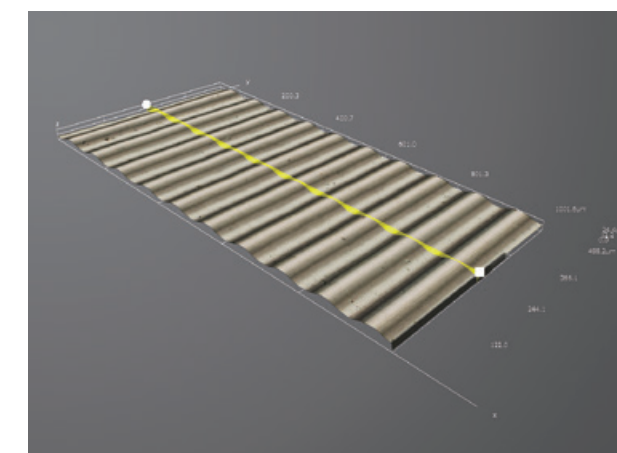
Based on brightness and RGB values, objects are detected with greater accuracy than ever before. By creating histograms to extract brightness and clicking on the screen to extract colors, the system calculates quantities, areas, and area ratios.

3D Measurement



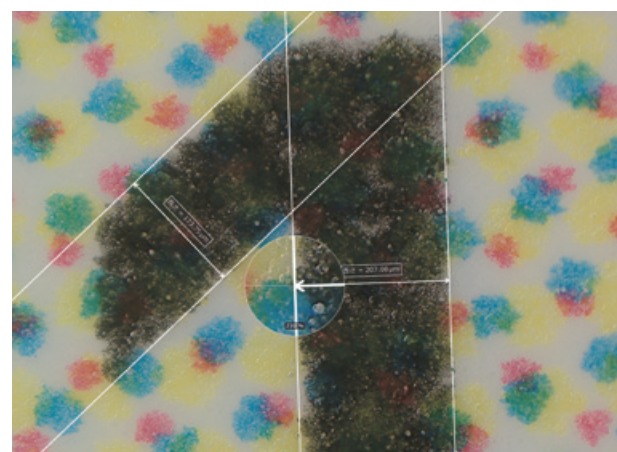
Measure and compare height differences, angles, widths, and radii at designated positions directly on the profile. The dual-display of 3D and 2D views further improves visual clarity of measurement points.

Surface Roughness Measurement



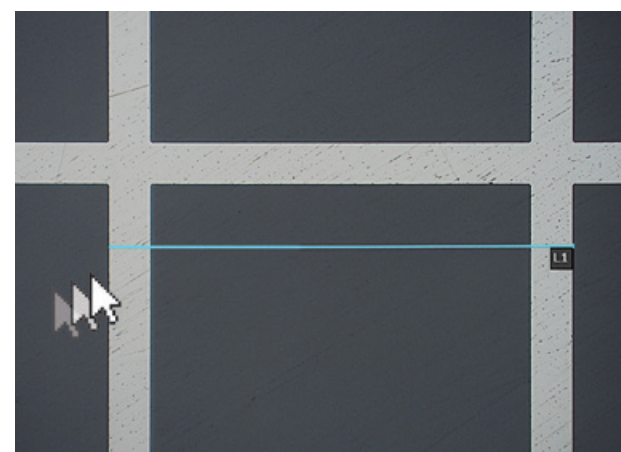
Display roughness and waviness curves on the profile for precise roughness measurements (Ra, Rz). Cut-off values are adjustable, providing a numerical representation of surface variations. Additionally, surface roughness in userselected areas can be measured with ease.

Digital Loupe



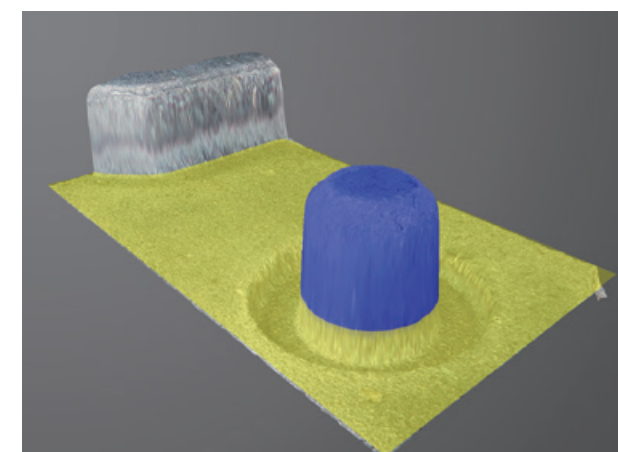
By digitally zooming around the mouse cursor's position, this feature enhances the accuracy of determining the start and end points during operator-driven measurements.

Edge Snapping



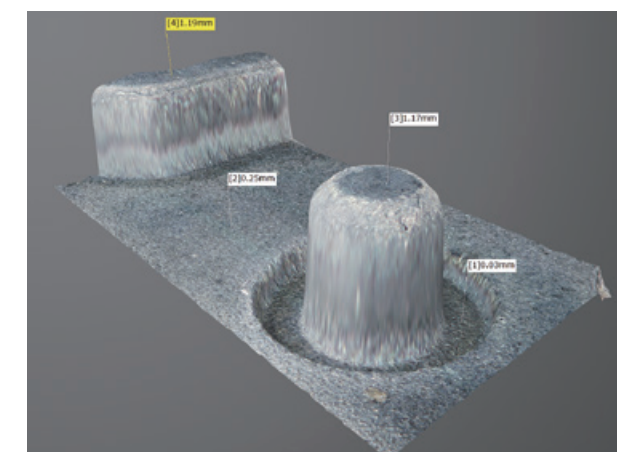
When the cursor is brought near the desired measurement point, it automatically snaps to the edge, reducing variations in measurement points among operators and improving overall accuracy.

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.

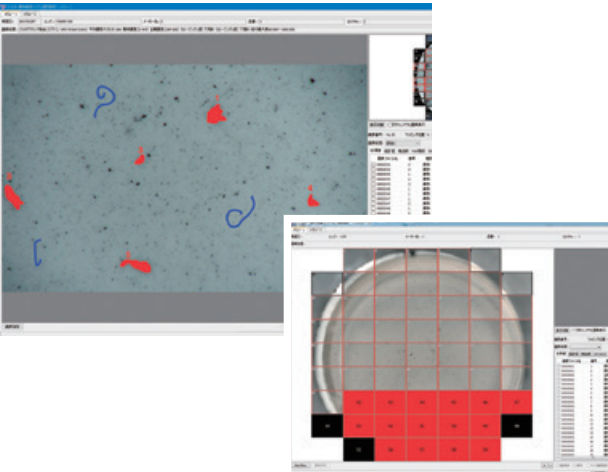
Point Height Measurement



Display point height by simply clicking on the 3D model. With each click, the 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 images.

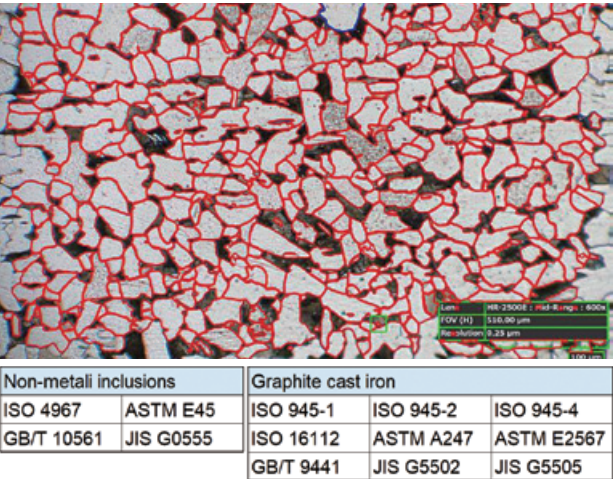
Additional Special Features

Contamination Inspection Software



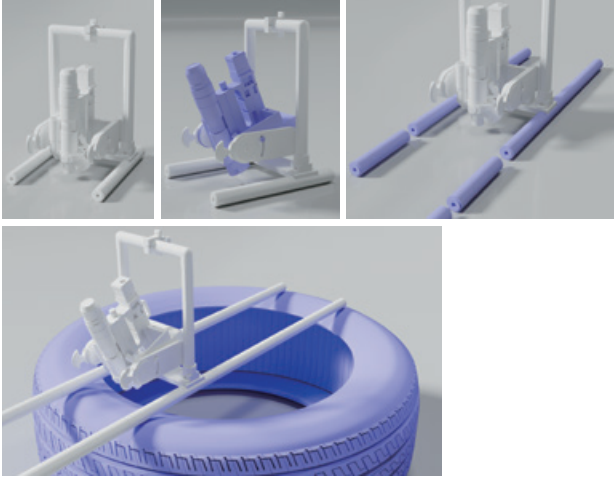
This analysis and inspection software is highly effective for detecting foreign particles on membrane filters and scratches on wafer surfaces. It enables counting of microscopic particles, contamination measurement, and area calculation. The software also generates reports compliant with cleanliness measurement standards (ISO 16232, VDA19.1, NAS 1638).

Image Analysis / Grain Analysis



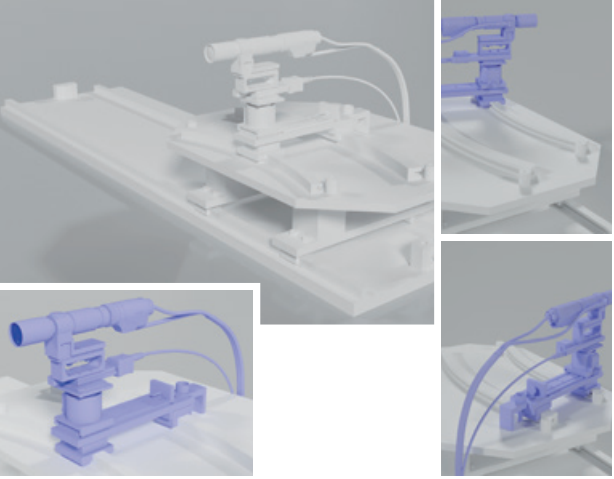
Observing polished metal structures, particle size and area can be measured by recognizing and separating boundaries using a special algorithm (according to ASTM E-112 standards).

Z - Axis Motorized Portable Observation System



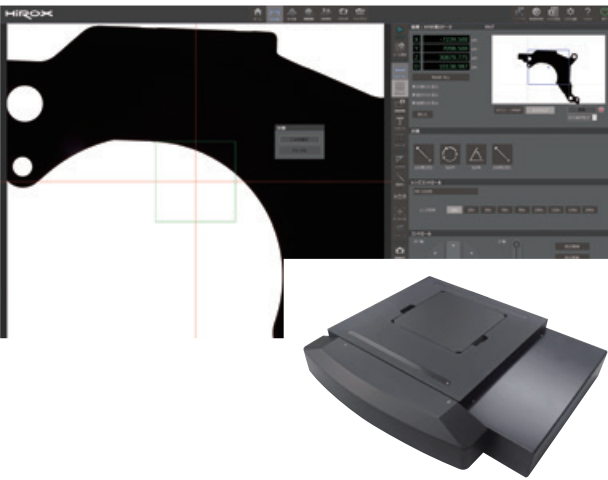
This system is designed for observing large objects such as metal rolls and tires, where placing the object on an XY stage is not feasible. Instead, the lens and stand are placed directly on the object for observation.

Fatigue Testing Observation System



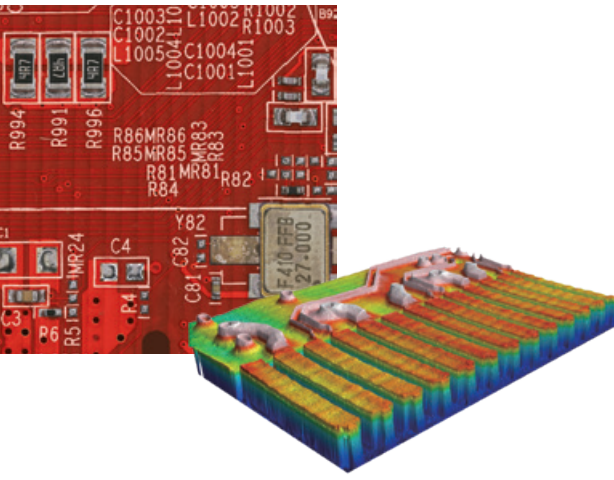
This system enables magnified observation of test specimens during fatigue testing.

Stage Measurement (Tool Makers Microscope)



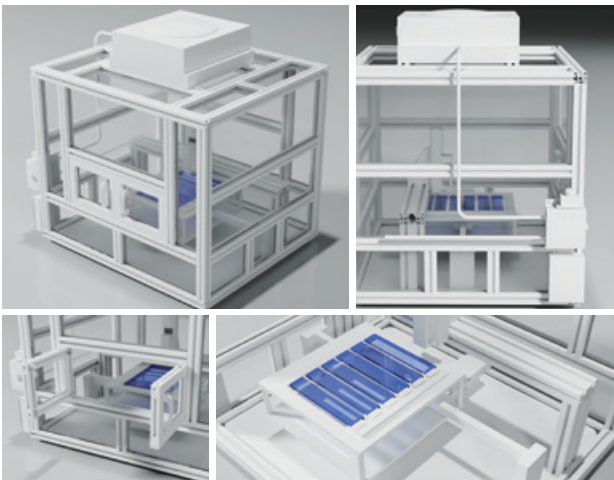
This measurement system features a motorized XY stage equipped with a linear encoder with a minimum reading resolution of 0.1 μ m. It ensures highly reliable measurements, even when measuring large objects or performing off-screen measurements.

NPS (Nano Point Scanner)



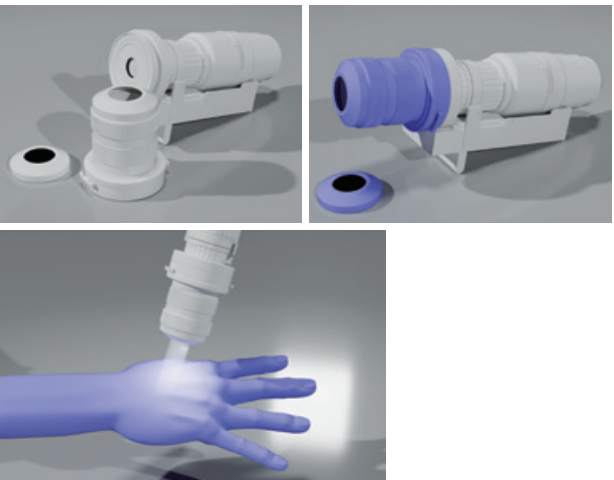
The Nano Point Scanner is a non-contact 3D measurement system combining a white light confocal point sensor with a high-precision motorized stage. It allows surface measurements of various objects with submicron accuracy.

Contamination Detection System



A contamination detection system that combines a motorized XYZ stage with a clean environment device.

Handheld Skin Observation System



This handheld observation system features a cushioning material at the tip of the adapter, allowing the lens to be placed directly on the skin without causing damage.

Customize Line Up Observe Paintings with a Digital Microscope

The HIROX EUROPE staff participated in a project to verify Vermeer's "Girl with a Pearl Earring" in the Mauritshuis Museum (NL). The project took place in the museum for two weeks and was held in a glassed space for visitors to see. In order to shoot the whole painting, we have created an XYZ 3-axis motorized stand with a very large working area (500x500mm motorized axis). The installation and real time observation of the system is available on our website, using the QR codes.



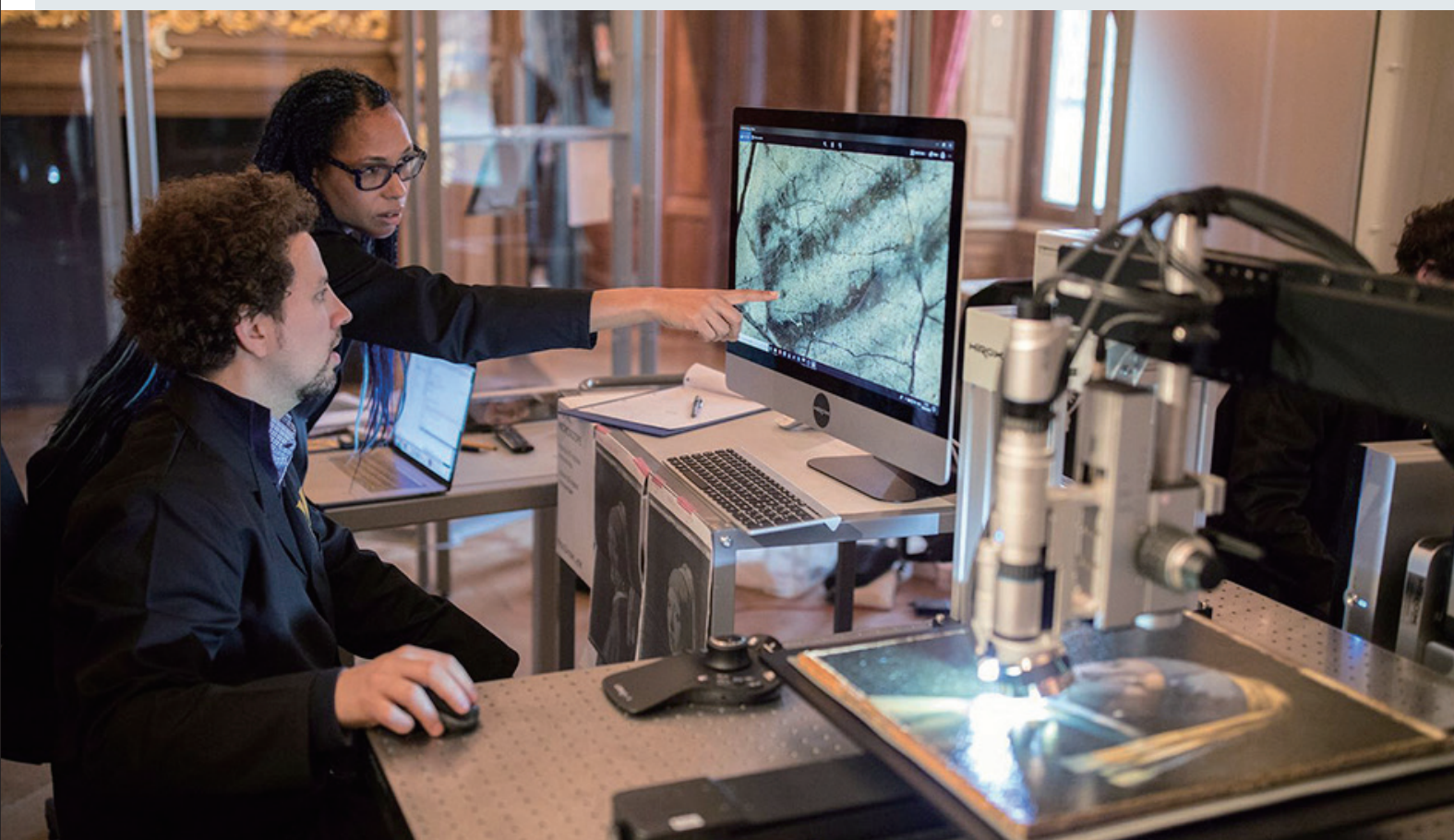
Verification landscape



Setting up Systems



Full panorama

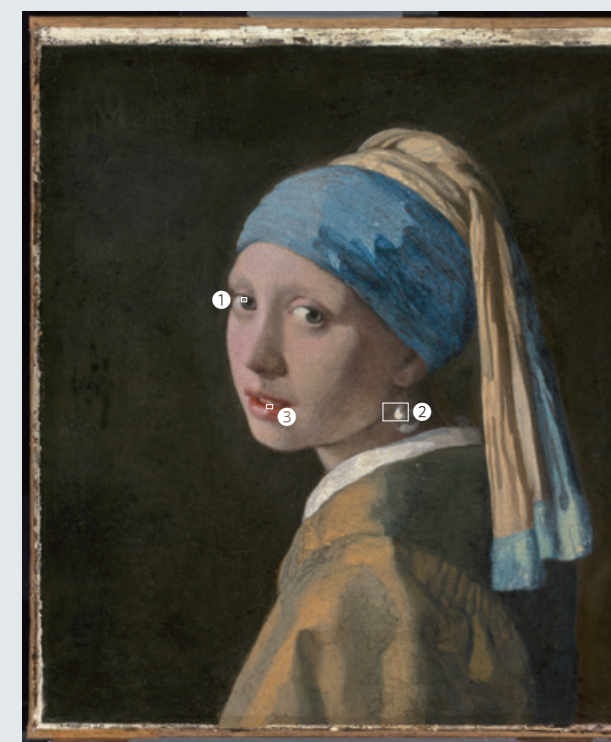


Copyright : Mauritshuis « Girl with the pearl Earring - Johannes Vermeer »

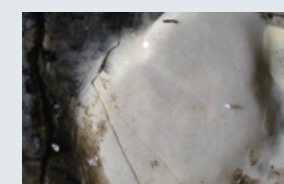
System Configuration

All-In-One PC Unit

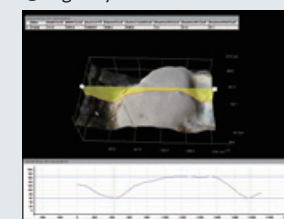
Digital
Microscope
Main Unit



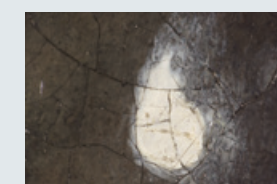
Copyright : Mauritshuis « Girl with the pearl Earring - Johannes Vermeer »



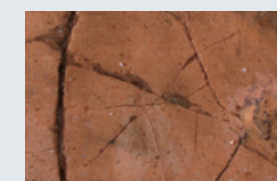
1 Right Eye 140x



Height Measurement

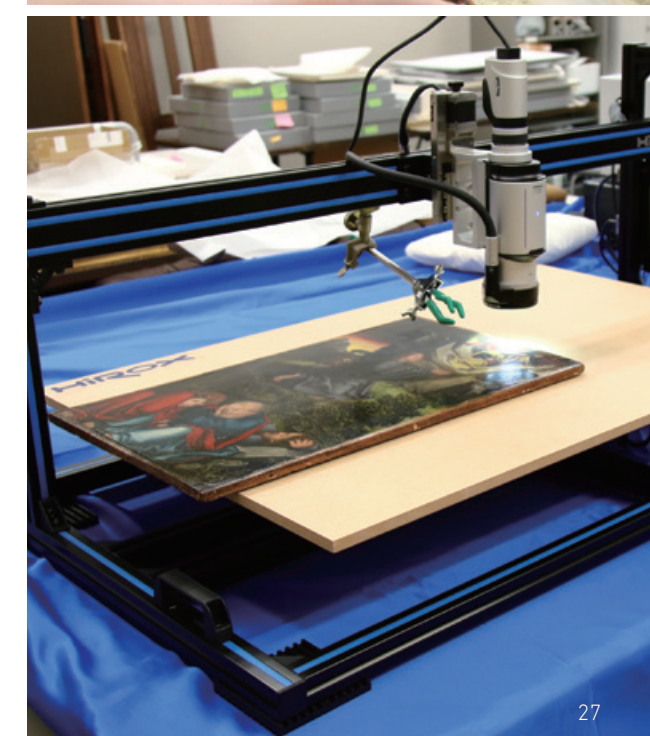


2 Earring 35x

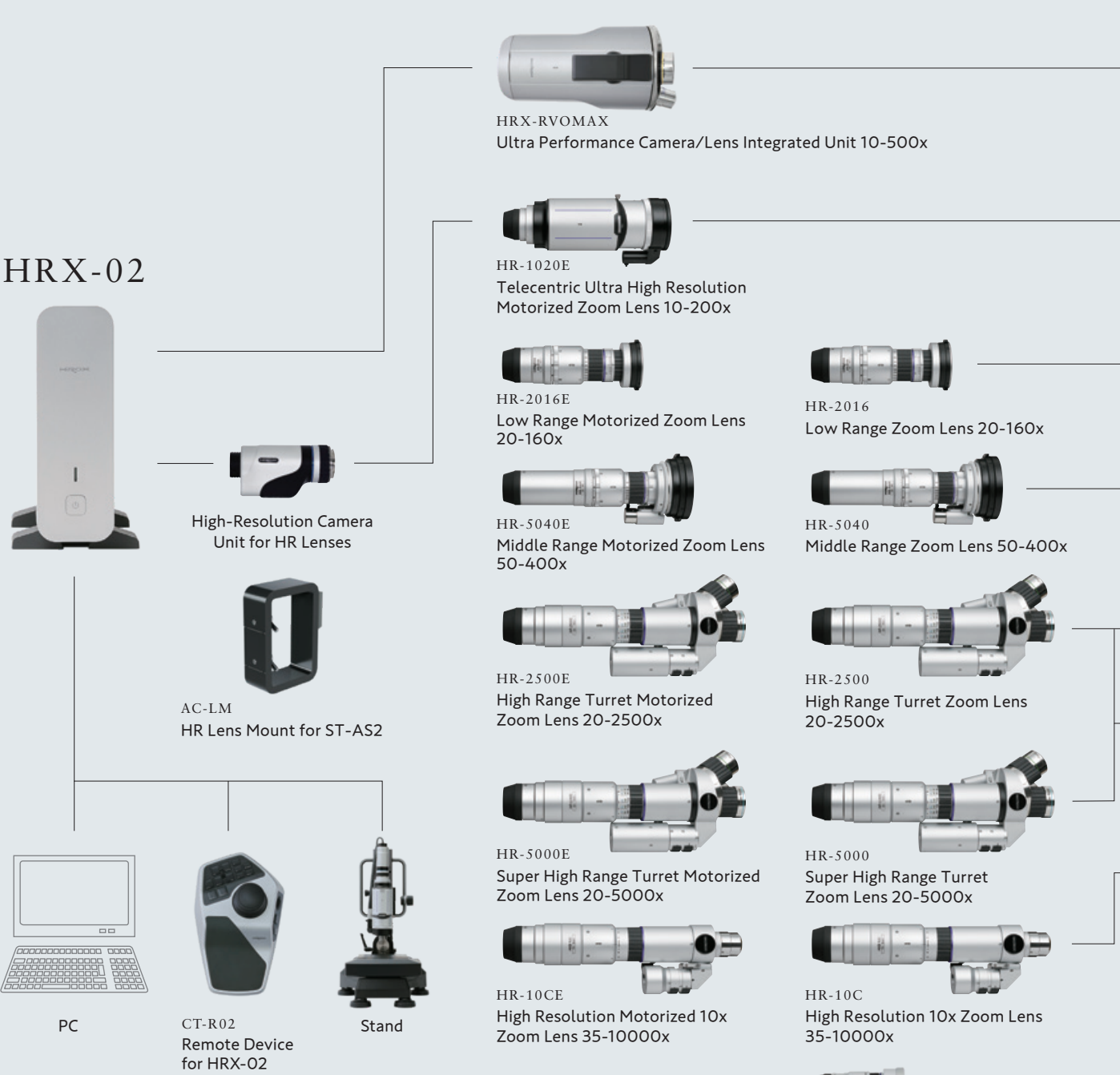


3 Lips 140x

※ The entire painting was captured at 35x with over 9,000 multi focus images. With the high quality Hirox lens, a very high resolution image with true color rendering shows very fine details that have never been seen before. In addition, we photographed 9 areas of interest, such as the eyes, earrings, blue scarf, and lips, at 140x, and converted them into 3D data to measure paint thickness and even individual pigments.



HRX-02



■ Included in the microscope package

Software

HRS-3D	3D Measurement software
HRS-TL	Tiling Software
SP-Software	Contamination Analyzer

System	Standard	Option1	Option2	Option3
Observation/Recording	●	●	●	●
2D Measurement	●	●	●	●
3D Measurement	—	●	—	●
Tiling	—	—	●	●

Stand

• Basic Functions : Camera Control Unit

Model		HRX-02
Camera	Imaging Device	2/3-inch 5.07Megapixel CMOS Image Sensor - Global Shutter Type
	Total Pixels	2464 (H) × 2066 (V)
	Effective Pixels	2448 (H) × 2056 (V)
	Visual Pixels	2448 (H) × 2048 (V) / 2040 (H) × 1530 (V)
	Scanning Method	Progressive Scan
	Unit Cell Size	3.45μm (H) × 3.45μm (V)
	Frame Rate	50fps (Max)
	Live HDR	25fps (Max)
	Electronic Shutter	Auto (1/24~1/1000) / Variable (1~1/25000)
	Gain	Auto / Manual (0dB~12dB)
Light Source	White Balance	Auto (One Push) , Manual (R,G,B)
	Back Focus	NOT Required
	Lamp	High Intensity LED
Interface	Lamp Life	30,000 hours (Average)
	Color Temperature	5700K (Typical)
	Camera	Special Cable
Interface	PC Interface	USB3.0 Series B
	Stand Controller	Special Cable
	USB Ports	USB3.0 Series A×2
Environmental Resistance	Ambient Temperature	5~40℃
	Relative Humidity	20~80% (No Condensation)
	Storage Temperature	-15~50℃ (No Condensation)
	Atmosphere	Corrosive Gas Prohibited
	Altitude	Below 2000 Meter (6600 Feet)
	Contamination Degree	2
	Overvoltage Level	II
Power	Supply Voltage	AC100V ~ 240V 50 / 60Hz
	Consumption	200W
Weight	Main Unit	Approx. 2.7kg
	Camera Unit	Approx. 1.0kg
Dimension	Main Unit	130mm (W) × 248mm (H) × 287mm (D) 5.11" × 9.76" × 11.30"
Lens Control	Correspondence Method	HRX Lens Series Motorized Turret Zoom Lens HR Lens Series Motorized Zoom Lens / Manual Zoom Lens

• Recommend Minimum PC Specification

PC	OS	Windows11 64bit or Higher
	CPU	Intel Core i7 7th Generation or Higher
	RAM	32GB Memory or Higher
	HDD / SSD	512GB or Higher
	Interface	USB3.0 Series A × 4 or More
Monitor	Resolution	4K (3840 × 2160)

• Basic Specification : Stand and Stage

Model		ST-AS2		
Stand Base	Inclination	150 Degree (90 Degree on Right and 60 Degree on left)		
	Positioning	Inclination Angle Detection Sensor / XY Stage Vertical Movement and Hight Detection Sensor		
	Transmitted Lighting	Integrated High Intensity LED Lighting (Optional)		
	External Lighting	Dual Goose Neck Lighting (Optional)		
	Weight	10kg		
Z Axis	Resolution	5 Phases Stepping Motor 0.05μm (0.002mil) / Pulse		
	Effective Stroke	75mm		
	Travel Speed	15mm / sec at Max		
	Weight	4.5kg		
	XY Stage	Model	AS-50	AS-100
Motor		2 Phases Stepping Motor		—
Resolution		0.15625μm (0.006mil) / Pulse		—
Effective Stroke		50 × 50mm (1.97" × 1.97")	100 × 100mm (3.94" × 3.94")	76 × 51mm (2.99" × 2.01")
Travel Speed		7.45mm / sec at Max		—
Load Capacity		3.0kg		1.0kg
Stage Plate Size		170 × 170mm (6.69" × 6.69")	240 × 235mm (9.49" × 9.25")	240 × 180mm (9.49" × 7.09")
Θ stage (Optional)		Center Disk Size 4" , 5" and 6"		—
Weight		4.0kg	6.0kg	1.5kg

• Controller Device

Model		CT-R02
Dimension	Main Device	150mm (W) × 75mm (H) × 230mm (D) 5.91" × 2.95" × 9.06"
Weight	Main Device	0.9kg
Interface		USB2.0 Series A

• Standard Software

Observation Function & Tool	Live HDR (High Dynamic Range) Function
	Live Image Optimization
	Auto-Focus ※ 1
	Live-Focus (Quick Full Focus) ※ 1
	Real-Time Digital Zoom
	XY Stage Mapping (Navigation Tool) ※ 2
	3D Display Function ※ 1 (Original Color / Wireframe / Pseudo Color)
	Image Adjustment (Contrast, Edge, Hue)
	Camera Mode Selection
	Observation Settings Save/Restore (Brightness, camera settings, magnification, lighting, etc., depending on the lens)
Display Function	Full-Screen, Split Monitor (Horizontal, Vertical 4window, 9window)
	Live Image Rotation
Recording	Capture Still Image (JPEG,TIFF, BMP)
	Record Movie (WMV)
	Time Lapse Timer Capture
	Automatic Record (Coordinate capture, Area capture, Interval Capture)
2D Measurement	Distance, Angle, Radius, Circle, Perimeter, Area, Distance Between Circles / X-Axis / Y-Axis / XY-Axis, Perpendicular Length, Parallel Line, Manual Count
	Create Reference Lines (Save/Restore) Line Feature Detection
	Auto Measurement (Auto-Count, Auto-Area, Auto-Line)
	Auto-Edge Detection
	Digital loupe
	Measurement / Statistics list
	Easy Report Function and Export to MS Office
Utility	Comment / Shape Input Function
	Language (English, Chinese, German, French, Korean, Japanese)
	Help (Pop-up User Guide / Manual)

• Advanced Software - Optional

3D Measurement ※ 1	3D Profile Measurement Height, Length, Angle Radius, Others
	Roughness Measurement (Ra Rz Rzjs)
	Surface Roughness Measurement (Sq Ssk Sku Sp Sv Sz Sa)
	Point Height Measurement
	Volume and Area Measurement
	Adjustment (Noise Filter, Level Correction and Smoothing)
	3D / 2D Dual Screen Display
	Lighting Function
	Easy Report Function and Export to MS Office
	3D Image Map CSV Output
2D Measurement	Stage Measurement (Optional Off-Screen Measurement) ※ 2
Tiling / Stitching ※ 2	2D Tiling 50000 × 50000pixel
	3D Tiling 20000 × 20000pixel
Advanced Analysis Software	Contamination Analyzer ISO16232, VDA19.1 Compliant

※ 1 High-Precision Angle Stand (ST-AS2) is required.
※ 2 Motorized XY-Axis Stage is required.