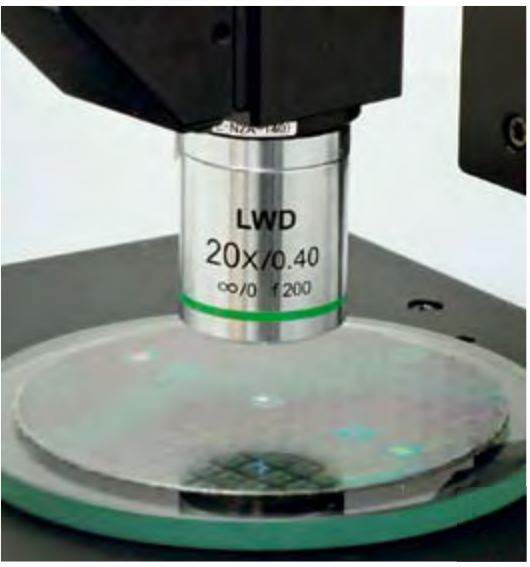
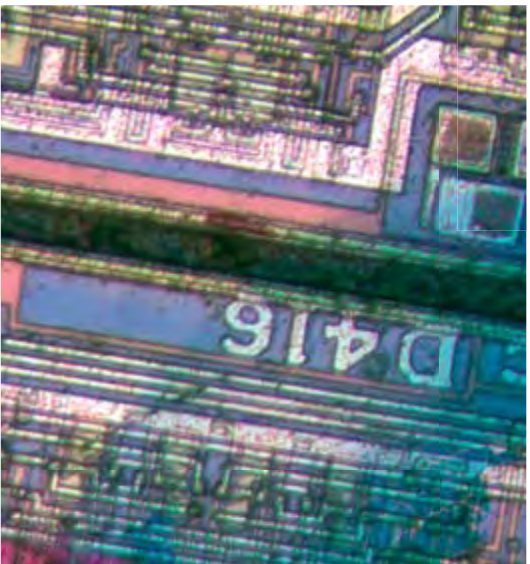
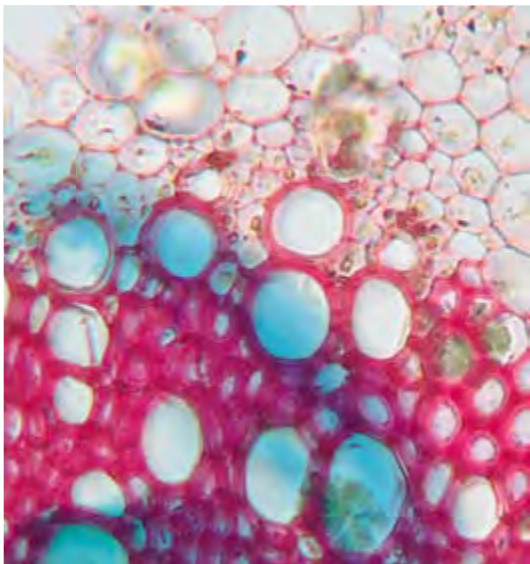
MICROSCOPE & OPTICAL CATALOG

KYOWA TOKYO





Kyowa Optical Co.,Ltd
General Catalog



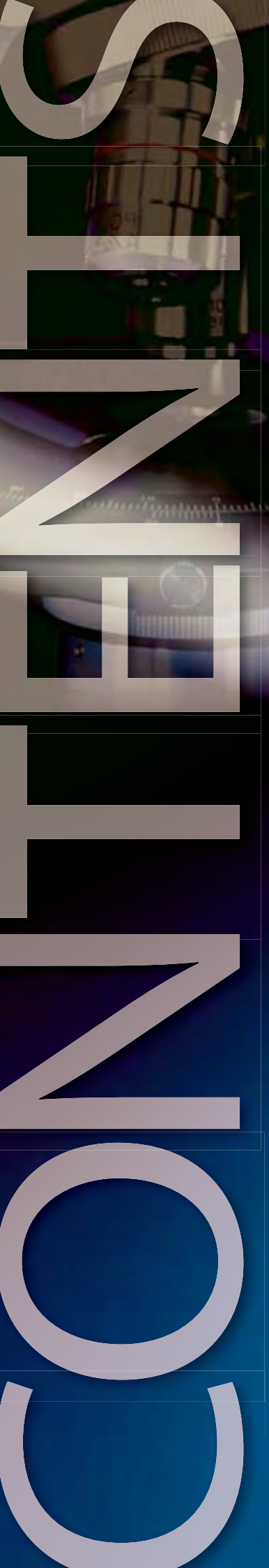


Table of Contents

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

KTL-N2□type

(For f = 200)

(For f = 180)

KTL-N3□type

KTL-N2□Wtype

(Type twin lenses)

KTL-N4□type

(Type 90° bend barrel)

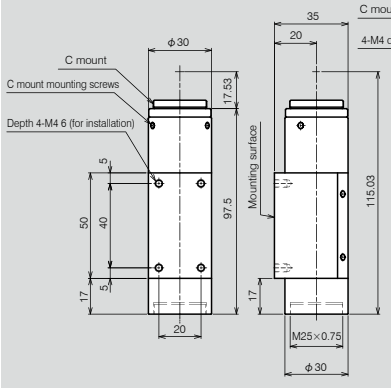
■Specifications

Type(※note 1)	KTL-N1□Type	KTL-N2□Type		KTL-N3□Type	KTL-N2□W Type	KTL-N4□Type
f (focal length)	200㎜	200㎜	180㎜	200㎜	200㎜	200㎜
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				
Coreesponding 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

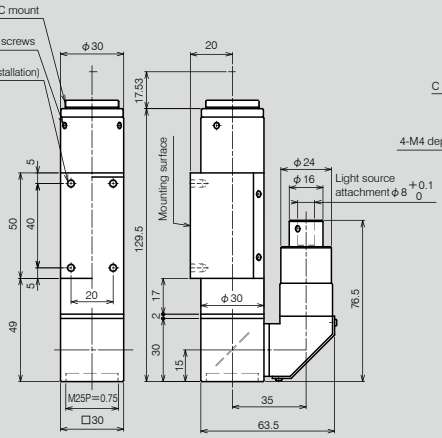
※Note 1: Each type of in □, enter the number of the following by the standard objective lens mounting.
A: M25P0.75, B: 20.32/36pitch (for f = 180), C: 26/36pitch, D: 20.32/36pitch (for f = 200)
※Note 2: The following uses of a conversion adapter ①～④ are available, please select when ordering according to the application.
①M25P0.75→20.32／36pitch、②20.32／36pitch→M25P0.75、③20.32／36pitch→26／36pitch、④M25P0.75→26／36pitch

Dimensions

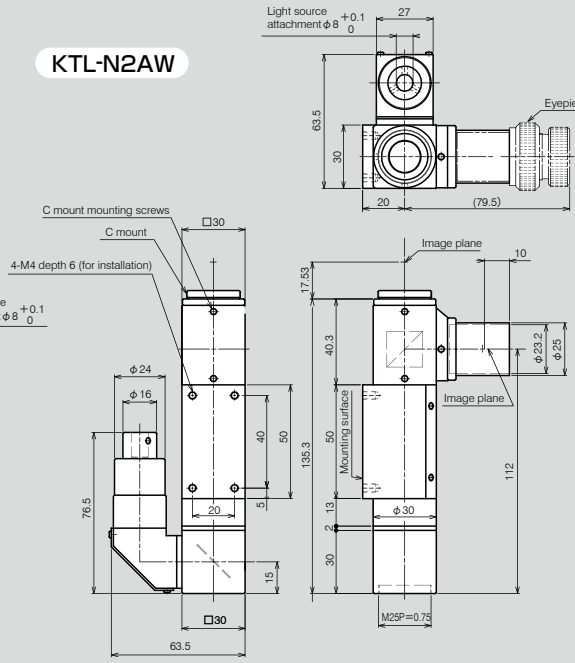
KTL-N1A



KTL-N2A



KTL-N2AW



Infinity-corrected objective lens optical system

Same focal distance 95mm (for f = 200)

Same focal distance 45mm (for f = 200)

CWF 10×

KTL-N-010
Conversion adapter C mount

KTL-N cradle unit

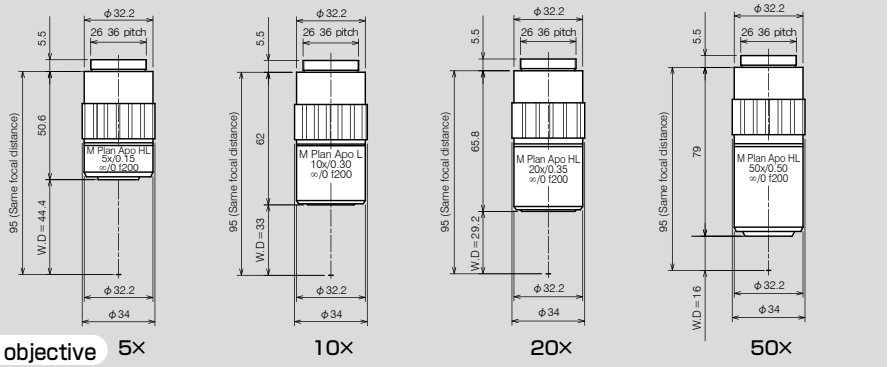
Achieve a compact design and excellent resistance.

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

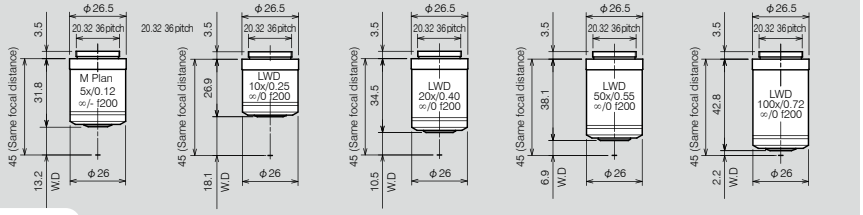
(mm)



95mm objective 5× 10× 20× 50×

Dimensions

(mm)

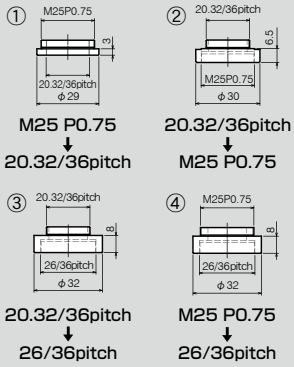


45mm objective 5× 10× 20× 50× 100×

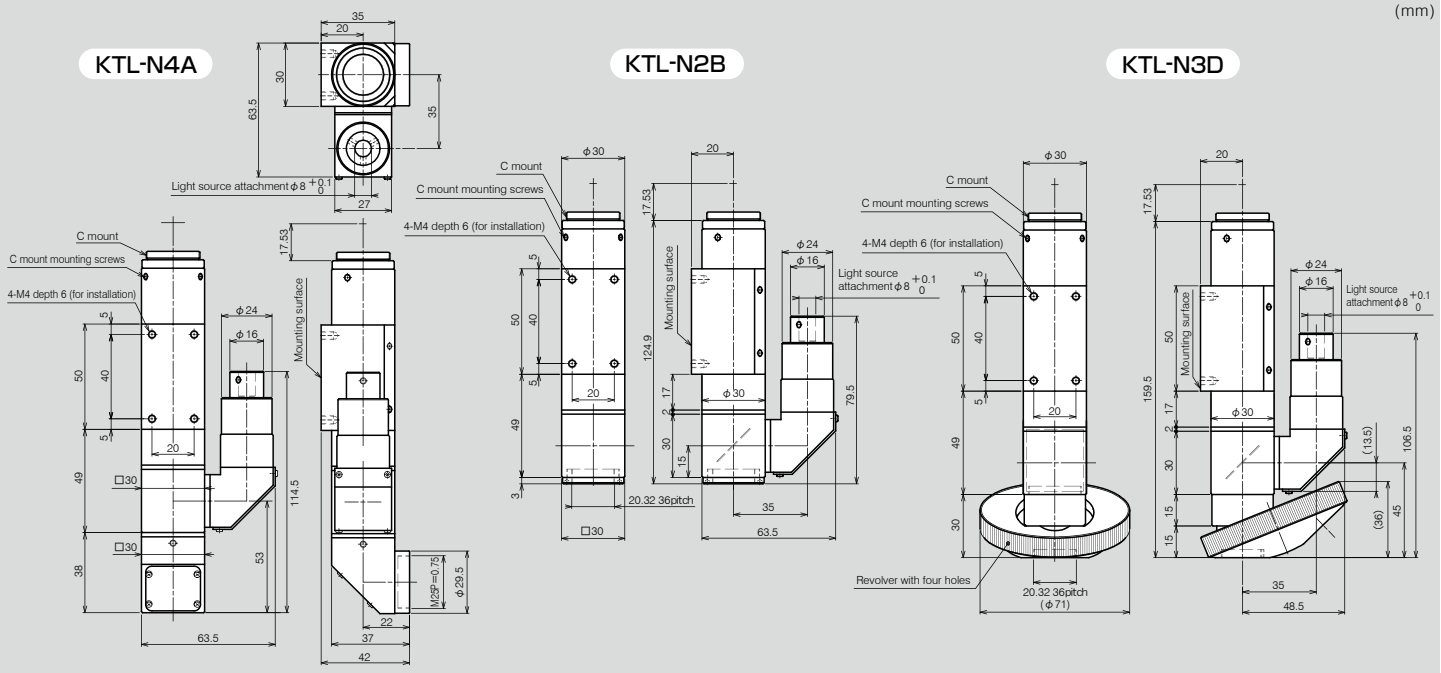
Dimensions

(mm)

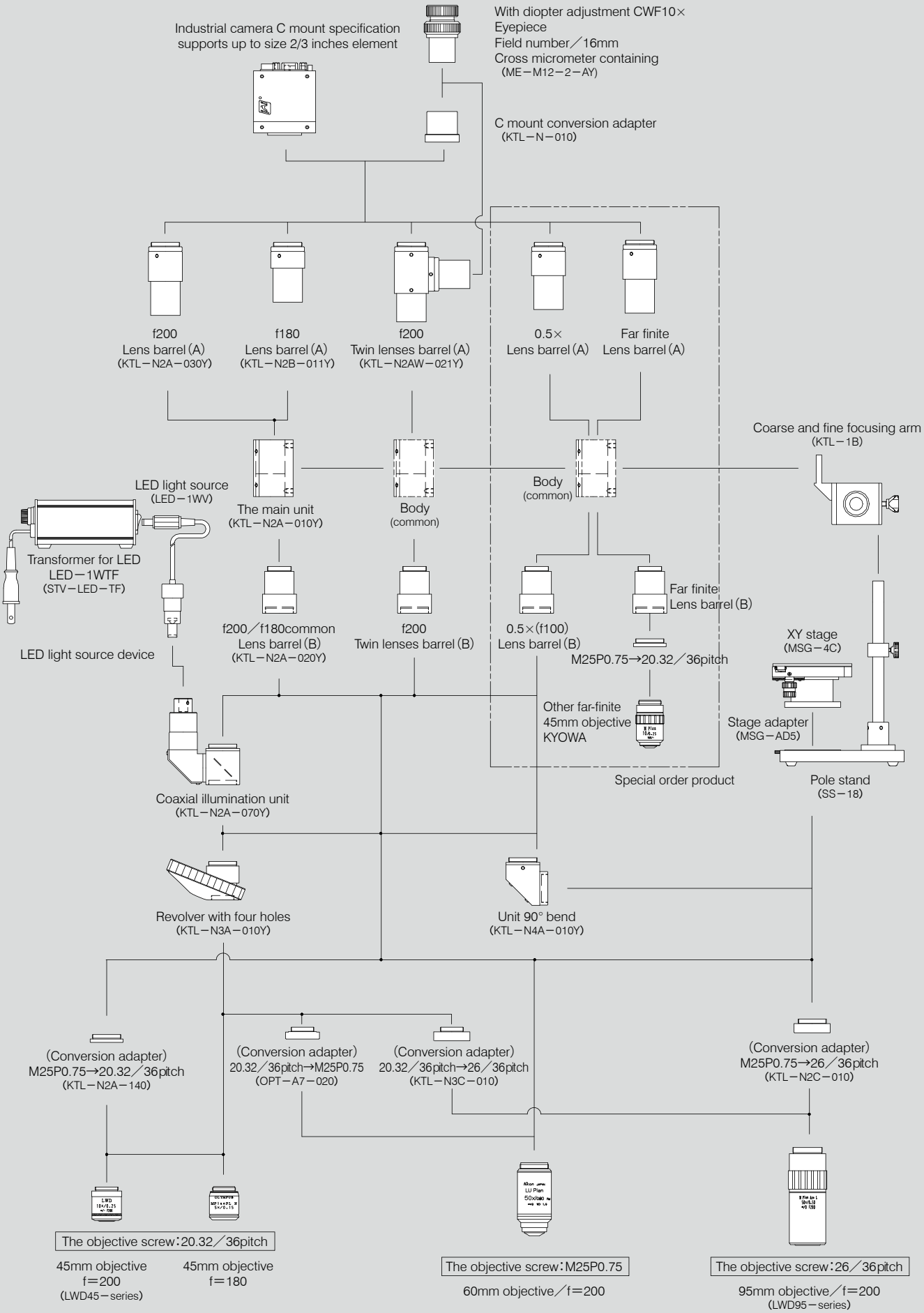
Type of conversion adapter



(mm)



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.

AZM-DS-1

AZM-DS-2

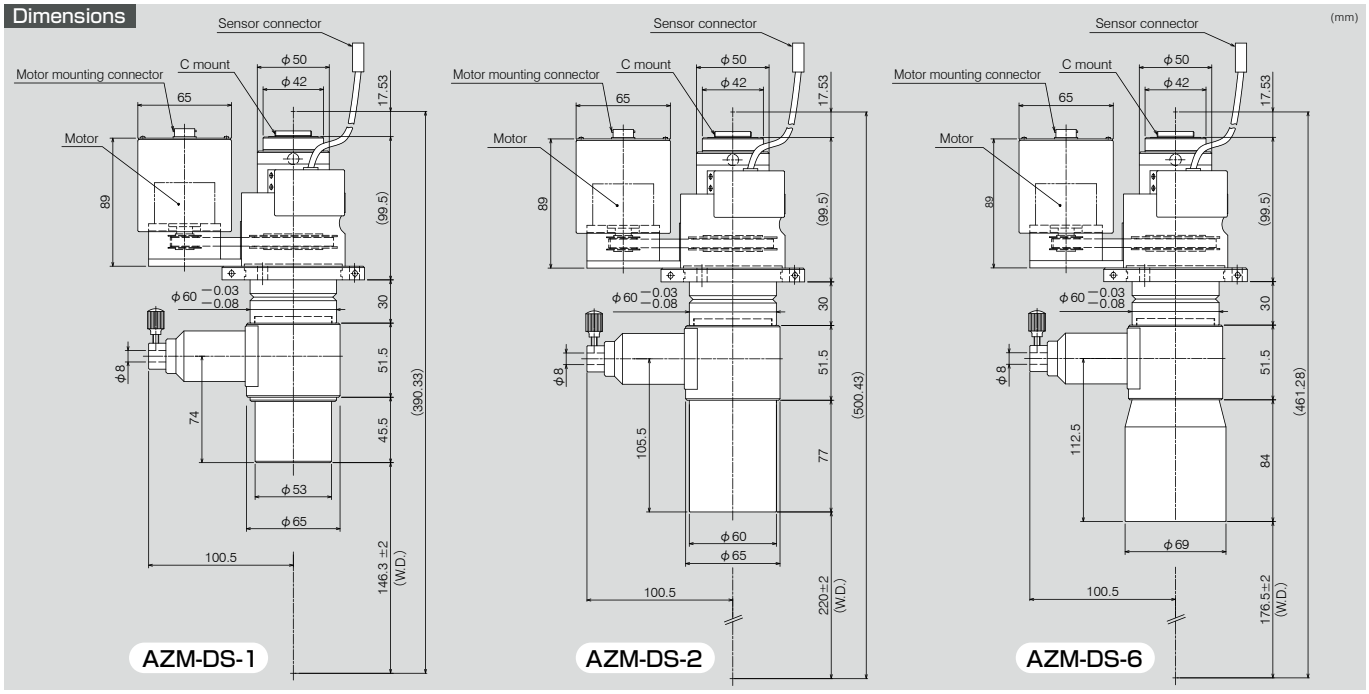
AZM-DS-6

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±2㎜	220±2㎜	176.5±2㎜
Depth of focus	19.6㎜~1.2㎜	26.8㎜~0.69㎜	17㎜~0.85㎜
Resolution	46μm~14.4μm	66μm~14.4μm	70μm~11μm
Actual field of view	25.7×34.2㎜~4×5.3㎜	24×32㎜~3.6×4.8㎜	34.2×45.9㎜~5.3×7.1㎜
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

(mm)



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	Stroke150㎜ Outside diameter : 220㎜(W)×320㎜(D)×442㎜(H)	LAS-400	Available	Available	Unavailable
		Stroke150㎜ Outside diameter : 220㎜(W)×320㎜(D)×710㎜(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 Specification

Name				Model	EMZ-C1	EMZ-C2	EMZ-C3
Body part	Zoom lens barrel	Zoom objective lens formula 0.4×~2× 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 ㎜	TS-LH	●	●	●
	Power transformer	Imput voltage: AC100V Output current: 0 ~900mA Fuse: 1A	Weight About 263g	LED-1WTF	●	●	●
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	Stroke150㎜ Dimensions : 220㎜(W)×320㎜(D)×442(H)㎜		LAS-400	Available	Unavailable	Unavailable
		Stroke550㎜ (By changing the mounting position) The amount of coarse movement150㎜ Dimensions : 220㎜(W)×320㎜(D)×710(H)㎜		LAS-700	Available	Available	Available
Weight					1,995g	2,075g	2,315g

■EMZ-A Specification

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

Master lens Common EMZ-C and EMZ-D

Three master lens types are available. Magnifications are 1×, 0.75× and 0.5×. 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(㎜)	Working distance(W.D)
EMZ-C1 EMZ-D1	0.4×~2× (Master Lens 1×)	20×15~4×3	104㎜
EMZ-C2 EMZ-D2	0.3×~1.5× (Master Lens 0.75×)	26.7×20~5.3×4	138㎜
EMZ-C3 EMZ-D3	0.2×~1× (Master Lens 0.5×)	40×30~8×6	214㎜

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

●Depth of focus(EMZ-C、EMZ-D)

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

●Resolution(EMZ-C、EMZ-D)

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

TV adapter
(common EMZ and FMZ)

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

●Optical performance table(EMZ-A、FMZ-A)

Depth of focus ▭ Resolution ▭

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

※ Common EMZ-A and FMZ-A, ... C mount TV adapter 1×, under using CCD camera (resolution/0.015㎜).
※ EMZ-A ...For coaxial epi-illumination, vignetting may occur at more than 13 mm actual field of view.

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

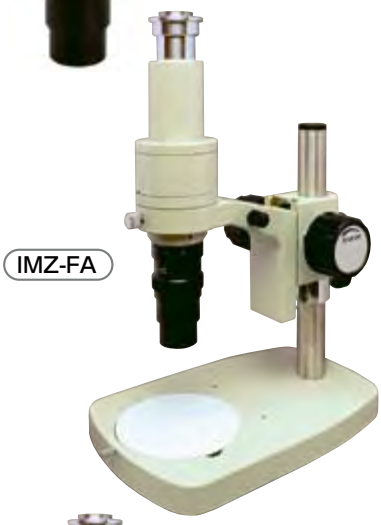
- ●A zoom lens working in the range of 0.8× to 5×, there is little blur and optical axis deviation when zooming.
- ●Because IMZ-EA has 1/4 wavelength plate, you can check the best images.
- ●IMZ-EA has new coaxial LED lighting and the power transformer and provides a clear image.
- ●IMZ-FA is ideal for 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

IMZ-FA



■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 :LED-1WTF:AC100V、0~350mA		0.8×~5× (Useful magnification1.5×~5×)	75mm±1mm
Auxiliary objective lens (optional)	SLA-IMZ/1.5×	1.2×~7.5× (Useful magnification1.5×~7.5×)	37mm±2mm
	SLA-IMZ/2×	1.6×~10×	24.5mm±2mm

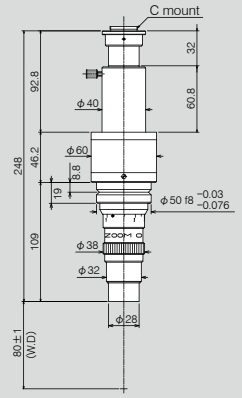
※When using the 1/3 inch CCD camera, vignetting in 0.8×~1× may occur in the four corners of the monitor.

IMZ-EA

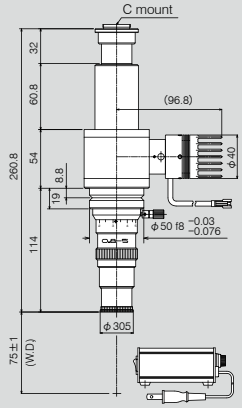
■IMZ Specifications

Name	Model	IMZ-FA	IMZ-EA
IMZ-FAbody (straight-tube)	IMZ-FA-ST	●	
IMZ-EAbody (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

Dimensions (mm)



IMZ-FA



IMZ-EA

●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

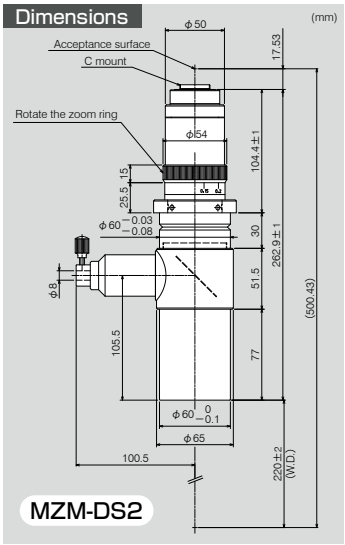
MZM-DS2

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



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

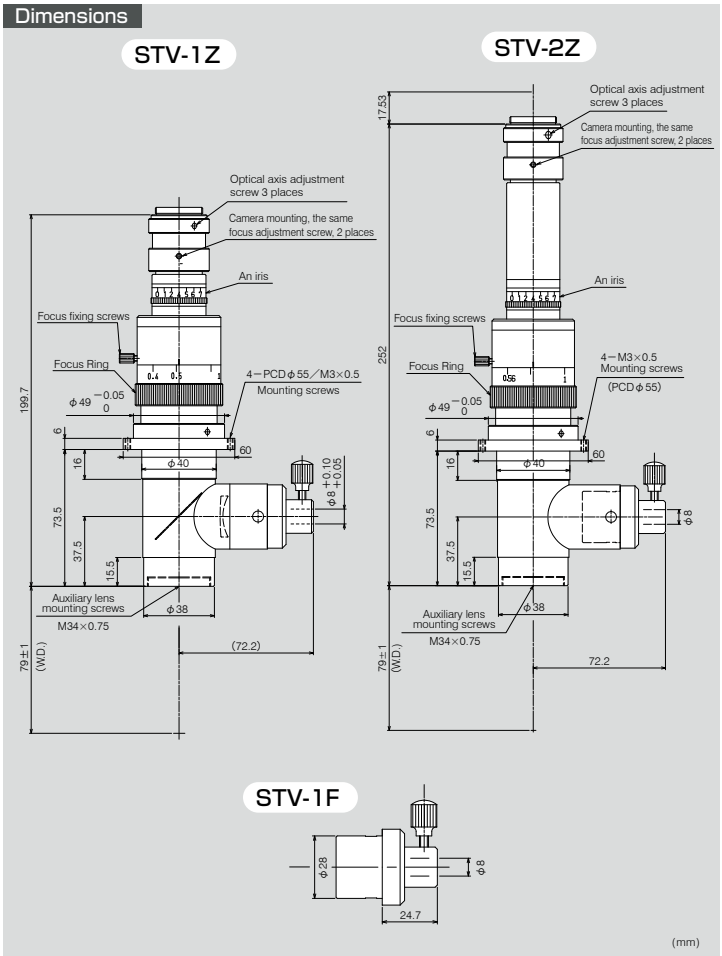
Name	TVZ-150	TVZ-200	TVZ-280	TVZ-90S	TVZ-90
Magnification	0.17×~1.15×	0.13×~0.89×	0.095×~0.65×	0.385×~2.6×	0.7×~4.5×
Zoom ratio	1:6.76	1:6.84	1:6.84	1:6.75	1:6.42
Working distance (W.D.)	152mm ±3mm	200mm±3mm	280mm±3mm	90mm±2mm	90mm±2mm
Depth of focus※	14.8mm~0.40mm	18mm~0.72mm	46mm~1.4mm	2.41mm~0.14mm	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 potimal 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-illumiination 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	10.24㎜×12㎜ ～2.56㎜×1.92㎜	11.42㎜×8.57㎜ ～1.82㎜×1.37㎜
	※When using 2× rear converter	5.12㎜×6㎜ ～1.28㎜×0.96㎜	5.71㎜×4.285㎜ ～0.91㎜×0.685㎜
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×	1.98㎜	0.88㎜	0.49㎜
	14.64μm	9.76μm	7.32μm
0.5×	1.45㎜	0.65㎜	0.36㎜
	13.07μm	8.71μm	6.54μm
1×	0.37㎜	0.16㎜	0.09㎜
	6.65μm	4.46μm	3.33μm
1.5×	0.25㎜	0.11㎜	0.06㎜
	6.10μm	4.07μm	3.05μm
2×	0.16㎜	0.07㎜	0.04㎜
	5.23μm	3.49μm	2.61μm
2.5×	0.12㎜	0.05㎜	0.03㎜
	4.58μm	3.05μm	2.28μm
Working distance(W.D.)	79.1㎜	79.1㎜	79.1㎜

●STV-2Z Optical performance table

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

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.

NEW

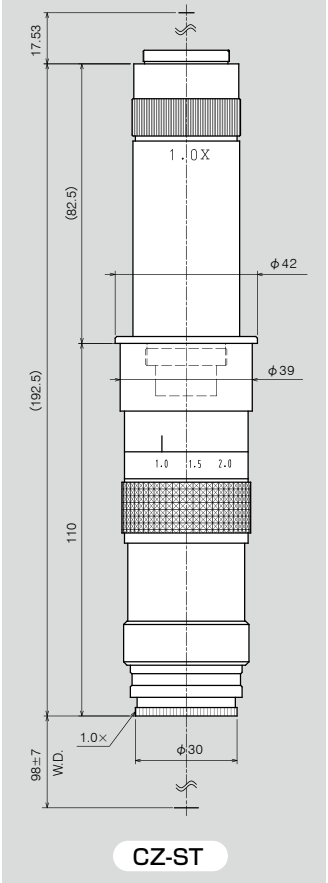
CZ-ST

Master lens
0.5×

(Optional)

Master lens
1.0×

Dimensions (mm)



CZ-ST

Type-S

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

Type-E

(X-Ystage separately)

●Optical performance table

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

■TYPE-S・E　USB camera set

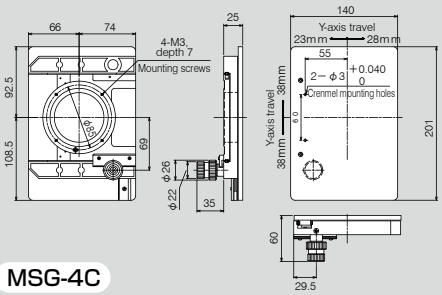
Unit / Name			Combination / Format	USB camera set Type-S	USB camera set Type-E	Remarks
Body	Zoom lens 0.7×~4.5×		CZ-ST	●	●	C mount specification
	Master lens	1.0×	CZ-MSL1.0×	●	●	
		0.5×	CZ-MSL0.5×			
USB Color Camera	1/2inches, 300 million pixel		YCU-300F	●	●	CD with exclusive software
LED ring lighting, dimming formula			CKL-144	●	●	With AC adapter
Focus thing unit			FA-18	●	●	
X-Ystage 75×50㎜			MSG-4C	●		With stage adapter
Stand	Pole stand		SS-17	●	●	
	Black-and-white stage plate		SP-8		●	φ95㎜

Industrial lens Accessory

XY stage

MSG-4C

Dimensions (mm)



MSG-4C

Weight ···1140g

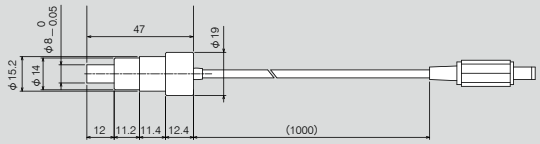
Industrial LED Lighting

Power LED

LED-1WTF

LED-1WV

Dimensions (mm)



LED-1WV

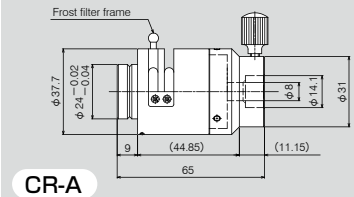
Lighting adapter

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

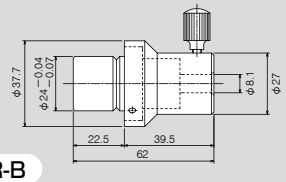
CR-B Compatible models (EMZ-C)

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

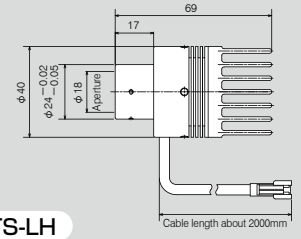
Dimensions (mm)



CR-A



CR-B



TS-LH

■Accessories for commercial microscope

Name	Model	Remarks
Adapter for lighting	CR-A φ8	For IMZ-EA／EMZ-A
	CR-A φ10	For IMZ-EA／EMZ-A
	CR-A φ12	For IMZ-EA／EMZ-A
	CR-A φ14	For IMZ-EA／EMZ-A

Name	Model	Remarks
Adapter for lighting	CR-B φ8	For EMZ-C
	CR-B φ10	For EMZ-C
	CR-B φ12	For EMZ-C
	CR-B φ14	For EMZ-C

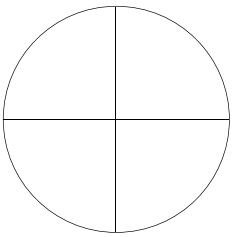
Accessory Other Accessories

Eyepiece Micrometer

※In addition, special micrometer also available.

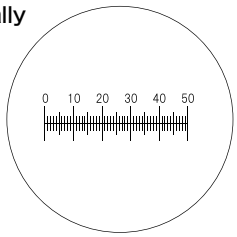
Cross

Outer diameter	Model
φ19 mm	M-F19-1
φ21 mm	M-F21-1
φ24 mm	M-F24-1
φ25 mm	M-F25-1



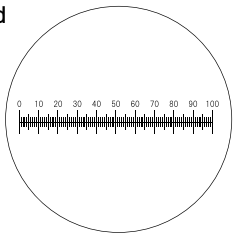
Each of fifty equally spaced 50mm

Outer diameter	Model
φ19 mm	M-F19-2
φ21 mm	M-F21-2
φ24 mm	M-F24-2
φ25 mm	M-F25-2



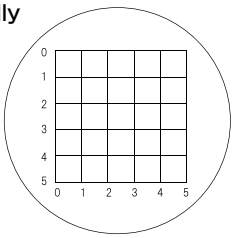
Each of a hundred equally 10mm

Outer diameter	Model
φ19 mm	M-F19-3
φ21 mm	M-F21-3
φ24 mm	M-F24-3
φ25 mm	M-F25-3



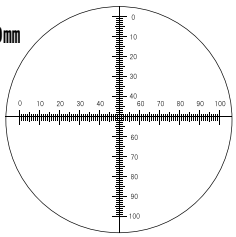
Each of five equally spaced 5mm

Outer diameter	Model
φ19 mm	M-F19-4
φ21 mm	M-F21-4
φ24 mm	M-F24-4
φ25 mm	M-F25-4



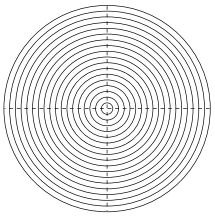
XY scale, each of a hundred equally 10mm

Outer diameter	Model
φ19 mm	M-F19-5
φ21 mm	M-F21-5
φ24 mm	M-F24-5
φ25 mm	M-F25-5



Concentric circles

Outer diameter	Model
φ19 mm	M-F19-6
φ21 mm	M-F21-6
φ24 mm	M-F24-6
φ25 mm	M-F25-6



※φ19mm…t=1 (for biological microscope)
φ21mm…t=1 (for ME-LUX、ME-POL2)
φ24mm…t=1 (for KSZ、KS、SSZ)
φ25mm…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 (φ19mm).

CA-20A　CA-30A

TV-EX1.5　TV-EX2

■× 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 (innner 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 (φ19 mm) can be built in.
※ Supporting camera size less than 1/2 inches.

CA-05　CA-05A

Bulb

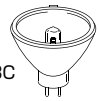
■Halogen lamp

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



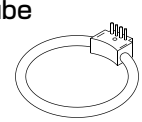
■Tungsten lamp

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

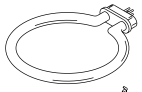
EP-OD-58
100V15W
Used product　KC、KC2、KM、KM2

■Ring fluorescent lamp
Ring fluorescent tube

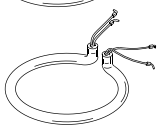
EP-OD-67
8W
Used product　FLC-8W/8WG



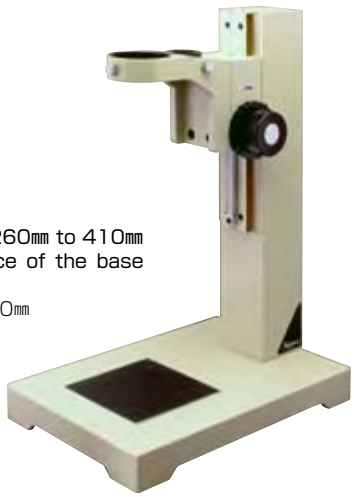
EP-OD-50
10W (Pin type)
Used product　FL-10



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 rage of 260㎜ to 410㎜ from the upper surface of the base portion.
※vertical stroke is 150㎜

LAS-700

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

LAS long arm stand

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

Universal stand

US-4·4B·4C

Useful for the speculum 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 observating 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.
※40㎜ vertical stroke
The amount of tremor movement is 1.2㎜ per rotation.

SU-40

The slider unit with a vertically moving mechanism is available to be used with being incorporated in various devices.
※40㎜ 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 combinating optional eyepiece and auxiliary lens.

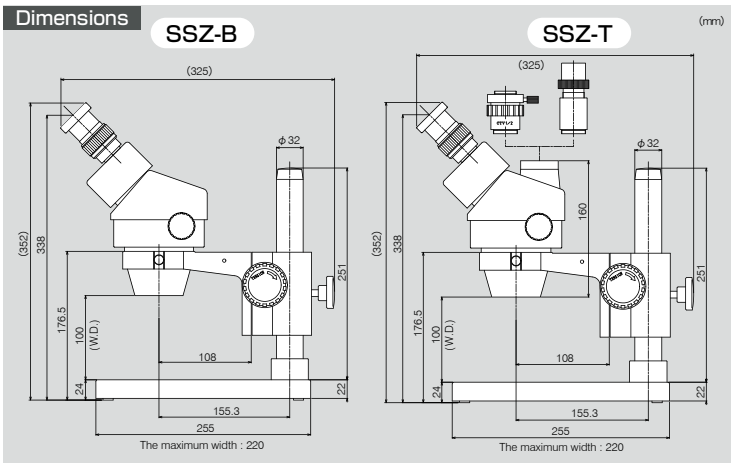
You can observe easily even when wearing glasses, because the eyepiece has long (approx. 17㎜) eyepoint.

SSZ-B　SSZ-T

■Specifications

Model		SSZ-B (binocular)	SSZ-T (trinocular)
Total magnification		7×～45×	
Lens barrel	Objective lens	0.7×～4.5×	
	Eyepiece	WF10× The number of views, 20 (micrometer eyepiece able to be mounted)	
	Working distance	100㎜ (Except for connecting ring)	
	Tilt angle of barrel	45°、360° rotatable	
	Eye width adjustment	Adjustment range of 54㎜ to75㎜	
	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 crenmel	
Accessories			Straight tube, C-mount adapter
Physical Dimensions		220㎜(W)×325㎜(D)×352㎜(H)	
Weight		About 4,400g	About 4,500g

Dimensions　(mm)



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.

KSZ　KSZ-T

KSZ-L (built-in lighting LED)　KSZ-TL (built-in lighting LED)

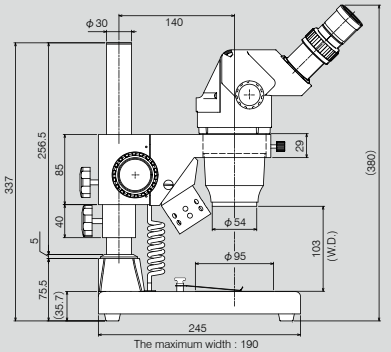
■Specifications

Total magnification	10×～65× (Zoom ratio 6.5)
Objective lens	1.0×～6.5×
Eyepiece	Able to be mounted WF10× micrometer eyepiece (number of view, 23)
Working distance	103㎜
Eye width adjustment	Adjustment range of 52㎜ to 75㎜
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	190㎜(W)×320㎜(D)×380㎜(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

Dimensions　(mm)

KSZ-L Binocular head+SS-14



【 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

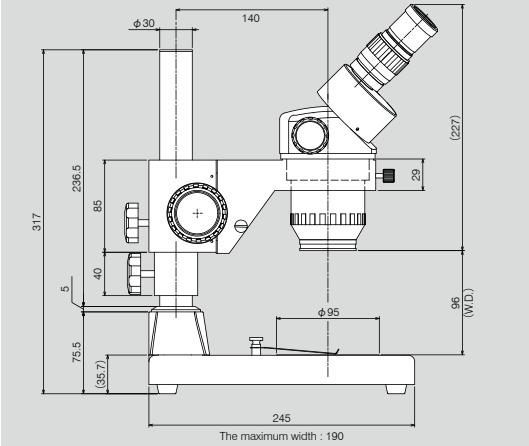
■Specifications

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×
Eyepiece	WF10× (number of field of view 23㎜)	
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	190㎜(W)×266㎜(D)×358.7㎜(H)	
Weight	4,020g	5,040g

Dimensions

(mm)

KS-1 Binocular head+SS-12



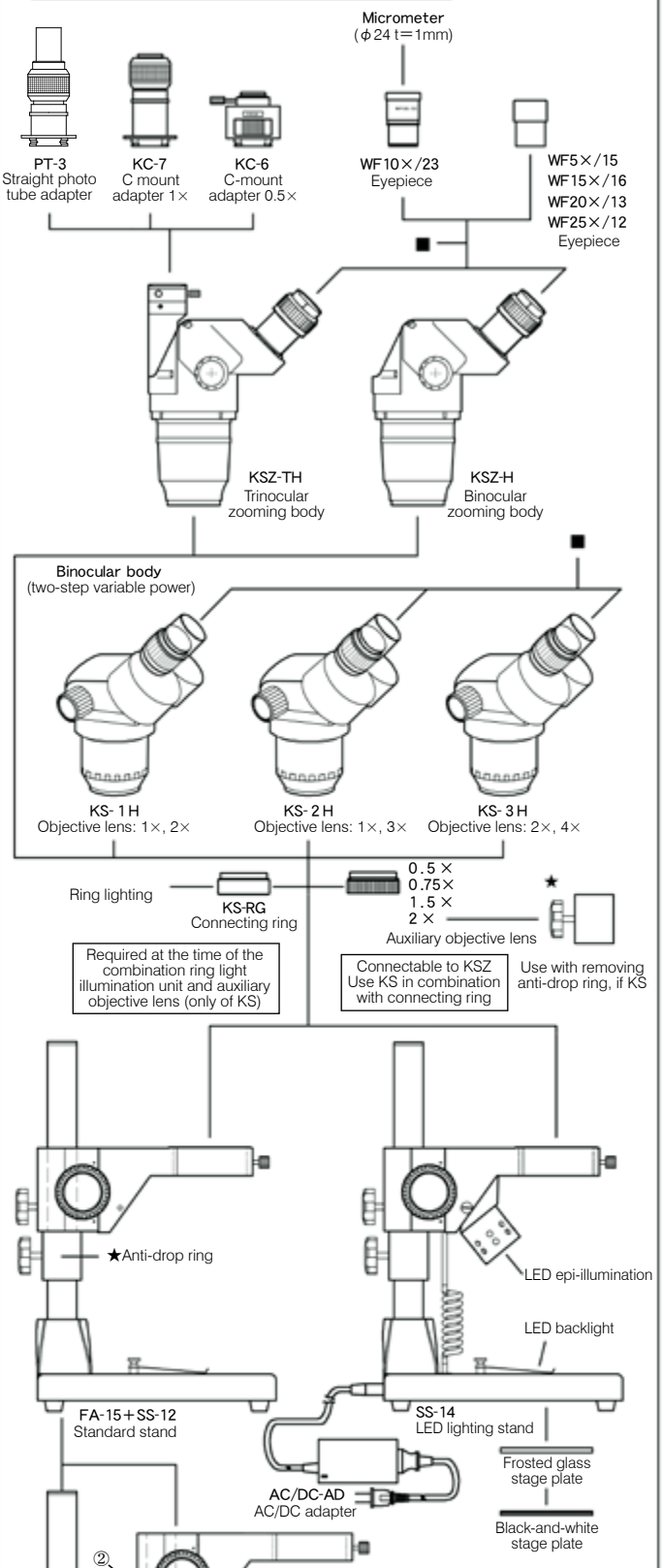
KSZ・KS Options

Adapter	C mount adapter 1×	KC-7 ※KSZ-T、KSZ-TL is standard
	C mount adapter 0.5×	KC-6
Eyepiece	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×

Eyepiece for KSZ/KS

Eyepieces for SSZ

KSZ/KS system diagram



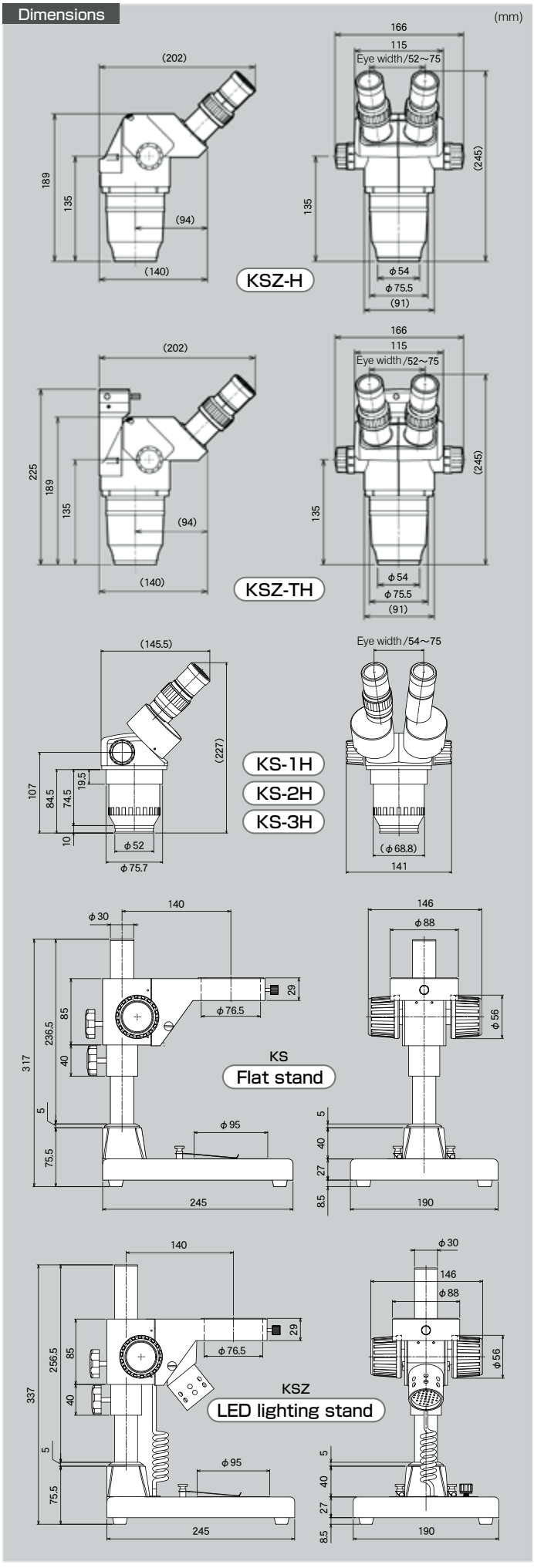
★Use optional 2× auxiliary objective lens (in the case of KS) with removing anti-drop ring because of short working distance.

1) First, remove mirror body from focusing device ① gently.
2) Loosen clamp handle ② then remove forcusing device ①.
3) Loosen clamp handle ③ then remove anti-drop ring ④.
4) Please do NOT longer coiled cord which connects with backlight stand in the case of removing focusing device mounting LED epi-illumination. In addition, please do that with making sure to disconnect the power cord.

・Please use this with screwing the auxiliary objective lens in the mounting screws at the bottom of the mirror body in combination with the connecting ring (KS-RG).

Dimensions

(mm)



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	60㎜(W)×90㎜(D)×455㎜(H)	70㎜(W)×100㎜(D)×470㎜(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 ϕ25～ϕ60 mounting dimensions)
Adopting the AC adapter corresponding to 100V～240V.
No flicker seen from ordinary fluorescent.

DKL-60

■Light-emitting part ／ specifications

Model	DKL-60
Mounting method	Three-point screw
Input voltage	DC12V
Power consumption	2.5W
Output current	140mA MAX
Approximately	About30,000 hours life (not guaranteed values)
Function of modulating light	0～100%
Illumination	About 17,500 Lux illuminance (measured distance: 75mm)
Dimensions	95㎜(W)×138.5㎜(D)×34㎜(H) (inner diameter ϕ60mm)
Weight	135g

■AC adapter ／ specifications

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

LED lighting equipment

Able to modulate light with a triple in a three-column array.
Adopting AC adapter corresponding to 100V～240V.

CKL-144

■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	47ϕ～60ϕ
Weight	160g (including AC adapter)

Metal Microscope for inspection training

ME-LUX2 series

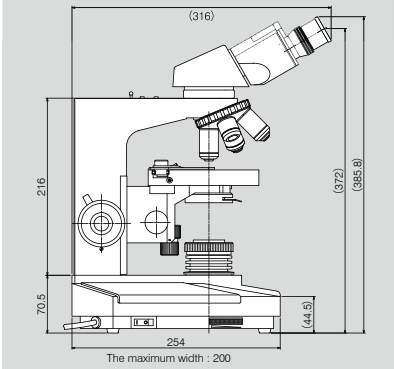
Adopiting a binocular eye piece having 30° of an incline which minimizes fatigue during speculum and makes natural posture.
The barrel realizes comfortable speculum with adopting Siedentopf barrel.

ME-LUX2S-2L

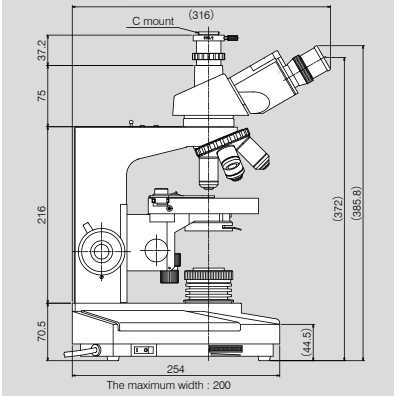
ME-LUX2S-3L

Dimensions (mm)

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 50～75㎜, 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 : 185㎜ (W)×140㎜ (D), mobile range : 77㎜(width)×52㎜ (length)			
	2L·3L type	Uniaxial mechanical stage (lower right handle)／size : 160㎜ (W)×140㎜(D), mobile range : 75㎜(width)×50㎜(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		200㎜(W)×316㎜(D)×385.8㎜(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 perchase 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 : φ21㎜・1㎜ thick
EW15× : φ19㎜・1㎜ thick

Objective lens (finite distal■45㎜ standard)

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

Metal polarizing microscope

both alternating reflection and transmission lighting type

ME-POL2 series

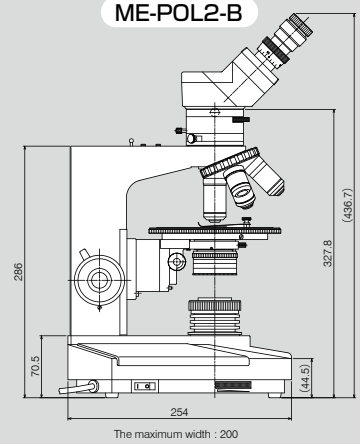
Arm has built-in Kohler illumination for reflected illumination. You can speculum with sharp contrast without unevenness and vignetting. Field stop, aperture stop and adustment of polarizer are easy to operate because they are incorporated in the upper part of the arm.
Halogen lamp 6V20W was adopted as the light source.

ME-POL2-B

ME-POL2-TC

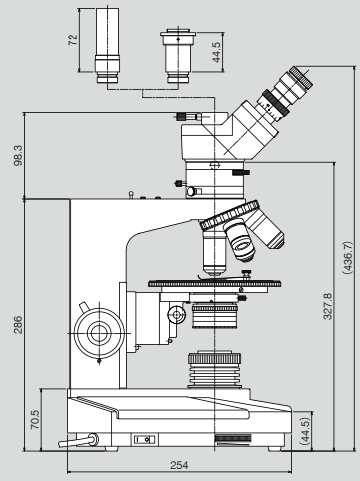
Dimensions (mm)

ME-POL2-B



The maximum width : 200

ME-POL2-TC



The maximum width : 200

■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 30㎜ , fine focus adjustment (0.2㎜ a rotation, one scale / 0.002㎜) Coarse handle adjustable to weight, with coarse stopper	
Lens barrel	45° angle of inclination, removable, Interpupillary adjustable range 54~74㎜, 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 conoscope (turret system)	Orthoscopic observation : display “O” Conoscopic observation (Bertrand lens) : display “C”
	Slot for test plate	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° rotable, 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	200㎜(W)× 278㎜(D)×436.7㎜(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 ■45㎜ standard)

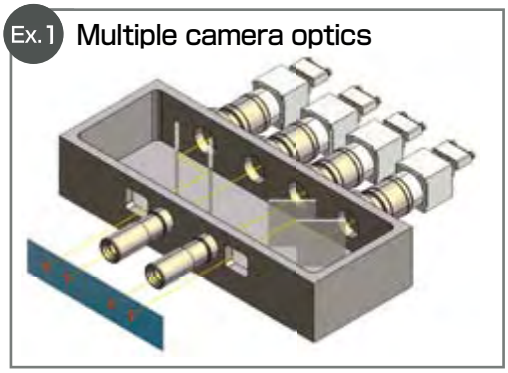
Format	N.A.	W.D.
POL-MPlan5×	0.10	16.5㎜
POL-MPlan10×	0.25	7.58㎜
POL-MPlan40×	0.65	0.6㎜

Customized optics

Microscope for embedding device

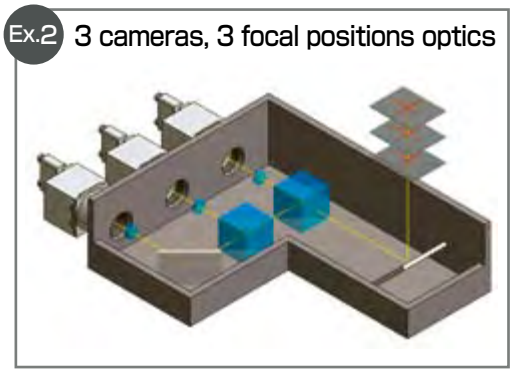
We produce optical units for your exclusive use with shape and design according to devices.

Ex.1 Multiple camera optics



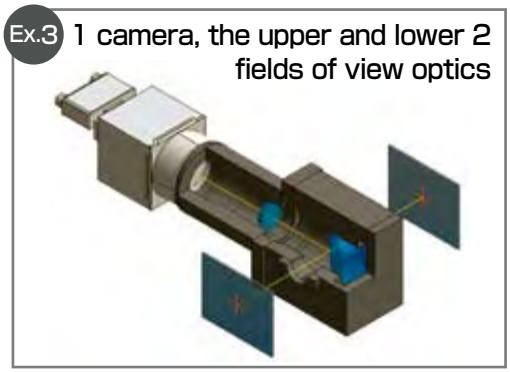
Four cameras will capture extensive work on the side at once with changing magnifications respectively.

Ex.2 3 cameras, 3 focal positions optics



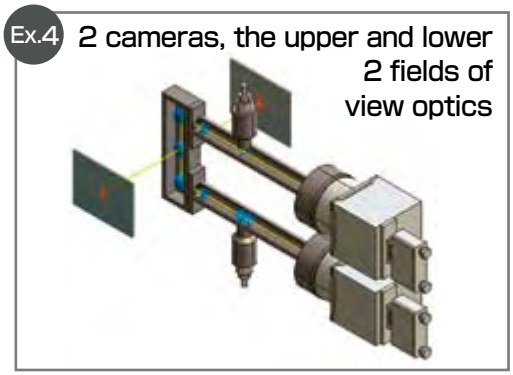
It will capture one work on the top side with changing focal positons. You can adjust the magnification simultaneously.

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



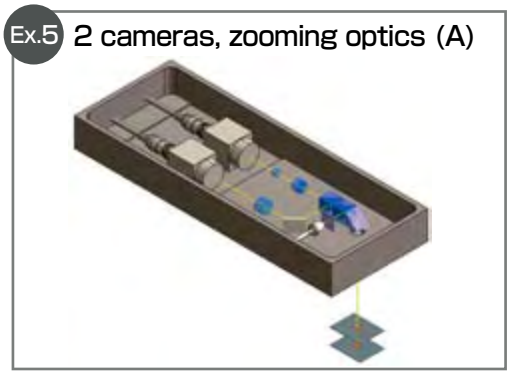
It can recognize the work in two places vertically and horizontally at once.

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



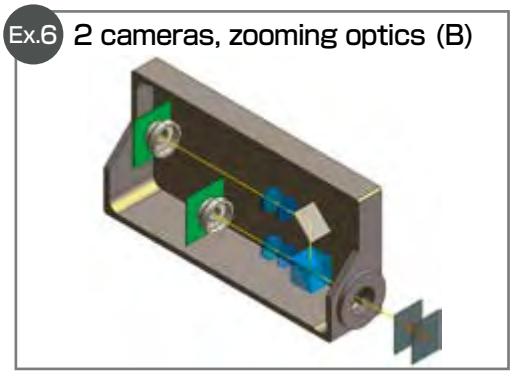
Two cameras can capture the upper and lower works of two simultaneously. A coaxial illumination is included.

Ex.5 2 cameras, zooming optics (A)



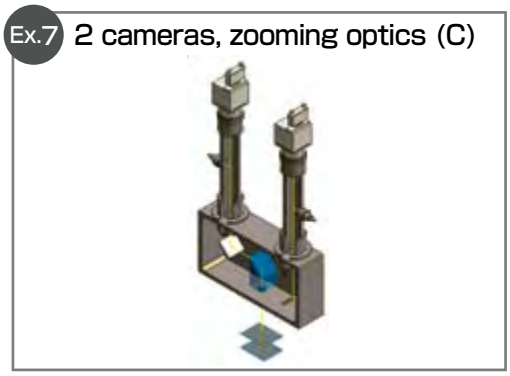
2 cameras can capture works in two places which are on the same optical axis but have different focal positions, at different magnifications respectively.

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.

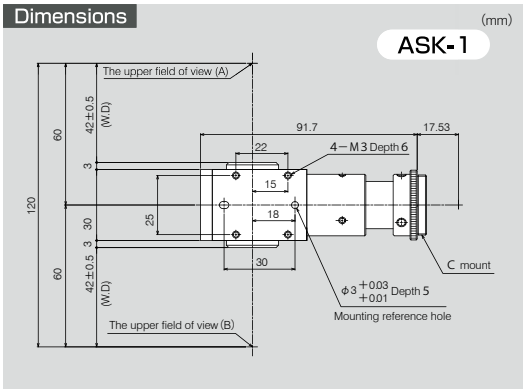
Ex.7 2 cameras, zooming optics (C)



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

Dimensions (mm)



■Specifications

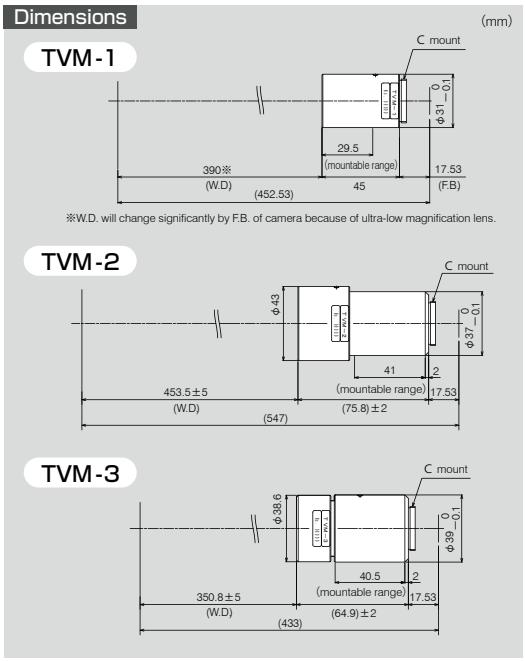
Camera／Adapted camera less than 1/3 inches recommended
C-mount specification
Magnification／1.1 times ± 5%
WD／42mm±0.5 (Both of the upper and lower)

TV macro-lens

TVM series

Supporting 1 inch mega pixel camera

Dimensions (mm)



■Specifications

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

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

Flow of producing custom unit

Contact us → Confirm your request → Design → Changing specification → Trial product → Evaluation and improvement → Mass production → Delivery → Maintenance Follow-up

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

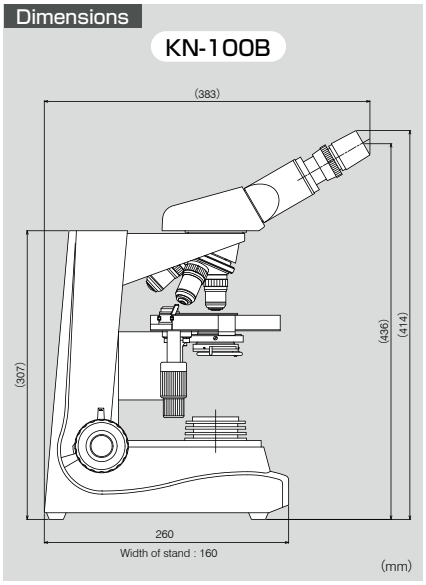
Biological microscopes for clinical setting and research

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 (ϕ23.2) 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	Trinocular tube set
		KN-100B	KN-100TC
Total magnification		40×～1000×	
Body part	Body	Body, inward revover with four holes (fixed), with daylight filter ϕ31.8㎜	
	Focusing mechanism	Vertically mobile stage, coarse stroke 26㎜	
	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 180㎜, 30°angle of inclination, rotatable and removable, Interpupillary adjustable range 55～75㎜, 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 : 142㎜(W)×133㎜(D) Stroke : 75㎜ to X direction, 50㎜ to Y direction, removable specimen holder	
Eyepiece		EW10×/20(20 fields of view)	
Objective lens (infinite distal)		Plan4×、Plan10×、Plan40×、Plan100× (oil)	
Condenser		Abbe condenser N.A.1.25 iris, vertically mobile rack and pinion	
Accessories			Straight tube, C-mount adapter
Physical Dimensions		233㎜(W)×383㎜(D)×414㎜(H)	233㎜(W)×342㎜(D)×480㎜(H)
Weight		8,740g	9,100g

Eyepiece

Eyepiece	Number of fields of view	Remarks
EW10×/20	20	
EW15×	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
EW10×／20：ϕ21㎜・1㎜ thick
EW15×：ϕ19㎜・1㎜ thick

Objective lens (infinite distal ■ 45 ㎜ standard)

Model	The number of aperture(N.A)	Working distance(W.D)	Focal length(f)	Remarks
Plan4×	0.10	25.4㎜	45.3㎜	
Plan10×	0.25	11.22㎜	18.1㎜	
Plan20×	0.40	6.06㎜	9㎜	Spring
Plan40×	0.65	0.5965㎜	4.5㎜	Spring
Plan100× oil	1.25	0.2129㎜	1.8㎜	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 ■ 45㎜ standard)

■Specifications

Body	KN-PH-100B	KN-PH-100TC	Phase difference device for KN-PH-100
Barrel	Binocular	Trinocular	
Eyepiece	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	233㎜(W)×383㎜(D)×414㎜(H)	233㎜(W)×342㎜(D)×480㎜(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℃～50℃
Dimensions (case)	36㎜(WF)×36㎜(H)×36.5㎜(D)
Accessories	BNC／RCA conversion connector, RCA／RCA coaxial cable (2m), AC-adapter, 3 power strip with ON-OFF (2m)

Biological microscopes for research and training

XSM series

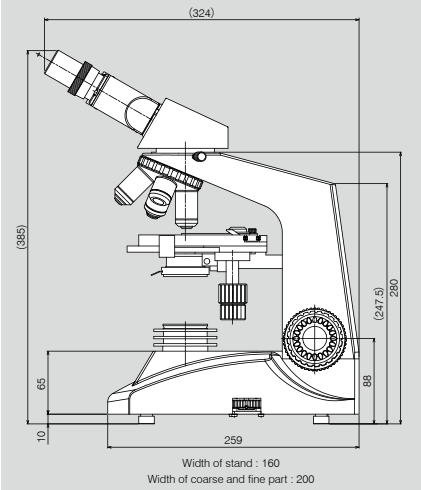
You can observe with it adopting rechageable LED lighting, regardless of place.
It is able to be used for research or training.
Designed compact, it can be used anywhere.

XSM-B

XSM-TC

Dimensions (mm)

XSM-B



■Specifications

Product name	Medilux30　XSM-B	Medilux30　XSM-TC
Total magnification	40×～1500×	
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 : 22㎜, coarse/fine handle 41㎜/0.2㎜ 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 50㎜～75㎜ 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) Size140㎜(W)×132㎜(D) Stroke : 76㎜ to X direction, 50㎜ 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	200㎜(W)×324㎜(D)×385㎜(H)	200㎜(W)×259㎜(D)×443.5㎜(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 ■ 45㎜ standard)

Model	N.A.
XSM4×	0.10
XSM10×	0.25

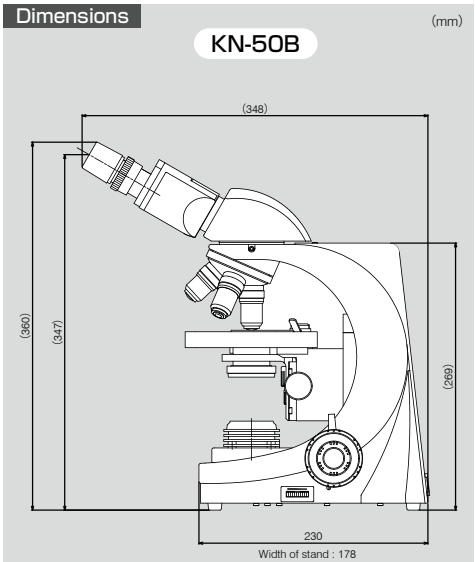
Model	N.A.
XSM40×	0.65
XSM100×	1.25/oil

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.

KN-50B

KN-50TC



■Specifications

Product name		Binocular barrel set	Trinocular barrel set
		KN-50B	KN-50TC
Total magnification		40×～1000×	
Body part	Body	Body, four-hole revolver (fixed), with daylight filter φ31.8㎜	
	Focusing mechanism	Vertically mobile stage, coarse stroke 22㎜	
	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 55～75㎜, 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 : 142㎜(W) x 132㎜(D) Stroke : 75㎜ to X direction, 50㎜ to Y direction, removable specimen holder	
Eyepiece		WF10×/18(18 fields of view)	
Objective lens		4×、10×、Semi Plan40×、100× oil	
Condenser		Abbe condenser N.A 1.25 iris, vertically mobile rack and pinion	
Accessories			Straight tube, C-mount adapter
Physical Dimensions		196㎜(W)×348㎜(D)×360㎜(H)	196㎜(W)×337㎜(D)×416㎜(H)
Weight		6,520g	6,880g

Eyepiece

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

※WF15 x /12 is optional.

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

Model	N.A.
LBJ4×	0.10
LBJ10×	0.25
LBJ20×	0.40

Model	N.A.
LBJ40×	0.65
LBJ100×	1.25/oil

※20× 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.

KZ2

KC2-400

KC2-400M

■Specifications

Model		KZ2	KC2-400	KC2-400M
Body part	Body	Three holes revolver (fixed)	Three holes revolver (fixed)	
	Focusing mechanism	Vertically mobile barrel stroke 30㎜	Vertically mobile stage coarse stroke 7㎜	
	Coarse device	Coarse handle (with safety device)	Coarse, fine and focusing handle (with safety device)	
	Lighting system	Reflecting mirror (plane and concave mirror), φ40㎜	Built-in illumination device100V15W Tungsten lamp	Reflecting mirror(plane mirror only), φ36㎜
Barrel		Barrel length : 130㎜	Barrel length :138㎜ 45° inclined monocular barrel (fixed) standard(φ23.2㎜ inner diameter)	
Stage		Horny and fixed stage (100㎜×90㎜) Crenmel styel fixing (2)	Horny and fixed stage(90㎜×90㎜) Crenmel styel fixing(2)	
Eyepiece		WF10× (field number 15)	WF10× (field number18) 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		110㎜(W)×160㎜(D)×295㎜(H)	121㎜(W)×163㎜(D)×285㎜(H)	101㎜(W)×155㎜(D)×275㎜(H)
Weight		1,060g	1,420g	1,180g

new

KMS-LED

KMS series

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

KC2

S40× 10× 4× Objective lens — Eyepiece

KZ2

S30× 10× 4× Objective lens — Eyepiece

■Specifications

Total magnification	20×、40×
Eyepiece	WF10× (field number 20㎜)
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	115㎜(W)×180㎜(D)×220㎜(H)
Weight	2,360g

KL-1·2N 400N

S40× 10× 4× Objective lens

WF10×/18
WF15×/12
Eyepiece

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.

KL-400N

KL-1・2N

KLP-2N

LS-LED

※ LS-LED is optional.

■ Specifications

Name \ Format		Biological microscope			Polarizing microscope
		KL-400N	KL-1N	KL-2N	KLP-2N
Body part	Lens barrel	Barrel length160㎜、45°inclined monocular barrel			
		360°rotation			Fixed, sliding with built-in analyzer barrel
	Revolver	3 holes			
	Stage	Horny and fixed 110×118㎜ With Crenmel (2), able to mount mechanical stage			φ100㎜、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			
		Stroke15㎜			Stroke12㎜
	Lighting	Concave reflecting mirror on both sides with φ45㎜ plug-in, able to mount simple illumination device (LS-LED)			
Objective lens	4×	●		●	POL 4×
	10×	●	●	●	POL 10×
	40×	●	●	●	POL 40×
Eyepiece	WF10×field number :18	●	●	●	Cross10× field number : 15 (cross-lined) Dioter adjustable, with bearing pin
	WF15×field number :12		●	●	
Total magnification		40×～400×	100×～600×	40×～600×	40×～400×
Storage box		Wooden strage box			
Physical dimensions		130㎜(W)×202㎜(D)×320㎜(H)			130㎜(W)×202㎜(D)×323㎜(H)
Weight		2,080g	2,040g	2,010g	2,360g

Dissecting microscope

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

It is a compact dissecting microscope optimized for observing and disecting 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,φ40㎜	
Accessories	With hand rests (2), with Crenmel (2)	
Storage box	Wooden strage box	
Physical dimensions	250㎜(W)×150㎜(D)×160㎜(H)	
Weight	700g	720g

Biological polarizing microscope

BIO-POL2 series

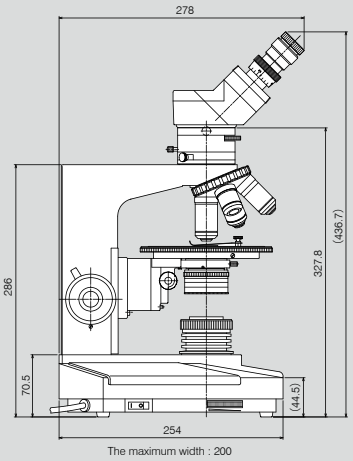
Transmitted illumination system is adopted.
You can switch between orthoscope and conoscope in a single operation.
Removable test plate (1/4 wave plate, sensitive color plate).
6V20W halogen lamp is adopted as light source.

BIO-POL2-B

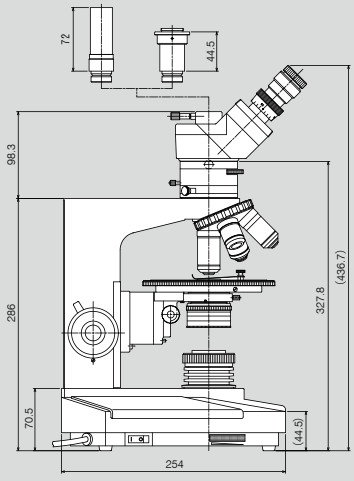
BIO-POL2-TC

Dimensions (mm)

BIO-POL2-B



BIO-POL2-TC



■Specifications

Model	BIO-POL2-B (binocular set)	BIO-POL2-TC (trinocular set)
Total magnification	48×~480×	
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 storoke 30 ㎜, micromotion handle (0.2 ㎜ a rotation, 1 scale / 0.002 ㎜) Adjustable to coarse handle weight, with coarse stopper	
Barrel	45°inclination, removable, interpupillary adjustable range 54~74㎜, with monocle 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 1.2×, analyzer (swing switching, IN/OUT)	
	Switiching between orthoscope and conoscope (turret)	Orthoscopic observation : display "O" Conoscopic observation (Bertrand lens) : display "C"
	Slot for test plate	Removable test plate (1/4 input wave plate, sensitive color plate)
Reflective polarizer	Swingable (0°~ 90°), the upper part of the arm	
Polarizing condenser	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)	
Revolver	Fixed large 4 holes revolver	
Stage	Diameter 150mm 360° rotable stage fixable at any positon With 360° equally spaced scale (minimum scale 1°, minimum reading 6' by a vernier) with Crenmel (2) mechanical stage	
Power consumption	24VA (when input voltage is 100V)	
Accessories	Hex driver centering objective lens (2), dust cover, spare lamp (2), spare fuse	
Physical dimensions	200㎜(W)× 278㎜(D)×436.7㎜(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
(finite distal ■45㎜ standard)

Format	N.A.	W.D.
POL-Plan4×	0.10	16.3㎜
POL-Plan10×	0.25	7.35㎜
POL-Plan40×	0.65	0.28㎜

Adapter for compact digital camera shooting

It is an adapter attachable compact digital camera commercially available.
Attachable to eyepiece frame (outside diameter ϕ28, ϕ35) of biological microscope whose outlet inner diameter is ϕ23.2mm.
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

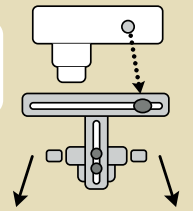
※WE10 x which is sold separately is required.

●Mounting method

Fix the camera at screw holes for tripod.

〈Compatible models〉
stereomicroscope
KSZ、KS

〈Compatible models〉
Biological microscope
Biological microscope KN-50TC
Biological microscope KN-100TC



Insert the WF10× eyepiece into trinocular barrel.
(Supplied with optional adapter for photo)

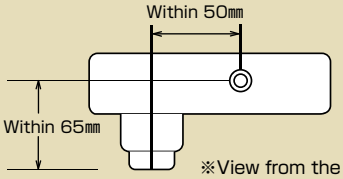
WF10×
sold separately

Attach optional adapter photo to a microscope.

Screw the straight tube supplied with the microscope into the microscope.

●Rough indication of compatible models

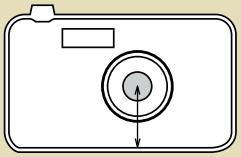
※Demonstration machine is available.



Distance between screw hole for tripod and the center of the lens is within 50㎜.

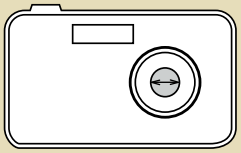
Distance between screw hole for tripod and the end of the lens is within 65㎜.

※View from the bottom

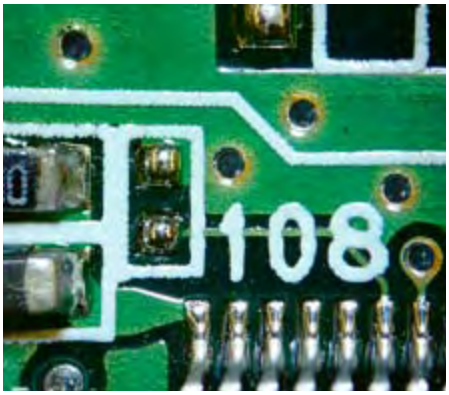


Distance from the bottom side of the camera to the center of the lens is within 26~70㎜.

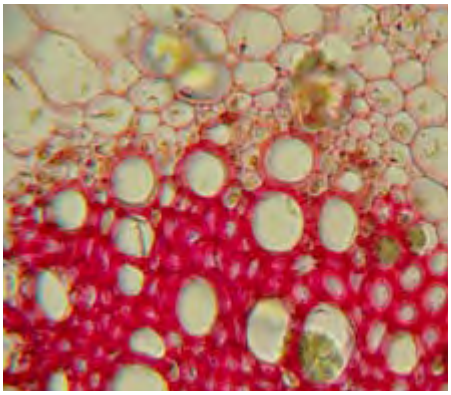
※Front view



Diameter of the lens is within 18㎜
(optical zooming more than three times recommended).



Circuit board

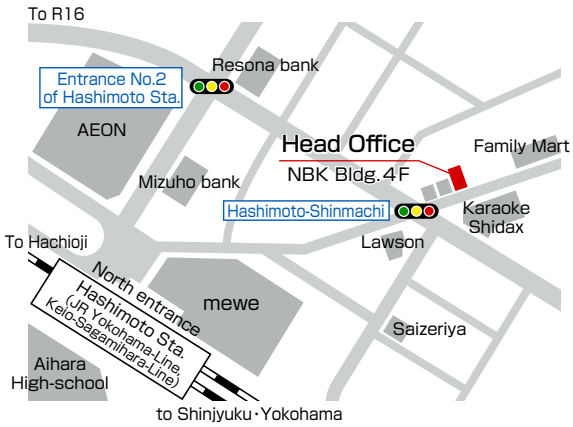


Cross-section of a stalk of ragweed

Scaly hair of oleaster

Kyowa Optical Co.,Ltd

Head Office／NBK Bldg.4F,3-19-20 Hashimoto, Midori-ku, Sagamihara-city,
Kanagawa-Prefecture, 252-0143. JAPAN
TEL.81-42-770-8161(main)　FAX.81-42-770-8169
URL : http://www.kyowaopt.co.jp
Shinshu Factory／1019 NANAKUBO, IIJIMA-MACHI, KAMIINA-GUN, NAGANO, 399-3705, JAPAN
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

JAB
CM021

QC12J0019