
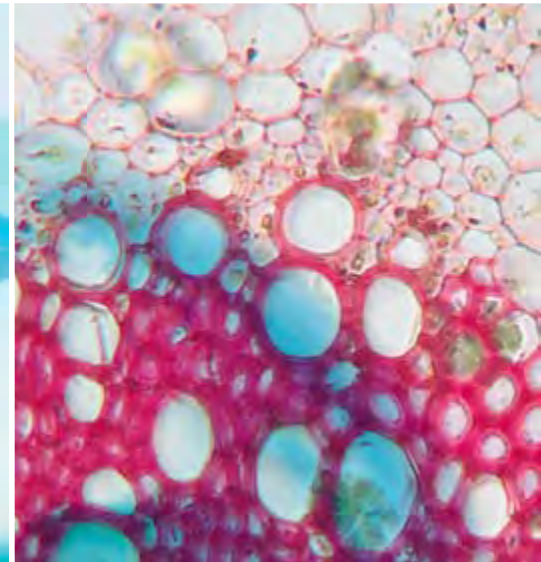
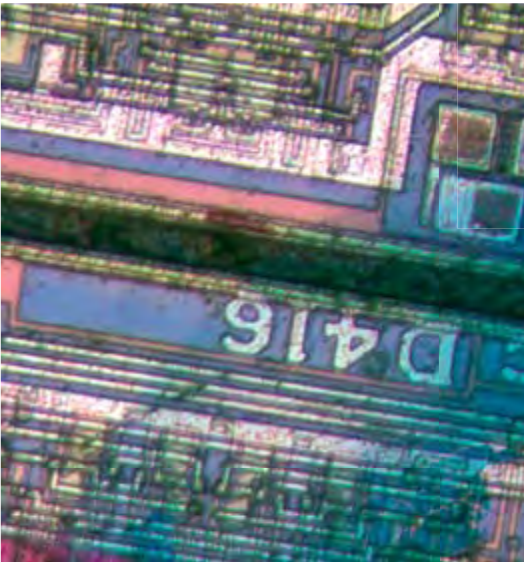
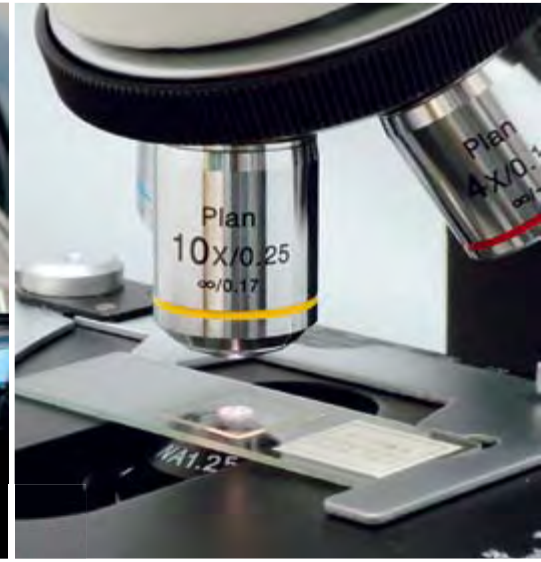




# MICROSCOPE & OPTICAL CATALOG

Kyowa Optical Co.,Ltd  
General Catalog

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# Industrial optics system Compact microscope with devices

## Techno-Lux KTL-N series Small, lightweight, compact microscope for production lines

- Small, lightweight. Compact microscope for production lines.
- Able to be designed to fit the shape in various devices.
- Adoption of infinity-corrected optics.
- Model selection is facilitated by the line-up of various models.

KTL-N1□type



(For f = 200)

KTL-N2□type



(For f = 180)

KTL-N3□type



KTL-N2□Wtype



(Type twin lenses)

KTL-N4□type



(Type 90° bend barrel)

### Specifications

Type(*note 1)	KTL-N1□Type	KTL-N2□Type		KTL-N3□Type	KTL-N2□W Type	KTL-N4□Type
f (focal length)	200mm	200mm	180mm	200mm	200mm	200mm
Magnification imaging lens	1 time					
Camera application	Less than or equal to 2/3 inch camera (specification C-mount)					
Coaxial illumination	×	φ8 spot lighting can be installed				
Corresponding Objective lens	Infinity objective lens (for f = 200mm)	Infinity objective lens (for f = 200mm)	Infinity objective lens (for f = 180mm)	Infinity objective lens (for f = 200mm)	Infinity objective lens (for f = 200mm)	Infinity objective lens (for f = 200mm)
Specifications Dimensions Mounting basic objective lens	M25P0.75	M25P0.75	20.32/36pitch	20.32/36pitch	M25P0.75	M25P0.75
Conversion adapter	*Note 2					
Number of revolver holes	×	×	×	○4 holes	×	×
Eyepiece included	×	×	×	×	○	×
Weight (Not including lens)	170g	275g	270g	545g	430g	327g

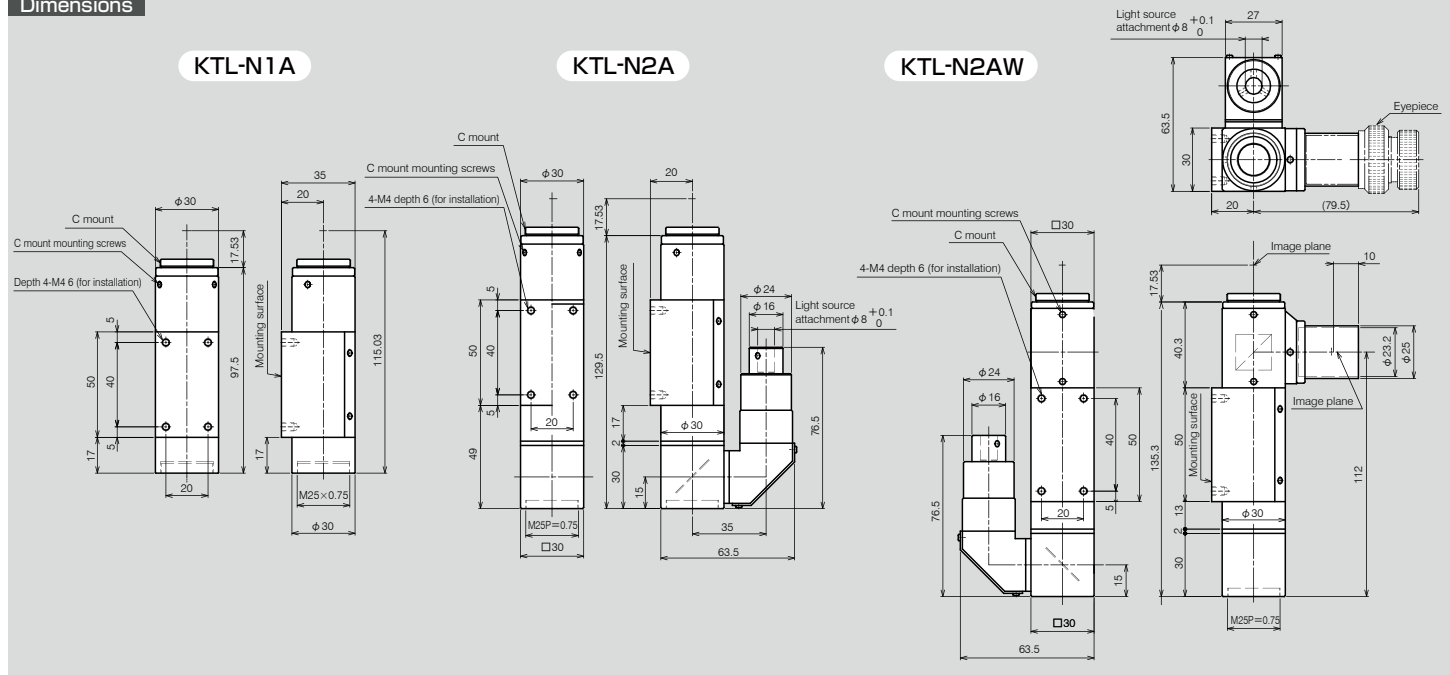
\*Note 1: Each type of in □, enter the number of the following by the standard objective lens mounting.

A: M25P0.75, B: 20.32/36pitch (for f = 180), C: 26/36pitch, D: 20.32/36pitch (for f = 200)

\*Note 2: The following uses of a conversion adapter ①~④ are available, please select when ordering according to the application.

①M25P0.75→20.32/36pitch, ②20.32/36pitch→M25P0.75, ③20.32/36pitch→26/36pitch, ④M25P0.75→26/36pitch

### Dimensions



# Infinity-corrected objective lens optical system

Same focal distance 95mm (for f = 200)

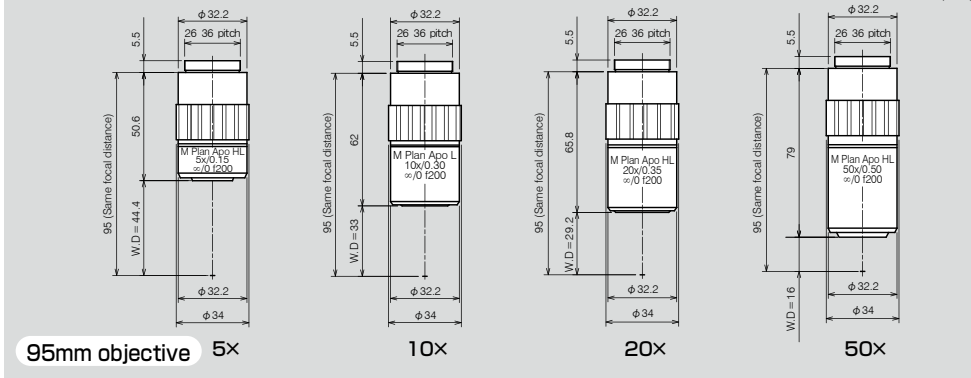
Same focal distance 45mm (for f = 200)



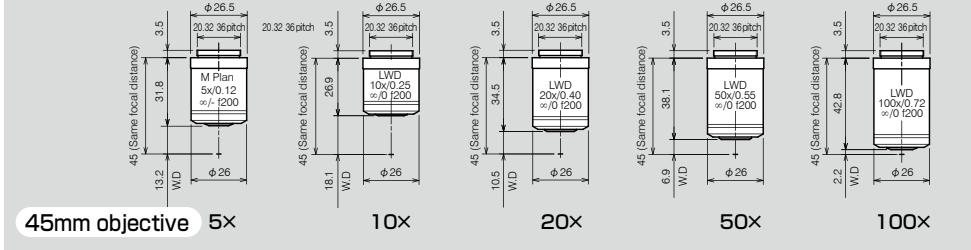
## Specifications

Objective lens	Same focal distance 95mm infinity objective lens				Same focal distance 45mm infinity objective lens				
Magnification	5×	10×	20×	50×	5×	10×	20×	50×	100×
Numerical aperture N.A.	0.15	0.3	0.35	0.5	0.12	0.25	0.4	0.55	0.72
Working distance W.D.	44.4mm	33mm	29.2mm	16mm	13.2mm	18.1mm	10.5mm	6.9mm	2.2mm
Focal length f	40mm	20mm	10mm	4mm	40mm	20mm	10mm	4mm	2mm
Resolution R	2.2μm	1.1μm	0.95μm	0.67μm	2.7μm	1.3μm	0.83μm	0.61μm	0.465μm
Weight	260g	320g	340g	420g	80g	76g	96g	100g	106g

## Dimensions



## Dimensions



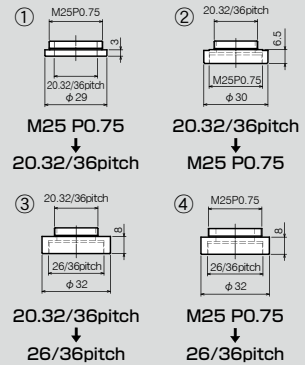
## KTL-N cradle unit

Achieve a compact design and excellent resistance.

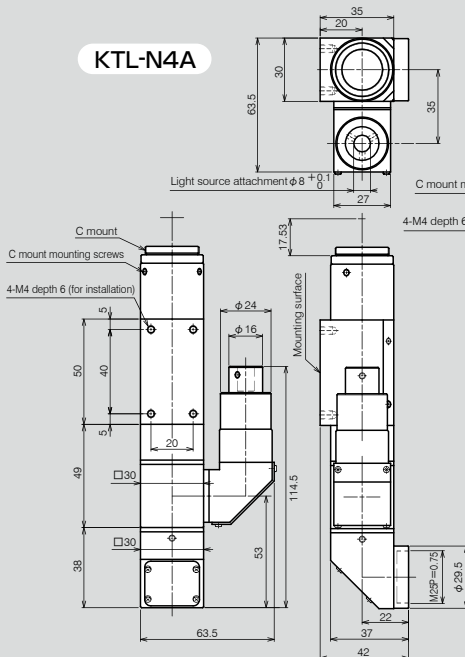


## Dimensions

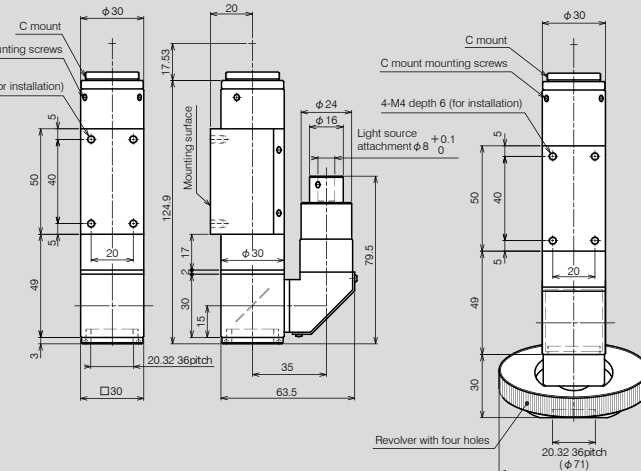
Type of conversion adapter



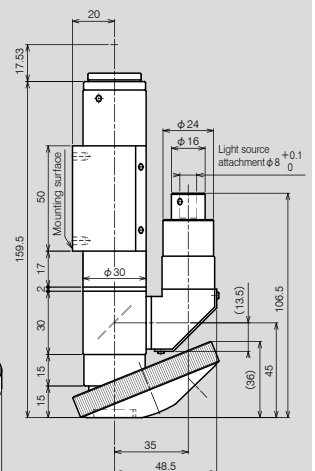
## KTL-N4A



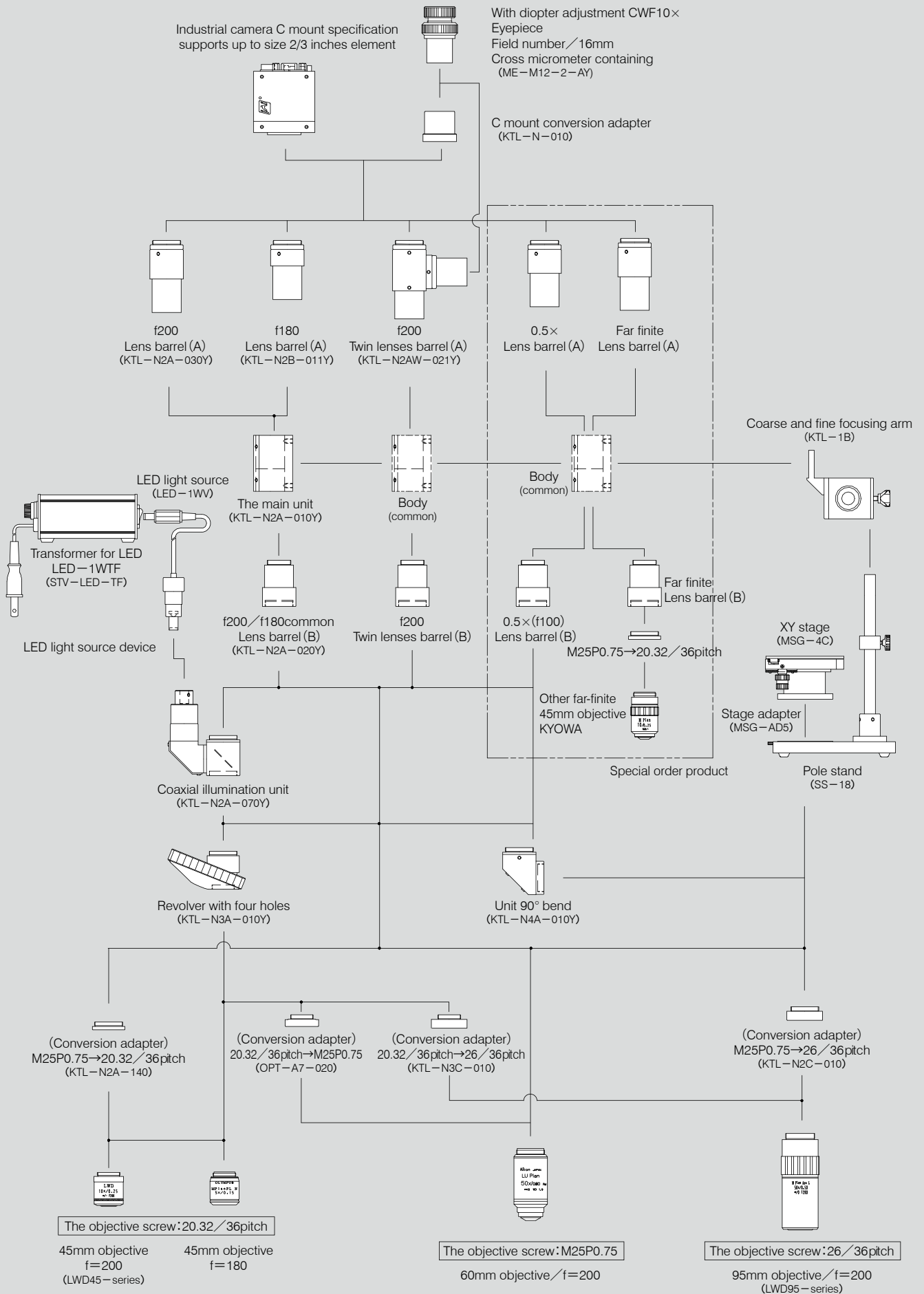
## KTL-N2B



## KTL-N3D



# KTL system diagram



# Auto zoom Auto Macro zoom ultra-wide viewing

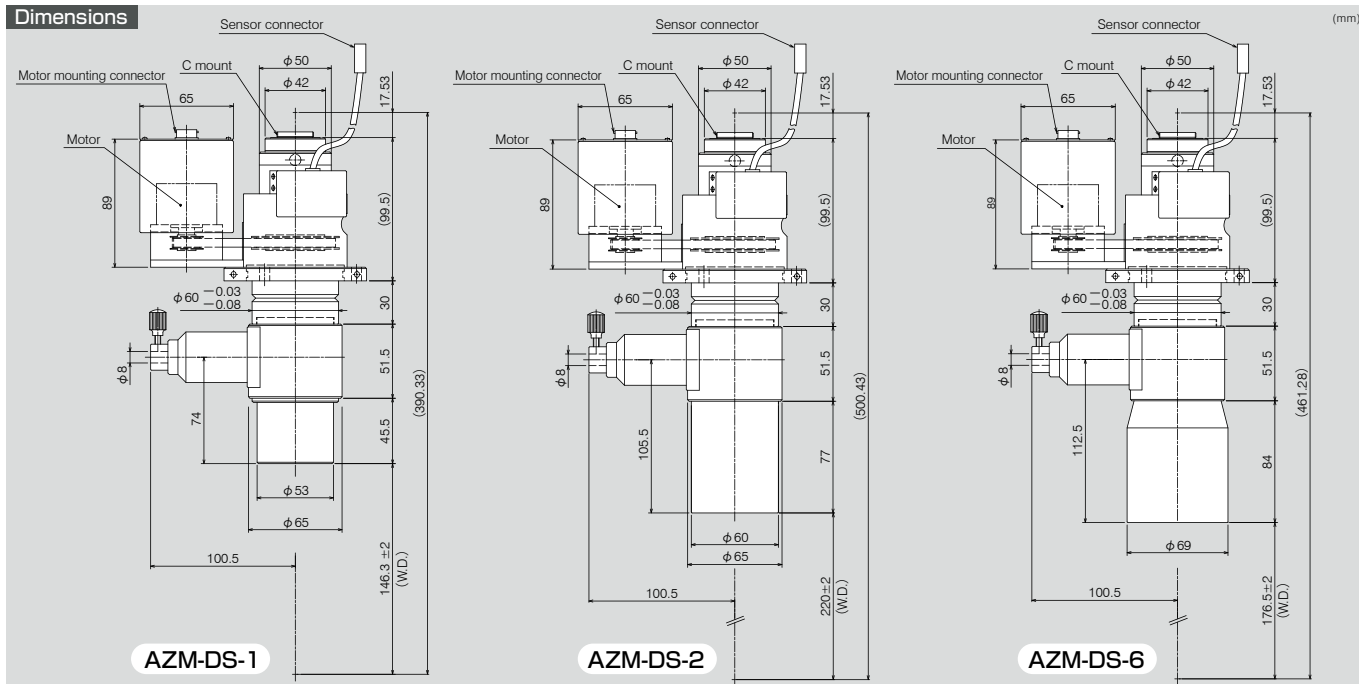
Meet the needs of semiconductor manufacturing, automation of FA machine.  
Macro zoom ultra-wide field of view equipped with auto zooming mechanism.



## Specifications

Model	AZM-DS-1	AZM-DS-2	AZM-DS-6
Magnification	0.14×~0.9×	0.15×~1.0×	0.14×~0.9×
Zoom ratio	1 : 6.4	1 : 6.6	1 : 6.4
Working distance (W.D.)	146.3±2mm	220±2mm	176.5±2mm
Depth of focus	19.6mm~1.2mm	26.8mm~0.69mm	17mm~0.85mm
Resolution	46μm~14.4μm	66μm~14.4μm	70μm~11μm
Actual field of view	25.7×34.2mm~4×5.3mm	24×32mm~3.6×4.8mm	34.2×45.9mm~5.3×7.1mm
Epi-illumination Coaxial	Light guide adapter CR-D (outlet diameter: φ8) ※ Optional LED lighting equipment		
Motor	High resolution stepping motor (pulley gear ratio = 3 : 1)		
Lens Mount	C mount (25.4U1)		
Camera	Industrial camera 1/3 inches.		Industrial camera 1/2 inches
Weight	1,870g	1,950g	2,040g

## Dimensions



EMZ-D1, D2, D3

## Specifications

Name		Model						
		EMZ-D1	EMZ-D2	EMZ-D3				
Model	Auto zoom lens barrel	Zoom objective lens 0.4×~2× zoom ratio 5 Built-in auto zooming mechanism 5-phase stepping motor 0.36 resolution Motor : pulley gear ratio = 3 : 1		Straight-tube C mount With TV adapter	EMZ-DE	●	●	●
	Epi-illumination Coaxial	Polarizer (polarizer, analyzer) insertion and removal formula With diffuser (φ22mm filter)		EMZ-CIL	●	●	●	
Master lens	Master lens 1×1/4 with wave plate		MSL-1	●	Available	Available		
	Master lens 0.75×1/4 with wave plate		MSL-2	Available	●	Available		
	Master lens 0.5×1/4 with wave plate		MSL-3	Available	Available	●		
Stand	Slider unit with stand	Stroke 150mm Outside diameter : 220mm(W)×320mm(D)×442mm(H)	LAS-400	Available	Available	Unavailable		
		Stroke 150mm Outside diameter : 220mm(W)×320mm(D)×710mm(H)	LAS-700	Available	Available	Available		
Weight				2,520g	2,610g	2,850g		

# Zoom lens for industrial

Covering a very wide range of micro-macro up as an inspection microscope for such as IC wafer and a liquid crystal pattern, we provide the optimal magnification observation image corresponding to the sample. (support coaxial epi-illumination device for both of EMZ-A and C)

## Built-in coaxial illumination / Macro zoom ultra-wide viewing EMZ-C1, C2, C3

Macro zoom ultra-wide viewing microscope is an optical device that can compensate for the ultra-wide viewing using by television cameras with coaxial epi-illumination. Taking out a large field of view such as a liquid crystal hybrid IC as the video at the same time, it is a microscope that can respond to speed-up of image processing.



EMZ-C

EMZ-A

### EMZ-C Specification

Name		Model		EMZ-C1	EMZ-C2	EMZ-C3
Body part	Zoom lens barrel	Zoom objective lens formula 0.4x~2x zoom ratio 5 Epi-illumination Coaxial Polarizer (Polarizer-analyzer) mounted	Straight-tube C mount With TV adapter	EMZ-CST	●	●
	LED lighting	Rated: 12V Current: 700mA MAX White LED	Cable length 2,000 mm	TS-LH	●	●
	Power transformer	Input voltage: AC100V Output current: 0~900mA Fuse: 1A	Weight About 263g	LED-1WTF	●	●
Master lens	Master lens 1 x 1/4 with wave plate		MSL-1	●	Available	Available
	Master lens 0.75 x 1/4 with wave plate		MSL-2	Available	●	Available
	Master lens 0.5 x 1/4 with wave plate		MSL-3	Available	Available	●
Stand	Slider unit with stand	Stroke 150mm Dimensions : 220mm (W) x 320mm (D) x 442 (H)mm	LAS-400	Available	Unavailable	Unavailable
		Stroke 550mm (By changing the mounting position) The amount of coarse movement 150mm Dimensions : 220mm (W) x 320mm (D) x 710 (H)mm	LAS-700	Available	Available	Available
Weight				1,995g	2,075g	2,315g

### EMZ-A Specification

Name		Model
Straight-tube	zoom ratio 6.25 0.8x~5x	EMZ-ST
LED lighting		TS-LH
Power transformer		LED-IWTF
TV adapter	0.7x	MZ-TV0.7x
	1x	MZ-TV1.0x

### Master lens Common EMZ-C and EMZ-D



Three master lens types are available. Magnifications are 1x, 0.75x and 0.5x. 1/4 wavelength plate for the coaxial incident illumination has been set at each of the master lenses.

### Optical performance table (EMZ-C, EMZ-D)

Model	Zoom magnification	Actual field of view(mm)	Working distance(W,D)
EMZ-C1 EMZ-D1	0.4x~2x (Master Lens 1x)	20x15~4x3	104mm
EMZ-C2 EMZ-D2	0.3x~1.5x (Master Lens 0.75x)	26.7x20~5.3x4	138mm
EMZ-C3 EMZ-D3	0.2x~1x (Master Lens 0.5x)	40x30~8x6	214mm

※Common EMZ-C and EMZ-D under using 2/3 inch CCD camera (resolution /0.015mm)

### Depth of focus (EMZ-C, EMZ-D)

Master lens Objective magnification zoom	1x		
	0.75x	0.5x	
0.4x	5.60mm	9.69mm	22.29mm
0.5x	4.08mm	7.11mm	16.20mm
1x	1.12mm	1.99mm	4.47mm
1.5x	0.65mm	1.16mm	2.60mm
2x	0.50mm	0.91mm	1.99mm

### Resolution (EMZ-C, EMZ-D)

Master lens Objective magnification zoom	1x		
	0.75x	0.5x	
0.4x	32μm	42μm	64μm
0.5x	28μm	37μm	56μm
1x	15μm	20μm	30μm
1.5x	12μm	16μm	24μm
2x	11μm	15μm	22μm

### Optical performance table (EMZ-A, FMZ-A)

Depth of focus  Resolution

Zoom magnification	Standard	Auxiliary objective lens (optional)				
		ZLA-0.5x	ZLA-0.75x	ZLA-1.5x	ZLA-2x	
0.8x	1.23mm	4.92mm	2.19mm	0.55mm	0.31mm	
	14.64μm	29.28μm	19.57μm	9.76μm	7.32μm	
1x	0.92mm	3.67mm	1.63mm	0.41mm	0.23mm	
	13.07μm	26.14μm	17.43μm	8.71μm	6.54μm	
2x	0.24mm	0.94mm	0.42mm	0.11mm	0.06mm	
	6.65μm	13.31μm	8.93μm	4.46μm	3.33μm	
3x	0.17mm	0.67mm	0.30mm	0.07mm	0.04mm	
	6.10μm	12.20μm	8.13μm	4.07μm	3.05μm	
4x	0.11mm	0.46mm	0.21mm	0.05mm	0.03mm	
	5.23μm	10.46μm	7.04μm	3.49μm	2.61μm	
5x	0.08mm	0.34mm	0.15mm	0.04mm	0.02mm	
	4.58μm	9.15μm	6.10μm	3.05μm	2.29μm	
Working distance (W,D)	EMZ-A	74mm ±1mm	134mm ±5mm	90mm ±3.5mm	37mm ±1.5mm	24.4mm ±1.1mm
	FMZ-A	79mm ±1mm	139mm ±5mm	95mm ±3.5mm	42mm ±1.5mm	29.4mm ±1.1mm

※ Common EMZ-A and FMZ-A, ... C mount TV adapter 1x, under using CCD camera (resolution/0.015mm).

※ EMZ-A ...For coaxial epi-illumination, vignetting may occur at more than 13 mm actual field of view.



### TV adapter

(common EMZ and FMZ)

Because TV adapter for C mount is available in two of the 1x and 0.7x, the monitor can be used properly according to the application of low-magnification plane.



Ideal for users who do not need a coaxial epi-illumination. Excellent cost performance. It is multi-purpose zoom microscope which works best in all industrial fields.

FMZ-A



**FMZ-A Specification**

Name		Model
Straight-tube	Zoom ratio 6.25 0.8×~5×	FMZ-ST
TV adapter	0.7×	MZ-TV0.7×
	1×	MZ-TV1×
Weight	1,015g	

**IMZ Series**

- A zoom lens working in the range of 0.8× to 5×, there is little blur and optical axis deviation when zooming.
- Because IMZ-EA has 1/4 wavelength plate, you can check the best images.
- IMZ-EA has new coaxial LED lighting and the power transformer and provides a clear image.
- IMZ-FA is ideal for users who do not require a coaxial epi-illumination.

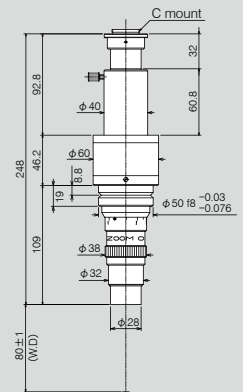
IMZ-FA-ST



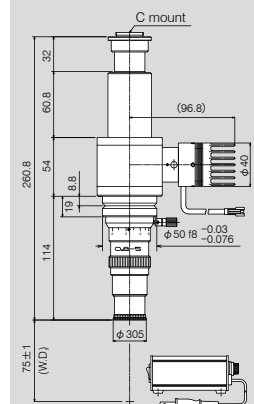
**IMZ-FA Specifications**

Name		Magnification zoom lens	Working distance/W.D.
IMZ-FA (straight-tube)		0.8×~5×	80mm±1mm
Auxiliary objective lens (optional)	SLA-IMZ/0.333×	0.2664×~1.665×	167mm±10mm
	SLA-IMZ/0.5×	0.4×~2.5×	132mm±7mm
	SLA-IMZ/0.75×	0.6×~3.75×	92mm±5mm
	SLA-IMZ/1.5×	1.2×~7.5×	42mm±2mm
	SLA-IMZ/2×	1.6×~10×	29.5mm±2mm

Dimensions (mm)



IMZ-FA



IMZ-EA

**IMZ-EA Specifications**

Name		Magnification zoom lens	Working distance/W.D.
IMZ-EA (straight-tube, built-in coaxial epi-illumination) Lighting LED (DC12V, white):TS-LH Power transformer 1LED-1WTF:AC100V, 0~350mA		0.8×~5× (Useful magnification 1.5×~5×)	75mm±1mm
Auxiliary objective lens (optional)	SLA-IMZ/1.5×	1.2×~7.5× (Useful magnification 1.5×~7.5×)	37mm±2mm
	SLA-IMZ/2×	1.6×~10×	24.5mm±2mm

※When using the 1/3 inch CCD camera, vignetting in 0.8×~1× may occur in the four corners of the monitor.

IMZ-FA



**IMZ Specifications**

Name	Model	IMZ-FA	IMZ-EA
IMZ-FA body (straight-tube)	IMZ-FA-ST	●	□
IMZ-EA body (without lamp house)	IMZ-EA-ST	□	●
IMZ-EA body LED lighting built-in coaxial illumination straight tube	IMZ-EA-STLH	□	●
Stand	SS-3	●	●
Focusing Mount	FA-13	●	●
Power transformer	LED-1WTF	□	●
Auxiliary objective lens (optional)	SLA-IMZ/1.5×	□	●
	SLA-IMZ/2.0×	□	●
Weight		750g	1,020g

**Optical performance table**

Zoom magnification	Standard	Auxiliary objective lens (optional)				
		0.5×	0.75×	1.5×	2×	
0.8×	1.23mm	4.92mm	2.19mm	0.55mm	0.31mm	
	16.64μm	33.27μm	22.18μm	11.09μm	8.32μm	
1×	0.92mm	3.67mm	1.63mm	0.41mm	0.23mm	
	11.09μm	22.18μm	14.79μm	7.39μm	5.55μm	
2×	0.24mm	0.94mm	0.42mm	0.11mm	0.06mm	
	7.32μm	14.64μm	9.76μm	4.88μm	3.66μm	
3×	0.17mm	0.67mm	0.30mm	0.07mm	0.04mm	
	6.31μm	12.62μm	8.41μm	4.21μm	3.16μm	
4×	0.11mm	0.46mm	0.21mm	0.05mm	0.03mm	
	5.55μm	11.09μm	7.39μm	3.70μm	2.77μm	
5×	0.09mm	0.34mm	0.15mm	0.04mm	0.02mm	
	5.23μm	10.46μm	6.97μm	3.49μm	2.61μm	

Depth of focus  Resolution



IMZ-EA

## MZM-DS2

It is a manual zoom lens that aims to be used in low magnification.

Working distance is long as 220mm and this microscope is ideal for industry of FA.

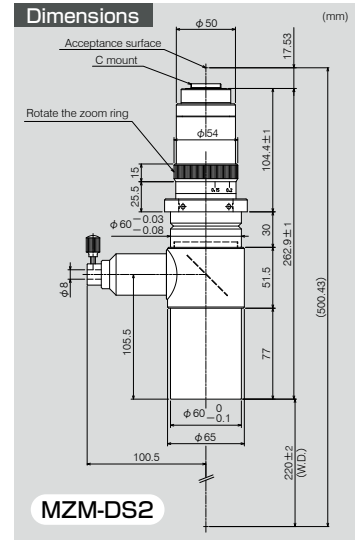
(For coaxial epi-illumination)

### MZM-DS2 Specifications

Magnification	0.15×	0.4×	1.0×
Valid values F	13.5	13.5	15
TV Distortion	+0.05%	-0.001%	+0.045%
Resolution	66μm	42μm	14.4μm
Camera	1/3 inch C mount camera		
Working distance	220±2mm		



MZM-DS2



MZM-DS2

## TVZ Series (Long Working macro zoom)

This is a zoom lens providing specifications for compact and lightweight C mount, and optimal for various measurements and inspections that requires a long working distance and low magnification.

- By Use of this unit zoom optics, a wide field of view can be observed in the design of low magnification.
- Compact and lightweight design ideal for mounting the device. High performance with a simple operation is delivered.
- The long working distance zoom system considering workability.
- Without any intermediate blur during zooming, the zoom lens suppresses the optical axis deviation and has a vivid image.



TVZ-150



TVZ-200



TVZ-280



TVZ-90S



TVZ-90

### Specifications

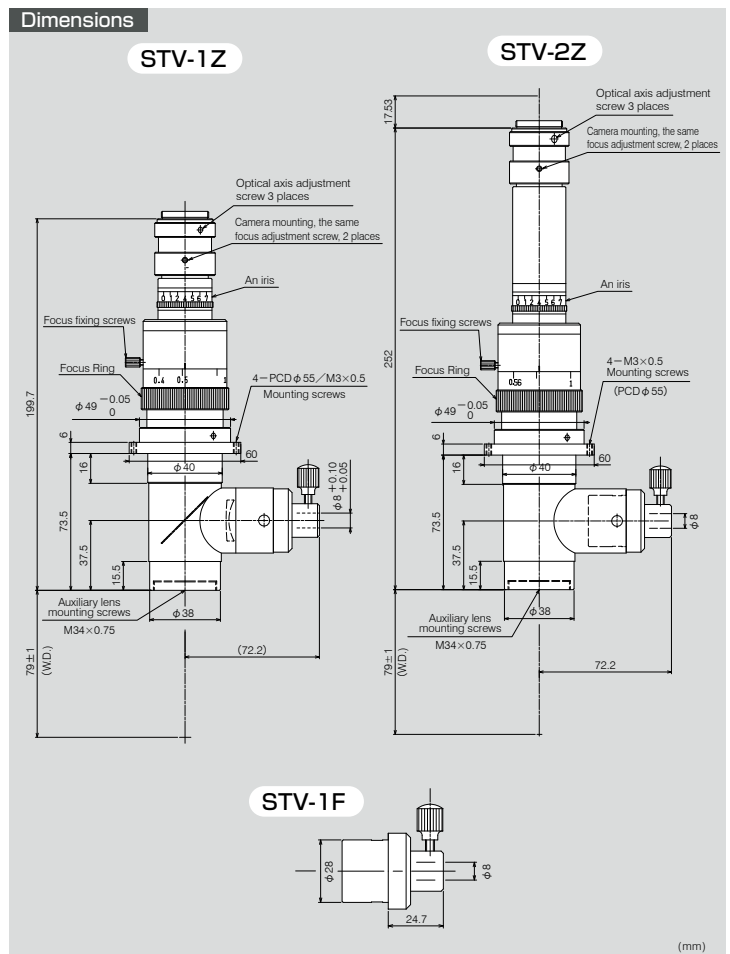
Name	TVZ-150	TVZ-200	TVZ-280	TVZ-90S	TVZ-90
Magnification	0.17×~1.15×	0.13×~0.89×	0.095×~0.65×	0.385×~2.6×	0.7×~4.5×
Zoom ratio	1:6.76	1:6.84	1:6.84	1:6.75	1:6.42
Working distance (W.D.)	152mm±3mm	200mm±3mm	280mm±3mm	90mm±2mm	90mm±2mm
Depth of focus*	14.8mm~0.40mm	18mm~0.72mm	46mm~1.4mm	2.41mm~0.14mm	1.47mm~0.10mm
Resolution	52μm~8μm	63μm~10μm	90μm~14μm	16μm~5.2μm	16.64μm~5.23μm
Actual field of view when using 1/2 inches camera				16.62mm×12.46mm ~2.46mm×1.84mm	9.14mm×6.85mm ~1.42mm×1.06mm
Actual field of view when using 1/3 inches camera	28.23mm×21.17mm ~4.17mm×3.13mm	36.92mm×27.69mm ~5.39mm×4.04mm	50.52mm×37.89mm ~7.38mm×5.53mm	12.46mm×9.35mm ~1.84mm×1.38mm	6.85mm×5.14mm ~1.06mm×0.8mm
Actual field of view when using 1/4 inches camera	21.17mm×15.88mm ~3.13mm×2.34mm	27.69mm×20.76mm ~4.04mm×3.03mm	37.89mm×28.42mm ~5.53mm×4.15mm	9.35mm×7.01mm ~1.38mm×1.03mm	5.14mm×3.85mm ~0.8mm×0.6mm
Length (to the C mounting surface)	158.5mm	159.5mm	159.5mm	157.99mm	234.47mm
Greatest dimension	φ37mm	φ37mm	φ37mm	φ39mm	φ39mm
An iris					Variable aperture
Dimensions of the hold	φ36 mm				
Lens Mount	C mount (25.4U1)				

\* when using the CCD camera (resolution /0.015mm).

## STV series

This covers the macro range as an inspection microscope such as IC wafer and liquid crystal pattern that require coaxial epi-illumination, and provides images in the optimal magnification corresponding to the sample.

- Zoom ratio is 6.25, and magnification conversion is able to be done smoothly from low magnification to high.  
(STV-1Z : 0.4×~2.5× / STV-2Z : 0.56×~3.5×)
- Uniformal lighting covering all from macro to micro makes images on the monitor vivid.
- Coaxial epi-illumination adopting LED lamp helps acquire vivid images with no shadow at deep parts of samples.  
Scratches on metal surface and liquid crystal are suitable for observation of hybrid IC covered with glass membrane.
- The body is in two types of fixing methods in consideration of various devices mounted.



### Specifications

Name		STV-1Z	STV-2Z
Zoom ratio		1 : 6.25	
Magnification	Standard	0.4×~2.5×	0.56×~3.5×
	※When using 2× rear converter	0.8×~5×	1.12×~7×
Actual field of view When using 1/2 inches CCD camera	Standard	10.24mm×12mm ~2.56mm×1.92mm	11.42mm×8.57mm ~1.82mm×1.37mm
	※When using 2× rear converter	5.12mm×6mm ~1.28mm×0.96mm	5.71mm×4.285mm ~0.91mm×0.685mm
Lens Mount		C mount (25.4U1)	
An iris		Variable aperture	

※ 2× rear converter is optional. Please refer to P11.

### ● Coaxial epi-illumination (optional)

Name	Model
Light guide adapter	STV-1F

### ● STV-1Z Optical performance table

Zoom magnification	Standard	Auxiliary objective lens (optional)	
		1.5×	2×
0.4×	1.98mm	0.88mm	0.49mm
	14.64μm	9.76μm	7.32μm
0.5×	1.45mm	0.65mm	0.36mm
	13.07μm	8.71μm	6.54μm
1×	0.37mm	0.16mm	0.09mm
	6.65μm	4.46μm	3.33μm
1.5×	0.25mm	0.11mm	0.06mm
	6.10μm	4.07μm	3.05μm
2×	0.16mm	0.07mm	0.04mm
	5.23μm	3.49μm	2.61μm
2.5×	0.12mm	0.05mm	0.03mm
	4.58μm	3.05μm	2.28μm
Working distance(W.D.)	79.1mm	79.1mm	79.1mm

### ● STV-2Z Optical performance table

Zoom magnification	Standard	Auxiliary objective lens (optional)	
		1.5×	2×
0.56×	1.55mm	0.69mm	0.38mm
	14.64μm	9.76μm	7.32μm
0.7×	1.15mm	0.51mm	0.29mm
	13.07μm	8.71μm	6.54μm
1×	0.54mm	0.24mm	0.13mm
	8.92μm	5.94μm	4.46μm
2×	0.21mm	0.09mm	0.05mm
	6.20μm	4.14μm	3.10μm
3×	0.12mm	0.05mm	0.03mm
	4.94μm	3.29μm	2.47μm
3.5×	0.10mm	0.04mm	0.02mm
	4.57μm	3.05μm	2.28μm
Working distance(W.D.)	79.1mm	79.1mm	79.1mm

Depth of focus  Resolution  Working distance

※ when using the CCD camera (resolution /0.015mm).

## Digital Microscope

It is a zoom lens with excellent cost performance optimized as a manual zoom lens.

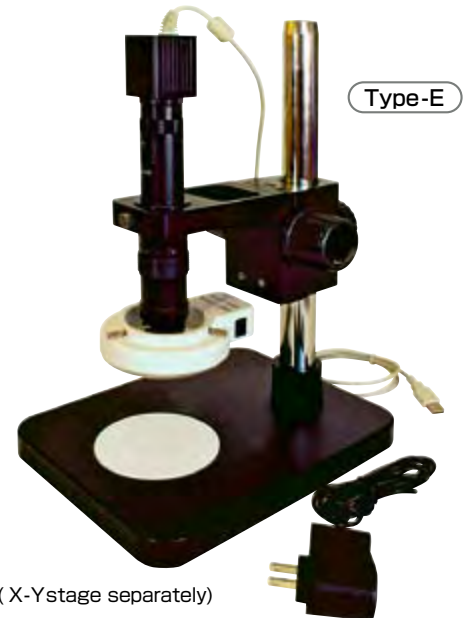
Excellent workability at 98 mm working distance.

Easy to observe in high-resolution camera.

Pole stand, XY stage, LED ring illumination and USB2.0 digital camera are also available as options.



Mesuring, recording and editing data with the software supplied as you like.



### ● Optical performance table

Item	CZ - ST (With 1× master lens)
Optical magnification	0.7× ~ 4.5× (±7%)
Actual field of view	9.14mm×6.85mm~1.42mm×1.06mm(When using 1/2 camera) 6.86mm×5.14mm~1.07mm×0.8mm(When using 1/3 camera)
Working distance	98mm±7mm
Compatible camera	Less than 1/2 in. camera
Lens Mount	C mount (25.4U1)
Environment	Room temperature 0~+40°C, humidity: 35~80% RH
Weight	460g

### ■ TYPE-S · E USB camera set

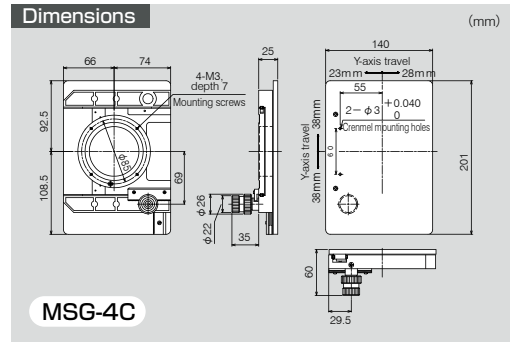
Unit	Combination		USB camera set		Remarks	
	Name	Format	Type-S	Type-E		
Body	Zoom lens 0.7×~4.5×	CZ-ST	●	●	C mount specification	
	Master lens	1.0×	CZ-MSL1.0×	●		
		0.5×	CZ-MSL0.5×	●		
USB Color Camera	1/2inches, 300 million pixel	YCU-300F	●	●	CD with exclusive software	
	LED ring lighting, dimming formula	CKL-144	●	●	With AC adapter	
	Focus thing unit	FA-18	●	●		
	X-Ystage 75×50mm	MSG-4C	●	●	With stage adapter	
Stand	Pole stand	SS-17	●	●		
	Black-and-white stage plate	SP-8		●	φ95mm	

# Industrial lens Accessory

## XY stage



MSG-4C



MSG-4C

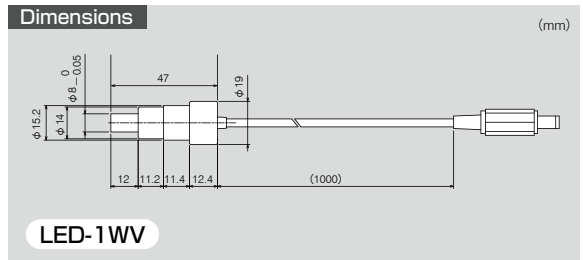
Weight ...1140g

## Industrial LED Lighting

### Power LED



LED-1WTF



LED-1WV

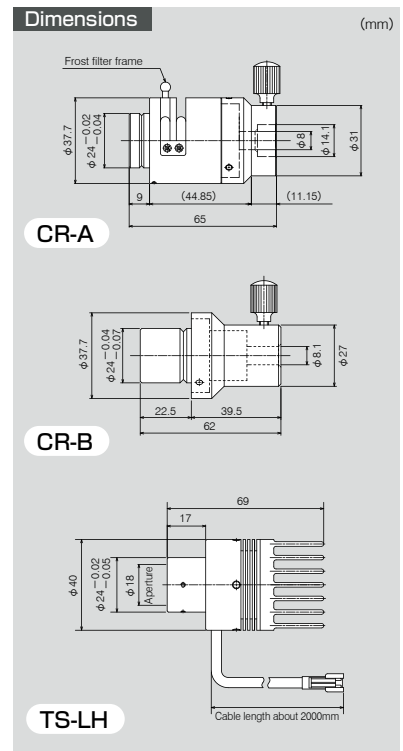


LED-1WV

### Lighting adapter



CR-A Compatible models (EMZ-A IMZ-EA)



CR-A

CR-B

TS-LH



CR-B Compatible models (EMZ-C)



TS-LH Compatible models (IMZ-EA EMZ-A EMZ-C)

### Accessories for commercial microscope

Name	Model	Remarks
Adapter for lighting	CR-A $\phi 8$	For IMZ-EA / EMZ-A
	CR-A $\phi 10$	For IMZ-EA / EMZ-A
	CR-A $\phi 12$	For IMZ-EA / EMZ-A
	CR-A $\phi 14$	For IMZ-EA / EMZ-A

Name	Model	Remarks
Adapter for lighting	CR-B $\phi 8$	For EMZ-C
	CR-B $\phi 10$	For EMZ-C
	CR-B $\phi 12$	For EMZ-C
	CR-B $\phi 14$	For EMZ-C

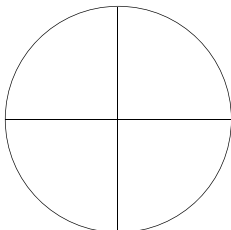
# Accessory Other Accessories

## Eyepiece Micrometer

※In addition, special micrometer also available.

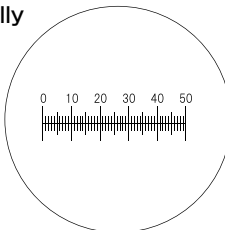
### Cross

Outer diameter	Model
φ 19 mm	M-F19-1
φ 21 mm	M-F21-1
φ 24 mm	M-F24-1
φ 25 mm	M-F25-1



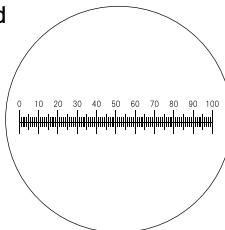
### Each of fifty equally spaced 50mm

Outer diameter	Model
φ 19 mm	M-F19-2
φ 21 mm	M-F21-2
φ 24 mm	M-F24-2
φ 25 mm	M-F25-2



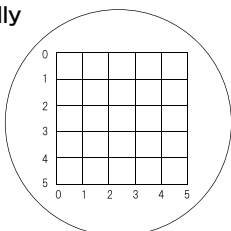
### Each of a hundred equally 10mm

Outer diameter	Model
φ 19 mm	M-F19-3
φ 21 mm	M-F21-3
φ 24 mm	M-F24-3
φ 25 mm	M-F25-3



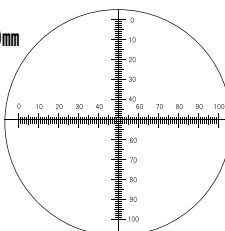
### Each of five equally spaced 5mm

Outer diameter	Model
φ 19 mm	M-F19-4
φ 21 mm	M-F21-4
φ 24 mm	M-F24-4
φ 25 mm	M-F25-4



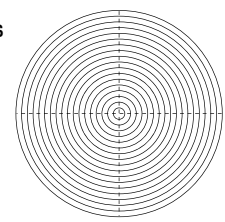
### XY scale, each of a hundred equally 10mm

Outer diameter	Model
φ 19 mm	M-F19-5
φ 21 mm	M-F21-5
φ 24 mm	M-F24-5
φ 25 mm	M-F25-5



### Concentric circles

Outer diameter	Model
φ 19 mm	M-F19-6
φ 21 mm	M-F21-6
φ 24 mm	M-F24-6
φ 25 mm	M-F25-6



※ φ 19mm···t=1 (for biological microscope)  
 φ 21mm···t=1 (for ME-LUX, ME-POL2)  
 φ 24mm···t=1 (for KSZ, KS, SSZ)  
 φ 25mm···t=1 (for SD, SDZ)  
 ○ Built-in micrometer charge, ¥ 3,000

## Rear converter lens

- 2× C mount TV adapter lens / CA-20A
- 3× C mount TV adapter lens / CA-30A

By mounting it between the camera head and the C-mount section, you will be able to expand the magnification on the monitor.

※The CA-20A is able to be built in various micrometer (φ 19mm).



- × 1.5 Extender Lens / TV-EX1.5
- × 2 Extender Lens / TV-EX2
- × 2.5 Extender Lens / TV-EX2.5
- × 3 Extender Lens / TV-EX3
- × 4 Extender Lens / TV-EX4

By mounting it between the camera head and the C-mount section, you will be able to expand the magnification on the monitor.

- C mount TV adapter / CA-05

To be installed between the part of straight tube (inner diameter 23.2mm and outer diameter 25mm) and the camera head

- C mount TV adapter / CA-05A

To be installed between the C mount part and the camera head.

You can shrink (0.5 times) the magnification on the monitor.  
 ※ Various micrometer (φ 19 mm) can be built in.  
 ※ Supporting camera size less than 1/2 inches.



## Bulb

### ■ Halogen lamp

EP-OD-33  
 6V20W  
 Used product Medi-20, KN-50



EP-OD-471  
 6V20W (Long life)  
 Used product EMZ-A, IMZ, ME-LUX2



EP-OD-800  
 6V30W  
 Used product KN-100TC, KN-100B



EP-OD-64  
 6V15W  
 Used product EP-3C



### ■ Tungsten lamp

EP-OD-42N  
 100V20W  
 Used product Bio-Lux



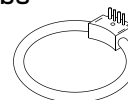
EP-OD-58  
 100V15W  
 Used product KC, KC2, KM, KM2



### ■ Ring fluorescent lamp

#### Ring fluorescent tube

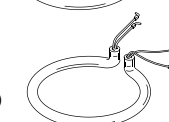
EP-OD-67  
 8W  
 Used product FLC-8W/8WG



EP-OD-50  
 10W (Pin type)  
 Used product FL-10



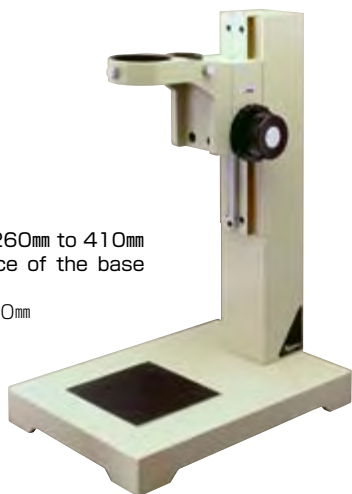
EP-OD-35  
 10W (Lead wire)  
 Used product FL-10R (old model)  
 FL-10RS/10RSZ



## Stand [slider unit with mount]

### LAS-400

Movable in a range of 260mm to 410mm from the upper surface of the base portion.  
 ※vertical stroke is 150mm



### LAS-700

Movable in a range of 550mm maximum movement.  
 ※ vertical stroke is 150mm



### LAS long arm stand

This is the most appropriate stand, when you try to observe a wide range of subjects and large sample. The arm is stable and large stand which moves vertically and rotates parallelly. Combined application with focus mount FA.

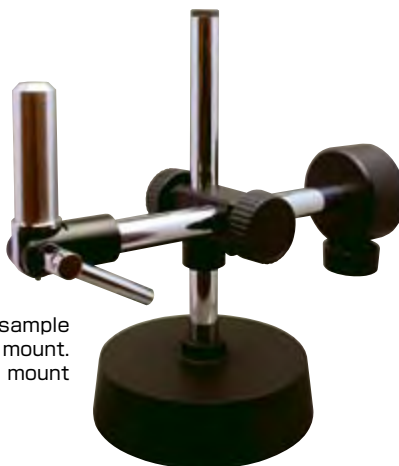


### Universal stand

#### US-4·4B·4C

Useful for the specimen of a large sample which is even bigger than standard mount. Attach the mirror body to the focus mount through the arm of the stand.

- US-4 ..... for SD, SDZ
- US-4B ..... for KS, KSZ
- US-4C ..... for SSZ



### Universal stand

#### US-5·5B·5C

This is optimal for observing large samples when mounting, inspecting and so on, because of good stability.

- US-5 ..... for SD, SDZ
- US-5B ..... for KS, KSZ
- US-5C ..... for SSZ

## Arm receiver

### CF-1

The use of coarse and fine uniaxial-handle makes it easy to carry out of focusing in high magnification.

※40mm vertical stroke  
 The amount of tremor movement is 1.2mm per rotation.



### SU-40

The slider unit with a vertically moving mechanism is available to be used with being incorporated in various devices.

※40mm vertical stroke



# Stereomicroscope

## [Zoom stereomicroscope]

### SSZ series

Knockout price for a zoom stereomicroscope is achieved. You can zoom smoothly in a range of 7 times to 45 times (zoom ratio is 6.4).

You can magnify between 3.5 times and 180 times by combining optional eyepiece and auxiliary lens.

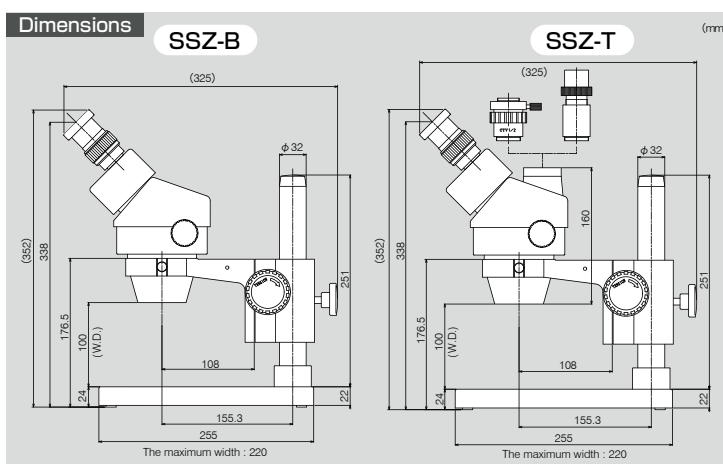
You can observe easily even when wearing glasses, because the eyepiece has long (approx. 17mm) eyepoint.

#### Specifications

Model	SSZ-B (binocular)	SSZ-T (trinocular)
Total magnification	7× ~ 45×	
Objective lens	0.7× ~ 4.5×	
Lens barrel	Eye-piece	WF10× The number of views, 20 (micrometer eyepiece able to be mounted)
	Working distance	100mm (Except for connecting ring)
	Tilt angle of barrel	45°, 360° rotatable
	Eye width adjustment	Adjustment range of 54mm to 75mm
	Diopter adjustment	Binocular with diopter adjustment
	Camera Adapter	CCD1/2adapter, with a straight tube
Focusing Mount	Rack and pinion system, steering to adjust solidity	
Stand	Standard mount, black-and-white plate, with crenel	
Accessories	Straight tube, C-mount adapter	
Physical Dimensions	220mm(W)×325mm(D)×352mm(H)	
Weight	About 4,400g	About 4,500g

#### SSZ options

Eyepiece	WF10×/20	Auxiliary lens	SLA-0.5×/SSZ
	WF15×/15		SLA-1.5×/SSZ
	WF20×/10		SLA-2×/SSZ



### KSZ series

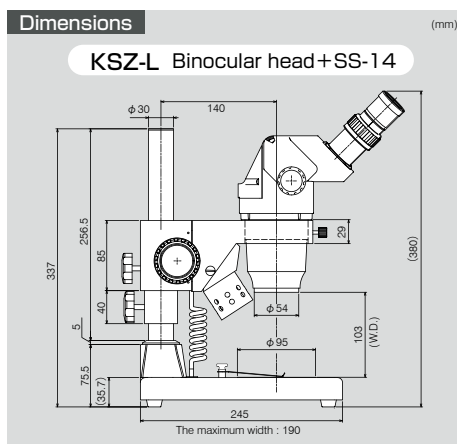
It is the ultimate stereomicroscope in "the visibility" and the ease of use. Ideal for assembly in the field of precision industry, inspection and measurement micro part. Able to zoom up smoothly between high magnification of 10× ~ 65×. Able to be up from 2.5× to 325× by combinations of options.



#### Specifications

Total magnification	10× ~ 65× (Zoom ratio 6.5)	
Objective lens	1.0× ~ 6.5×	
Eye-piece	Able to be mounted WF10× micrometer eyepiece (number of view, 23)	
Working distance	103mm	
Eye width adjustment	Adjustment range of 52mm to 75mm	
Lens barrel	45° angle of inclination, erected vertically and horizontally, rotating 360°, the optical path switching (trinocular tube)	
Focusing Mount	Rack-and-pinion system, up-and-down motion, adjustable stiffness steering	
Stage plate	Black-and-white stage plate, frosted glass plate (LED lighting mount only) φ95mm	
Accessories	Connecting ring with C-mount (KS-RG) is attached to KSZ-T Connecting ring with C-mount (KS-RG) is NOT attached to KSZ-TL	
Physical Dimensions	190mm(W)×320mm(D)×380mm(H)	
Weight	KSZ : 4,500g KSZ-T : 4,550g KSZ-L : 4,620g KSZ-TL : 5,640g	

※ L series has a built-in lighting LED. ※ Straight tube is NOT included





# 【 Two-step variable power stereomicroscope 】

## KS series

A full line up being able to be chosen according to your purpose is available.  
Meet the needs of wide needs from industrial inspection line to fields of education.



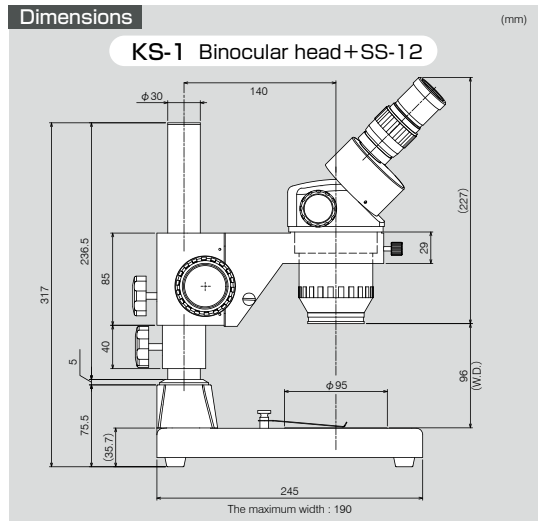
KS



KSL

### Specifications

Model	KS-1,2,3	KSL-1,2,3
Total magnification	KS-1 : 10×, 20× KS-2 : 10×, 30× KS-3 : 20×, 40×	KSL-1 : 10×, 20× KSL-2 : 10×, 30× KSL-3 : 20×, 40×
Eyeiece	WF10× (number of field of view 23mm)	
Lens barrel	Rotating 360°, 45° tilt barrel tilt, with diopter adjusting eye width adjustment	
Stand	Vertically movable rack-and pinion, fixed handle, with crenmel	
Lighting		Epi-LED backlight Built-in AC adapter
Stage	Black-and-white plate, with a frosted glass plate	
Outside diameter	190mm(W)×266mm(D)×358.7mm(H)	
Weight	4,020g	5,040g



### KSZ · KS Options

Adapter	C mount adapter 1×	KC-7 ※KSZ-T, KSZ-TL is standard
	C mount adapter 0.5×	KC-6
Eyeiece	5×	WF5×/15
	10×	WF10×/23
	15×	WF15×/16
	20×	WF20×/13
	25×	WF25×/12
Auxiliary objective lens	0.5×	SLA-KSZ/0.5×
	0.75×	SLA-KSZ/0.75× SLA-KS/0.75×
	1.5×	SLA-KSZ/1.5×
	2×	SLA-KSZ/2× SLA-KS/2×

### Eyeiece for KSZ/KS



### Eyeieces for SSZ





# Stereomicroscope Accessory

## Lighting equipment to extract the full performance of the stereomicroscope

Condensing the latest high-power LED to the lens.

Steplessly adjustable with flexible strut. LED ring illumination able to light at any angle.



LED lighting equipment

LED-S

High-intensity LED lighting Single

LED-W

High-intensity LED lighting Double

### Specifications

Model	LED-S	LED-W
Emission of light	Neutral white (color temperature 4000K, high color rendering)	
Used LED	Made by Philips Lumileds Lighting Company (procurement with assigning ranks)	
Dimming function	PWM control system (about 2000Hz)	
Condensing	By using lenses only for LED	
Power supply	DC5V	DC9V
Dimensions	60mm(W)×90mm(D)×455mm(H)	70mm(W)×100mm(D)×470mm(H)
Weight	About 440g	About 940g

## Ring fluorescen lighting device

Ring fluorescen lamp



FLC-8W

FLC-8WG

## Fluorescen lighting device

FL-10 Transformer including ring fluorescent light tube

## LED lighting equipment

Versatility due to clamp method of three-point screw.

(Up to  $\phi 25 \sim \phi 60$  mounting dimensions)

Adopting the AC adapter corresponding to 100V~240V.

No flicker seen from ordinary fluorescent.



DKL-60

## LED lighting equipment

Able to modulate light with a triple in a three-column array.

Adopting AC adapter corresponding to 100V~240V.



CKL-144

### Light-emitting part / specifications

Model	DKL-60
Mounting method	Three-point screw
Input voltage	DC12V
Power consumption	2.5W
Output current	140mA MAX
Approximately	About 30,000 hours life (not guaranteed values)
Function of modulating light	0~100%
Illumination	About 17,500 Lux illuminance (measured distance: 75mm)
Dimensions	95mm(W)×138.5mm(D)×34mm(H) (inner diameter $\phi 60$ mm)
Weight	135g

### AC adapter / specifications

Input voltage	AC100V~240V
Output voltage	DC12V 1A MAX
Compatible specification	CE · UL · PSE
Weight	95g

### Specifications

Input voltage	100~240V (AC-0.8A)
Lighting	LED lighting triple array with the function to modulate light
Output voltage	12V / DC
Mountable inner diameter	47 $\phi$ ~60 $\phi$
Weight	160g (including AC adapter)

# Metal Microscope for inspection training

## ME-LUX2 series

Adopting a binocular eye piece having 30° of an incline which minimizes fatigue during speculum and makes natural posture.

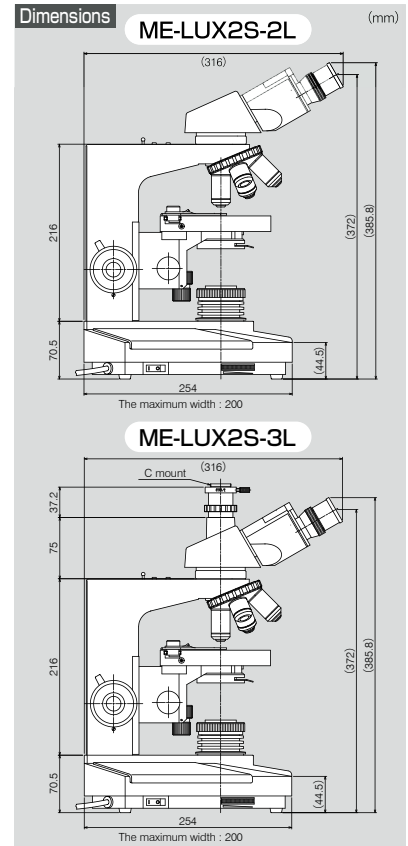
The barrel realizes comfortable speculum with adopting Siedentopf barrel.



ME-LUX2S-2L



ME-LUX2S-3L



### Specifications

Item	Binocular set		Trinocular set	
	Exclusive type for reflected illumination	Both alternating type for reflected and transmitted illumination	Exclusive type for reflected illumination	Both alternating type for reflected and transmitted illumination
	ME-LUX2S-2	ME-LUX2S-2L	ME-LUX2S-3	ME-LUX2S-3L
Total magnification	50×~600×			
Illumination systems	2·3 type	Built-in of halogen lamp 6V20W (2), field stop, aperture stop, light-modulating dial on the left side of the base, power supply (base) With green and yellow filter one each		
	2L·3L type	Built-in of halogen lamp 6V20W (4), field stop, aperture stop, light-modulating dial on the left side of the base, power supply (base) With green and yellow filter one each, switchable to reflected and transmitted illumination, switch on the right side of the base		
Focusing device	Vertically mobile stage by uniaxial, coarse and fine handle (rack and pinion), Coarse stroke 30mm, coarse handle adjustable to weight, with coarse stopper			
Barrel	30° angle of inclination, magnification lens barrel 1×, rotatable and removable			
	Interpupillary adjustable range 50~75mm, with mechanism correcting degrees of binocular vision Trinocular barrel : two-stage switching optical path (observation 100%/observation 50%/TV 50%)			
Revolver	Fixed by large revolver with 4 holes, inside clipping nail system			
Eyepiece	WHE10× (18 views), EW15× (13 views)			
Objective lens DIN standard	M Plan5×, M Plan10×, M Plan20×, M Plan40×			
Stage (fixed to the body)	2·3 type	Uniaxial mechanical stage (lower right handle)/size : 185mm (W)×140mm (D), mobile range : 77mm(width)×52mm (length)		
	2L·3L type	Uniaxial mechanical stage (lower right handle)/size : 160mm (W)×140mm(D), mobile range : 75mm(width)×50mm(length) Detachable specimen presser (able to install two specimens)		
Condenser	2·3 type	No condenser		
	2L·3L type	Abbe condenser, N.A.1.25, with an aperture stop, with φ31.7 filter (blue)		
Power consumption	24VA (when input voltage is 100V)			
Accessories			Straight tube, C-mount adapter	
Dimensions	200mm(W)×316mm(D)×385.8mm(H)			
Weight	About 7,300g	About 7,600g	About 7,500g	About 7,800g

- 1) Wooden storage box is sold at ¥12,500 (¥13,125 tax included) optionally. Make to order.  
2) When you purchase a set of trinocular barrel, C-mount adapter will be accessory.



### Eyepiece

Eyepiece	The number of fields	Remarks
WHE10×/18	18	
EW15×	15	With a frame mounting a micrometer

\*Micrometer size WHE10×/18 : φ21mm·1mm thick  
EW15× : φ19mm·1mm thick



### Objective lens (finite distal 45mm standard)

Model	Number of aperture (N.A.)	Working distance (W.D.)
M Plan 5×	0.10	16.5 mm
M Plan 10×	0.25	7.58 mm
M Plan 20×	0.40	8 mm
M Plan 40×	0.65	0.6 mm
M Plan 60×	0.85	0.2 mm
M Plan 100× dry	0.80	0.5 mm

# Metal polarizing microscope both alternating reflection and transmission lighting type

## ME-POL2 series

Arm has built-in Kohler illumination for reflected illumination. You can speculum with sharp contrast without unevenness and vignetting. Field stop, aperture stop and adjustment of polarizer are easy to operate because they are incorporated in the upper part of the arm.

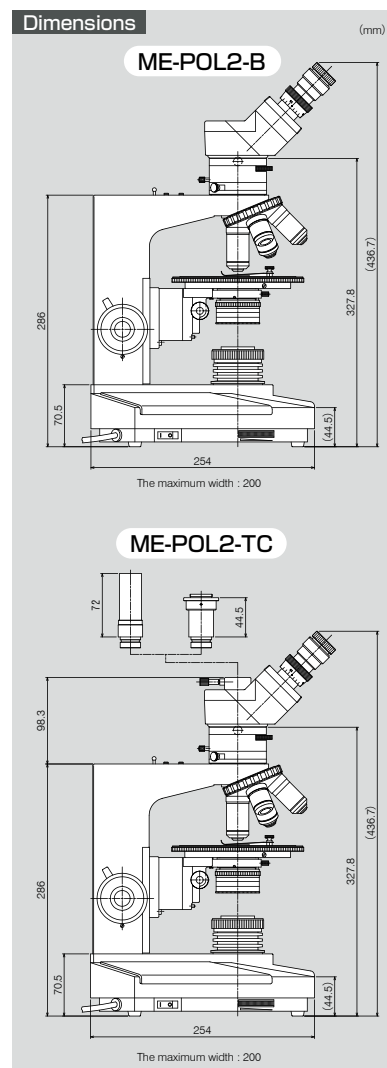
Halogen lamp 6V20W was adopted as the light source.



ME-POL2-B



ME-POL2-TC



### Specifications

Model	ME-POL2-B (binocular set)	ME-POL2-TC (trinocular set)
Total magnification	60×~480×	
Lighting	Reflected illumination (with field stop and aperture stop), backlight switchable, built-in power (base) Dial for adjusting lights (left side of base), switch (right side of base) blue filter, halogen lamp 6V20W, fuse	
Focal level device	Vertically mobile stage by uniaxial, coarse and fine handle (rack and pinion), Coarse stroke 30mm, fine focus adjustment (0.2mm a rotation, one scale / 0.002mm) Coarse handle adjustable to weight, with coarse stopper	
Lens barrel	45° angle of inclination, removable, interpupillary adjustable range 54~74mm, with mechanism correcting degrees of single vision	Two-stage switching optical path (observation 100, observation 20 : TV 80)
Intermediate barrel for polarized observation	Removable, lens barrel magnification 1.2×, analyzer (swinging switch, IN/OUT) Switching between orthoscope and coscope (turret system) Slot for test plate	Orthoscopic observation : display "O" Conoscopic observation (Bertrand lens) : display "C" Test plate (1/4 input wave plate, sensitive color plate) removable
Reflective polarizer	Swinging system (0°~90°), upper part of arm	
Polarizing condenser	Condenser : Abbe condenser N.A.1.25 with aperture stop Transmissive polarizer : 360° rotatable, with click-stop at position 0, display scales (0.90.180.270)	
Revolver	Fixed by large revolver with 4 holes	
Power consumption	24VA (When input voltage is 100V)	
Accessories	Hex driver for centering objective lens (2), dust cover, spare lamp (2), spare fuse Straight tube, C-mount adapter	
Physical dimensions	200mm(W)× 278mm(D)×436.7mm(H)	
Weight	About 8,500g	About 8,800g



Eyepiece

WHE10×/18 with diopter correction (18 fields)
WHE10×/18 with diopter correction (18 fields) Cross, with orientating pin



Objective lens (distal finite ■45mm standard)

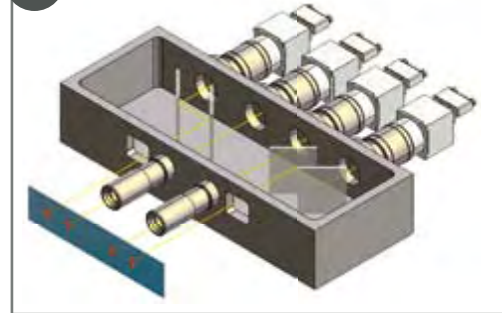
Format	N.A.	W.D.
POL-MPlan5×	0.10	16.5mm
POL-MPlan10×	0.25	7.58mm
POL-MPlan40×	0.65	0.6mm

# Customized optics

## Microscope for embedding device

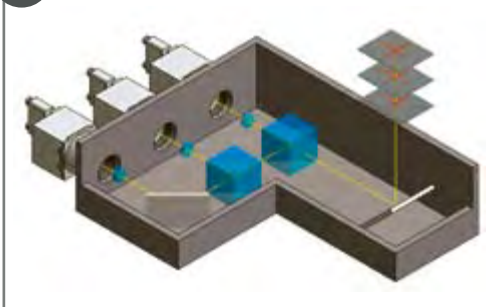
We produce optical units for your exclusive use with shape and design according to devices.

**Ex.1 Multiple camera optics**



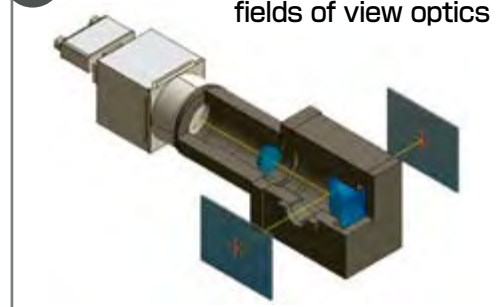
Four cameras will capture extensive work on the side at once with changing magnifications respectively.

**Ex.2 3 cameras, 3 focal positions optics**



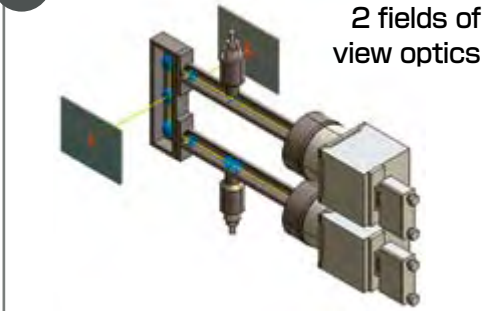
It will capture one work on the top side with changing focal positions. You can adjust the magnification simultaneously.

**Ex.3 1 camera, the upper and lower 2 fields of view optics**



It can recognize the work in two places vertically and horizontally at once.

**Ex.4 2 cameras, the upper and lower 2 fields of view optics**



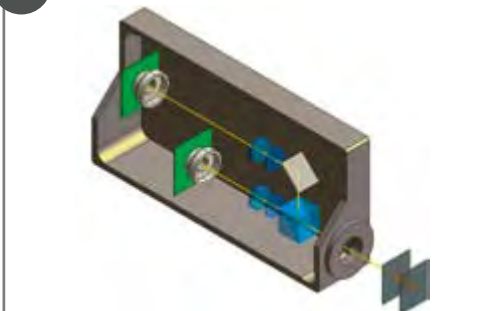
Two cameras can capture the upper and lower works of two simultaneously. A coaxial illumination is included.

**Ex.5 2 cameras, zooming optics (A)**



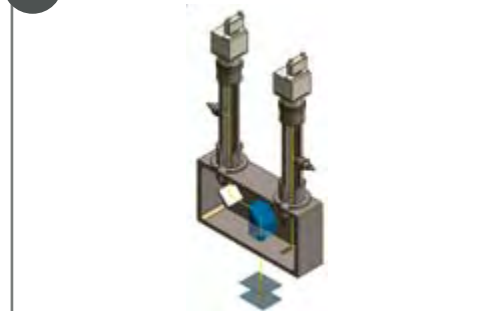
2 cameras can capture works in two places which are on the same optical axis but have different focal positions, at different magnifications respectively.

**Ex.6 2 cameras, zooming optics (B)**



It can capture works which are on the same optical axis but have different focal positions with changing magnifications respectively.

**Ex.7 2 cameras, zooming optics (C)**



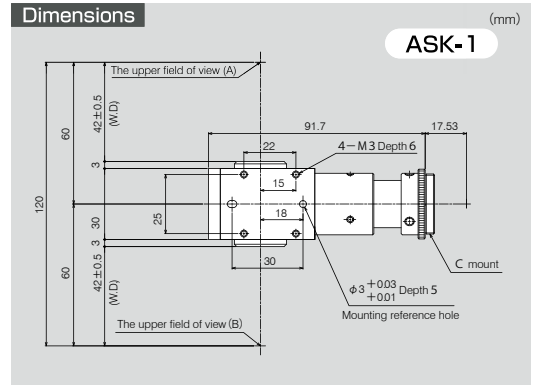
2 cameras will capture works which are on the same optical axis but have different focal positions. A coaxial illumination is included.

# Two vertical fields of view optics



ASK-1

■ Specifications  
 Camera / Adapted camera less than 1/3 inches recommended  
 C-mount specification  
 Magnification / 1.1 times ± 5%  
 WD / 42mm ± 0.5 (Both of the upper and lower)



# TV macro-lens

## TVM series

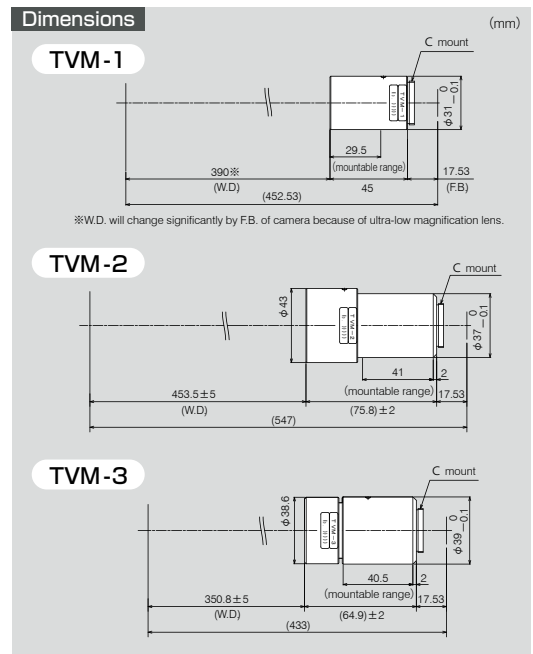
Supporting 1 inch mega pixel camera



TVM-3

TVM-1

TVM-2

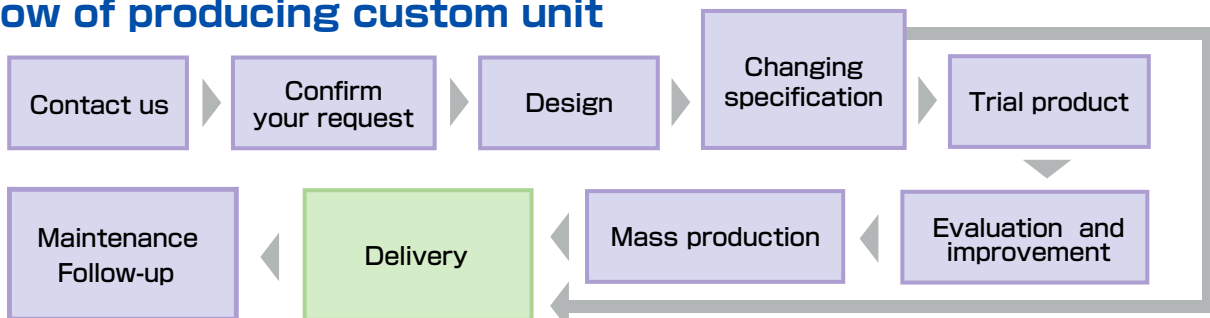


### Specifications

Model	TVM-1	TVM-2	TVM-3
Magnification	0.075x	0.2x	0.2x
N A	0.006	0.014	0.017
Resolution	55.92 μm	23.97 μm	19.74 μm
Valid F value	6.25	7.15	5.88
Working distance (W.D.)	390mm (※)	453.5mm ± 5mm	350.8mm ± 5mm
Lens mount	C mount		
Camera	1 inch 400million pixels capable		

※W.D. will change significantly by F.B. of camera because of ultra-low magnification lens.

## Flow of producing custom unit



We support for your request from designing to maintenance of mass production comprehensively.

# Biological microscopes for clinical setting and research

## KN-100 series

High resolution and excellent optical performance was achieved with adopting infinite distal correcting system objective lens.

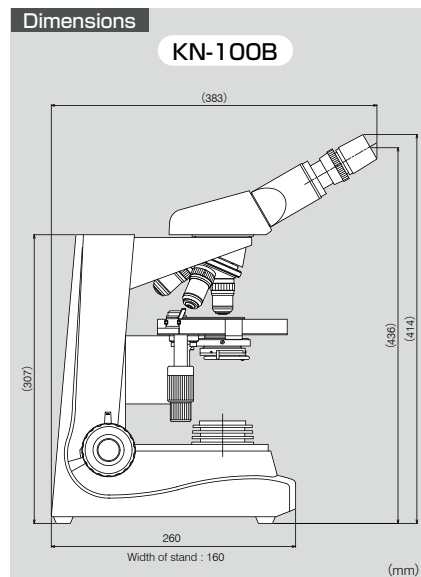
Trinocular KN-100TC includes C-mount adapter and straight tube ( $\phi 23.2$ ) as standard equipment, so it can capture images into a computer with being connected with TV camera and USB-enabled camera.



KN-100B



KN-100TC



### Specifications

Product name		Binocular tube set KN-100B	Trinocular tube set KN-100TC
Total magnification		40x~1000x	
Body part	Body	Body, inward revover with four holes (fixed), with daylight filter $\phi 31.8$ mm	
	Focusing mechanism	Vertically mobile stage, coarse stroke 26mm	
	Coarse and fine device	Uniaxial, coarse and fine handle, coarse handle with adjustment mechanism for weight, with coarse stopper	
	Lighting system	Halogen lamp 6V30W (2), built-in power supply, dimming dial	
Barrel	Imaging barrel lens 180mm, 30° angle of inclination, rotatable and removable, interpupillary adjustable range 55~75mm, with diopter correction of left eye.		
	Binocular barrel (binocular part 100%)	Trinocular barrel optical path switching system (binocular part 100% / binocular part 20% C-mount part 80%)	
Stage	Uniaxial large mechanical stage (lower left handle) / size : 142mm(W)×133mm(D) Stroke : 75mm to X direction, 50mm to Y direction, removable specimen holder		
Eyepiece	EW10x/20(20 fields of view)		
Objective lens (infinite distal)	Plan4x、Plan10x、Plan40x、Plan100x (oil)		
Condenser	Abbe condenser N.A.1.25 iris, vertically mobile rack and pinion		
Accessories	Straight tube, C-mount adapter		
Physical Dimensions	233mm(W)×383mm(D)×414mm(H)	233mm(W)×342mm(D)×480mm(H)	
Weight	8,740g	9,100g	



### Eyepiece

Eyepiece	Number of fields of view	Remarks
EW10x/20	20	
EW15x	15	With mounting micrometer frame

※If you use "mounting micrometer frame" on EW10 x /20, it is optional because the number of fields of view changes to 18.

※Size of micrometer

EW10x/20 :  $\phi 21$ mm · 1mm thick  
EW15x :  $\phi 19$ mm · 1mm thick



### Objective lens ( infinite distal ■ 45 mm standard)

Model	The number of aperture(N.A)	Working distance(W.D)	Focal length(f)	Remarks
Plan4x	0.10	25.4mm	45.3mm	
Plan10x	0.25	11.22mm	18.1mm	
Plan20x	0.40	6.06mm	9mm	Spring
Plan40x	0.65	0.5965mm	4.5mm	Spring
Plan100x oil	1.25	0.2129mm	1.8mm	Spring



# Phase-contrast microscope

## KN-PH system series

Infinite distal correcting objective lens type PH (phase difference) makes it possible to observe cells and bacteria which are still alive.

Trinocular microscope can support C-mount camera.  
Trinocular KN-PH-100TC includes C-mount adapter and straight photo tube as standard equipment.



KN-PH-100B



KN-PH-100TC



Phase difference device for KN-PH-100

※Objective lens (infinite distal ■ 45mm standard)

### Specifications

	KN-PH-100B	KN-PH-100TC	Phase difference device for KN-PH-100
Body	KN-PH-100B	KN-PH-100TC	Phase difference device for KN-PH-100
Barrel	Binocular	Trinocular	
Eyeiece	EW10×/20 (2)	EW10×/20 (2)	
Objective lens for phase difference	10×, 20×, 40×, 100× oil	10×, 20×, 40×, 100× oil	10×, 20×, 40×, 100× oil
Phase difference device	Rotating disk, with centering telescope	Rotating disk, with centering telescope	
Total magnification	100× ~ 1000×	100× ~ 1000×	
Accessories		Straight tube, C-mount adapter	Centering telescope
Physical Dimensions	233mm(W)×383mm(D)×414mm(H)	233mm(W)×342mm(D)×480mm(H)	
Weight	9,120g	9,480g	460g

# CCD camera

## CCD color camera for microscope

KS-N63



Back

### Specifications

Model	KS-N63
Television system	NTSC
Picture element	1/3 inch CCD
Number of effective pixels	768(H)×494(V)
Scanning system	2:1 Inter lace
Signal system	15.734kHz
Horizontal frequency	59.94kHz
Vertical frequency	Internal(External HD/VD or VBS)
Synchronization scheme	TV Lines
Horizontal resolution	480TV Lines
Minimum illumination	0.17 Luxat F1.2
SN ratio	Morethan 48db(AGC-OFF)
γ	0.45
White balance	ATW PSW

AGC	ON
Electronic Shutter	Electronic Iris : 1/60~100.000 Fixed Shutter : NTSG 1/60
Flicker correction mode	Switching ON/OFF
Image inversion function	Normal image / mirror image
Video output	VBS 1.0p-p 75Ω
Backlight compensation	Switching ON/OFF
Mount	C mount
Power	DC+12V(8V~14V)
Current consumption	200mA
Operation temperature	-10°C~50°C
Dimensions (case)	36mm(WF)×36mm(H)×36.5mm(D)
Accessories	BNC / RCA conversion connector, RCA / RCA coaxial cable (2m), AC-adaptor, 3 power strip with ON-OFF (2m)

# Biological microscopes for research and training

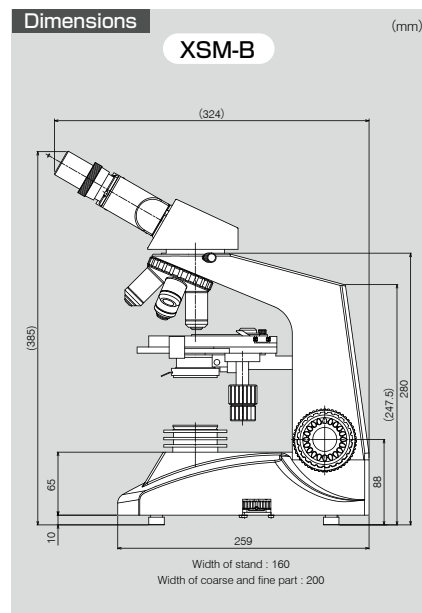
## XSM series

You can observe with it adopting rechargeable LED lighting, regardless of place. It is able to be used for research or training. Designed compact, it can be used anywhere.



XSM-B

XSM-TC



### Specifications

Product name	Medilux30 XSM-B	Medilux30 XSM-TC
Total magnification	40x~1500x	
Illumination system	LED light source, built-in power supply, with dimming dial With AC adapter for charging	
Focal level device	Vertically mobile stage by uniaxial coarse and fine handle Coarse stroke : 22mm, coarse/fine handle 41mm/0.2mm a rotation With adjusting mechanism for coarse handle weight, with coarse stopper	
Barrel	30° angle of inclination, barrel magnification 1 × 360° rotatable and removable, interpupillary adjustable range 50mm~75mm With binocular vision degree correction	
	Fixed optical path	Light intensity ratio : binocular part 20%, straight tube part (picture) 80% With photo straight tube (identical focal adjustment mechanism)
Eyepiece	Wide field of view WF10× (18 fields of view), WF15× (12 fields of view)	
Objective lens	4×, 10×, S40×, S100× (oil)	
Stage	Uniaxial large mechanical stage (lower right handle) Size 140mm (W)×132mm (D) Stroke : 76mm to X direction, 50mm to Y direction, removable crenmel	
Condenser	Abbe condenser, NA 1.25, with aperture stop Vertically mobile spiral	
Accessories	Straight tube, C-mount adapter	
Physical Dimensions	200mm (W) × 324mm (D) × 385mm (H)	200mm (W) × 259mm (D) × 443.5mm (H)
Weight	5,360g	5,500g



Eyepiece for KL/XSM

Eyepiece	Number of fields of view
WF10× /18	18
WF15× /12	12



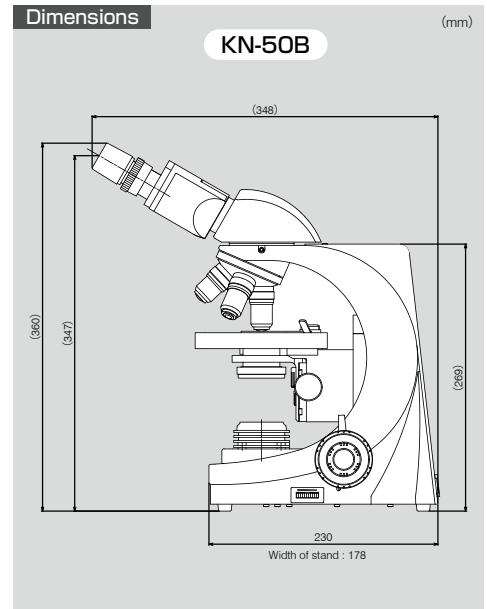
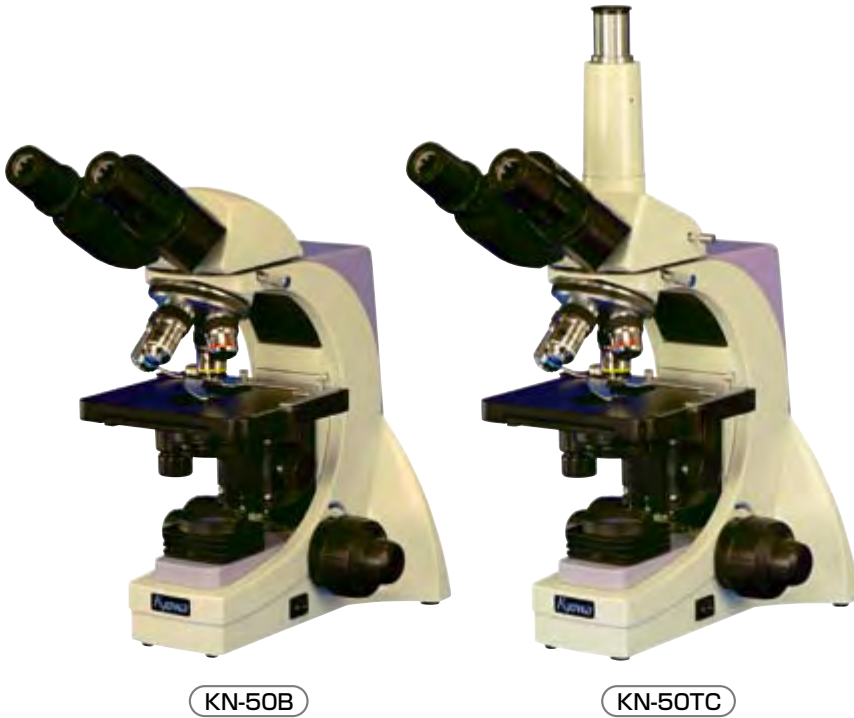
Objective lens for XSM (finite distal ■ 45mm standard)

Model	N.A.	Model	N.A.
XSM4x	0.10	XSM40x	0.65
XSM10x	0.25	XSM100x	1.25/oil

## KN-50 series [corresponding to Science Education Promotion Act]

Siedentopf barrel which achieved good facility doesn't cause changes of magnifications after interpupillary adjusting.

6V20W high-intensity halogen lamp serving bright images is built-in.



### Specifications

Product name	Binocular barrel set		Trinocular barrel set	
	KN-50B		KN-50TC	
Total magnification	40x~1000x			
Body part	Body	Body, four-hole revolver (fixed), with daylight filter $\phi 31.8\text{mm}$		
	Focusing mechanism	Vertically mobile stage, coarse stroke 22mm		
	Coarse and fine device	Uniaxial, coarse and fine handle, with adjusting mechanism for weight of coarse handle, with coarse stopper		
	Lighting system	Halogen lamp 6V20W (2), built-in power supply, dimming dial		
Barrel	30° angle of inclination, removable, interpupillary adjustable range 55~75mm, with left eye diopter correction			
	Binocular barrel (binocular part 100%)	Trinocular barrel (binocular part 100%/binocular part 20% C-mount part 80%)		
Stage	Uniaxial large mechanical stage (lower left handle) / size : 142mm(W) x 132mm(D) Stroke : 75mm to X direction, 50mm to Y direction, removable specimen holder			
Eyepiece	WF10x/18 (18 fields of view)			
Objective lens	4x, 10x, Semi Plan40x, 100x oil			
Condenser	Abbe condenser N.A 1.25 iris, vertically mobile rack and pinion			
Accessories			Straight tube, C-mount adapter	
Physical Dimensions	196mm(W)x348mm(D)x360mm(H)		196mm(W)x337mm(D)x416mm(H)	
Weight	6,520g		6,880g	



#### Eyepiece

Eyepiece	Number of fields of view
WF10x / 18	18
WF15x / 12	12

※WF15 x /12 is optional.



#### Objective lens for KN-50 (finite distal ■ 45mm standard)

Model	N.A.	Model	N.A.
LBJ4x	0.10	LBJ40x	0.65
LBJ10x	0.25	LBJ100x	1.25/oil
LBJ20x	0.40		

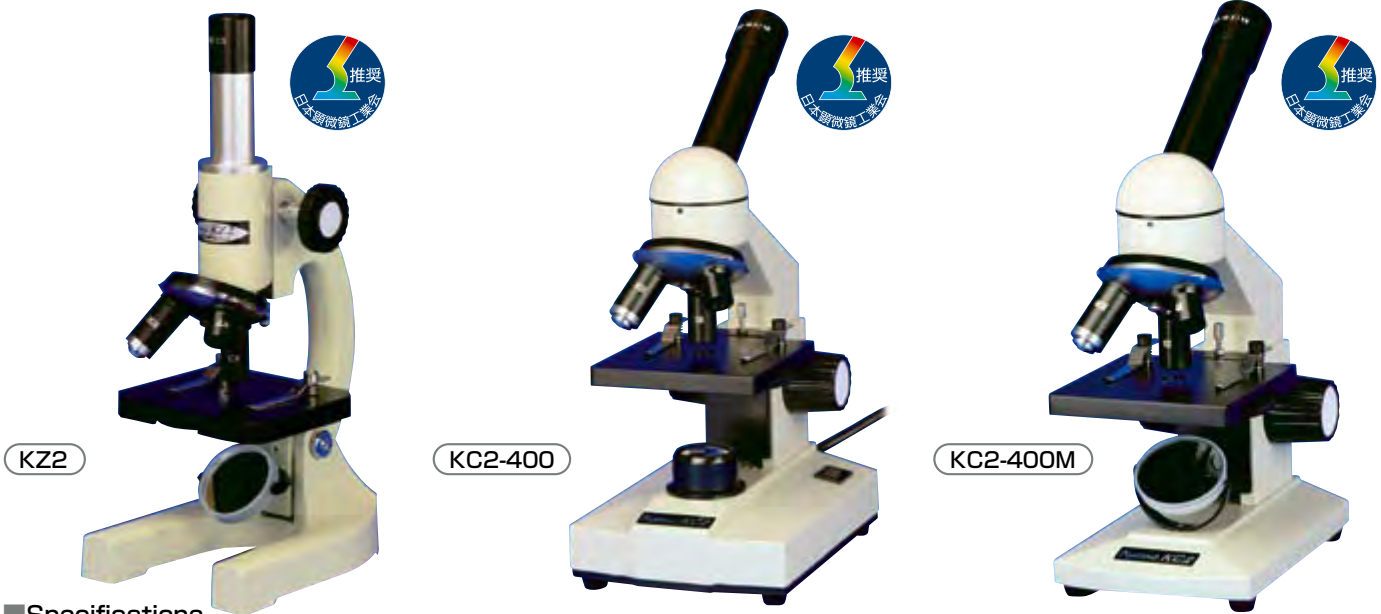
※20x is optional

# Microscope for education

Microscope for elementary and junior high school students

[corresponding to Science Education Promotion Act,  
recommended by Japan Microscope Manufacturers' Association]

KZ series continues on the bestseller list.  
Cost-effective, compact designed KC series.

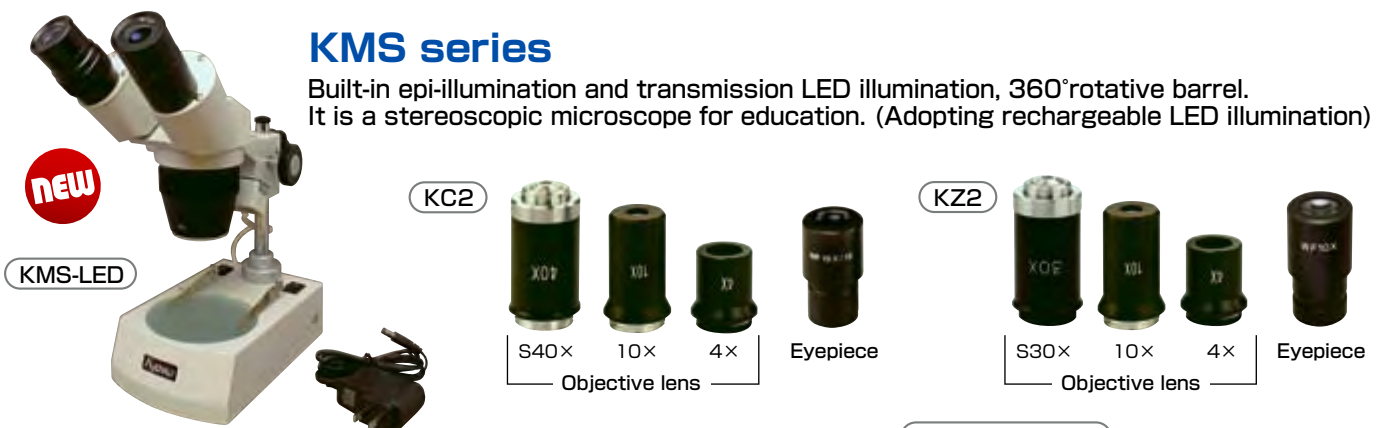


## Specifications

Model	KZ2	KC2-400	KC2-400M
Body	Three holes revolver (fixed)	Three holes revolver (fixed)	
Focusing mechanism	Vertically mobile barrel stroke 30mm	Vertically mobile stage coarse stroke 7mm	
Coarse device	Coarse handle (with safety device)	Coarse, fine and focusing handle (with safety device)	
Lighting system	Reflecting mirror (plane and concave mirror), $\phi 40$ mm	Built-in illumination device 100V15W Tungsten lamp	Reflecting mirror (plane mirror only), $\phi 36$ mm
Barrel	Barrel length : 130 mm	Barrel length : 138mm 45° inclined monocular barrel (fixed) standard ( $\phi 23.2$ mm inner diameter)	
Stage	Horny and fixed stage (100mm×90mm) Crenmel styel fixing (2)	Horny and fixed stage (90mm×90mm) Crenmel styel fixing (2)	
Eyeiece	WF10× (field number 15)	WF10× (field number 18) with micrometer mounting frame	
Objective lens	4×, 10×, S30×	4×, 10×, S40×	
Condenser	No condenser / with 6 holes rotative stop	Hemispherical lens N.A. 0.65 (fixed) / with 6 holes rotative stop	
Total magnification	40× ~ 300×	40× ~ 400×	
Storage box	Wooden storage box		
Physical dimensions	110mm(W)×160mm(D)×295mm(H)	121mm(W)×163mm(D)×285mm(H)	101mm(W)×155mm(D)×275mm(H)
Weight	1,060g	1,420g	1,180g

## KMS series

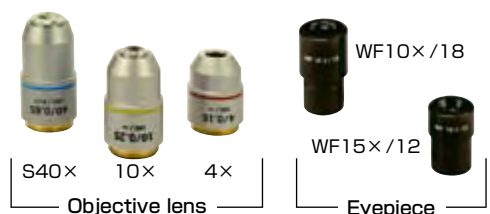
Built-in epi-illumination and transmission LED illumination, 360°rotative barrel.  
It is a stereoscopic microscope for education. (Adopting rechargeable LED illumination)



## Specifications

Total magnification	20×, 40×
Eyeiece	WF10× (field number 20mm)
Barrel	360° rotative, 45° inclined barrel, interpupillary distance adjustment, with diopter adjustment
Stand	Vertically mobile rack-and-pinion, fixing handle, with Crenmel
Lighting	Built-in AC adapter for epi-illumination and transmission LED illumination
Stage	Black-and-white plate, with frosted glass plate
Physical dimensions	115mm(W)×180mm(D)×220mm(H)
Weight	2,360g

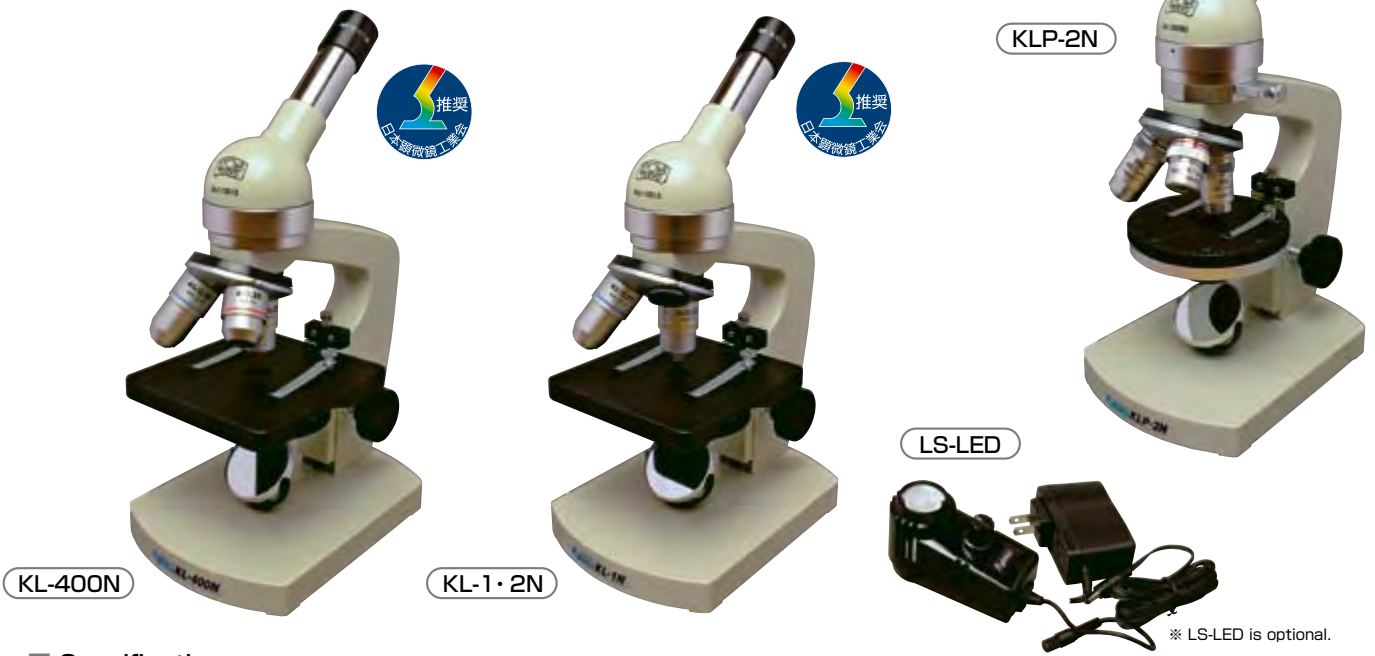
## KL-1·2N 400N



# Microscope for junior high school students

[corresponding to Science Education Promotion Act, recommended by Japan Microscope Manufacturers' Association]

KL series is practical microscope which is popular for many children and students. It is outstandingly easy to use and robust. KLP-2N is a polarizing microscope with an extremely compact design. This function is needed polarization performance as entry-level machine.



\* LS-LED is optional.

## Specifications

Name		Format	Biological microscope			Polarizing microscope
		KL-400N	KL-1N	KL-2N	KLP-2N	
Body part	Lens barrel	Barrel length 160mm, 45° inclined monocular barrel				
	Revolver	360° rotation			Fixed, sliding with built-in analyzer barrel	
	Stage	Horny and fixed 110×118mm With Crenmel (2), able to mount mechanical stage				φ 100mm, 360° rotatable Embedded at the bottom of polarizer stage (fixed), With Crenmel (2)
	Condenser	With 5 holes rotative stop			Number of apertures : 0.65	
	Focusing mechanism	Vertically mobile stage, focusing handle, with stage stopper				
	Lighting	Stroke 15mm				
Objective lens	4×	●	●	●	POL 4×	
	10×	●	●	●	POL 10×	
	40×	●	●	●	POL 40×	
Eyepiece	WF10×field number :18	●	●	●	Cross 10× field number : 15 (cross-lined)	
	WF15×field number :12	●	●	●	Dieter adjustable, with bearing pin	
Total magnification		40× ~ 400×	100× ~ 600×	40× ~ 600×	40× ~ 400×	
Storage box		Wooden strage box				
Physical dimensions		130mm(W)×202mm(D)×320mm(H)			130mm(W)×202mm(D)×323mm(H)	
Weight		2,080g	2,040g	2,010g	2,360g	

## Dissecting microscope

It is a dissecting microscope optimized for observing and dissecting animals, plants and so on.

It is a compact dissecting microscope optimized for observing and dissecting animals, plants and so on. Since supporting magnifier frame is double-adjustable, you can move magnifier freely in all directions. In addition, supporting frame move vertically in 40mm range by rack-and-pinion.



Small dissecting microscope

## Specifications

Model	KD-1	KD-2
Type	Ramsden magnifier	Steinheil magnifier
Stage	Transparent glass stage	
Focusing	Rack-and-pinion type, vertically mobile magnifier	
Magnifier	10×, 20×	
Reflecting mirror	Plane mirror, φ 40mm	
Accessories	With hand rests (2), with Crenmel (2)	
Storage box	Wooden strage box	
Physical dimensions	250mm(W)×150mm(D)×160mm(H)	
Weight	700g	720g

# Biological polarizing microscope

## BIO-POL2 series

Transmitted illumination system is adopted.

You can switch between orthoscope and conoscope in a single operation.

Removable test plate (1/4 wave plate, sensitive color plate).

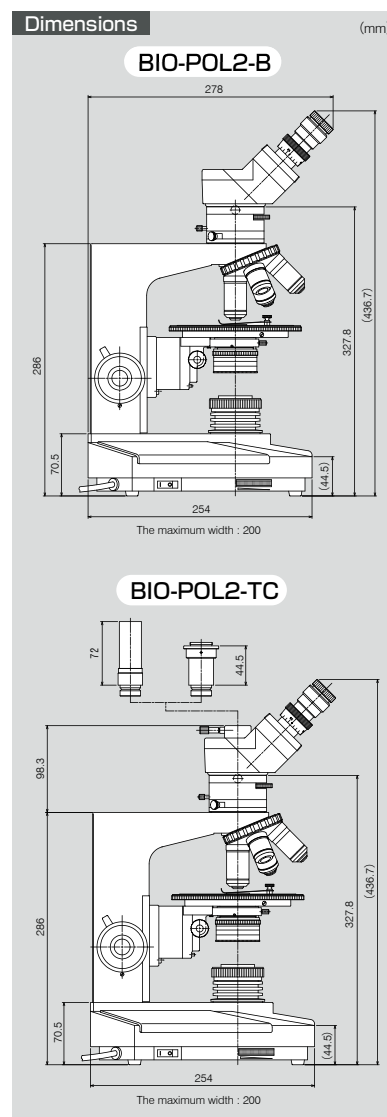
6V20W halogen lamp is adopted as light source.



BIO-POL2-B



BIO-POL2-TC



### Specifications

Model	BIO-POL2-B (binocular set)	BIO-POL2-TC (trinocular set)
Total magnification	48x~480x	
Lighting	Transmitted illumination, built-in power supply (base), dimming dial (left side of base), blue filter, halogen lamp 6V20W, fuse	
Focal level device	Vertically mobile stage by uniaxial, coarse and fine handle (rack-and-pinion) Coarse stroke 30 mm, micromotion handle (0.2 mm a rotation, 1 scale / 0.002 mm) Adjustable to coarse handle weight, with coarse stopper	
Barrel	45° inclination, removable, interpupillary adjustable range 54~74mm, with monocular diopter correction mechanism	
	With C-mount adapter switchable to two-stage optical path (observation 100, observation 20 : TV 80)	
Intermediate barrel for polarization observation	Removable, barrel magnification 1.2x, analyzer (swing switching, IN/OUT)	
	Switching between orthoscope and conoscope (turret)	Orthoscopic observation : display "O" Conoscopic observation (Bertrand lens) : display "C"
Reflective polarizer	Slot for test plate	
Polarizing condenser	Removable test plate (1/4 input wave plate, sensitive color plate)	
Condenser	Swingable (0°~90°), the upper part of the arm	
Revolver	Condenser : Abbe condenser N.A.1.25, with an aperture stop Transmissive polarizer : 360° rotative, with 0-position click-stop, scale display (0.90.180.270)	
Stage	Fixed large 4 holes revolver	
Power consumption	Diameter 150mm 360° rotatable stage fixable at any position With 360° equally spaced scale (minimum scale 1°, minimum reading 6' by a vernier) with Crennel (2) mechanical stage	
Accessories	24VA (when input voltage is 100V)	
Physical dimensions	Hex driver centering objective lens (2), dust cover, spare lamp (2), spare fuse	
Weight	200mm(W)×278mm(D)×436.7mm(H)	About 8,500g



Eyepiece

WHE10x/18  
with diopter correction (18 fields)

WHE10x/18  
with diopter correction (18 fields)  
Cross, with orientating pin



Objective lens

(finite distal ■45mm standard)

Format	N.A.	W.D.
POL-Plan4x	0.10	16.3mm
POL-Plan10x	0.25	7.35mm
POL-Plan40x	0.65	0.28mm

# Adapter for compact digital camera shooting

It is an adapter attachable compact digital camera commercially available.

Attachable to eyepiece frame (outside diameter  $\phi 28$ ,  $\phi 35$ ) of biological microscope whose outlet inner diameter is  $\phi 23.2\text{mm}$ .

In common, attachable to stereomicroscope.

It is made easy to shoot with more improvement of stability, versatility and operability than conventional adapters.

## <Applications>

- I want to save a photo of what you are seeing in the microscope.
- I want it displayed on the monitor at a low cost.
- I want to capture images to a computer.



Mounting example of trinocular straight tube stereomicroscope



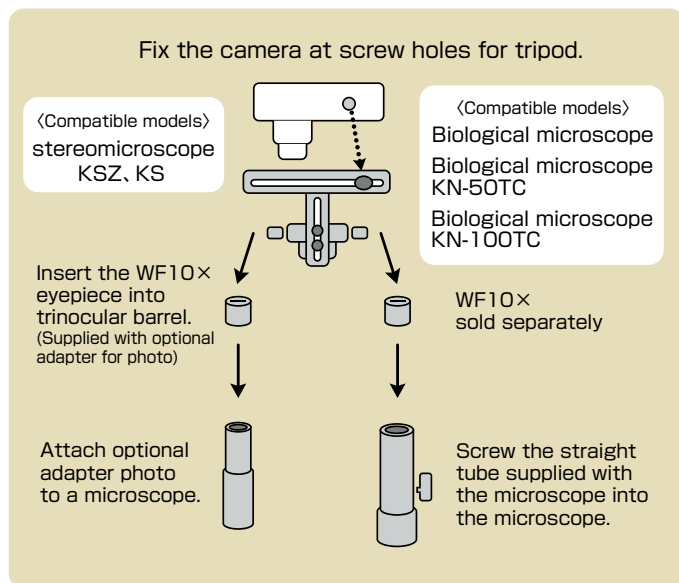
Mounting example of trinocular biological microscope



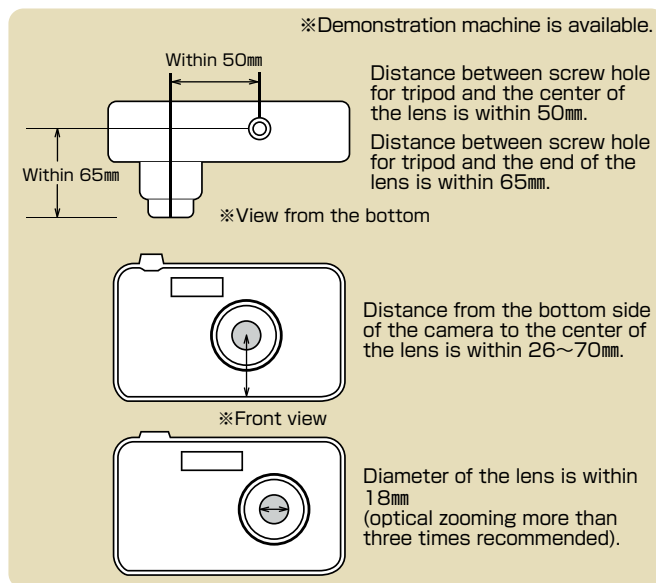
Z1017

※WE10 x which is sold separately is required.

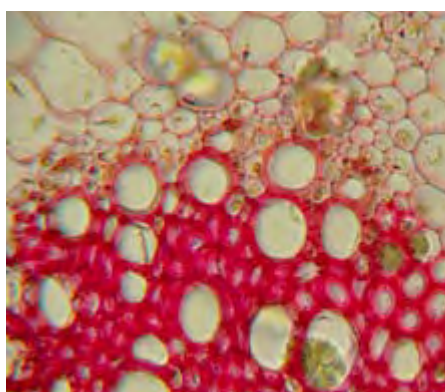
## ● Mounting method



## ● Rough indication of compatible models



Circuit board



Cross-section of a stalk of ragweed



Scaly hair of oleaster

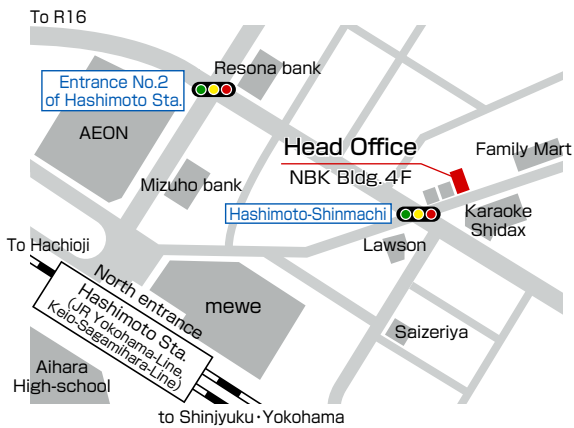
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History / Established in 1940

Business Line / Design, manufacture and sales of industrial microscope, metal microscope, polarizing microscope, biological microscope, microscope for school and training, specific optics



Shinshu Factory

