

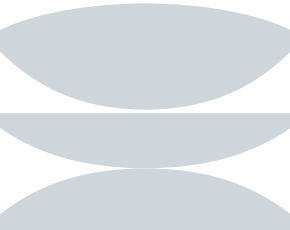


DIGITAL  
MICROSCOPE

*RH-2000 / RH-8800*



for the NEXT



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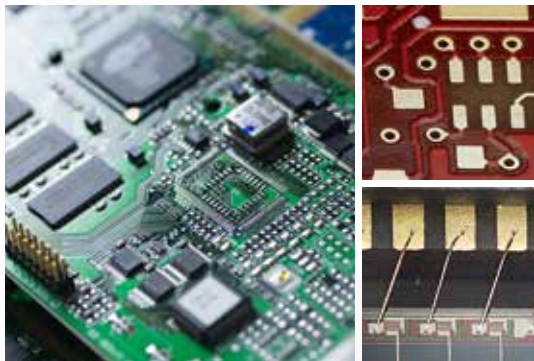
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APP-P1705-0082

# What's a Digital Microscope?

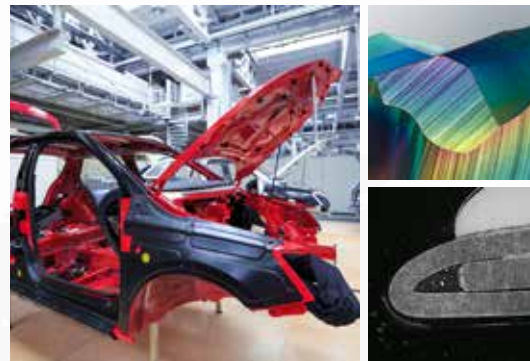
A digital microscope (DM), is a microscope that has a camera (CMOS) attached instead of an eyepiece and displays the digitally acquired image on a large monitor. In addition to observation, it can also have various extended functions such as dimension measurement, recording of still images and moving images. It is utilized in a wide range of scenes such as research and development, production technology and quality assurance of various private enterprises and government agencies with stress-free observation environment and ease of handling.

## Electronics/Electric/Semi



Used to inspect features of prototypes and mass production products such as soldered parts on mounting boards, through holes, and wafer pattern circuits. With the Hirox original rotary adapter, easy inspection of cracks and flux are possible.

## Automotive/Machinery



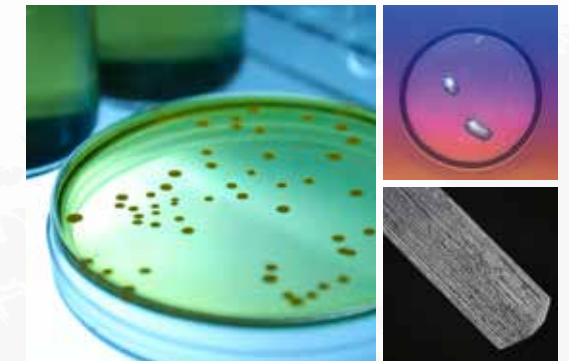
The DM is used for research and development, production, and quality assurance, in applications such as checking the finished dimensions of molds, mass-produced products, and checking the finished product. It can also measure surface irregularities as well as observing the surface condition.

## Aerospace/Defense



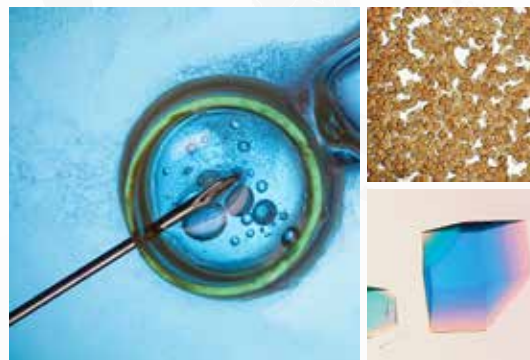
Applications such as turbine inspection of jet engines, engine development of space rockets, new material research and more. Lenses can be selected according to the application, from small lenses that can be used for handheld observation to ultrahigh magnification lenses for grain structure analysis.

## Contract Research Lab



Whether there is a request for inspection of metal, resin, rubber, biological, or other objects, it is possible to cover with the versatility of the digital microscope. With a lens lineup of 0 to 10000x, it shows the detailed condition of the object.

## Medical/Pharma/Chemical



Inspection of powder, crystals, emulsion, medical instruments such as injection needles and stents can be observed with high versatility. Timer recording and particle counting functions that can be used for follow-up observation are also included.

## Agriculture/Food



It is used for plant cell observation, product development, and foreign body contamination inspection in quality assurance. By using LED lighting, organic samples can be observe thoroughly without the influence of heat on the sample.



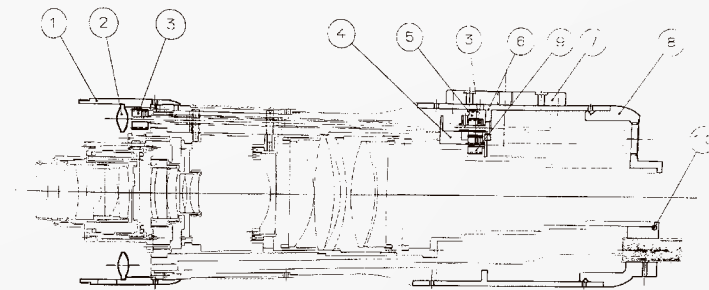
# Digital Microscope Technology

## Hirox Digital Microscope

The Hirox digital microscope is systemized with a main unit, lens with a large depth of field, a camera that maximizes lens performance, optimal lighting for objects, precisely controllable stands, usability-rich applications, and comfortable observation. Furthermore, ACS communications makes it possible to control speed based on lens information, instant measurement on the monitor, automatic judgment of shooting conditions according to the operation of an operator, and to observe, capture, and measure by intuitive operations of the user. Hirox Makes it possible to observe, capture and measure with smooth, intuitive operation.

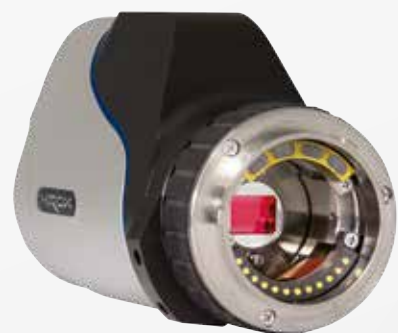
## Lens Made by Lens Manufacturer

In the 1920s, Hirox began making lenses. Since then Hirox has produced various lenses for reflex cameras, TV cameras, and 8mm film cameras. With the lens know-how cultivated through lens development and production, Hirox has created a number of proprietary lenses and optical adapters. Providing clear and easy observation with a lenses that have both a large depth of field and high resolution.



## New 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, at a very fast 50 FPS (special 100FPS mode).



## Lighting Technology

In magnification observation, lighting technology is regarded as important as lens performance. Hirox lighting technology suppresses the reflection of glass and metal, like the lamp in the picture below. It enables real observation.



Lamp with glass and metal surface light reflection removed (40x).

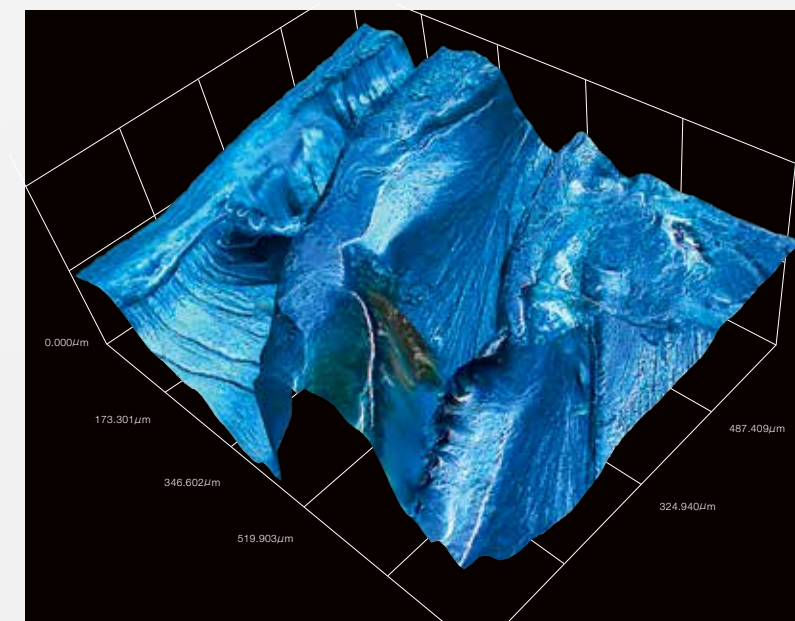
# 3D Technology

## HIROX Designed Original "Rotary-Head" Adapter

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.



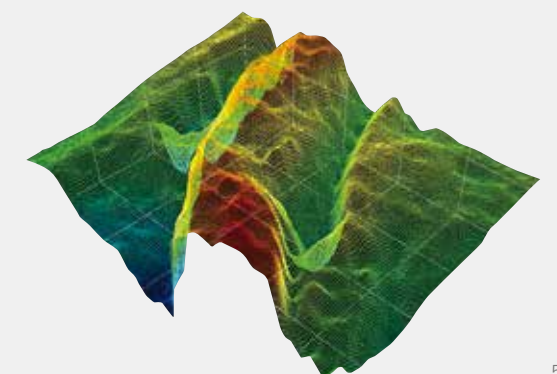
View the videos here:  
<http://www.hirox.com/movie/>



burr of plastic molded article (350x)

## 3D Modeling

Fast and accurate scanning with an integrated stepping motor creates 3D Modeling data. 3D model information can be displayed as original color, pseudo color, or as a wireframe, maximizing the amount of information that can be taken from a 3D model.

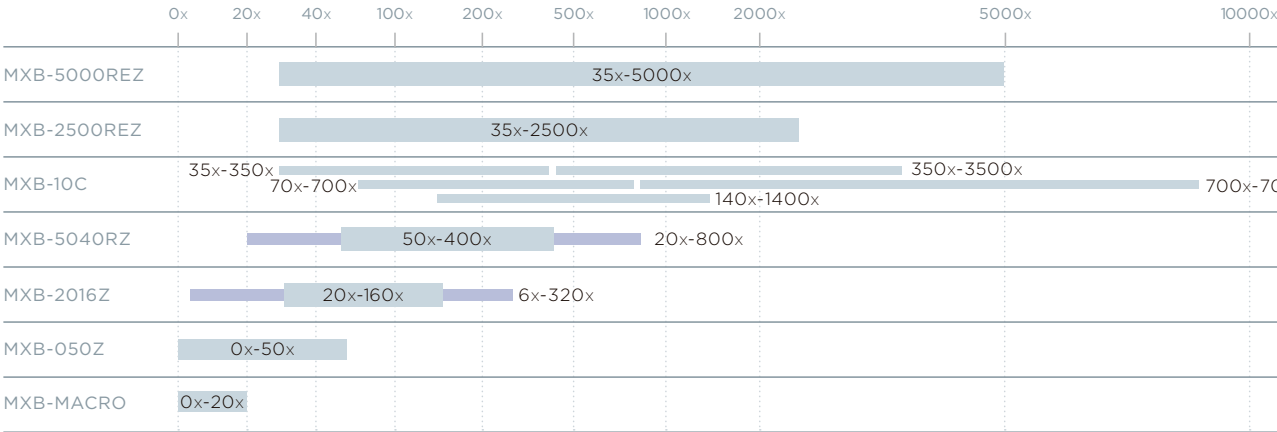


# History

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 eye piece. Rich with experience, Hirox keeps leading the way with the latest generation of 3D digital microscopy: the RH-8800 and RH-2000. High resolution observation, accurate and fast measurements, full motorized XYZ axis for 3D tiling and much more with just a few clicks. Making the user's life easier is always our main focus.



# Lenses & Adapters



\* Magnification at adapter installation



MXB-MACRO



MXB-050Z



MXB-2016Z



MXB-5040RZ



MXB-10C



MXB-2500REZ / MXB-5000REZ

## CONTENT

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# Lens Technology

## MXB-2500REZ

35-2500x Quartet Illumination  
Revolver Zoom Lens

## MXB-5000REZ

35-5000x Quartet Illumination  
Revolver Zoom Lens



MXB-2500REZ / MXB-5000REZ

Model	MXB-2500REZ / MXB-5000REZ			
Lighting Method	Co-Axial, Dark Field and Mixed			
Range	Low-Range	Mid-Range	High-Range	
Magnification	35-250x	140-1000x	350-2500x (2500REZ)	700-5000x (5000REZ)
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			

Incredibly wide zoom range with a triple objective turret and triple illumination mechanism, providing co-axial, ring and side lighting. A mix lighting can also be chosen between co-axial and ring lighting in order to cover a multitude of applications.

## Seamless Wide Zoom Range

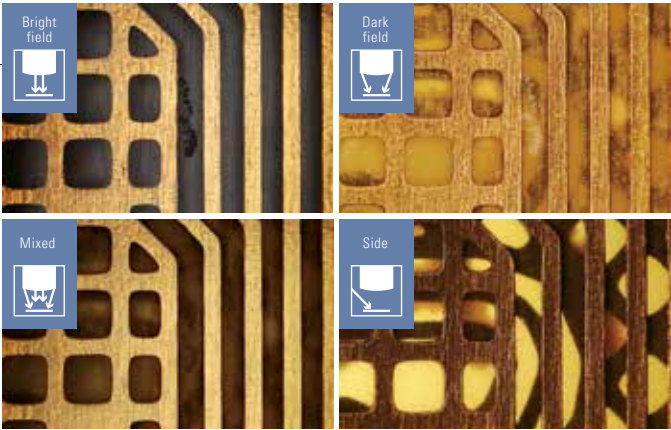
Whether you switch the objective lens or increase the zoom, you can easily find your area of interest without the need to move the sample.



Ammolite-Jewel (35x, 400x, 2500x)

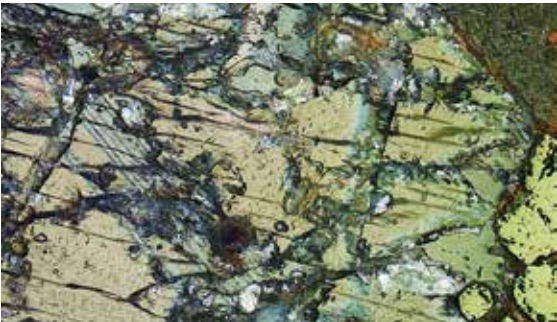
## Light Select

Easily choose optimum lighting with the versatility to select bright field (co-axial), dark field (ring), mixed lighting (co-axial and ring), or side lighting.



Circuit board (140x)

## Various Observation



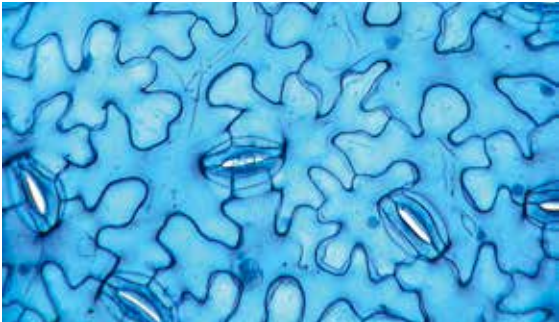
Slice cut surface of Concrete (350x)



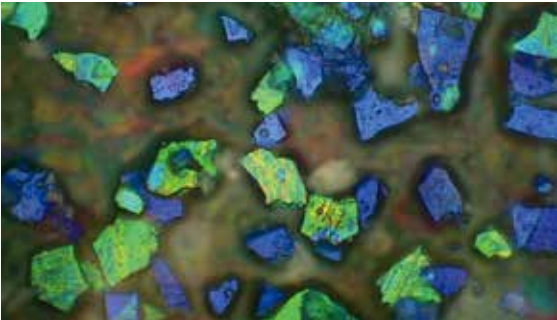
Medical injection needle (140x)



Paint peeling surface (350x)



Leaf stoma of jasminum nudiflorum (1000x)



Ink pegments (1000x)



Fracture of silicon



MXB-2016Z

20-160x Low Range  
High Resolution Zoom Lens



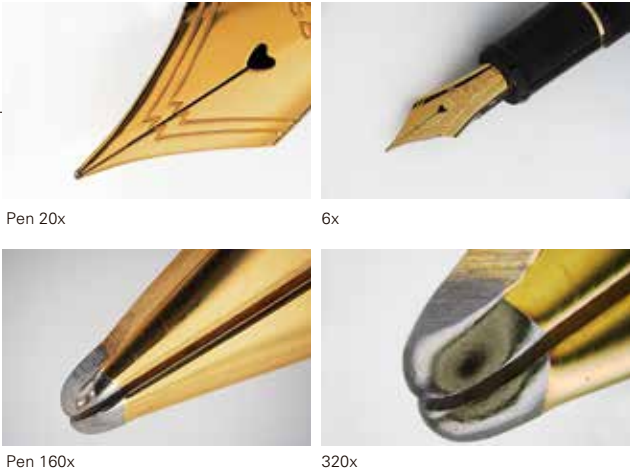
MXB-2016Z

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	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		

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

Wide Zoom Range

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



Pen 20x

6x

Pen 160x

320x

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.



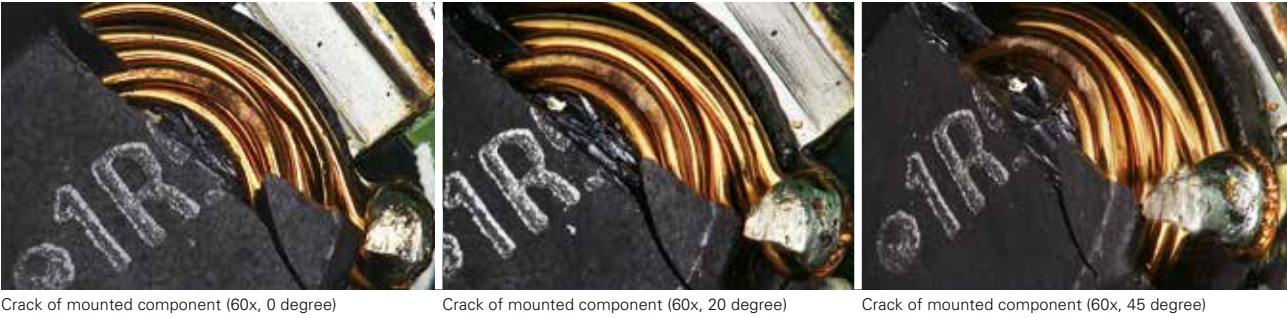
Rug (60x)

Rug

Front bumper of automotive

Inclination Observation

By using lenses with a long working distance and a large depth of field, it is easy to achieve multi-angled observation with the angle stand. This angle stand is also versatile because of its 180 degrees of inclination.

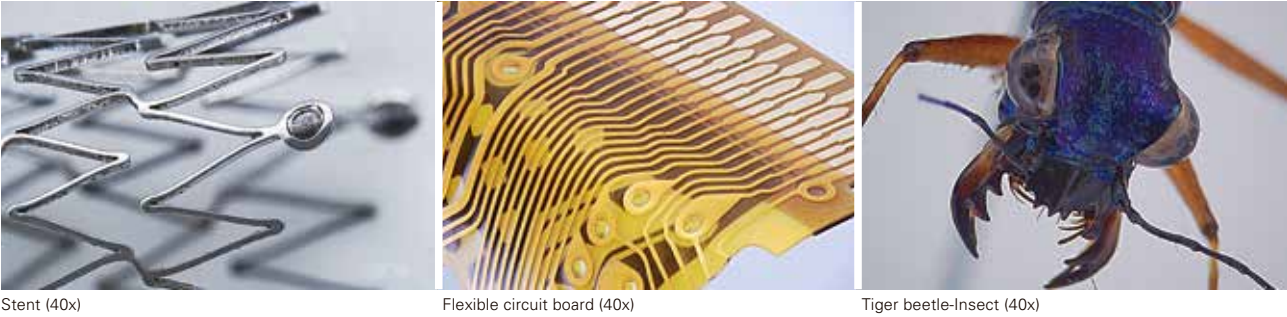


Crack of mounted component (60x, 0 degree)

Crack of mounted component (60x, 20 degree)

Crack of mounted component (60x, 45 degree)

Various Observation



Stent (40x)

Flexible circuit board (40x)

Tiger beetle-Insect (40x)



MXB-050Z  
0-50x Macro Zoom Lens

MXB-MACRO  
0-20x Macro Lens



MXB-MACRO



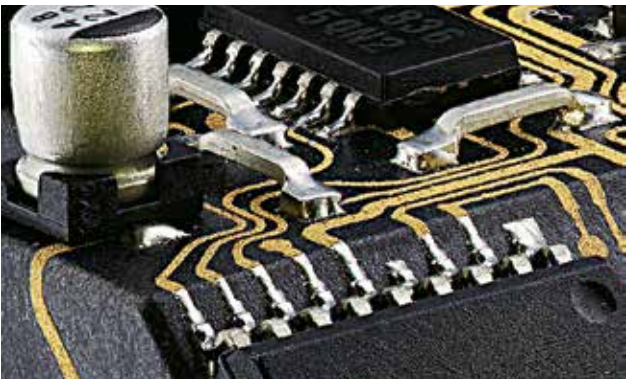
MXB-050Z

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

The macro lenses can cover the need for observation of large objects for macro documentation. The view can easily be extended out to infinity if overall documentation is required, for example taking an image of the car for the report that will also feature magnified images of the car's paint.

MXB-MACRO - Magnification is variable. The macro lens can magnify by changing its distance with the object.

MXB-050Z - The multi-functional macro zoom lens can achieve a view of the entire object and a magnification of up to 50x. A light source guide is integrated into the lens for diverse environments. This lens can be switched from an infinity -5x magnification lens to a 5x-50x par-focal magnification lens.



3D mounted board (30x)



Pocket watch (10x)

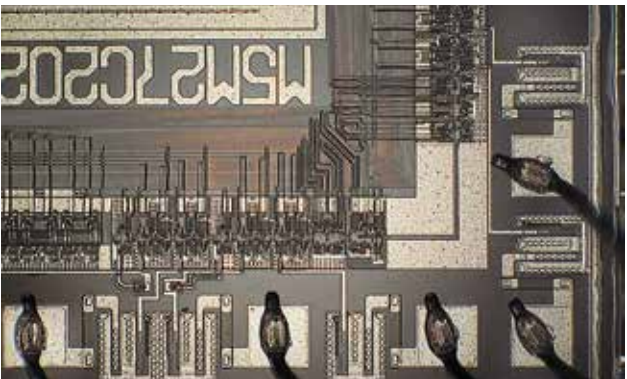
MXB-10C  
35-10000x High Range /  
High Resolution 10x Co-Axial  
Zoom Lens



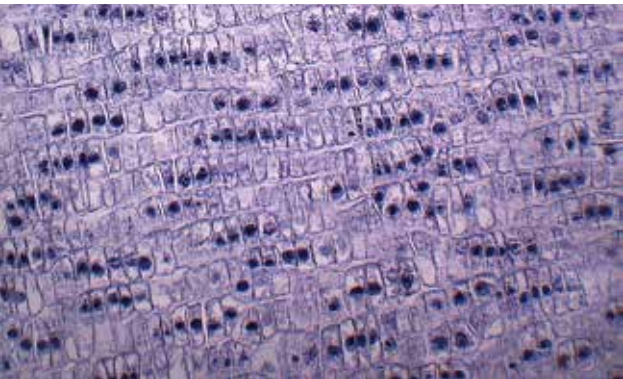
MXB-10C

Model	MXB-10C						
Lighting Method	Co-Axial Vertical Lighting						
Objective Lens	OL35	OL70II	OL140	OL140II	OL350II	OL700II	OL1000
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 / 0.39"
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						

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.



Pattern of IC (200x)



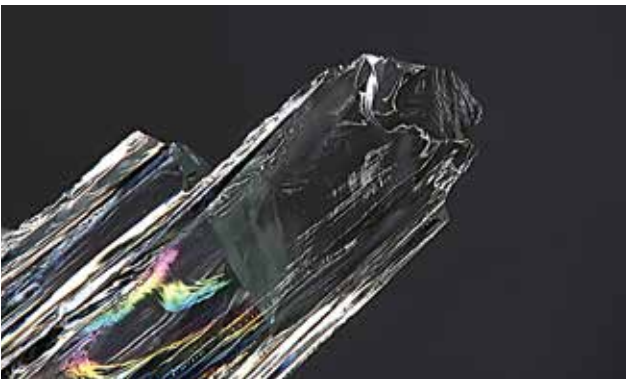
Vertical section of board bean root (700x)

MXB-5040RZ  
50-400x Zoom Lens

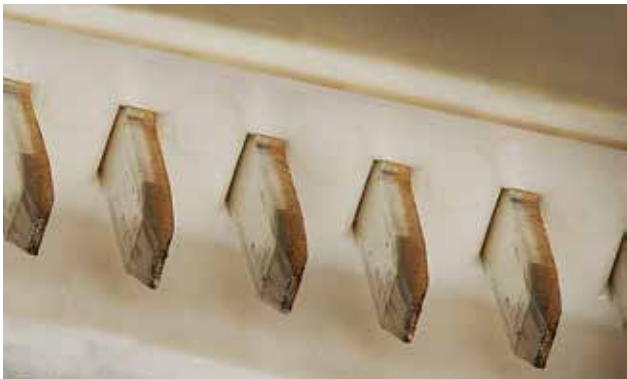


Model	MXB-5040RZ		
Adapter	Normal	Low	High
Magnification	50-400x	20-160x	100-800x
Working Distance(mm/inch)	54/2.13"	80/3.15"	20/0.79"
Horizontal View (mm/inch)	6.1-0.78/0.24-0.03"	15.4-2.0/0.61-0.08"	3.05-0.39/0.12-0.02"
Depth of Field	2.7-0.08/0.11"-3.15mil	16.81-0.58/0.66-0.02"	0.68-0.02/0.03"-0.79mil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

The 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.



Splinter of glass (200x)

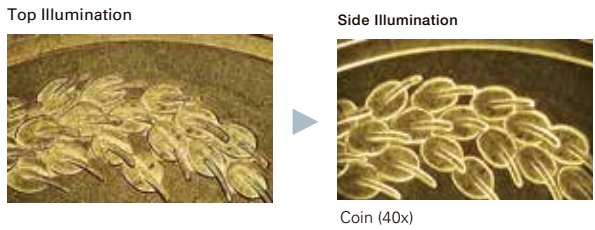


Connector part (50x)

# Adapter / Lighting Effect

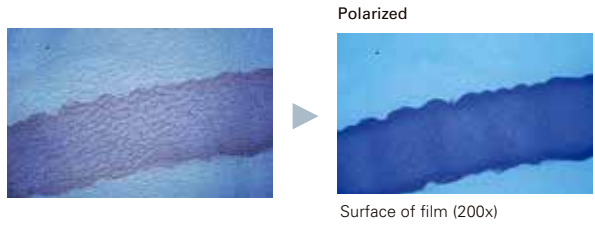
## Variable Lighting

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.



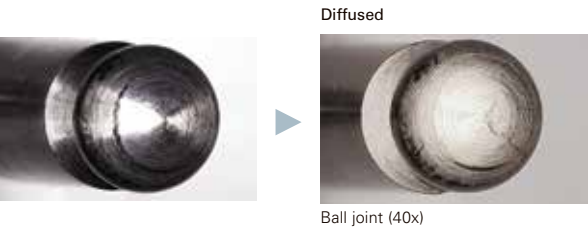
## Polarized Lighting

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.



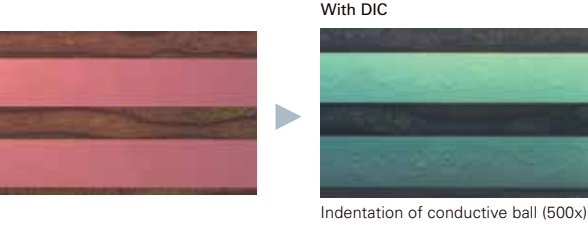
## Diffused Lighting

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.



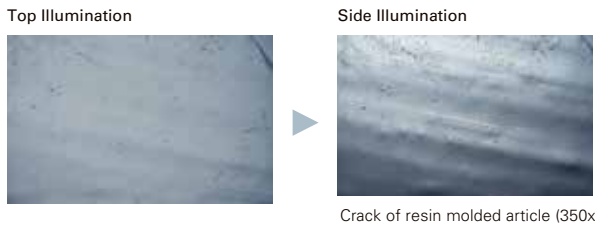
## Differential Interface Contrast

The differing optical paths of the polarized light rays, in response to the phase contrast, can detect shading interference. It is effective for observation of contrast-resistant objects.



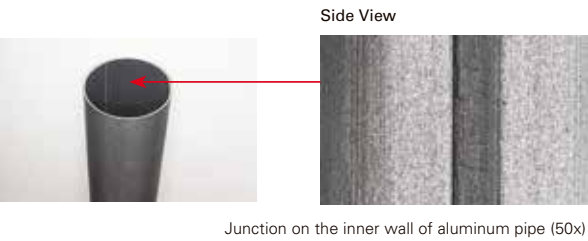
## Directional Lighting

This adapter helps to highlight microscopic surface shapes that cannot be detected even under the same-axis epi-illumination. By fine-tuning the lever, it helps to accurately grasp fine edges.



## Side View Inspection

This adapter allows observations of objects using a 90 degree angle view with the use of a mirror. It helps inspecting narrow spots on the side of objects that are otherwise unreachable. It is suitable for the observation of cylinder inner walls for example.





# Observation



Wrist watch (40x)

## 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 limited by the depth of field.

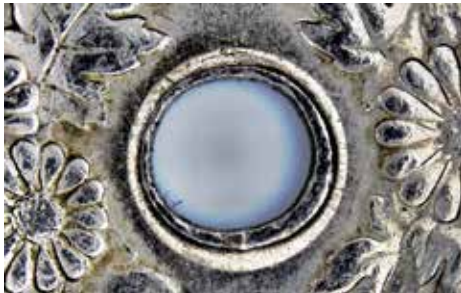


## ACS Communication

The Auto Calibration Select (ACS) sensor automatically applies the proper lens settings with each magnification or lens change, completely eliminating the need to choose the calibration values. When a lens / mag is changed, the ACS feature also adjusts the z-axis speed / steps coinciding with the preferred lens' camera setup.



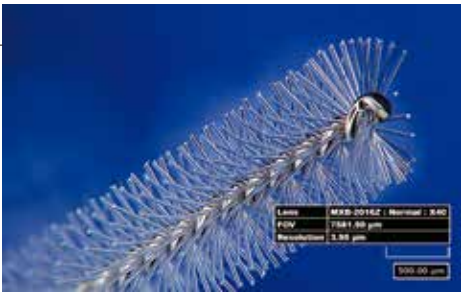
Before (Coin 20x)



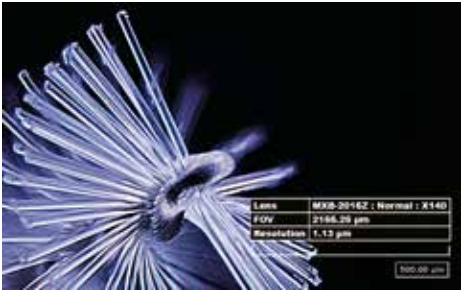
After

## High Dynamic Range (HDR)

High Dynamic Range, an essential observation technology based on a Hirox original algorithm, reproduces a dynamic shutter range as a visual image. This function provides results through blending both the low and high light boundaries of an image to give a clear and balanced result.



x40

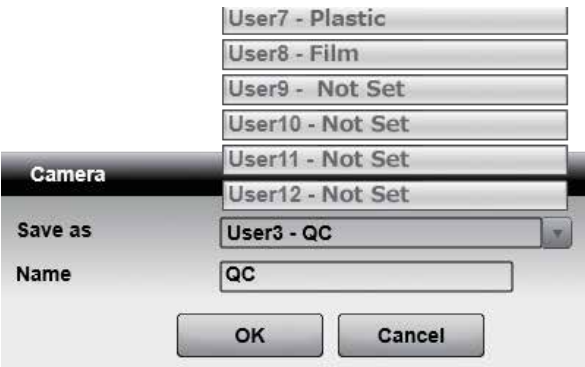


x140

Interdental brush (40x, 140x)

## Camera Set-Up / Individual User

A log-in screen helps distinguish users in a multi-user work environment. Personal preferences such as system settings and image data can be saved to a unique user profile. This is particularly helpful with numerous operators each making observations and measurements of different objects.



## Anti-Vibration (Camera Stabilization)

Some working environments can cause constant micron level shaking on microscopy stages. A solution to this problem is Hirox's new Anti-Vibration feature improving observations in adverse conditions.



## Split Window (Multi-View)

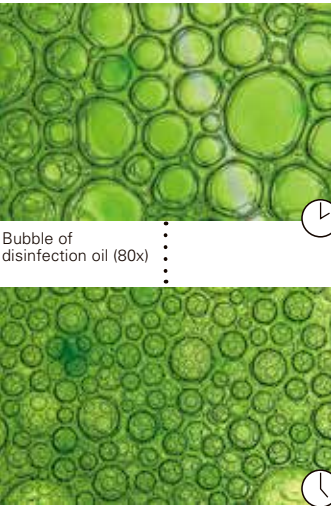
Multiple images can be simultaneously displayed for comparison. You can split the screen horizontally / vertically, or divide the screen into 4 windows. First in the industry to be able to access all functions when splitting the screen into vertical / horizontal comparisons or multi-view comparisons.



Screw

## Time Lapse

The RH-8800, RH-2000 can automatically take a sequence of frames 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.



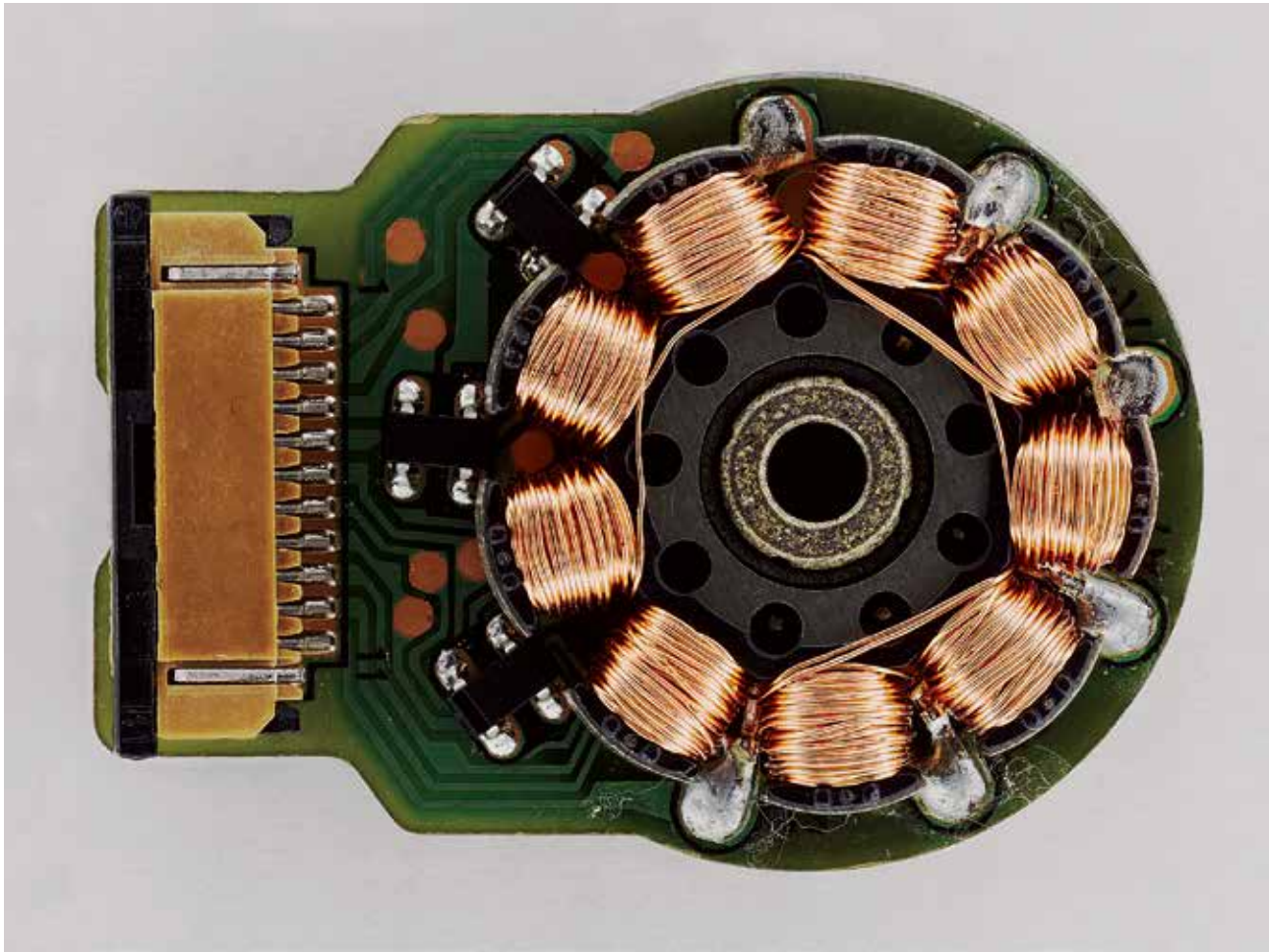
## Recording Movie

It can record movies in 2 different formats (AVI / WMV) and 4 different resolution.

## Capturing a Still Image

It can capture a still image in different formats (TIFF / BMP/ JPEG). Every saved JPEG image is ingrained with the camera, calibration, and magnification information, allowing for confirmation of recording date, camera settings, and intensity of light used.

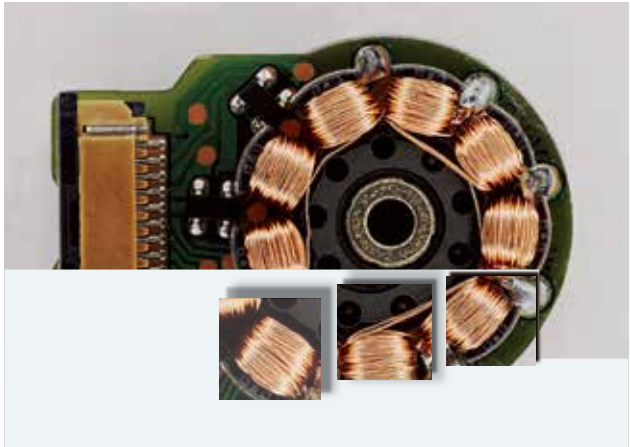




Coil base (40x)

### Auto 2D Tiling and Mapping

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.

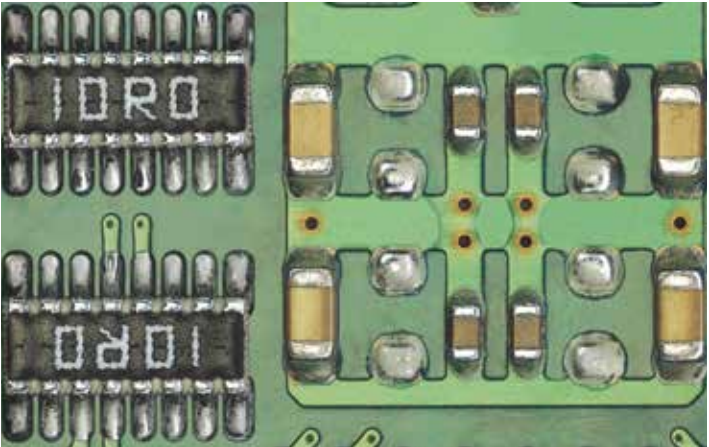
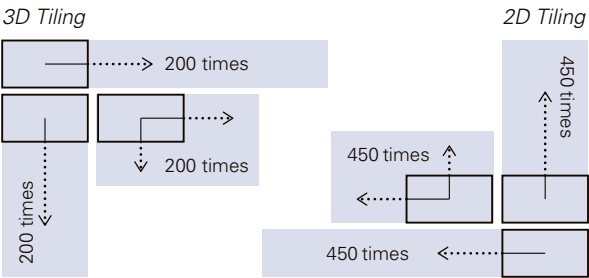


### 3D Tiling Wide-View 3D Modeling

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.

### Flexible Tiling Shape

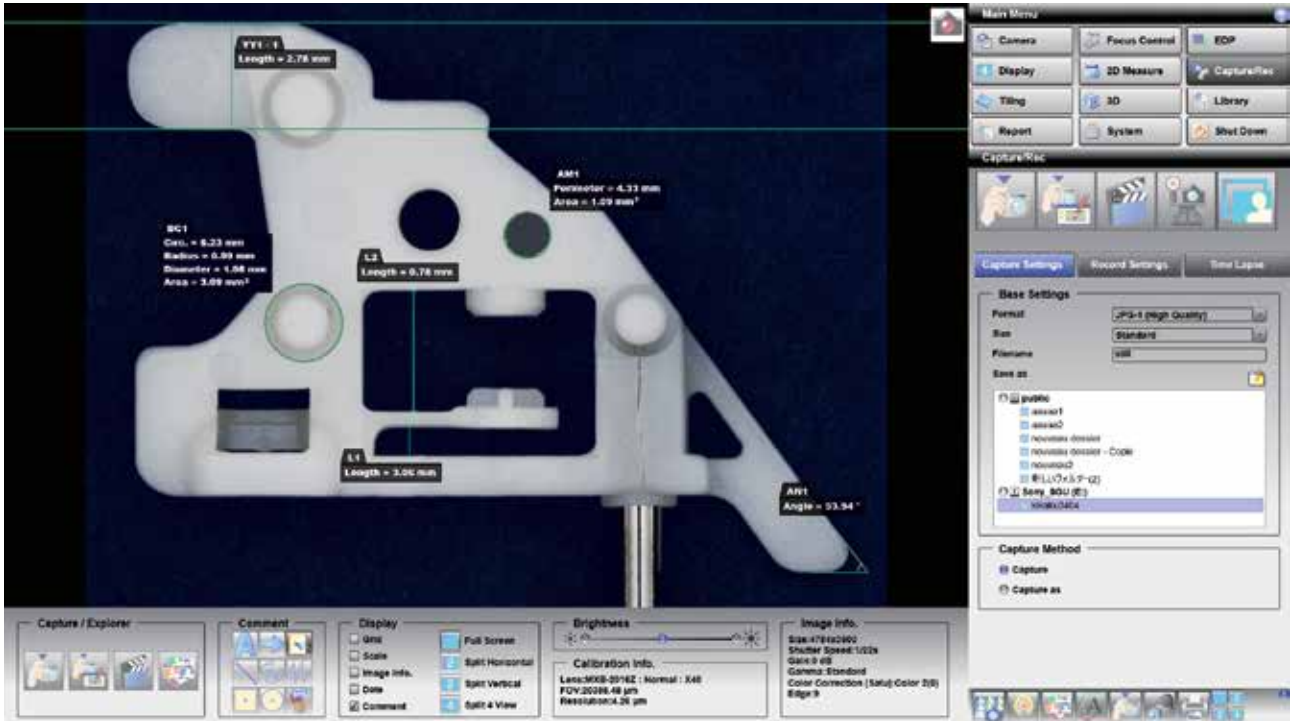
2D tiling maximum tiled square image is 468 times the original image FOV. 3D tiling maximum tiled square image is 200 times the original image FOV.



Mounted board (140x)



# Measurement



Parts of HDD (40x)

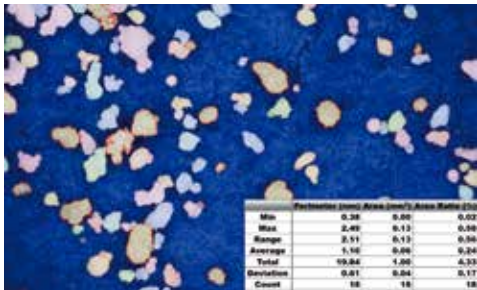
## 2D Measurement

Accurate and calibrated measurements in real-time, including length, area, angle, diameter, and 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.



## Auto Count Functions

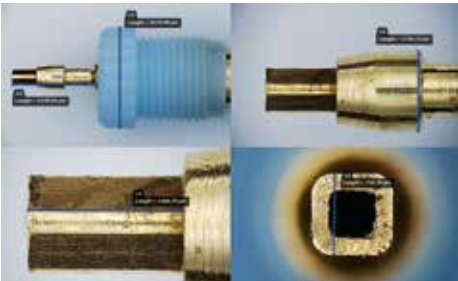
Advanced software algorithm allows automatic detection and count of particles, based on contrast or color values. With 1 click the system automatically counts parts that have similar colors, with Advanced statistics.



Pharmacon (50x)

## Multi View Measurement

For the first time in the industry, Hirox is able to accurately use 2D measurement functions when splitting the monitor for a multi-view display.



Arcal parts of lighter

## Edge Detection

When the cursor approaches a point the user wishes to measure, its position is automatically corrected to match the edge. This reduces inconsistencies in measured points, which tend to occur for each operator.



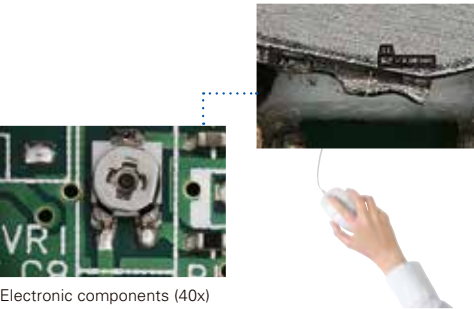
Correct cursor position automatically

## Calibration / Lens Settings

Cleaning up the menu to improve work efficiency; it is now possible to display other lens manufacturer's information and hide Hirox lenses not owned.

## Digital Zoom Measurement

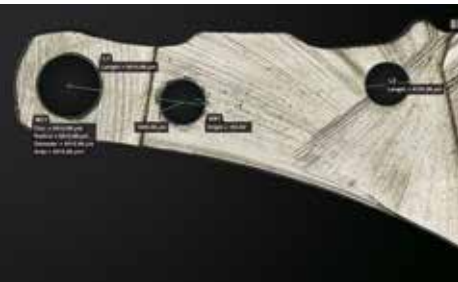
By utilizing the real-time digital-zoom function, the end user can enhance pixels in order to locate the exact edge of a measurement, increasing accuracy and consistency.



Electronic components (40x)

## Standard Shape Measurement

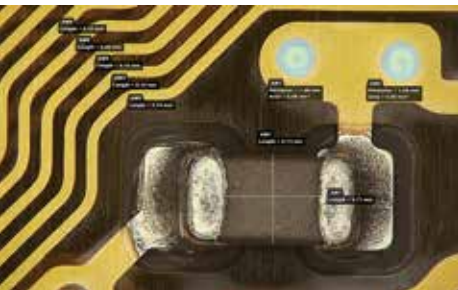
Measurement is possible using the standard shapes. When measuring, the cursor position is automatically corrected to match the shape.



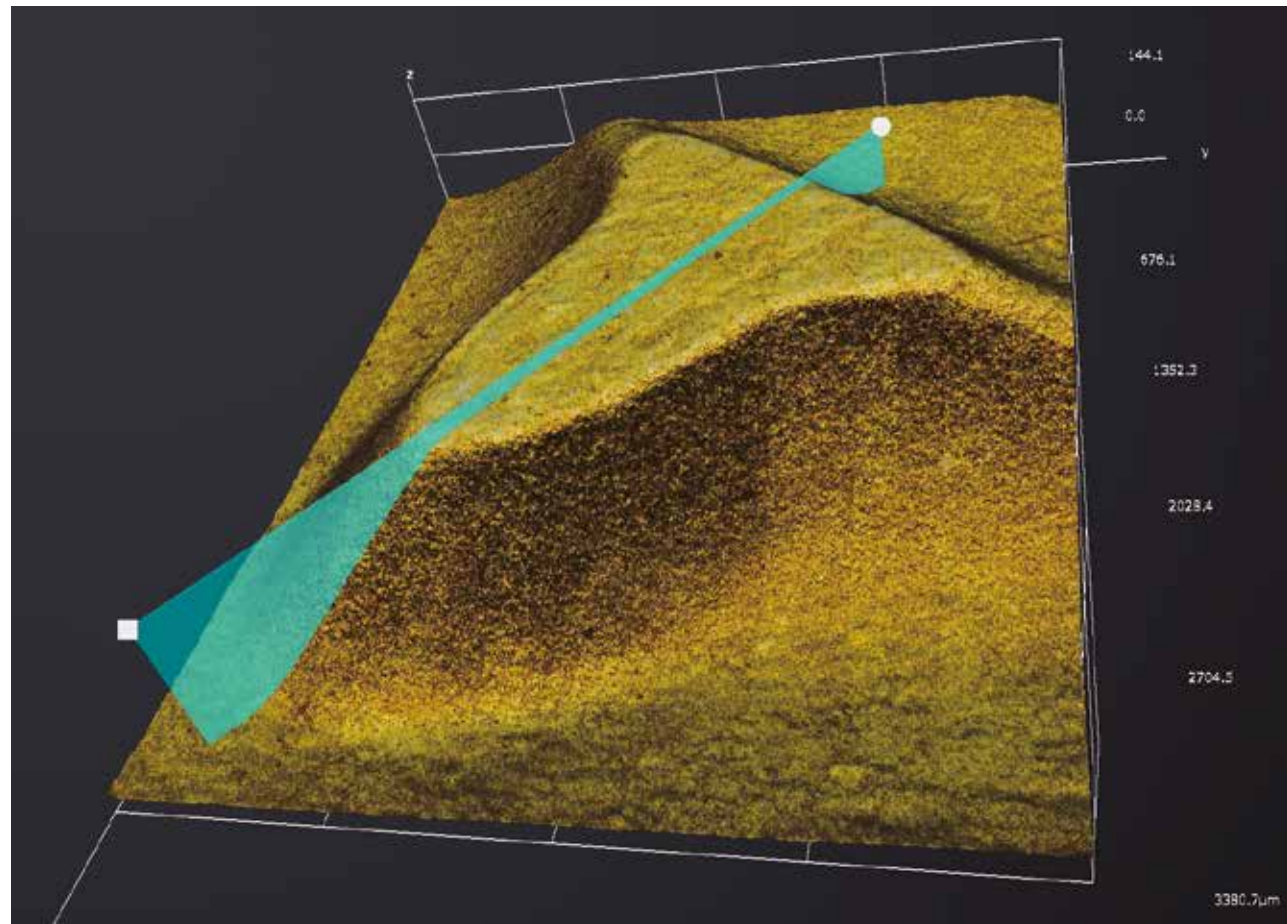
Metal molede parts (35x)

## Auto Area / Distance

Automatically measures area and distance of object with one click. It realizes efficient work and reduces the variation of the measurement results.



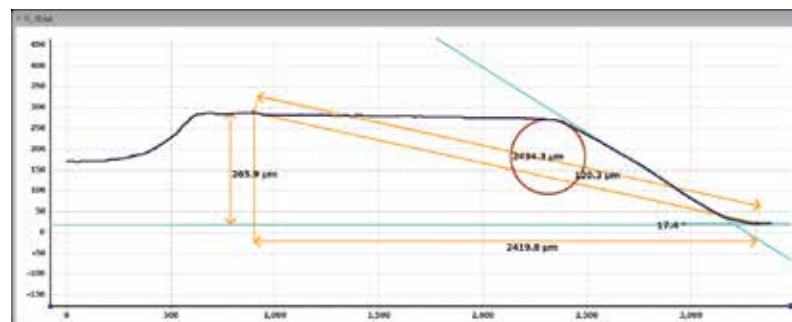
Circuit board (80x)



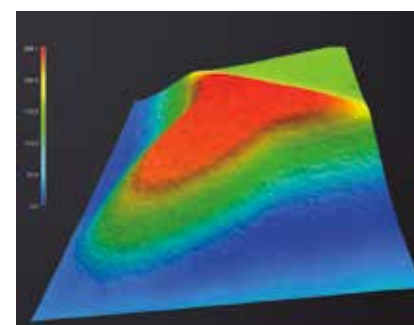
Cutting tool (350x)

## 3D Measurement / Profiling

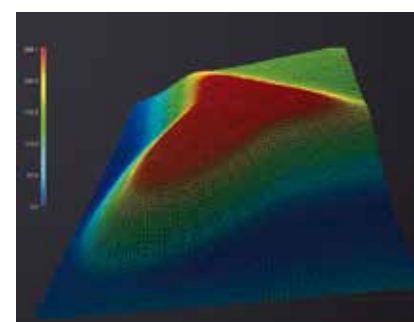
Simply adjust the slicer to visualize and measure any details on the 3D object: the profile created is like a virtual vertical cross section allowing precise measurements. Using the profile measurement function, it's very simple to measure any radius on a 3D object by simply "drawing" a circle with 3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



Profile graph measurement



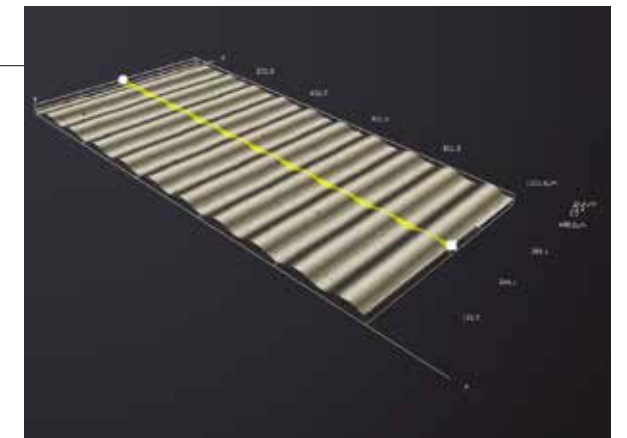
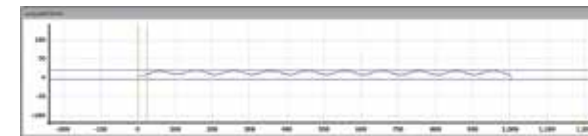
Pseudo color



## Wireframe

Roughness (Ra, Rz)

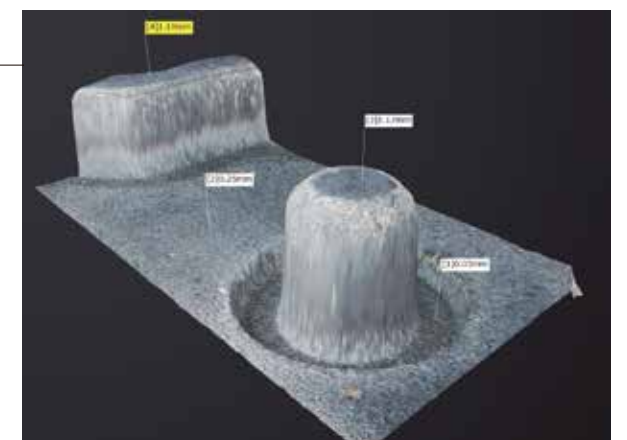
The powerful 3D software enables accurate line roughness measurement in Ra and Rz (ISO4287:1997) and is compatible with optional surface roughness measurements (Sa, Sq, and many more).



Roughness standard specimen

## Point Height Measurement

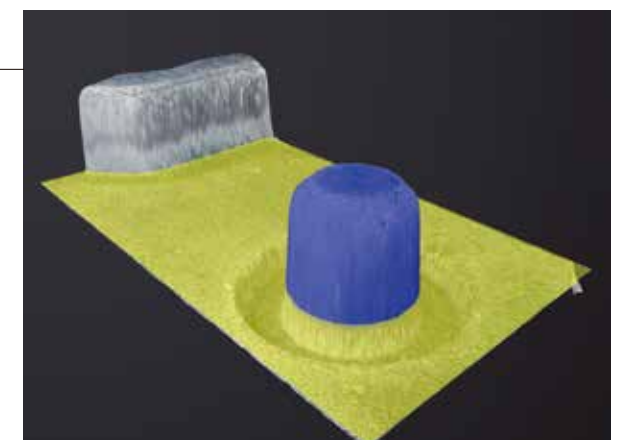
Display point height by simply clicking on the 3D model. With each click, the height value labels are displayed from a standard zero point or a zero point can be set (new reference point) from a specific position on the model. Point height measurements are possible in both 2D and 3D images.



## Parts of HDD

## 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.



### Parts of HDD

## Level Correction, Noise Filter and Reduction

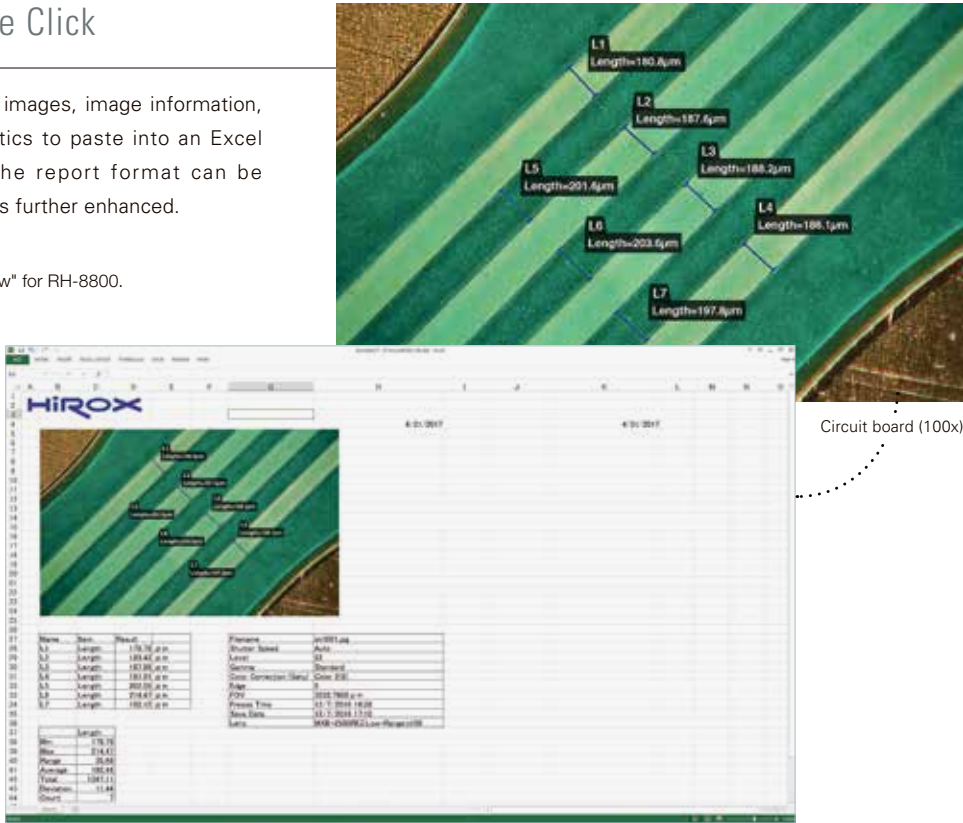
The level correction feature gives the end-user the ability to adjust the surface of the image without touching the sample. The advanced Noise Filter reduces unwanted static and provides a clearer image.



Excel Reports with One Click

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.

\*With Free measurement software "EZ-View" for RH-8800.  
\*Microsoft Excel is required.



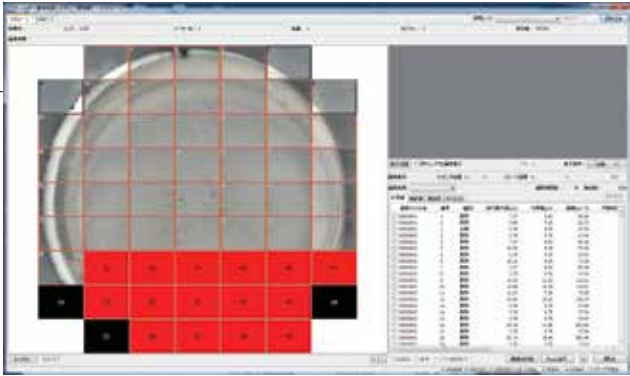
Efficient Work by Operating with Dual Monitors

By using a dual monitors system, it is enables operators to observe and make measurement reports side by side. It is also possible to paste directly into an Excel sheet without saving images every time.



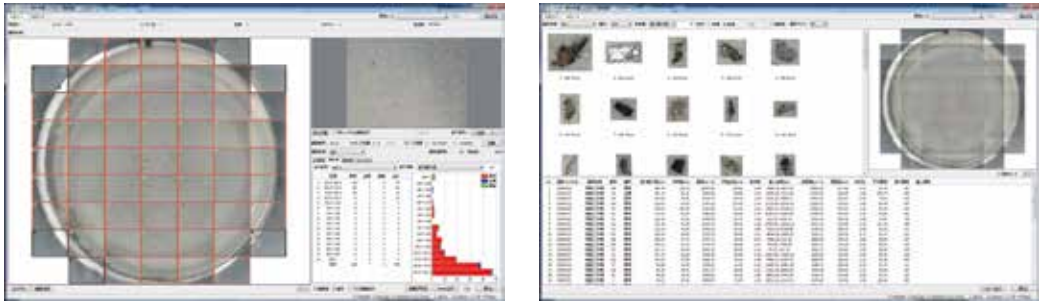
Fast, Accurate, Automatic Software Analysis of Contamination

The Digital microscope magnifies particles of contamination and detects them automatically. In addition, the software performs statistics and a pass /fail judgment on each particle size.



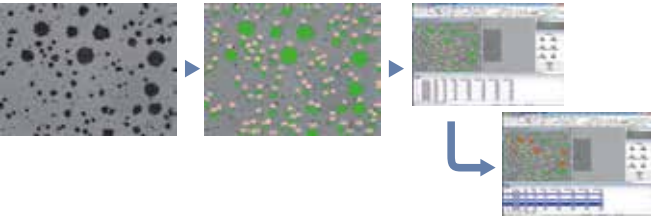
Particle Measurement · Statistical Calculation

It is possible to measure the shape of every particle and cell from metal particles to animal cells. Also, to calculate statistical data at the same time and display histogram and frequency distribution easily. By setting the conditions of extracted particles, it judges pass /fail instantaneously.



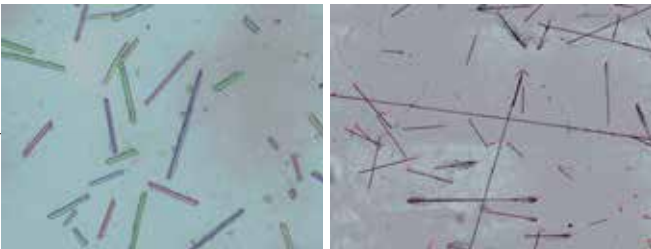
Particle Separation Measurement

When particles are overlapped, it is difficult to perform ordinary particle analysis. With this software, it is possible to separate the overlapping particles and make measurements.

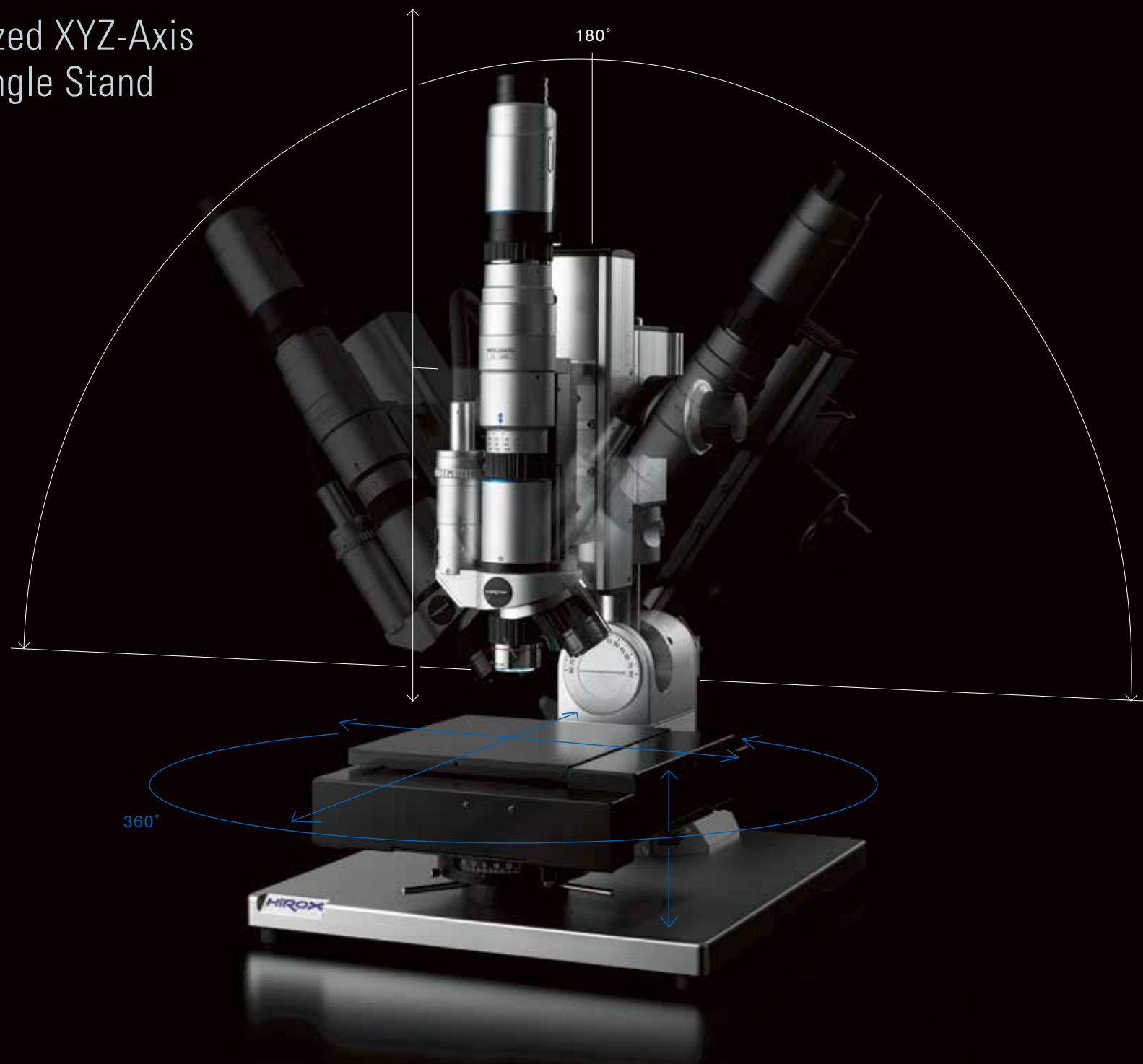


Fiber Particle Measurement

Even when fiber particles are crossed, it is possible to separate them one by one, measuring the length and number, the width and fiber ratio of the fiber particles.



Motorized XYZ-Axis  
Free Angle Stand



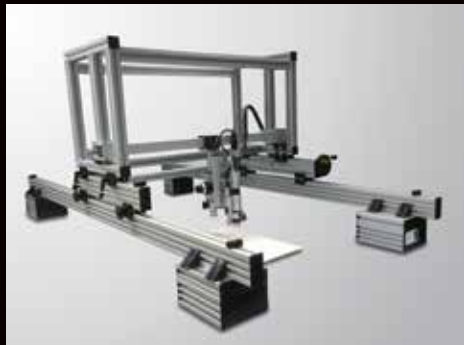
Imagine lenses are eyes and the microscope is the brain of the body. Then the stand would be the body itself. To accommodate to many objects and observational applications, Hirox has created both a Straight type stand and an Angle type stand (angle 90°) for the digital microscope. The XY stage can rotate, and with some versions can have the height and angle changed. Hirox' unique ACS communication automatically applies the Motorized Z-Axis Block to move by the proper speed which corresponds to the lens magnification. The Motorized Z-Axis Block (Z-Axis motion solution 0.05μ), makes it easy to focus during high magnification observation without any stress. The motor can be controlled freely by the 3D Mouse.

Customized Stand

By customizing lenses, adapters, and stands, the possibilities of observation expand infinitely. This is an example of Hirox custom made stands to provide the best observation ability.



1



2



3



4



5

- 1. Portable Stand
- 2. Customizable Large Stand System
- 3. Observing a cylindrical object horizontally
- 4. Observing the edge to the center of wafer with rotating stage.
- 5. The Flexible Arm Stand



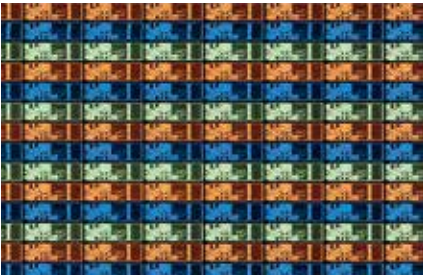
Motorized XY-Axis Large Stage

Large Motorized XY-Axis Stage allows for the observation of large samples with effective stroke of 110mm x 100mm. High intensity LED transmitted lighting is built in for observation of various samples.

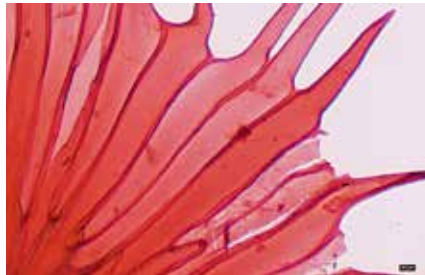


Transmitted Lighting

An illumination method that transmits light from below the stage through a condenser to aid in imaging transparent samples. A smeared cell would be a common example, but examining a through hole in a PC board would also require transmitted lighting.



Liquid crystal panel (350x)



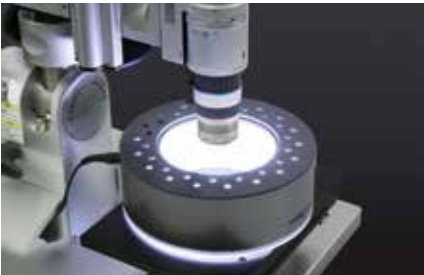
Scaly hairs of silverberry (1500x)



Printed surface of package (35x)

Dome Lighting

Metal and other reflective samples can be especially difficult to image, as wherever the light source is will be reflected on the sample. With this accessory however, the lighting is coming from 360 degrees around the sample, giving even lighting across the sample. This is especially useful for challenging samples like metal ball bearings.



Dome Lighting



Electrode (80x)



Swing arm in HDD (80x)

UV Lighting

Ultraviolet lighting is below 380nm outside the visible light spectrum and can be used to increase the image resolution beyond the limit of standard optical microscopes. This can be used to better see cracks in solder. UV light also increases the contrast of certain samples relative to their surroundings, due to the interaction of light with the molecules within the sample itself. One example is protein crystals.

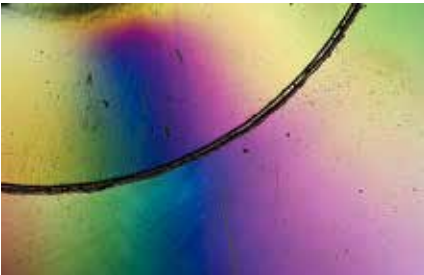


Scratches on circuit board (80x)

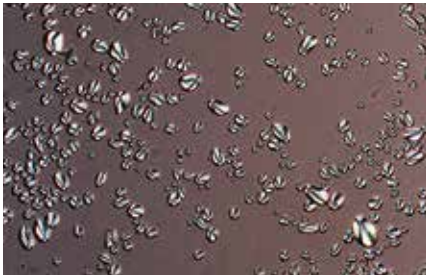


Transmitted Polarized Lighting

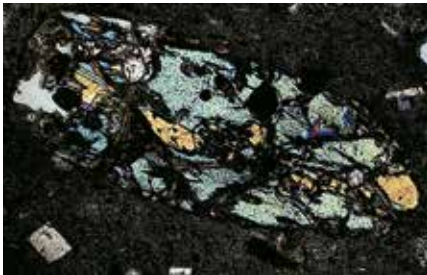
Using a filter with the condenser, light can be restricted to a single direction of vibration. This filter can enhance an image by reducing light intensity and glare. This is especially useful with transparent biological samples, as different elements/features of the sample can be observed by changing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



Transparent plastic plate (140x)



Cross of starch (350x)



Metal strucure (140x)

## 2 Types of Digital Microscopes Available

*From simple observation to maximum capabilities.*

- *Flexibility for many of types of applications.*
- *Reduced initial investment.*
- *The ability to expand application capabilities such as using other application/analysis software.*

*Easy to use software for less experienced users.*

- *Quick startup for fast paced working environments.*
- *Perfect for companies requiring stand alone systems.*

### RH-2000 PC Edition Unit

RH-2000 is an extremely versatile digital microscope. 3D Measurement and Tiling software are options that can be added at anytime, reducing the cost of the initial purchase. Also, by having the system connected to a computer instead of being integrated, the IT department can connect the computer to your network without objection. Additional image analysis /application software can be installed and used on the computer to further analyze images from the RH-2000.



### RH-8800 All-In-One Unit

RH-8800 is an All-In-One digital microscope, which enables intuitive and comfortable operation by integrating observation, recording, and measuring together as one. Every function links and cooperates smoothly with each other in high performance. Fulfill future needs by upgrading the functions.



#### New Mounting System

Camera unit features a lens integrated with Mycom, allowing two-way communication between the lens and software. The bayonet mount features a one-step attachment, eliminating the need for an additional cable.

#### High Intensity LED Lighting

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

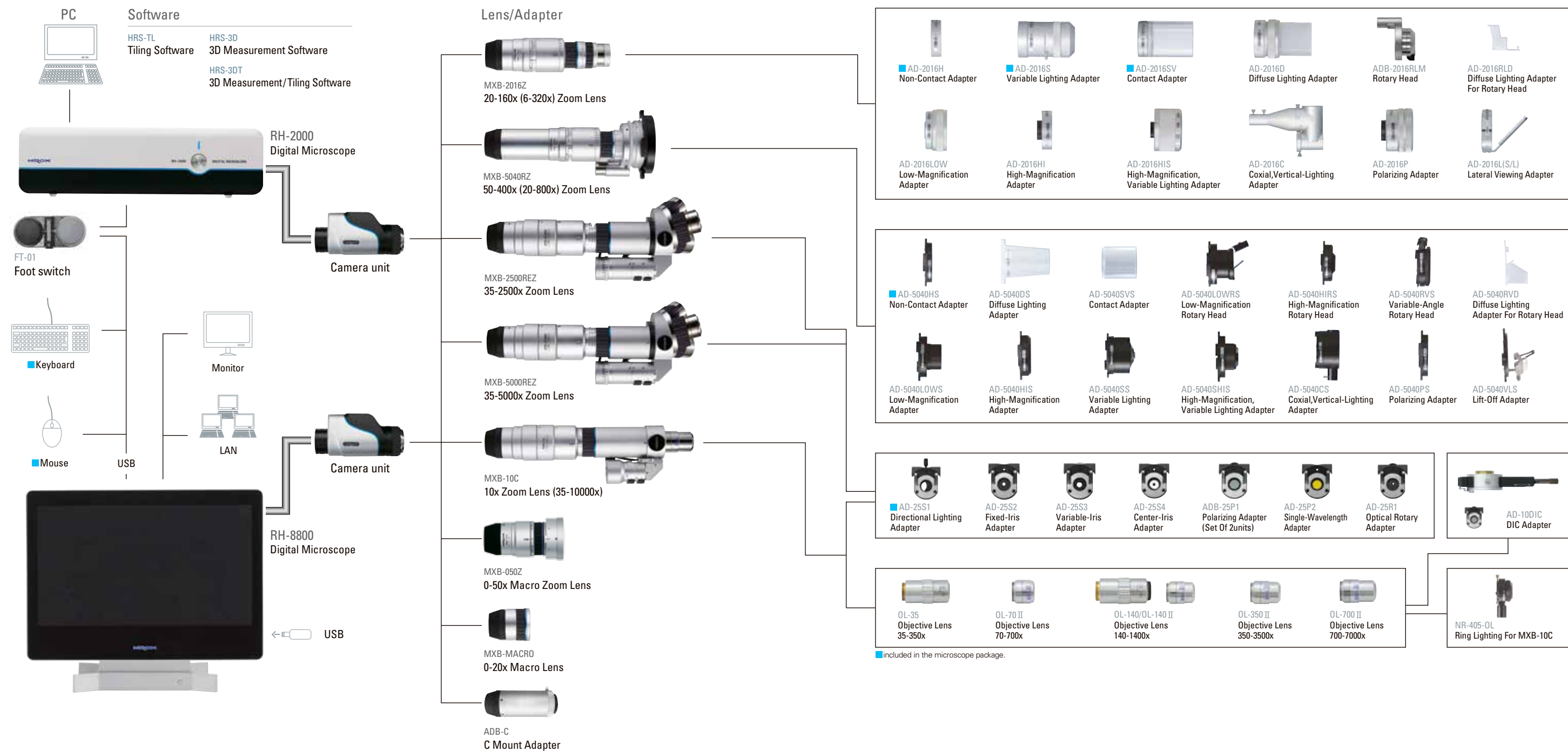


#### 3D Mouse

This RH-2000 / RH-8800 compatible controller can have it's 15 buttons assigned to various software functions for rapid use. The joystick can control the XYZ-Axis motors of stage and stand.



System Line Up

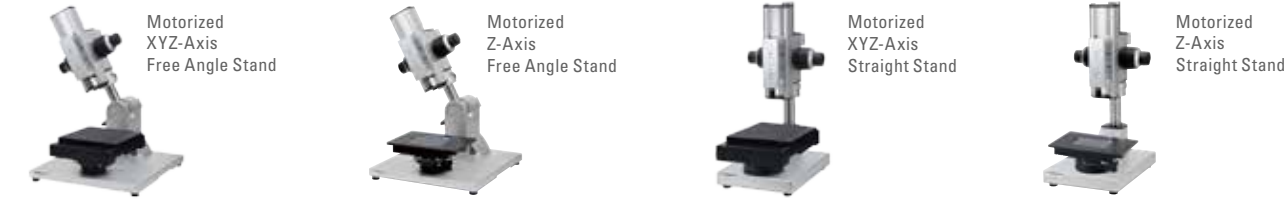


RH-2000 Advanced Software

	Standard	Option1	Option2	Option3
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 Software HRS-TL Tiling Software

High Precision Stands



# Specifications

### Basic Functions: Camera Control Unit

Model		RH-2000	RH-8800
Camera	Imaging Device	1/1.9-inch 2.38 Mega-pixel CMOS Image Sensor	
	Total Pixels	1952(H)×1241(V)	
	Effective Pixels	1945(H)×1225(V)	
	Visual Pixels	1920(H)×1200(V)	
	Scanning Method	Progressive Scan	
	Frame Rate	50 Frame/Sec (Max) at 1920 x 1200 Resolution	
		100 Frame/Sec (Max) at Binning	
	Electronic Shutter	Auto (1/15 ~ 1/20000)	
		Manual : Preference Setup (1/15 ~ 1/20000) Variable (1 ~ 1/25000)	
	Gain	Manual: 0dB ~ 12dB	
Display Monitor	White Balance	AUTO (One Push) / MANUAL (R, B)	
	Back Focus	NOT Required	
	Display Size	—	Full HD LCD 21.5" Monitor
	Panel Size		476.2 (H) x 268.11 (V) mm - 18.75" (H) x 10.56" (V)
	Pixel Pitch		0.248 (H) x 0.248 (V) mm - 0.01" (H) x 0.01" (V)
	Number of Pixels		1920 (H) x 1080 (V)
	Display Color		Approx. 16,770,000 colors
	Brightness		300cd/m2 (typical)
	Contrast Ratio		1000:1 (typ)
	Viewing Angle		170° (Horizontal), 160° (Vertical)
Recording	Image Format	Exif-JPEG (compressed), TIFF/BMP (non-compressed)	
	Still Image Size	1920×1200 ~ 800×500 / 1600×1200 ~ 640×480	
	Movie	1920×1200 / 1600×1200 (15FPS), 960×600 / 800×600 (30FPS)	
	Movie Format	AVI (non-compressed), WMV (compressed)	
	Maximum Tiled Image	30000 (H) × 30000 (V) on Square Image or 468 times from original image FOV	
Light Source	Storage	—	500GB HDD, OS/Application SSD
	Lamp	High Intensity LED	
	Lamp Life	30,000 hours (Average)	
	Color Temperature	5700K (Typical)	
Output	Camera	USB 3.0 Series B	
	External Monitor	HDMI / Display Port / RGB Through PC	Display Port / RGB
Input	MyCom Contoller	USB 2.0 Series B - ACS, Rotary, External Devices, Others	
	Motorized Z-Axis	5 Phase Step Motor Driver Integrated	
	External	Remote Device, Foot Switch (Capture / Capture Image)	
	Mouse / Keyboard	—	USB Mouse/Keyboard supported
Interface	LAN	Through PC	10BASE-T / 100BASE-TX / 1000BASE-T
	USB 2.0/3.0 Ports	USB 2.0 Series / A Types x 2 + Through PC	USB 2.0 Series / A Type x6 (Side x 2, Back x 4)
Power	Supply Voltage	AC100V~240V 50/60Hz	
	Consumption	90W	195W
Environmental Resistance	Ambient Temperature	5~40°C (41~104F)	
	Relative Humidity	20~80% RH (No Condensation)	
	Atmosphere	Corrosive Gas Prohibited	
	Altitude	Below 2000 Meter (6600 Feet)	
	Storage Temperature	-15°C ~ 50°C (No Condensation)	
	Contamination Degree	2	
	Overvoltage Level	II	
Weight	Main Unit	3.6 Kg (7.94lb)	Approx. 14 Kg (30.86lb)
	Camera Unit	1.0 Kg (2.20lb)	1.0 Kg (2.20lb)
Dimension	Main Unit	270 mm (W) × 75 mm (H) × 230 mm (D)	525 mm (W) × 445 mm (H) × 210 mm (D)
		10.63" (W) × 2.95" (H) × 9.06" (D)	20.67" (W) × 17.51" (H) × 8.2" (D)

### Basic Functions: Motorized XYZ Stage

Model		XY-GEF-US + FB-E	XY-GE100 + FB-E
XY Axis	Effective Stroke	50 × 50 mm (1.97" × 1.97")	110 x 100 mm (4.33" x 3.94")
	Maximum Speed	8 mm / Sec	
	Load Capacity	3kg	5kg
	Resolution / Lost Motion	0.04 um / Within 0.020 mm	0.08 um / Within 0.020 mm
	Dimension / Weight	195 mm (W) × 209 mm (D) × 53 mm (H) / 3.9 kg	280 mm (W) × 252 mm (D) × 53 mm (H) / 5 kg
	Transmitted Lighting	— High Intensity LED Back Lighting	
Z Axis	Effective Stroke	30 mm (1.18") Motor, 85 mm (3.35") Manual	
	Resolution	0.05 um (0.002 Mil) / pulse - 5 Phases Motor	
	Repeatability	0.5 um (0.23 Mil)	
	Weight	Approx.3 kg	

### Recommend PC Specification for RH-2000

CPU	4th Generation Intel® Core™ i5 Processor or Higher
RAM	8GB Memory or Higher
HDD	500 GB or Higher
Monitor	Must be 1920 x 1080 Resolution or Higher (16:9 Ratio)
OS	Windows 7 - 64 bit or Higher

### Standard Software

Model		RH-2000	RH-8800
Observation Functions	Camera Setup Preview	o	o
	Mode Function (save camera settings)	o	o
	My Com Communication (ACS)	o	o
	Gamma Correction / Edge Enhancement	o	o
	Hue / Chroma Correction and Chroma ON/OFF	o	o
	Brightness Level	o	o
	Live Anti-Halation / HDR	o	o
	Camera Shake Correction	o	o
	Auto Brightness / Tone Curve Adjustment	o	o
Observation Tool	Focus Control / Focus Indicator	o	o
	LED Lamp ON/OFF	o	o
	Real-Time Digital Zoom / Rotary Head Control	o	o
	Grid Settings (Various Functions are available)	o	o
	Custom Tool Bar and Quick Function Key	o	o
	Split Monitor (Horizontal, Vertical, 4 window)	o	o
Various Fuctions	Cropping Image / Turning Over, ±90 Rotation	o	o
	Full Focus / Auto-Focus	o	o
	Quick Extended Depth of Field	o	o
	Auto Multi-Focus 3D Merge Depth Composition	o	o
	Auto-Positioning Depth Composition	o	o
Enhanced Digital Processing	3D Multi-Focus / 3D Model Preview Function	o	o
	High-Resolution Image (10560×6600 ~ 2400×1800) / Non-Tiled Image	o	o
	High Dynamic Range (HDR) / Anti-Halation Function	o	o
	Image Adjustment: Contrast, Edge, Hue/Chroma Correction	o	o
Measurement Functions	Image Improvement: Auto Brightness / Tone Curve, Noise Removal	o	o
	Auto Calibration Select (ACS): Recognize Lens, Zoom, Lighting, others	o	o
	Distance, Angle, Radius, Diameter, Area and Other Tools	o	o
	Automatic Measurement: Auto-Count, Auto-Area, Auto-Edge Detection	o	o
	Scale Display (Various Setup Available in Metric/Inch)	o	o
	Statistic Result Data CSV or MS Office Output	o	o
Utility	Wide Image Measurement	o	o
	Image Data Parameter	o	o
	Comments / Annotation / Scale / Date / Image Information	o	o
	Easy Report Function and Export to MS Office	o	—
	Password Protection (Calibration / User setup)	o	o
	Language (ENG, JPN, FRN, GER, ITA, SPA, KOR, CHN, RUS )	o	o
	Help (Pop-up User Guide / Manual)	o	o

### Advanced Software

3D Measurement Functions	3D Display (Original Color / Wireframe / Pseudo Color Display)	HRS-3D	o
	3D Profile Measurement (Height, Length, Angle, Radius, Others)		o
	3D Model Illumination Simulation		o
	3D Profile Roughness Measurement		o
	3D Volume and Area Measurement		o
	3D Image Height Point Measurement		o
	HDR / Anti-Halation 3D Model		o
	2D Image 3D Profile Measurement		o
	3D Image Map CSV Output (Import to Various 3D application Software)		o
	Noise Filter and Removal		o
Tiling	3D Model Level Correction	HRS-TL	o
	2D Tiling / Up to 15000 x 15000 pixels or 225,000,000 Pixel Area		o
	Expanded mode Up to (equivalent size) 30000 × 30000 pixels or 900,000,000 Pixel Area		o
	3D Tiling / Up to 10000 x 10000 pixels or 100,000,000 Pixel Area		o
	Expanded mode Up to (equivalent size) 20000 × 20000 pixels or 400,000,000 Pixel Area		o

### Additional Software for Other PCs / Non-Licensed

EZ-View	Refer to Stardard Software Features	o	o
3D Viewer	Free 3D Image File Viewing Software	o	o

#### [Compliance with the RoHS Environmental Protection Program]

Hirox is compliant with the [RoHS Directives] based on the fundamental principles and plan stated below. These directives regulate goods manufactured after October 2006 that use hazardous substances that have an adverse effect on the environment or human life.

- Fundamental Principles: Recognizing that preservation of the environment is the greatest problem facing the human race, Hirox is working with all of its divisions to reduce its environmental impact.
- Plan: In order to reduce the environmental impact of all manufacturing and consumption practices related to the production and sale of our digital microscopes as well as future products and services, Hirox is pursuing an environmental management program striving to achieve harmony with the environment. RoHS Directive: Known as the "Directive for the reduction of the use of certain hazardous substances in electrical and electronic equipment." It is effective in all areas of the EU. The use of the following six hazardous substances in electrical and electronic equipment is regulated: Pb (lead), Cd (cadmium), Hg (mercury), hexavalent chrome, PBB (polybrominated biphenyl), and PBDE (polybrominated biphenyl).