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## HIROX LENS COLLECTION

# A Guide to New Discoveries

In order to see things as they are, the first and most important element is the lens. As a lens maker since several generations, HIROX has always been a leader in optical innovation.

Constantly improving the original HIROX lenses, we make sure to deliver the highest quality while keeping the same mounting system to insure a lifelong use and compatibility.

We are proud to have invented some of the most revolutionary optical design, such as the patented 3D Rotary Head or the Variable Light Angle Adapter: the diversity of our unique lenses illustrates HIROX's responses to the highest expectations for countless applications.

HIROX will continue to focus on developing high quality optics that can only be produced by a true lens maker.



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## STAND&STAGE/UNIT

Stand/Stage/Unit P28

## MAIN UNIT

Main Unit P31

Patent No. 3113375, Patent No. 3119455, Patent No. 2512300, Patent No. 2512299, Patent No. 1750384

※The color may slightly differ from the actual products.

### [Environment Protection Measures in Compliance with RoHS Directive]

Since October 2006, all the HIROX products are complying with the RoHS directive, regulating harmful substances that are feared to damage the environment and human bodies. Based on our principles and policies, we do our best to protect the environment.

■Basic Principle: HIROX recognizes that protecting the environment is the most important task of human beings across the globe and intends to give its full efforts to reduce environment burdens.  
 ■Policy: HIROX promotes environment management activities in order to reduce the environment impact of digital microscope system manufacturing, sales and all related production and consumer activities as well as the impact of our future products and services so that we can coexist with the environment.

RoHS Directive: Formally called Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment, the directive is implemented in the EU area. It regulates the amounts of Pb(lead), Cd(cadmium), Hg(mercury), hexavalent chrome, PBB(polybrominated biphenyls) and PBDE( polybrominated biphenyl ethers) used in electrical and electronic equipment.

# SYSTEM CONFIGURATION



# ADAPTER EFFECT

## Adapter Effect

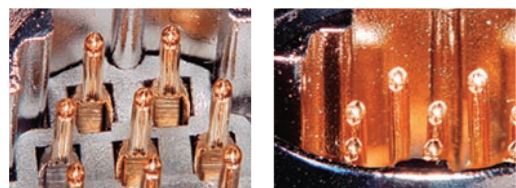
### An Eye-Opening Experience

In order to respond to user's demands for more precision and details, we have created unique optical adaptors. By mounting these products, the capabilities of our lenses expand infinitely. Together, we make possible what's usually impossible.



### Variable Angle Rota-Head Adapter PAT

This adaptor enables observations of objects with a 360 degrees rotational inspection. The rotating prism also enables viewing angle adjustments in four stages (25·35·45·55 degrees) with no blind corners. This is an original HIROX design.



connector 50x  
[angle: 25 degrees]      [angle: 55 degrees]

### Rotary-Head Adapter PAT

This adaptor enables observations of objects with a 360 degrees rotational inspection, with a fixed 45 degrees viewing angle. Through the observation of moving images, it helps to understand shapes. This is an original HIROX design.



Legs soldering inspection of QFP substrates at 60x magnification.

### Low magnification Adapter

This adaptor reduces the lens magnification while increasing the working distance enabling the inspection of bigger objects/area.



The tip of ball-pointed pen at 50x magnification.

4x

### High magnification Adapter

This adaptor doubles the lens magnification, enabling the inspection of smaller objects/area.

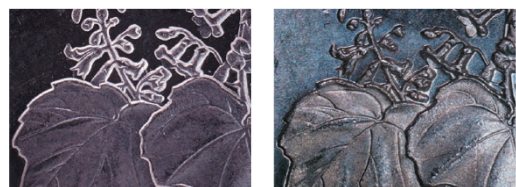


The tip of ball-pointed pen at 400x magnification.

800x

### Variable Lighting Adapter PAT

This adaptor 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.

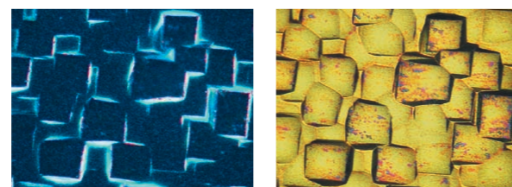


500yen Coin 30x  
[Side Lighting(75 degrees)]

[Epi-Illumination (12 degrees)].

### Co-axial Lighting Adapter

This adaptor allows observations under regular reflections (whereby light that is projected parallel to the optical axis of a lens are reflected vertically). It is designed for the observation of mirror-finished surfaces, ground surfaces and other surfaces that are flat and highly reflective.

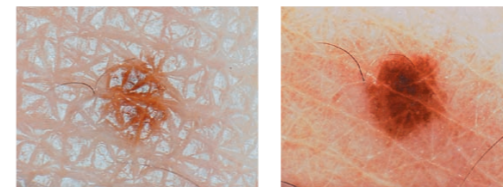


Surface of metal chip at 1700x magnification (side lighting).

Co-axial Lighting

### Polarizing Adapter

This adaptor 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.

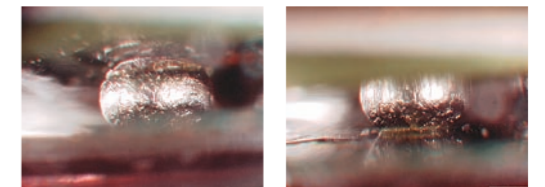


Pigmented skin spots at 50x magnification [Epi-Illumination]

[Polarizing filter Lighting]

### Optical Rota Adapter PAT

This adaptor allows observation angles to change freely without moving the lens. By rotating the dial, observation angles change and allow observations that are 3-dimensional and full of data. This is an original HIROX design.

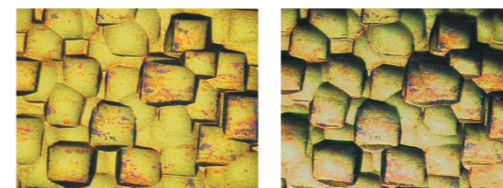


BGA 100x  
[Points of contact for BGA upper parts]

[Points of contact for BGA lower parts]

### Directional Lighting Adapter

This adaptor 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.

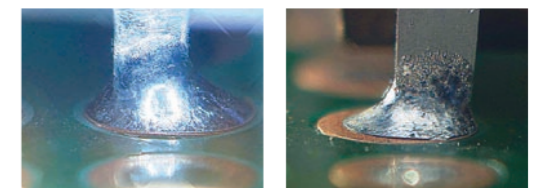


Surface of metal chips at 1700x magnification.

[Directional Lighting]

### Lift of Adapter

This adaptor helps observations using near-horizontal viewing angle through the use of a mirror. It is optimal for observing the lift-off phenomenon in lead-free solders, the peel-off phenomenon, and other instances needing observations from the side.

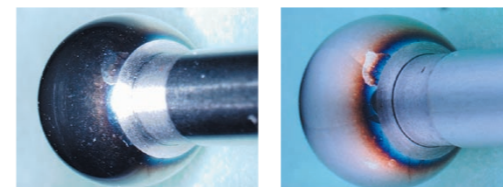


Lift-off phenomenon at 150x magnification.

Peel-off phenomenon at 150x magnification.

### Diffuse Lighting Adapter

This adaptor 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.

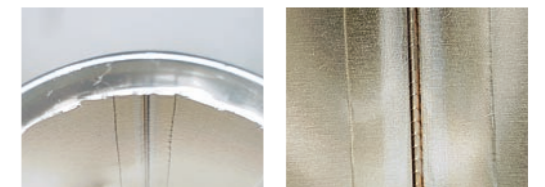


Ball joint at 40x magnification [Epi-illumination].

[Diffuse lighting]

### Side View Inspection

This adaptor allows observations of objects using a 90 degrees 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.

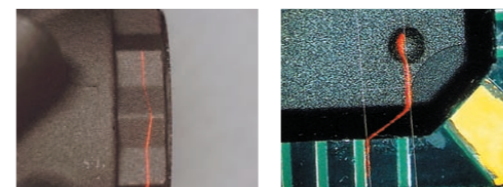


Inner side of a can at 5x magnification.

80x

### Z-axis Measurement Laser Slit Light Adapter

This adaptor enables height measurement using laser illumination. It casts a superfine laser slit light with a 45 degrees angle. Measurements can thus be easily made.



Processed metal products at 100x magnification.

Electronic parts at 60x magnification.

### Contact Adapter

This adaptor is designed to come in contact with objects for observations. It is suitable for big sized objects or for non destructive inspection.



Observation of painted surfaces.

### Non-contact Adapter

This adaptor enables observations without touching the objects. It is suitable for living organisms and liquids for example.



# MX-MOUNT LENS


## MX-MOUNT LENS




### Evolving to Grasp Things As They Are

"MX mount" is HIROX's originally designed optical lens mounting since over 20 years. It has been developed to integrate simultaneously a high quality video CCD and a high level illumination technology to get the best from the Hirox optics. This series is optimized for the Hirox Digital Video microscopes, allowing the user to benefit from decades of research resulting in the most comfortable and powerful observation environment.


Lighting Method —	Magnification 20~160x	Field of View 15.4~2.0mm(H)	Working Distance 44mm	Depth of Field 13.3~0.25mm	ACS —	Weight 322g
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**[Lens Holder]**




HS-CH (V7)  
Lens Holder



[Holder Mounted]



HS-CH (V4)  
Lens Holder



[Holder Mounted]

By using a lens holder, the lens can be stably fixed onto the stand.

※The photo shows AD-2016H being mounted.

# MX-2016Z


## Low-magnification Zoom Lens [20-160x]

**Standard Zoom Lens, Allowing Hand-Held Operations**  
This zoom lens features a compact body enabling hand-held operations and can be used for various purposes using the different available screw type adaptors. By using low or high magnification adaptors, the lens covers a magnification range from 6x up to 320x.

ADAPTER	 <b>AD-2016H</b> Non-contact Adapter [included]	 <b>AD-2016S</b> Variable Lighting Adapter [included]	 <b>AD-2016SV</b> Contact Adapter [included]	 <b>AD-2016LOW</b> Low-magnification Adapter [6-48x]	 <b>AD-2016HI</b> High-magnification Adapter [40-320x]
Lighting Method	Dark field vertical lighting	Variable Angle lighting	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	44mm	0mm	0mm	132mm	20mm
Weight	8g	49g	17g	29g	9g
ADAPTER	 <b>AD-2016SL</b> Z-Axial Measurement Laser Slit Light Adapter ※1	 <b>AD-2016LOWR</b> Low-magnification Rotary-Head Adapter [6-48x]	 <b>AD-2016L(S/L)</b> Side View Inspection	 <b>AD-2016D</b> Diffuse Lighting Adapter	 <b>AD-2016HIS</b> High-magnification Variable Angle Lighting Adapter [40-320x]
Lighting Method	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting	Diffuse Lighting	Variable Angle Lighting
Working Distance	29.6mm	27mm	10.5~15.5mm	0~4mm	1mm
Weight	244g	288g	36g (S) , 41g (L)	26g	53g
ADAPTER	 <b>AD-2016P</b> Polarizing Adapter	 <b>AD-2016C</b> Co-axial Lighting Adapter	 <b>AD-2016RLM</b> Rotary-Head Adapter	 <b>AD-2016RLD</b> Diffuse Lighting Adapter ※2	
Lighting Method	Polarizing filter lighting	Co-axial lighting	Dark field vertical lighting	Diffuse lighting	
Working Distance	31mm	10.5mm	12mm	AD-2016RLM Working Distance-1mm	
Weight	22g	253	237g	2g	

※1 AC adaptor included. ※2 Adapter is mounted on AD-2016RLM

**OPTION**

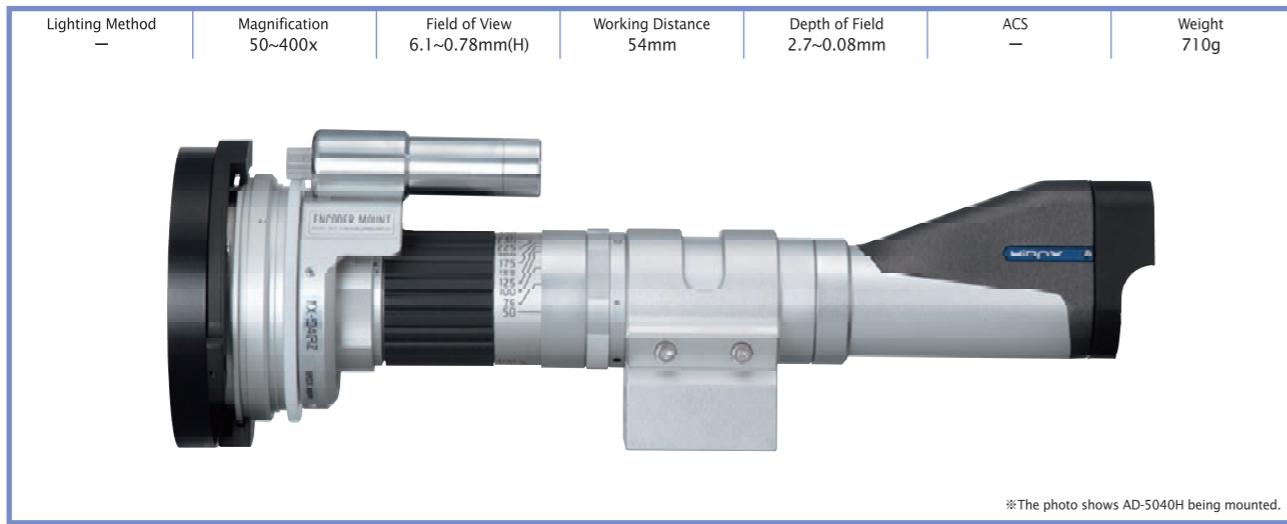


**CT-1**  
Rotary head controller

Rotational speed control  
Rotational direction control

Weight 935g

※Controllers for AD-2016RLM, AD-2016 LOWR.



# MX-5040RZ

**Zoom Lens [50-400x]**

### All-Purpose Zoom Lens Equipped with Various Adaptors

This multi function zoom lens is equipped with many different optical adaptors. By mounting a rotary head, it enables 3-dimensional observations of images using a 360 degrees rotational view. To improve the operational efficiency, each optical adaptor uses a "snap-on" system and can be replaced in one-touch. This lens covers a magnification range from 20x up to 800x.

ADAPTER	 AD-5040HS Non-contact Adapter [included]	 AD-5040DS Diffuse Lighting Adapter ※1	 AD-5040SVS Contact Adapter ※1	 AD-5040LOWRS Low-magnification Rotary-Head Adapter [20-160x] PAT	 AD-5040HIRS High-magnification Rotary-Head Adapter [100-800x] PAT
Lighting Method	Dark field vertical lighting	Diffuse lighting	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	54mm	4mm	0~1.5mm	28.5mm	3.5mm
Weight	68g	36g	100g	266g	173g
ADAPTER	 AD-5040RVS Variable Angle Rota-Head Adapter PAT	 AD-5040RVD Diffuse Adapter ※2	 AD-5040LOWS Low-magnification Adapter [20-160x]	 AD-5040HIS High-magnification Adapter [100-800x]	 AD-5040SS Variable Lighting Adapter PAT
Lighting Method	Dark field vertical lighting	Diffuse Lighting	Dark field vertical lighting	Dark field vertical lighting	Variable Angle lighting
Working Distance	25mm(25°), 19mm(35°), 14mm(45°), 9mm(55°)	AD-5040RVS Working Distance -1mm	80mm	20mm	6~21mm
Weight	124g	2g	180g	108g	285g
ADAPTER	 AD-5040SHIS High-magnification Variable Angle Lighting Adapter[100-800x] PAT	 AD-5040CS Co-axial Lighting Adapter	 AD-5040PS Polarizing Adapter	 AD-5040SLS Z-Axial Measurement Laser Slit Light Adapter ※3	 AD-5040VLS Lift off Adapter
Lighting Method	Dark field vertical lighting	Co-axial lighting	Polarizing filter lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	1.6mm	21mm	54mm	23mm	3mm
Weight	176g	325g	87g	300g	100g

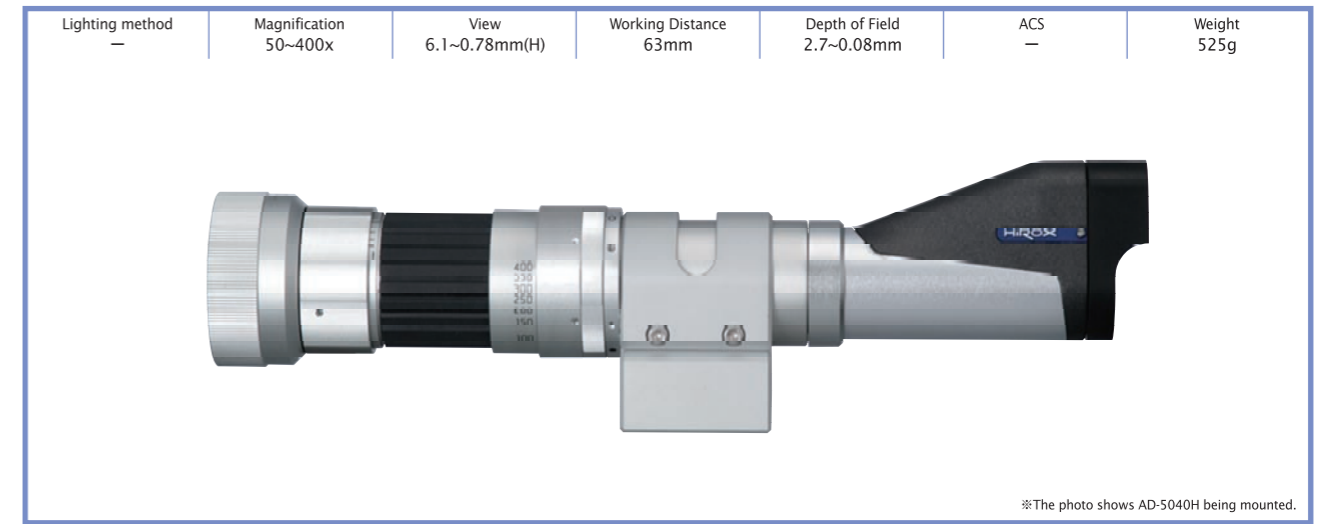
※1 The lens is mounted on AD-5040HS ※2 Mounting on AD-5040RVS ※3 AC adaptor included.

**OPTION**



Rotational speed control  
Rotational direction control  
Rotary head controller  
Weight 935g

※Controllers for AD-5040LOWRS, AD-5040HIRS, AD-5040RVS.



# MX-5040SZ

**Zoom Lens [50-400x]**

### Various Functions, Compact Body Come Together

This zoom lens has a compact design and allows hand-held operations. By mounting the snap-on switching adapter, it enables most of MX-5040RZ adaptors to be used (except for the motorized rotary head), responding to various inspection purposes. This lens covers a magnification range from 20x up to 800x.


ADAPTER	 AD-5040H Non-contact Adapter [included]	 AD-5040LOW Low-magnification Adapter [20-160x]	 AD-5040HI High-magnification Adapter [100-800x]	 AD-5040SHI High-magnification Variable Angle Lighting Adapter[100-800x] PAT
Lighting Method	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting	Variable lighting
Working Distance	63mm	80mm	29mm	1.6mm
Weight	32g	180g	100g	138g
ADAPTER	 AD-5040SD Snap-on adapter			
Lighting Method	Depends on Snap-Type Adaptors			
Working Distance	Depends on Snap-Type Adaptors			
Weight	48g			

※By attaching the snap-type switching adaptor, MX-5040RZ adaptors can be applied.

**MX-5040RZ ADAPTER**



Lighting Method Co-axial lighting	Magnification ※Magnification, field of view, working distance and depth of field depend on the selected objective lens.	Field of View	Working Distance	Depth of Field	ACS —	Weight 655g
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※This photo shows OL-700 II being mounted.

# MX-10C



## Co-axial 10x Zoom Lens

### Same-Axis, Epi-Illumination Allows High-Level Optical Observation


This highly scalable zoom lens is based on the same-axis epi-illumination and uses 6 replaceable objective lenses, covering magnification ranges from 35x up to 7000x. Our unique optical design allows the use of side-lighting adapters (rotary angle lighting, directional lighting adapter or polarizer) for the finest detailed observations.

ADAPTER			
	AD-10S Directional Lighting Adapter [Included]	AD-10P Polarizing Adapter	AD-10R Optical Rota Adapter
Weight	10g	11g	8g


LENS						
	OL-35	OL-70 II	OL-140	OL-140 II	OL-350 II	OL-700 II
Lighting Method	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting
Magnification	35~350x	70~700x	140~1400x	140~1400x	350~3500x	700~7000x
View	9.83~1.05mm (H)	4.42~0.47mm (H)	2.46~0.26mm (H)	2.21~0.23mm (H)	0.88~0.09mm (H)	0.44~0.04mm (H)
Working Distance	34mm	21mm	30.5mm	12mm	10.6mm	3.4mm
Depth of Field	0.92~0.1mm	0.44~0.024mm	0.114~0.012mm	0.09~0.0076mm	0.041~0.0024mm	0.01~0.0007mm
Weight	230g	89.5g	257.3g	117.5g	125.4g	145.9g

OPTION		
	NR-405-OL Ring illumination for OL series	[Ring Mounted]
Lighting Method	Ring Lighting	
Main Unit	Compatible with KH-3000-1300-7700 main unit	
Weight	108g	
	Compatible with OL-35, -70 II, -140, -140 II, -350 II Lens.	

Lighting Method Option	Magnification 0~50x	View ∞~6.1mm(H)	Working Distance ∞~21.4mm(0~50x) / 202.8mm(5x) / 97.5mm(10x) / 49.2mm(20x) / 35.9mm(30x) / 26.8mm(40x) / 21.0mm(50x)	Depth of Field —	ACS —	Weight 129g
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**[Lens Holder]**



HS-CH (V7) Lens holder [Mounted Holder]



By using a lens holder, the lens can be stably fixed onto the stand.

# MX-MACROZ IV

## Macro Lens [0-50x]

### Simple Structure, Suitable for a Wide Field of View

This macro lens can cover a magnification range from 0x up to 50x by changing the working distance. It is simply built, excels in operational efficiency and is perfect for wide field of view. It is also compatible with ring light illumination (NR-405-M4).

OPTION		
	NR-405-M4 MX-MACROZ IV-Use Ring Illumination	[Time of attachment]
Lighting Method	Ring Lighting	
Main Unit	Compatible with KH-3000-1300-7700 main bodies	
Weight	104g	

Lighting Method Dark field vertical lighting	Magnification ∞~5x, 5~50x	View ∞~59~6.1mm(H)	Working Distance ∞~90mm	Depth of Field —	ACS —	Weight 393g
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**[Newly Developed Macro Switch]**



By pushing the switch, it allows switching between macro and zoom.

# MX-MACROZ VI

## Macro Zoom Lens [0-50x]

### Optical Design to Allow Shift from Macro to Zoom

This newly developed macro zoom lens covers magnification ranges from 0x up to 50x. By changing the macro switch, the lens can be used as a macro lens under the range of ∞~5x and as a zoom lens under 5~50x thanks to our unique lens design. Lighting is embedded to allow data-taking under various environments.

Prism Chip Mechanism Soft spring	Prism Chip 0.9mm	Observation angle 90° over	Lighting Method Optical 2-way lighting	Magnification 50~200x	View —	Working Distance 19.9~0.86mm ※1	Depth of Field —	ACS —	Weight 695g
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※1 Working distance from the prism mirror.

# MX-BGAZ

**BGA Lens [50-200x]**

## An Ultimate Shape That Makes What's Invisible Visible

This BGA lens enables non destructive observation of BGA ball connection parts. With a built-in 3D optical rotary ring, it allows 3D observations with angle changes. It combines several illumination sources (prism chips and light fibers), spring structures and other technologies for comfortable observations.

### 3D Optical Rotaring

By rotating the dial, observation angles can be changed without moving the lens. It allows 3-dimensional, high data volume observations.



### Zoom Ring

This is a dial for adjusting magnification. By rotating the dial, the magnification power can be changed from 50 to 200 times.

### Flexible arm

This is a revolutionary optical illumination arm that is developed by processing special metals and fibers. Its flexible structure enables any wished illumination.

### Prism tip

This is a set of a prism mirror for vertical observations and a prism chip acting as a light guide. It is only 0.8 mm thick and allows high-resolution observations even on concentrated substrates.



### Spring Structure

This lens features a unique embedded spring into the head part. The spring absorbs the shocks from contacts and prevents substrates and prism chips from being destroyed.

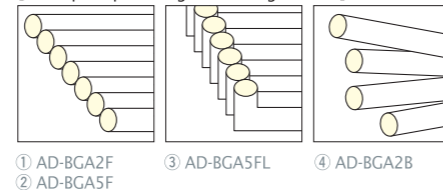


### OPTION



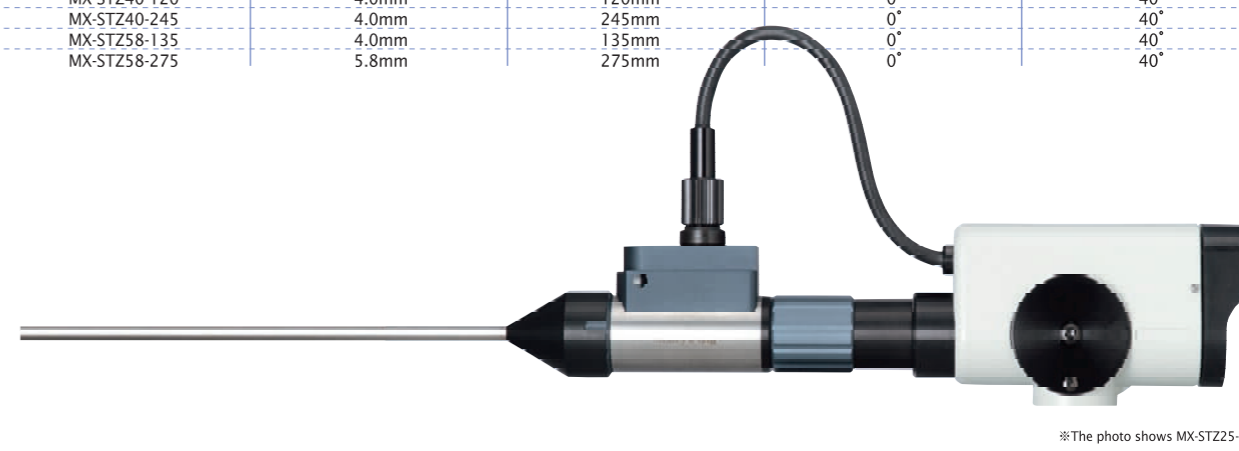
① AD-BGA2F	Light Pen 0.2mm	Weight 2.7g
② AD-BGA5F	Light Pen 0.5mm	Weight 2.8g
③ AD-BGA5FL	L-shaped Light Pen for Tip Parts 0.5mm	Weight 2.8g
④ AD-BGA2B	Light Brush 0.25mm	Weight 1.0g
⑤ AD-BGAPC	Prism Chip	Weight 52g

### [The Tip Shapes of Light Pen & Light Brush]



① AD-BGA2F ② AD-BGA5F ③ AD-BGA5FL ④ AD-BGA2B

Lens Number	Outer Diameter	Effective Length	View Direction	View Angle
MX-STZ25-128	2.8mm	125mm	0°	40°
MX-STZ40-120	4.0mm	120mm	0°	40°
MX-STZ40-245	4.0mm	245mm	0°	40°
MX-STZ58-135	4.0mm	135mm	0°	40°
MX-STZ58-275	5.8mm	275mm	0°	40°



※The photo shows MX-STZ25-128.

# MX-STZ


**Straw-scope Lens [φ2.8~5.8mm L125~275mm]**

## Observing Places Only Reachable by Straw Scope

This is a straw-scope lens that allows observations of narrow places and machine interiors. We have designed independent optics and illumination systems for the sleeve part and realized superior resolution that cannot be attained by fiber scopes. The sleeve part excels in water proof capability and is applicable to engine interiors and other various environments.

ADAPTER	Side View Inspection				
	AD-STL28-125	AD-STL40-120	AD-STL40-245	AD-STL58-135	AD-STL58-275
Outer Diameter	3.05mm	4.5mm	4.5mm	6.3mm	6.3mm
Effective Length	125mm	120mm	245mm	135mm	275mm
View Direction	90°	90°	90°	90°	90°
Scope Diameter	2.8mm	4.0mm	4.0mm	5.8mm	5.8mm

Lighting Method Co-axial lighting	Magnification 180~330x	View 1.74~0.87mm(H)	Working Distance 21.5mm	Depth of Field —	ACS —	Weight 970g
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※The photo shows OLD-1833 being mounted.

# MX-180DIL

**Differential interference Lens [180-330x]**

## Designs That Allow Free Maneuvering of Lights

This differential interference lens is specialized in illumination attached with polarizing adaptors and differential interference sliders. The polarization adaptor controls the reflection of the observed object and is thus suitable for highly reflective objects. The differential interference slider with adjustable angles facilitates observations of differential interference images.

### OPTION



OLD-7013

Magnification	700~1300x
View	0.44~0.21mm
Working Distance	11mm
Weight	145.6g

By changing the objective lens, it allows the magnification ranges to be set according to the size of observed objects.



Differential Interference Slider Differential Interference Slider 94 g

By adjusting the angles of the prism-embedded differential interference slider, it allows observations of surface shapes.



Lighting Method	Magnification	View	Working Distance	Depth of Field	ACS	Weight
—	—	—	—	—	—	85.4g



# MT-C16

**Macro Lens [0-16x]**

### Responding to Wide Field of View with Highly Scalable Designs

This is a macro lens that covers magnification ranges of 0 to 16 times by changing the working distance. With an aperture diaphragm, it excels in operational efficiency and responds smoothly to wide field of view. It creates high-level images and excels in the cost performance at the same time.



# ACS Function

## ACS Function

mxG-2016Z mxG-5040RZ mxG-5040SZ mxG-10C mxG-MACROZ VI


### Unique Functions To Avoid Erroneous Selections


The MXG series is combining the Hirox MX Mount with the newly developed ACS function: Automatic Calibration Select. This original Hirox function detects and sends the magnification data to the main unit by using one of the smallest high-sensitivity sensors embedded into the lens.

The ACS function make sure that calibration values are accurately selected in real time. It allows high-level reproduction while producing efficient and accurate measurement operations. It frees users from mistakes and troublesome operations.




Lighting method —	magnification 20~160x	View 15.4~2.0mm(H)	Working distance 44mm	Depth of Field 13.3~0.25mm	ACS ○	Weight 350g
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ACS FUNCTION


**[Lens Holder]**




HS-CH (V7)  
Lens holder



[Holder Mounted]



HS-CH (V4)  
Lens holder



[Holder Mounted]

By using a lens holder, the lens can be stably fixed onto the stand.

※ The photo shows AD-2016H being mounted.

# MXG-2016Z

**Low-magnification Zoom Lens with ACS Function [20-160x]**

## Automatic Calibration Select. Evolution of Standard Lens.

This zoom lens features a compact body enabling hand-held operations and can be used for various purposes using the different available screw type adaptors. By applying ACS functions, it prevents erroneous calibration selections. By using low or high magnification adaptors, the lens covers a magnification range from 6x up to 320x.

ADAPTER	AD-2016H Non-Contact Adapter	AD-2016S Variable Lighting Adapter	AD-2016SV Contact Adapter	AD-2016LOW Low-magnification Adapter [6-48x]	AD-2016HI High-magnification Adapter [40-320x]
	 [included]	 [included]	 [included]	 [included]	 [included]
Lighting Method	Dark field vertical lighting	Variable lighting	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	44mm	0mm	0mm	132mm	20mm
Weight	8g	49g	17g	29g	9g

ADAPTER	AD-2016SL Z-Axial Measurement Laser Slit Light Adapter	AD-2016LOWR Low-magnification Rotary-Head Adapter [6-48x]	AD-2016L(S/L) Side View Inspection	AD-2016D Diffuse Lighting Adapter	AD-2016HIS High-magnification Variable Angle Lighting Adapter [40-320x]
	 ※1	 [included]	 [included]	 [included]	 [included]
Lighting Method	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting	Diffuse Lighting	Variable Angle Lighting
Working Distance	29.6mm	27mm	10.5~15.5mm	0~4mm	1mm
Weight	244g	288g	36g (S) , 41g (L)	26g	53g

ADAPTER	AD-2016P Polarizing Adapter	AD-2016C Co-axial Lighting Adapter	AD-2016RLM Rotary-Head Adapter	AD-2016RLD Diffuse Lighting Adapter
	 [included]	 [included]	 [included]	 [included]
Lighting Method	Polarizing filter lighting	Co-axial lighting	Dark field vertical lighting	Diffuse Lighting
Working Distance	31mm	10.5mm	12mm	AD-2016RLM Working distance -1mm
Weight	22g	253g	237g	2g

※1 AC adaptor included. ※2 adapter is mounted on AD-2016RLM

**OPTION**

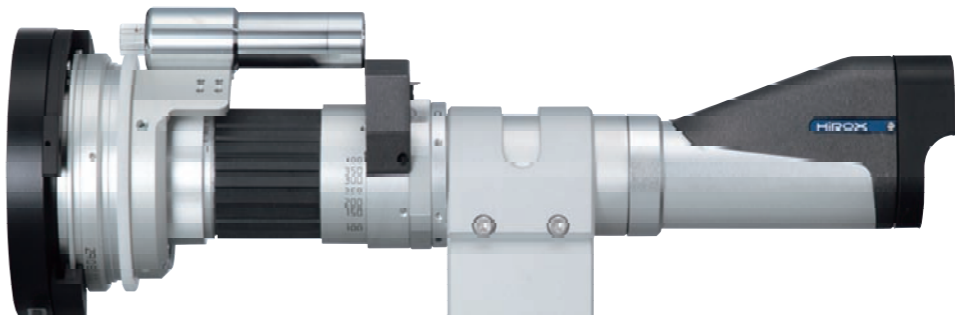



CT-1  
Rotary head controller

Rotational speed control  
Rotational direction control  
Weight 935g

※Controllers for AD-2016RLM, AD-2016 LOWR.

Lighting Method —	Magnification 50~400x	View 6.1~0.78mm(H)	Working Distance 54mm	Depth of Field 2.7~0.08mm	ACS ○	Weight 735g
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ACS FUNCTION






※ The photo shows AD-5040HS being mounted.



# MXG-5040RZ

**Zoom Lens with ACS Function [50-400x]**

## Evolving All-Purpose Lens To Achieve Further Accuracy, Efficiency

This multi function zoom lens is equipped with many different optical adaptors. By mounting a rotary head, it enables 3-dimensional observations of images using a 360 degrees rotational view. To improve the operational efficiency, each optical adapter uses a "snap-on" system and can be replaced in one-touch. This lens covers a magnification range from 20x up to 800x. By using the ACS functions, the operational efficiency is further enhanced.

ADAPTER	AD-5040HS Non-contact Adapter	AD-5040DS Diffuse Lighting Adapter	AD-5040SVS Contact Adapter	AD-5040LOWRS Low-magnification Rotary-Head Adapter [20-160x]	AD-5040HIRS High-magnification Rotary-Head Adapter [100-800x]
	 [Accompaniments]	 ※1	 ※1	 [included]	 [included]
Lighting Method	Dark field vertical lighting	Diffuse lighting	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	54mm	4mm	0~1.5mm	28.5mm	3.5mm
Weight	68g	36g	100g	266g	173g

ADAPTER	AD-5040RVS Variable Angle Rota-Head Adapter	AD-5040RVD Diffuse Adapter	AD-5040LWS Low-magnification Adapter [20-160x]	AD-5040HIS High-magnification Adapter [100-800x]	AD-5040SS Variable Lighting Adapter
	 [included]	 ※2	 [included]	 [included]	 [included]
Lighting Method	Dark field vertical lighting	Diffuse lighting	Dark field vertical lighting	Dark field vertical lighting	Variable lighting
Working Distance	25mm(25°), 19mm(35°), 14mm(45°), 9mm(55°)	AD-5040RVS Working distance -1mm	80mm	20mm	6~21mm
Weight	124g	2g	180g	108g	285g

ADAPTER	AD-5040SHIS High-magnification Variable Angle Lighting Adapter [100-800x]	AD-5040CS Co-axial Lighting Adapter	AD-5040PS Polarizing Adapter	AD-5040SLS Z-Axial Measurement Laser Slit Light Adapter	AD-5040VLS Lift of Adapter
	 [included]	 [included]	 [included]	 [included]	 [included]
Lighting Method	Dark field vertical lighting	Co-axial lighting	Polarizing filter lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	1.6mm	21mm	54mm	23mm	3mm
Weight	176g	325g	87g	300g	100g

※1 The lens is mounted on AD-5040HS ※2 Mounting on AD-5040RVS ※3 AC adaptor included.

**OPTION**

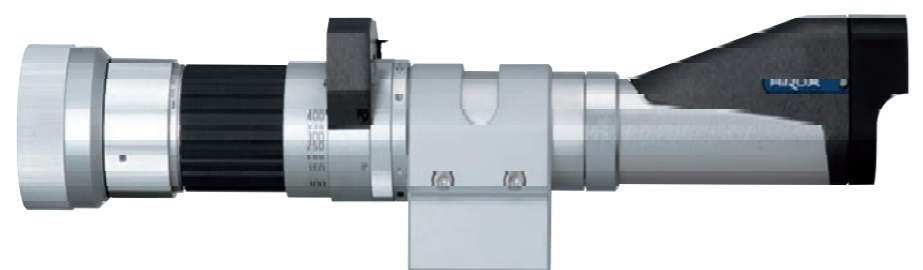


CT-1  
Rotary head controller

Rotational speed control  
Rotational direction control  
Weight 935g

※Controllers for AD-5040LOWRS, AD-5040HIRS, AD-5040RVS.

Lighting Method —	Magnification 50~400x	View 6.1~0.78mm(H)	Working Distance 63mm	Depth of Field 2.7~0.08mm	ACS ○	Weight 540g
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ACS FUNCTION

※The photo shows AD-5040H being mounted.

# MXG-5040SZ

**Zoom Lens with ACS Function [50-400x]**

## Adding ACS Functions to Designs We Pride In

This zoom lens has a compact design and allows hand-held operations. By mounting the snap-on switching adapter, it enables most of MX-5040RZ adapters to be used (except for the motorized rotary head), responding to various inspection purposes. This lens covers a magnification range from 20x up to 800x. ACS functions allow more accurate observations.

ADAPTER	AD-5040H Non-contact Adapter [included]	AD-5040LOW Low-magnification Adapter [20-160x]	AD-5040HI High-magnification Adapter [100-800x]	AD-5040SHI High-magnification Variable Angle Lighting Adapter[100-800x]
Lighting Method	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting	Variable lighting
Working Distance	63mm	80mm	29mm	1.6mm
Weight	32g	180g	100g	138g


ADAPTER	AD-5040SD Snap-on adapter
Lighting Method	Counting on Snap-Type Adaptors
Working Distance	Counting on Snap-Type Adaptors
Weight	48g

※By attaching the snap-type switching adaptor, MX-5040RZ-adaptors can be applied.

## MX-5040RZ ADAPTER

AD-5040HS	AD-5040DS	AD-5040SVS	AD-5040LWS	AD-5040HIS	AD-5040SS	AD-5040SHIS	AD-5040CS
AD-5040PS	AD-5040SLS	AD-5040VLS	※Please refer to the MX-5040RZ pages for details of the adaptor.				

Lighting method Co-axial lighting	Magnification ※Magnification, field of view, working distance and depth of field depend on the selected objective lens.	View	Working Distance	Depth of Field	ACS ○	Weight 670g
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ACS FUNCTION

※This photo shows OL-700 II being mounted.

# MXG-10C

**Co-axial 10x Zoom Lens with ACS Function**

## ACS Functions Support High-Level Optical Observations

This highly scalable zoom lens is based on the same-axis epi-illumination and uses replaceable objective lenses, covering magnification ranges from 35x up to 7000x. Our unique optical design allows the use of side-lighting adapters (rotary angle lighting, directional lighting adapter or polarizer) for the finest detailed observations. ACS functions support high-level observations.

ADAPTER	AD-10S Directional Lighting Adapter	AD-10P Polarizing Adapter	AD-10R Optical Rota Adapter
Weight	10g	11g	8g

LENS	OL-35	OL-70 II	OL-140	OL-140 II	OL-350 II	OL-700 II
Lighting Method	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting
Magnification	35~350x	70~700x	140~1400x	140~1400x	350~3500x	700~7000x
View	9.83~1.05mm (H)	4.42~0.47mm (H)	2.46~0.26mm (H)	2.21~0.23mm (H)	0.88~0.09mm (H)	0.44~0.04mm (H)
Working Distance	34mm	21mm	30.5mm	12mm	10.6mm	3.4mm
Depth of Field	0.92~0.1mm	0.44~0.024mm	0.114~0.012mm	0.09~0.0076mm	0.041~0.0024mm	0.01~0.0007mm
Weight	230g	89.5g	257.2g	117.5g	125.4g	145.9g

OPTION	NR-405-OL Ring illumination for OL series
Lighting method	Ring Lighting
Main Unit	Compatible with KH-3000·1300-7700 main bodies
Weight	108g
※Compatible with OL-35, -70 II, -140, -140 II, -350 II Lens. [Ring Mounted]	

Lighting Method Dark field vertical lighting	Magnification ∞~5x, 5~50x	View ∞~59~6.1mm(H)	Working Distance ∞~90mm	Depth of Field —	ACS ○	Weight 440g
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[Newly Developed Macro Switch]



By pushing the switch, it allows switching between macro and zoom.

# MXG-MACROZ VI

Macro Zoom Lens with ACS Function [0-50x]

## Automatic Calibration Select, Macro Zoom Lens

0x-50x, now with integrated Auto Calibration Select (ACS) maintains the magnification calibration while zooming. Constant focus from 5x-50x zoom range and built-in lighting.




CX-Mount Lens

# CX-MOUNT LENS


## HIROX Lens For Various Observation Situations

CX Mount Lens is a lens series compatible with the standard C-mount cameras. HIROX has created an optical design that is in unity with illumination. This lens series delivers the same quality Hirox is famous for, while making it available for various settings. Welcome to the world of HIROX.

Lighting Method	Magnification	View	Working Distance	Depth of Field	ACS	Weight
—	50~400x	6.1~0.78mm(H)	54mm	2.7~0.08mm	—	695g




[AD-C]




CX→MX Mount Replacement  
By replacing the mount, it can be connected to the main unit of the KH series.

※The photo shows AD-5040HS being mounted.

Lighting Method	Magnification	View	Working Distance	Depth of Field	ACS	Weight
—	50~400x	6.1~0.78mm(H)	63mm	2.7~0.08mm	—	510g



[AD-C]



CX→MX Mount Replacement  
By replacing the mount, it can be connected to the main unit of the KH series.

※The photo shows AD-5040H being mounted.

# CX-5040RZ

Zoom Lens [50-400x]

## A Full Range Of Adaptors To Suit Every Purpose

This multi function zoom lens is equipped with many different optical adaptors. By mounting a rotary head, it enables 3-dimensional observations of images using a 360 degrees rotational view. To improve the operational efficiency, each optical adaptor uses a "snap-on" system and can be replaced in one-touch. This lens covers a magnification range from 20x up to 800x.

# CX-5040SZ

Zoom Lens [50-400x]

## Flexible Optical Designs That Help Expand The World

This zoom lens has a compact design and allows hand-held operations. By mounting the snap-on switching adaptor, it enables most of MX-5040RZ adaptors to be used (except for the motorized rotary head), responding to various inspection purposes. This lens covers a magnification range from 20x up to 800x.


ADAPTER	AD-5040HS	AD-5040DS	AD-5040SVS	AD-5040LOWRS	AD-5040HIRS
	Non-contact Adapter	Diffuse Lighting Adapter	Contact Adapter	Low-magnification Rotary-Head Adapter [20-160x]	High-magnification Rotary-Head Adapter [100-800x]
Lighting Method	Dark field vertical lighting	Diffuse Lighting	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	54mm	4mm	0~1.5mm	28.5mm	3.5mm
Weight	68g	36g	100g	266g	173g

ADAPTER	AD-5040RVS	AD-5040RVD	AD-5040LWS	AD-5040HIS	AD-5040SS
	Variable Angle Rota-Head Adapter	Diffuse Adapter	Low-magnification Adapter [20-160x]	High-magnification Adapter [100-800x]	Variable Lighting Adapter
Lighting Method	Dark field vertical lighting	Diffuse Lighting	Dark field vertical lighting	Dark field vertical lighting	Variable lighting
Working Distance	25mm(25°), 19mm(35°), 14mm(45°), 9mm(55°)	AD-5040RVS Working distance-1mm	80mm	20mm	6~21mm
Weight	124g	2g	180g	108g	285g

ADAPTER	AD-5040SHIS	AD-5040CS	AD-5040PS	AD-5040SLS	AD-5040VLS
	High-magnification Variable Angle Lighting Adapter[100-800x]	Co-axial Lighting Adapter	Polarizing Adapter	Z-Axial Measurement Laser Slit Light Adapter	Lift off Adapter
Lighting Method	Dark field vertical lighting	Co-axial lighting	Polarizing filter lighting	Dark field vertical lighting	Dark field vertical lighting
Working Distance	1.6mm	21mm	54mm	23mm	3mm
Weight	176g	325g	87g	300g	100g

※1 The lens is mounted on AD-5040HS ※2 Mounting on AD-5040RVS ※3 AC adaptor included.

OPTION		Rotational speed control Rotational direction control
	CT-1	Rotary head controller
		Weight 935g

OPTION		Main unit
	R-476	KMH-24 Compatible with Metal Halide Lamps
		Light Guide
		Weight 450g

OPTION		Lamp
	KMH-24	Metal Halide Lamp
		Main unit Compatible with R-476
		Weight 735g

※Controllers for AD-5040LOWRS, AD-5040HIRS, AD-5040RVS.

※Please make inquiries when using other lighting sources.

ADAPTER	AD-5040H	AD-5040LOW	AD-5040HI	AD-5040SHI
	Non-contact Adapter	Low-magnification Adapter [20-160x]	High-magnification Adapter [100-800x]	High-magnification Variable Angle Lighting Adapter[100-800x]
Lighting Method	Dark field vertical lighting	Dark field vertical lighting	Dark field vertical lighting	Variable lighting
Working Distance	63mm	80mm	29mm	1.6mm
Weight	32g	180g	100g	138g

ADAPTER	AD-5040SD
	Snap-on adaptor
Lighting Method	Counting on Snap-Type Adaptors
Working Distance	Counting on Snap-Type Adaptors
Weight	48g

※By attaching the snap-type switching adaptor, MX-5040RZ-use adaptors can be applied.

MX-5040RZ ADAPTER							
AD-5040HS	AD-5040DS	AD-5040SVS	AD-5040LWS	AD-5040HIS	AD-5040SS	AD-5040SHIS	AD-5040CS
AD-5040PS	AD-5040SLS	AD-5040VLS					


※Please refer to the MX-5040RZ pages for details of the adaptor.

OPTION		Main unit
	R-476	KMH-24 Compatible with Metal Halide Lamps
		Light Guide
		Weight 450g


OPTION		Lamp
	KMH-24	Metal Halide Lamp
		Main unit Compatible with R-476
		Weight 735g

※Please make inquiries when using other lighting sources.

Lighting Method Co-axial lighting	Magnification ※Magnification, field of view, working distance and depth of field depend on the selected objective lens.	View	Working Distance	Depth of Field	ACS —	Weight 645g
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[AD-C]






**CX→MX Mount Replacement**  
By replacing the mount, it can be connected to the main unit of the KH series.

※This photo shows OL-700 II being mounted.

# CX-10C

## Co-axial 10x Zoom Lens



**By Changing The Objective, 6 Magnification Ranges Are Enabled.**  
This highly scalable zoom lens is based on the same-axis epi-illumination and uses 6 replaceable objective lenses, covering magnification ranges from 35x up to 7000x. Our unique optical design allows the use of side-lighting adapters (rotary angle lighting, directional lighting adapter or polarizer) for the finest detailed observations.

ADAPTER	 AD-10S Directional Lighting Adapter [included]	 AD-10P Polarizing Adapter	 AD-10R Optical Rota Adapter <small>PAT</small>
Weight	10g	11g	8g

LENS	 OL-35	 OL-70 II	 OL-140	 OL-140 II	 OL-350 II	 OL-700 II
Lighting Method	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting	Co-axial lighting
Magnification	35~350x	70~700x	140~1400x	140~1400x	350~3500x	700~7000x
View	9.83~1.05mm (H)	4.42~0.47mm (H)	2.46~0.26mm (H)	2.21~0.23mm (H)	0.88~0.09mm (H)	0.44~0.04mm (H)
Working Distance	34mm	21mm	30.5mm	12mm	10.6mm	3.4mm
Depth of Field	0.92~0.1mm	0.44~0.024mm	0.114~0.012mm	0.09~0.0076mm	0.041~0.0024mm	0.01~0.0007mm
Weight	230g	89.5g	257.2g	117.5g	125.4g	145.9g

OPTION	 R-576 Light Guide	Main unit Weight	 KMH-24 Metal Halide Lamp	Lamp Main unit Weight
		KMH-24 Compatible with Metal Halide Lamps 218g		Metal Halide Lamp R-576 Compatible 735g

※Please make inquiries when using other lighting sources.

OPTION	 NR-405-OL Ring illumination for OL series	Lighting method Main unit Weight	Ring Lighting Compatible with KH-3000·1300·7700 main bodies 108g	 [Light Ring Mounted]
			※Compatible with OL-35, -70 II, -140, -140 II, -350 II Lens.	

Lighting Method Dark field vertical lighting	Magnification ∞~5x, 5~50x	View ∞~59~6.1 mm(H)	Working Distance ∞~90mm	Depth of Field —	ACS —	Weight 286g
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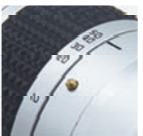


[AD-C]



**CX→MX Mount Replacement**  
By replacing the mount, it can be connected to the main unit of the KH series.

[Newly Developed Macro Switch]

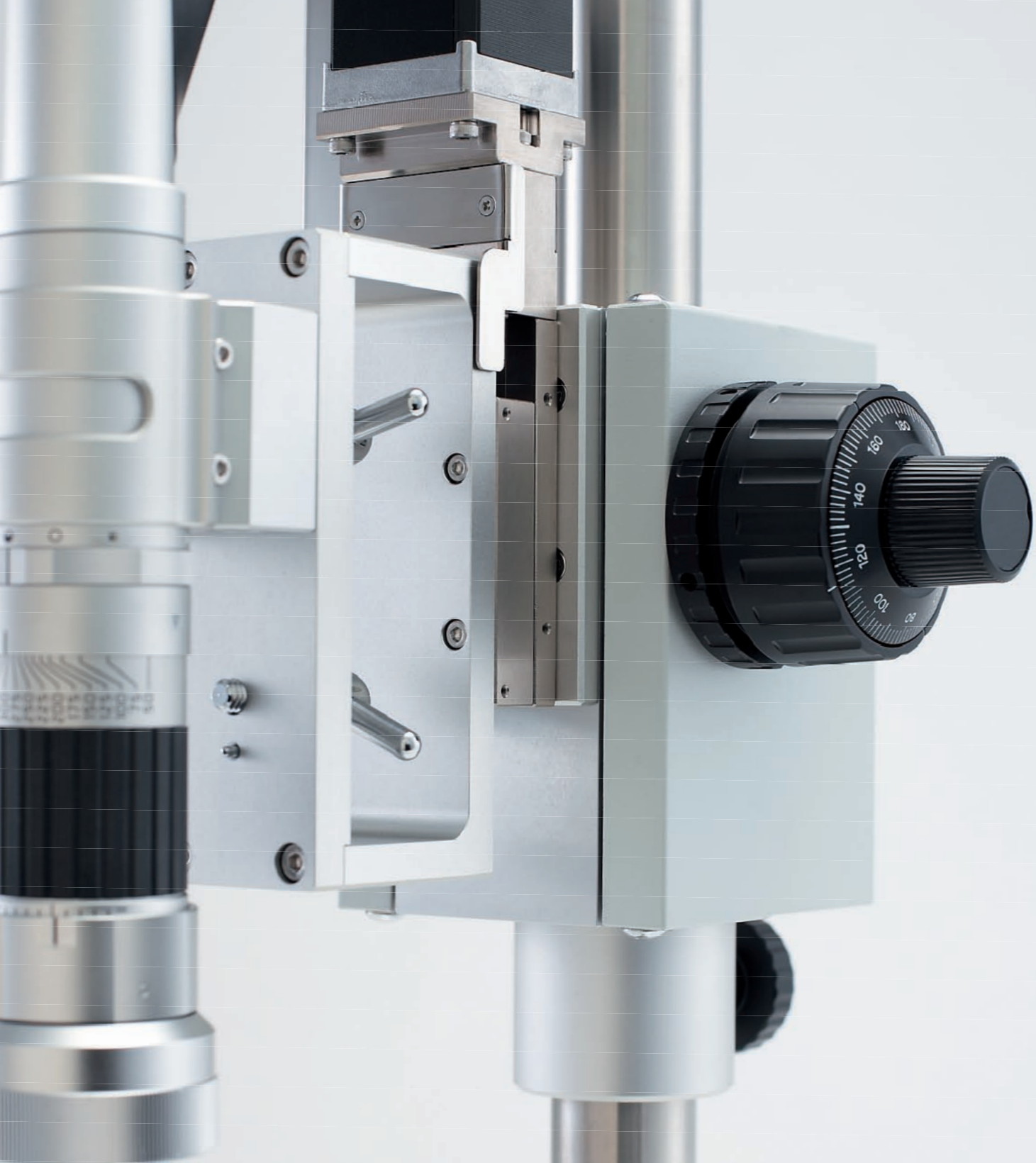


By pushing the switch, it allows switching between macro and zoom.

# CX-MACROZ VI

## Macro Zoom Lens [0-50x]

**A New Development For Free Macro and Zoom Operations**  
This newly developed macro zoom lens covers magnification ranges from 0x up to 50x. By changing the macro switch, the lens can be used as a macro lens under the range of ∞~5x and as a zoom lens under 5~50x thanks to our unique lens design. Lighting is embedded to allow data-taking under various environments.



Stand, Stage, Unit

# STAND & STAGE/UNIT

## Connecting Lens to Human Hands

Lenses can deliver their full capabilities when operated by human hands while connected to an intelligent and robust stand system. The stand is thus a place that connects the lens and the hands. We therefore have pursued high precision and usability in our stands. We have confidence in our lenses. We also have confidence in our stands.

### ST-HE

Standard light-weight stand

This stand is suitable for low-magnification inspection. It is light and easy to carry.

Size	150X230X34 · 444 · φ 20
Weight	2.4kg

\*Compatible with XY Stage (AS-XY). Separately sold



### ST-HN

Standard Stand

This stand is suitable for with low- to medium- magnification inspection. With a simple structure, it suits every purpose.

Size	200X270X38 · 443 · φ 20
Weight	5.5kg

\*Compatible with XY Stage (AS-XY)-and with transmitted illumination XY Stage (AS-XYB), transmitted illumination unit (AS-B) can be attached. (All separately sold).



### ST-HU2

High Precision Stand

This stand is capable of high-precision height adjustments and is suitable for all purposes.

Size	200X270X38 · 443 · φ 20
Weight	6.0kg

\*Compatible with XY Stage (AS-XY)-and with transmitted illumination XY Stage (AS-XYB), transmitted illumination unit (AS-B) can be attached. (All separately sold).



### ST-HL

Large Size Stand

This stand is suitable for observing large objects. With a stable arm, it facilitates observations of large-size objects.

Size	500X640X37 · 657 · φ 29
Weight	12.0kg

\*Compatible with the large XY push table (AS-XYL). Sold separately



### ST-0E

High Precision Stand

This is a super high-precision stand that is capable of high-precision height adjustments and is influenced little by vibrations because of its stable structure.

Size	340X347X42 · 270 · φ 20
Weight	5.89kg

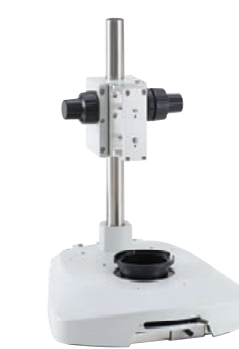


### ST-0B

High Precision Stand with Backlighting

This stand is capable of super high-precision height adjustments and is resistant to vibrations because of its stable structure.

Size	340X347X82 · 270 · φ 32
Weight	9.12kg



### ST-AU

Inclination Stand

This stand enables side view observation with 180 degrees inclination pole. This is an Hirox unique design.

Size	380X320X42 · 537~573 · φ 20
Weight	11.0kg

\*Compatible with XY Stage (AS-XY). Separately sold



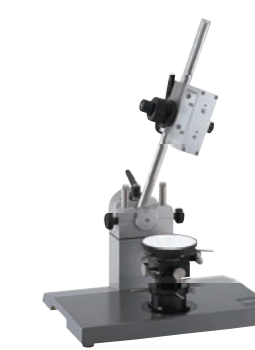
### ST-AUR

Inclination Stand with Rotational Stage

This stand enables side view observation with 180 degrees inclination pole. The stage can also be rotated to allow observations from any angles. This is an Hirox unique design.

Size	380X320X42 · 573~610 · φ 20
Weight	12.1kg

\*Compatible with XY Stage (AS-XY). Separately sold



### ST-HU32

Z-Axis Motor Stand

This high-precision stand includes a motorized Z-Axis and is suitable for high-magnification inspection. (Enables Height measurement, Multi Focus, 3D Profiling and more when combined with CT-7 and KH-7700).

Size	200X270X38 · 448 · φ 32
Weight	6.7kg

\*ST-HU32 (consisting of ST-U32 Base Pole parts & ST-HZ Electric Bloc parts)  
 \*Compatible with XY Stage (AS-XY)-and with transmitted illumination XY Stage (AS-XYB), transmitted illumination unit (AS-B) can be attached. (All separately sold).  
 \*Control of the Z-axis is made by Motor controller (CT-7) (Separately sold).



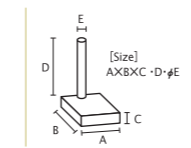
### ST-HU32-FB

Z-Axis Motor Stand with Manual Fine Adjustment

This high-precision stand includes a motorized Z-Axis and is suitable for high-magnification inspection. Long-distance adjustments can be made by hand and short ones are electrically operated. (Enables Height measurement, Multi Focus, 3D Profiling and more when combined with CT-7 and KH-7700).

Size	200X270X38 · 448 · φ 32
Weight	10.0kg

\*ST-HU32 (consisting of ST-U32 Base Pole parts & rough slight movement & ST-HZ Electric Bloc parts)  
 \*Compatible with XY Stage (AS-XY)-and with transmitted illumination XY Stage (AS-XYB), transmitted illumination unit (AS-B) can be attached. (All separately sold).  
 \*Control of the Z-axis is made by Motor controller (CT-7) (Separately sold).

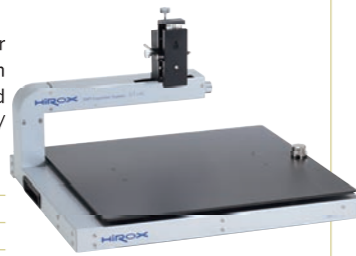


### ST-HK

Stand for BGA

This stand has been designed for BGA inspection. Our original design allows the lens to move vertically and the prism chip to be easily attached / removed from the lens.

Size	410X466X75 · 290
Weight	7.9kg



### AS-BH

BGA Substrate holder

This PCB holder helps to stably fix double-face packaging substrates. It is suitable for various substrates including BGA.

Size	175X144
Weight	2.71 kg



### AS-XY

XY Stage

This stage enables objects to be fixed for observations. It helps improve operational efficiency by facilitating the fixing and removing of objects.

Size	175X144
Weight	0.86kg

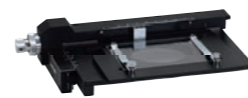


### AS-XYB

XY Stage for Backlighting

This stage is fit for transmitted illumination. It casts lights from under the observed objects to allow objects.

Size	175X144
Weight	0.863kg



### AS-XYL

Large XY Stage

This large stage enables users to slide its upper part to easily observe large-sized objects.

Size	390X390
Weight	7.85kg



### AS-B

Backlighting Unit

This unit allows observations with transmitted illumination by installing it into the base parts of a stand.

Weight	107g
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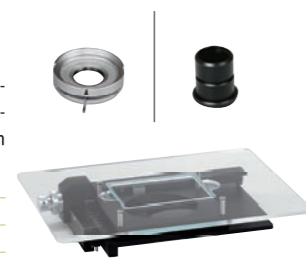


### AS-BP

Crystal Transmission Observation Unit

This unit allows observations of inflection rates and organizational directions that cannot be viewed with regular lighting.

Size	180X140
Weight	1.85kg



### AS-DFR

Variable Transmitted Illumination Unit

This unit allows observations of differential interference images. It is an optically designed product equipped with transmitted illumination and differential interference sliders.

Size	175X144
Weight	3.055kg

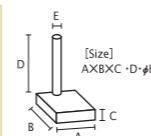


### CT-7

Motor Controller

This controller controls electrically operated stages. It allows various setups and operations to suit the purposes.

Size	210X159X63
Weight	1.355kg



## Maximizing Lens Capabilities

HIROX is not only a lens maker but also a pioneer in video microscopy. HIROX's digital microscopes enhance our lens in the best possible way. Our microscopes are equipped with highly advanced functions based on unique optical designs. They allow everyone to make the most optimal observations by maximizing the capability of a lens, while keeping in mind the ease of use. The possibility of our lens thus expands almost infinitely with our digital microscopes, combining the best light sources, the highest quality CCD cameras and much more in a compact system.

### KH-7700



The KH-7700 is an all-purpose digital microscope that brings together various functions from observation on a high resolution display to measurement, analysis, recording, management and outputs (6x USB, DVD burner, 160Go Hard Drive, Print, Network Connection, ...). With its 3D measurement functions, it helps accurately grasp the 3-dimensional expressions of the observed objects. Easy to carry and delivered with a complete software package, it is probably the most evolved video microscope.

### KH-1300



The KH-1300 digital microscope is specialized for high-resolution images and videos, displayed on external screen or connected to a PC. It is equipped with a Firewire port in an industry's first allowing high-speed transmissions. It can be customized by adding functions as necessary so that observation environments are created freely to suit every purpose.

## MAIN UNIT

Main Unit