

# Main Specifications

## LV-IMA (motorized)/LV-IM (manual)/LV-FMA (motorized)/LV-FM (manual)

Main body	LV-IMA IM Module/LV-FMA FM Module A (motorized) Motorized nosepiece up/down section: stroke 20mm, resolving power 0.025µm, max. speed 2.5mm/sec. (resolving power 0.05µm) LV-IM IM Module/LV-FM FM Module (manual) Coarse/fine focus knob: stroke 30mm, coarse 5.2mm/rotation, fine 0.1mm/rotation (in 1µm increments)
Nosepiece	C-N6 Nosepiece (brightfield, sextuple), L-NBD5 Nosepiece (bright/darkfield quintuple, with flare prevention), L-NU5 Nosepiece (universal quintuple, with flare prevention), LV-NU5A Nosepiece (high-durability motorized universal quintuple, with flare prevention), LV-NU5AC Nosepiece (high-durability motorized universal quintuple, with flare prevention and centering mechanism)
Episcopic illuminator LV-UEPI	12V-50W high-intensity halogen lamp; Field (centerable) and aperture diaphragms synchronized with B/D changeover; ø25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer insertable
Episcopic illuminator LV-UEPI2	12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, manual control/PC control and no centering necessary); Centerable field and aperture diaphragms synchronized with B/D changeover; ø25mm filter (NCB11, ND16, ND4) insertable; 2 epi-filter cubes insertable; Polarizer/analyzer/λ plate insertable, excitation balancer insertable
Episcopic illuminator LV-UEPI2A	12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, PC control and no centering necessary); Motorized operation/control of illumination changeover turret; Motorized aperture diaphragm (centerable, automatically optimized for the selected objective)/field diaphragm (centerable) synchronized with B/D changeover; ø25mm filter (NCB11, ND16, ND4) insertable; 2 epi-filter cubes insertable; Polarizer/analyzer/λ plate insertable, excitation balancer insertable
Eyepiece tube	LV-T13 Trinocular (erect image, F.O.V. 22/25), LV-TT2 Tilting Trinocular (erect image, F.O.V. 22/25), Y-TF Trinocular (inverted image, F.O.V. 22/25), Y-TT Trinocular (inverted image, F.O.V. 22/25), TV tube lens unit 0.5x, 1x
Eyepiece	CFI eyepiece series
Objective lens	CFI60 series
Electrostatic decay time	1000-10V, within 0.2 sec.
Weight (main body)	LV-IMA: approx. 3.7kg, LV-IM: approx. 3.5kg, LV-FMA: approx. 6.0kg, LV-FM: approx. 5.8kg,

## LV-ECON E Controller

Interface	Motorized nosepiece: LV-NU5A, LV-NU5AC (with centering mechanism) Episcopic illuminator: LV-UEPI2A, LV-EPILED, HG Precentered Fiber Illuminator Intensilight C-HGFIE (PC control type only) Motorized focusing module: LV-IMA, LV-FMA Halogen lamphouse (powered by TE2-PS 100W power source): LV-LH50PC PC (USB1.1) *Software Development Kit (SDK) is available.
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N.B. Export of the products\* in this catalog is controlled under the Japanese Foreign Exchange and Foreign Trade Law. Appropriate export procedure shall be required in case of export from Japan.  
\*Products: Hardware and its technical information (including software)

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 <b>WARNING</b>	TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING YOUR EQUIPMENT.
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### NIKON CORPORATION

Shin-Yurakucho Bldg., 12-1, Yurakucho 1-chome, Chiyoda-ku, Tokyo 100-8331, Japan  
phone:+81-3-3216-2384 fax:+81-3-3216-2388  
<http://www.nikon.com/instruments/>

### NIKON METROLOGY, INC.

12701 Grand River Avenue, Brighton, MI 48116 U.S.A.  
phone: +1-810-220-4360 fax: +1-810-220-4300  
E-mail: [sales\\_us@nikonmetrology.com](mailto:sales_us@nikonmetrology.com)  
<http://us.nikonmetrology.com/>  
<http://www.nikoninstruments.com/>

### NIKON METROLOGY EUROPE NV

Geldenaaksebaan 329, 3001 Leuven, Belgium  
phone: +32-16-74-01-00 fax: +32-16-74-01-03  
E-mail: [sales\\_europe@nikonmetrology.com](mailto:sales_europe@nikonmetrology.com)  
<http://www.nikonmetrology.com/>

### NIKON INSTRUMENTS (SHANGHAI) CO., LTD.

CHINA phone: +86-21-6841-2050 fax: +86-21-6841-2060  
(Beijing branch) phone: +86-10-5831-2028 fax: +86-10-5831-2026  
(Guangzhou branch) phone: +86-20-3882-0552 fax: +86-20-3882-0580

### NIKON SINGAPORE PTE LTD

SINGAPORE phone: +65-6559-3618 fax: +65-6559-3668

### NIKON MALAYSIA SDN BHD

MALAYSIA phone: +60-3-7809-3688 fax: +60-3-7809-3633

### NIKON INSTRUMENTS KOREA CO., LTD.

KOREA phone: +82-2-2186-8400 fax: +82-2-555-4415

### NIKON INDIA PRIVATE LIMITED

INDIA phone: +91-124-4688500 fax: +91-124-4688527

### NIKON CANADA INC.

CANADA phone: +1-905-602-9676 fax: +1-905-602-9953

### NIKON INSTRUMENTS S.p.A.

ITALY phone: +39-055-300-96-01 fax: +39-055-30-09-93

### NIKON AG

SWITZERLAND phone: +41-43-277-28-67 fax: +41-43-277-28-61

### NIKON GMBH AUSTRIA

AUSTRIA phone: +43-1-972-6111-00 fax: +43-1-972-6111-40

### NIKON BELUX

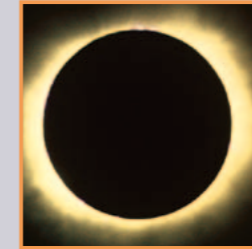
BELGIUM phone: +32-2-705-56-65 fax: +32-2-726-66-45



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# ECLIPSE

## Industrial Microscopes

# LV150/LV150A LV100D

## LV Focusing Modules

# LV-IM/LV-IMA LV-FM/LV-FMA



# Versatility

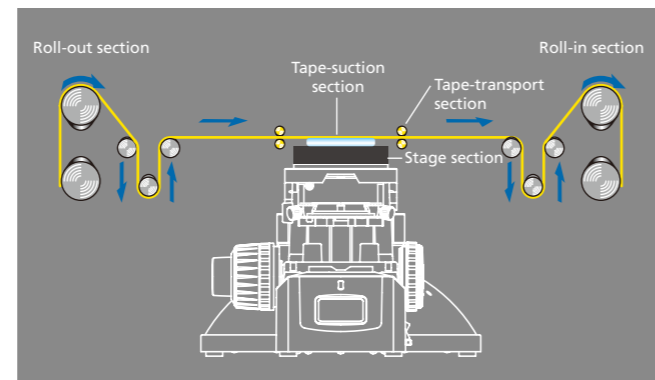
The modular design of the Eclipse LV series allows an unprecedented level of versatility. The Eclipse LV series offers flexibility that enables it to cover a wide variety of products and applications, extending from development and quality control to inspection in the manufacturing process. Users will recognize the superb performance of the Eclipse LV series when inspecting semiconductors, FPD, packages, electronics substrates, materials (material science), medical devices, cast/metallic/ceramic parts, precision molds, MEMS, telecommunications devices, and a wide variety of other samples.

## Modular Design

Major parts of the microscope main body arm, stand, base, etc. have been modularized for greater flexibility according to use. The LV-ARM Basic Arm, LV-FM FM Module, LV-FMA FM Module A, LV-EPI Epi Base, and LV-DIA Dia Base can be freely combined or incorporated into the system.



If the LV-DIA Dia Base is used, a diascope illuminator can be incorporated into the system\*.  
 \* An optional power source, the TE2-PS100W, and related options are needed to perform diascope illumination.



An example of the LV-DIA Dia Base incorporated into a tape-transport sample inspection system.

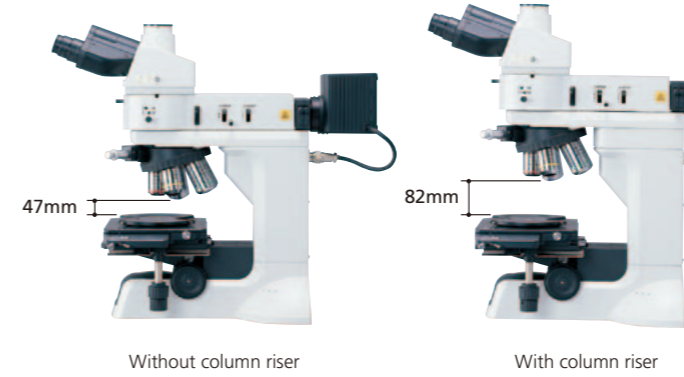
## Modular Design



An example configuration of the LV150

## Accepts Thicker Samples

The maximum sample height can be increased to 82mm from 47mm by inserting the LV-CR Column Riser 35 between the main body and arm of the microscope. This feature is useful for viewing the surfaces of precision molds, optical materials and other thick samples.



## Non-Nikon Stages (LV150 or LV150A only)

Use of non-Nikon stages, such as the Suruga Seiki B23-60CR, in combination with the LV-SUB Substage 2 allows the microscope to handle thicker samples of up to 116.5 mm, thereby enabling the observation of fiber ends and other tools.



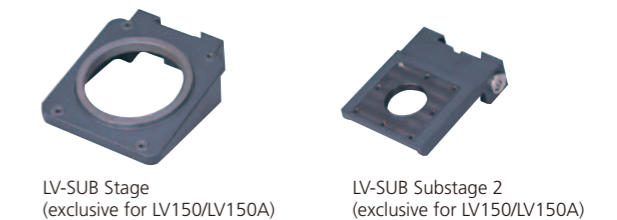
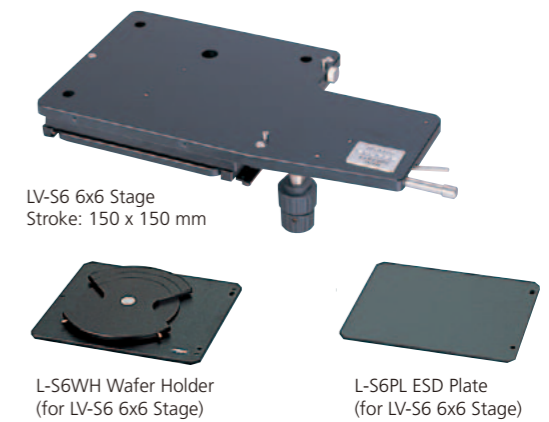
Combination of LV150 with LV-SUB Substage 2 and Suruga Seiki B23-60CR stage

## Extensive Range of Industrial Stages and Accessories

Users can select suitable models based on sample and stage stroke. All stages are highly durable with their triple-plate design.

### Compact Industrial Stage: LV-S32 3x2 Stage

The newly designed LV-S32 3x2 is a compact stage for industrial microscopes. Its triple-plate design ensures durability, stability and ease of use, even when heavy samples such as metallic materials are observed. The standard glass plate makes this stage suitable for episcopic and diascope illumination.



Appropriate holder and substage are selected based on sample and stage combination.

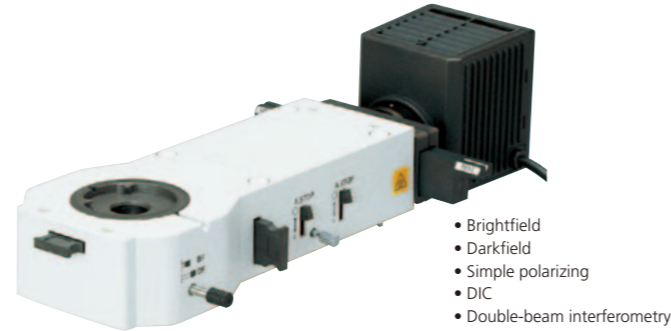


# Extend Your Vision

A wide variety of observation methods are available with the Eclipse LV series. Observation with first-order red compensator, UV polarizing, and epi-fluorescence observation with UV excitation, in addition to brightfield, darkfield, DIC, simple polarizing, epi-fluorescence (excitation using visible light) and double-beam interferometry are all possible. A new motorized illuminator has been added to the existing manual type. A 12V-50W halogen light source equivalent to or even brighter than the 12V-100W type and a high-intensity mercury fiber light source are available. The inclusion of a compact and lightweight white LED illuminator exclusively for brightfield use gives you the option of selecting the most appropriate combination for your purpose.

## Universal Epi-Illuminator: LV-UEPI

The LV-UEPI universal epi-illuminator enables brightfield, darkfield, simple polarizing and DIC observations. Field and aperture diaphragms are automatically opened when the observation is switched from brightfield to darkfield, and return to their original position when switched back to brightfield.



## Universal Epi-Illuminator 2: LV-UEPI2

The LV-UEPI2 universal episcopic illuminator is equipped with advanced optics suitable for a wide variety of observation methods brightfield, darkfield, DIC and epi-fluorescence. It allows the operator to concentrate on the observation by automatically maintaining optimal illumination conditions for the aperture diaphragm, shutter, filters, including diffuser and ND filter.



## Motorized Universal Epi-Illuminator 2: LV-UEPI2A

In this illuminator, the illumination changeover turret and the aperture diaphragm, as well as the illumination voltage control, have been motorized, for accurate reproduction of illumination therefore, images can be taken under consistent illumination. Aperture is automatically optimized according to the objective and illumination technique in use. It can, however, also be changed manually depending on the sample and purpose. When configured with the LV-ECON E controller, this illuminator can be controlled with the controller or from the connected PC.



## Optimal Illumination Function

	Field diaphragm	Aperture diaphragm	Shutter	UV-cut filter
BF	Any diameter	Any diameter	Open	Insert
DF	Open	Open	Open	Insert
FL1	Any diameter	Any diameter	Open	—
FL2	Any diameter	Any diameter	Open	—

## LV-PAB PA Cube

With a polarizer and analyzer attached in the shape of a crossed Nicol prism, this cube is used for DIC observations. It is used by installing it into the turret of the LV-UEPI2 or LV-UEPI2A epi-illuminator; to begin observations simply insert a DIC slider into the optical path.



## High-Intensity 12V-50W Halogen Light Source: LV-LH50PC Precentered Lamphouse

Although the LV-LH50PC Precentered Lamphouse is 12V-50W, the brightness is equivalent to or higher than that of 12V-100W. The low power-consumption halogen light source contributes to the compact design of the microscope while also being friendly to the environment. Defocus induced by heat is substantially reduced.



## HG Precentered Fiber Illuminator—Intensilight (for LV-UEPI2/LV-UEPI2A)

The use of the Intensilight precentered fiber illuminator eliminates the need for centering and focus adjustment, even after the lamp is replaced. Because the light source can be placed away from the microscope, heat and electrical noise on the microscope body is reduced. Six levels of light intensity from 3% to 100% are available, and the shutter is incorporated. The lamp lasts an average of 2000 hours, reducing replacement time and costs. Both manual (C-HGFI) and motorized (C-HGFIE) models are available. The motorized model should be used in combination with the LV150A. The motorized model can be controlled from an optional dedicated remote controller or a PC that incorporates Nikon's NIS-Elements imaging software.



C-HGFI (manual)

## Why is 50W brighter than 100W?

Image brightness is not determined by wattage. Nikon's new light source delivers greater brightness by optimizing the lamp filament size and improving pupil illumination fulfillment by optically expanding the size of the light source. This has resulted in a 50W light source that is brighter than a 100W lamp. With 50x or higher objectives, brightness is about 20% greater under episcopic illumination, 40-50% greater with diascope illumination, than previous Nikon illuminators.

## LV-EPILED White LED Illuminator

With emphasis on light weight and compact design, this white LED illuminator was specially developed for brightfield use. It is operated via the attached power source controller. By using the LV-ECON E controller, external control is also possible.



## Optical Performance

### Improved Transmission Rate for UV Wavelength

#### CFI LU Plan Fluor series

The transmission rate in the UV wavelength range has been improved for the new CFI LU Plan Fluor series. These objective lenses are suitable for various research, analysis and examination needs, while maintaining Nikon's commitment to high NA and long working distance. Only one kind of objective lens is needed for brightfield, darkfield, simple polarizing, observation with first-order red compensator, DIC and UV epi-fluorescence observations. These objective lenses, which offer high resolution and easy-to-use performance, can be combined not only with microscopes but also with other equipment for even greater versatility.



CFI60 LU Plan Fluor EPI series



CFI60 LU Plan Fluor BD series

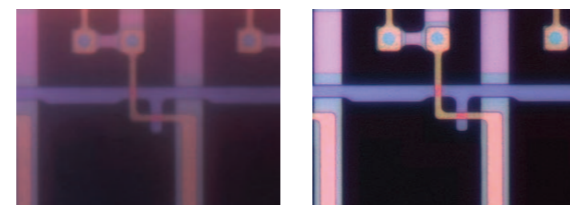


CFI60 L Plan EPI CR series of objective lenses with correction ring

### Objective Lenses with Correction Ring

#### CFI L Plan EPI CR series

The CFI60 series now includes the CFI L Plan EPI CR series to cope with the thinner coverglass used in liquid crystal displays, and highly integrated, and dense devices. Coverglass correction can be continuously made from 0 mm up to 1.2 mm (0-0.7 mm and 0.6-1.3 mm for 100x) with the correction ring. The 100x objective lens offers 0.85 high NA, while enabling high-contrast imaging of cells and patterns without being affected by the coverglass.



Without correction (50x)

With correction at 0.7 mm (50x)

### Environment Friendly

The eco glass used in the CFI LU Plan Fluor and L Plan EPI CR series does not contain harmful substances such as lead and arsenic.

### CFI60 Series Objectives Brightfield

Model	Magnification	NA	Working Distance (mm)
CFI L Plan EPI	1X*	0.03	3.8
	2.5X	0.075	8.8
	40X	0.65	1.0
CFI LU Plan Fluor EPI	5X	0.15	23.5
	10X	0.30	17.5
	20X	0.45	4.5
	50X	0.80	1.0
	100X	0.90	1.0
CFI LU Plan EPI ELWD	20XA	0.40	13.0
	50XA	0.55	10.1
	100XA	0.80	3.5
CFI L Plan EPI SLWD	20XA	0.35	24.0
	50XA	0.45	17.0
	100XA	0.70	6.5
CFI LU Plan Apo EPI	100X	0.95	0.4
	150X	0.95	0.3
CFI L Plan Apo EPI WI	150X	1.25	0.25

\*Requires use of MA2-PA unit.

### With correction mechanism

Model	Magnification	NA	Working Distance (mm)	Glass Thickness Correction Range
CFI L Plan EPI CR	20x	0.45	10.9-10.0	0-1.2mm
CFI L Plan EPI CR	50x	0.7	3.9-3.0	0-1.2mm
CFI L Plan EPI CRA	100x	0.85	1.2-0.85	0-0.7mm
CFI L Plan EPI CRB	100x	0.85	1.3-0.95	0.6-1.3mm

### Bright/darkfield

Model	Magnification	NA	Working Distance (mm)
CFI LU Plan Fluor BD	5X	0.15	18.0
	10X	0.30	15.0
	20X	0.45	4.5
	50X	0.80	1.0
	100X	0.90	1.0
CFI LU Plan BD ELWD	20XA	0.40	13.0
	50XA	0.55	9.8
	100XA	0.80	3.5
CFI LU Plan Apo BD	100X	0.90	0.51
	150X	0.90	0.4

### Condensers

Product Name	NA	W.D. (mm)
LWD Achromat condenser	0.65	10.2
C-C Slide Achromat condenser 2-100X	0.9	1.2-2.2
C-C Abbe condenser	0.9	1.9
C-C Achromat condenser	0.85	4.2
Darkfield (dry) condenser	0.8-0.95	4

## Improved Performance

Overall performance has been improved with better durability and rigidity.

### Tilting Trinocular Eyepiece Tube



#### LV-TT2 Tilting Trinocular Eyepiece Tube

The newly developed LV-TT2 tilting trinocular eyepiece tube (erect image) offers comfort to all users, regardless of their stature or viewing positions. The optical path changeover of 100:0/20:80 allows simultaneous use of monitor.

\*C-mount adapter 0.55x can be directly mounted to LV-TT2 and LV-TI3 for the DS-Vi1.

### Thorough ESD Protection



All parts of the microscope that might be touched, including the body, tube and stage, have been insulated. This improves anti-contamination and prevents samples from being harmed by electrostatic, thereby improving yields.

Electrostatic decay time: 1000-10V, within 0.2 sec.

### Highly Durable Motorized Universal Nosepieces



LV-NU5A Nosepiece

LV-NU5AC Nosepiece

#### LV-NU5A and LV-NU5AC Nosepieces

Two types of motorized universal quintuple nosepieces are available. The LV-NU5A boasts greater durability thanks to a new click mechanism and control system. The LV-NU5AC comes with a centering mechanism that suppresses image drift during objective changeover. These nosepieces can not only be configured with the LV150A microscope, but also incorporated into other devices in combination with the LV-NCNT2 nosepiece controller and LV-ECON controller.

### Manual Nosepiece

A variety of manual control nosepieces are available to suit all needs.



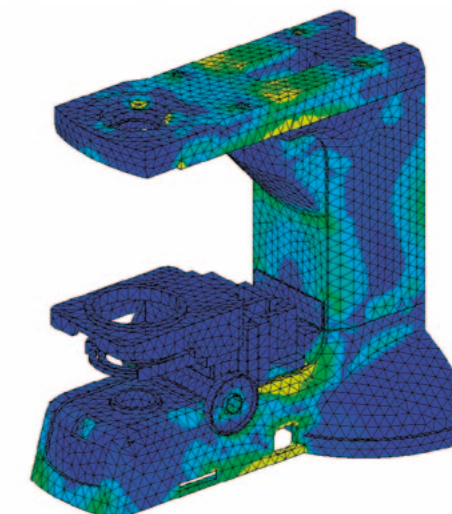
C-N6 Nosepiece (Brightfield)

L-NBD5 Nosepiece (Bright/darkfield)

L-NU5 Nosepiece (Universal)

### Highly Rigid, Vibration-Free Body

The use of structural analysis during the design process has improved rigidity and anti-vibration parameters to yield clear images even at high magnification.





## Manual and Motorized Focusing Module and Controller

Four types of new focusing modules are available.

- **For incorporation into system:**

- LV-IMA IM Module A (motorized)
- LV-IM IM Module (manual)

- **For incorporation into microscope:**

- LV-FMA FM Module A (motorized)
- LV-FM FM Module (manual)

The new offerings complement Nikon's rich variety of modular units—such as the LV-UEPI2A Motorized Universal Illuminator, LV-NU5A Motorized Universal Nosepiece, LV-NU5AC Motorized Universal Nosepiece with centering mechanism, and LV-ECON E Controller—to give you greater flexibility in configuring a system best suited to your purpose.

### LV-IMA IM Module A (motorized)/LV-IM IM Module (manual)



These modules are suitable for incorporation into systems.

The position for the mounting screw holes is selectable from the back or bottom.

- The LV-IMA IM Module A (motorized) has a vertical stroke of 20mm, while the LV-IM IM Module (manual) has one of 30mm.
- To ensure a good grip of hefty modules such as the LV-UEPI2A motorized universal illuminator, the rigidity of the modules has been greatly enhanced.
- The LV-IMA IM Module A (motorized) can be externally controlled via the LV-ECON E controller.

### LV-FMA FM Module A (motorized)/LV-FM FM Module (manual)



These modules are suitable for incorporation into microscopes. Mounting screw holes are located on the bottom of the units only.

- The LV-FMA FM Module A (motorized) has a 20mm vertical stroke. When configured with the LV-EPI Epi Base or the LV-DIA Dia Base, it turns your microscope into a system with a motorized nosepiece up/down mechanism; the system can be externally controlled via the LV-ECON E Controller.
- The combination of the LV-FM FM Module (manual; 30mm vertical stroke) and the LV-EPI Epi Base creates a system with a nosepiece up/down mechanism that has an ultra-long vertical stroke of 68mm—it facilitates operations such as semiconductor probe inspections.

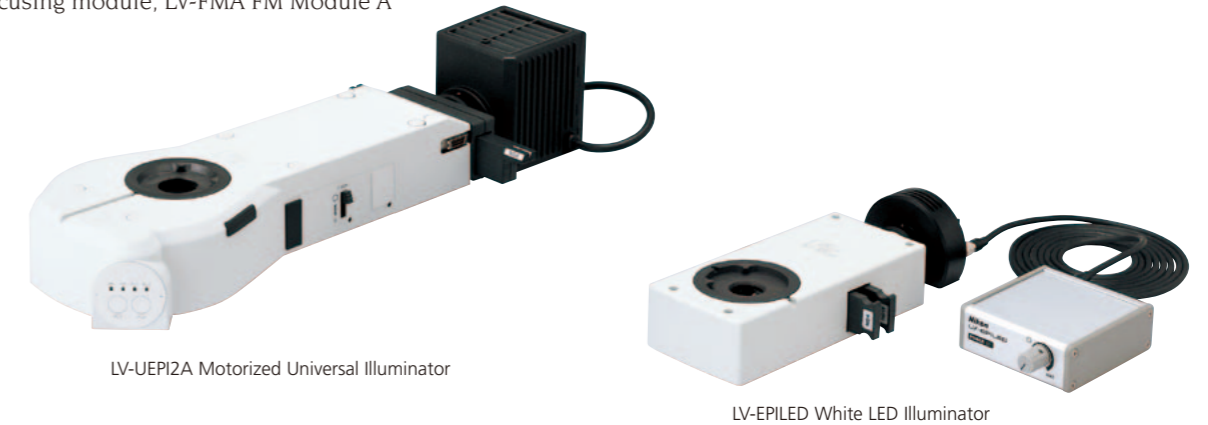
### LV-ECON E Controller

This controller provides interface to externally control the light source, motorized illuminator, nosepiece, focusing module and other motorized units from the connected PC and other devices. Communication between this and the PC is established via USB 1.1. It is also possible to manually operate the connected units from the front panel. A Software Development Kit (SDK) is available to support the user in creating software for proper incorporation and operation of the units.

\* Nikon's warranty covers Nikon equipment only.

#### Interface

- Motorized universal illuminator, LV-UEPI2A
- Halogen lamphouse, LV-LH50PC (TE2-PS100W power supply is required)
- HG Precentered Fiber Illuminator Intensilight C-HGFIE (PC control type only)
- White LED illuminator, LV-EPILED
- Motorized universal nosepiece, LV-NU5A, LV-NU5AC (with centering mechanism)
- Motorized focusing module, LV-IMA IM Module A
- Motorized focusing module, LV-FMA FM Module A
- USB 1.1

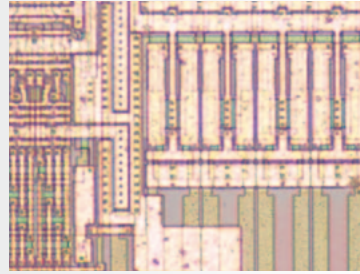


# Focusing Module



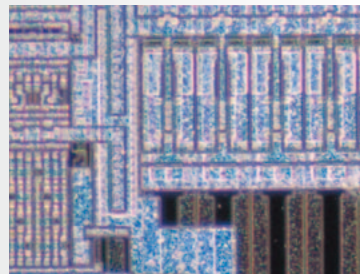
# Observation Methods

## Brightfield



The antireflective design applied to the objective lenses and light source ensures bright, and high-contrast images.

## Darkfield

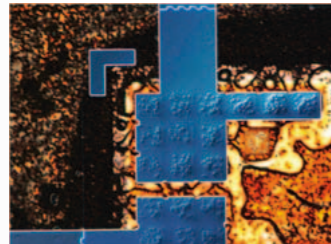


Nikon's unique "Fly-eye Lens" used in the darkfield illuminator yields a threefold increase in brightness over previous models. This allows high-sensitivity detection of defects and height gaps in samples.

## Nomarski DIC



L-DIC DIC Prism (standard)



L-DIHC DIC Prism (high contrast)



YM-PO Polarizer L-AN Analyzer L2-DIC DIC Prism L-DIHC High-contrast DIC Prism LV-PAB PA Cube

Standard or high contrast DIC sliders can be selected to suit the sample. This method is useful for the surface observations of various devices and precision molds.

## Double-Beam Interferometry Equipment (measures nano scale height gaps)

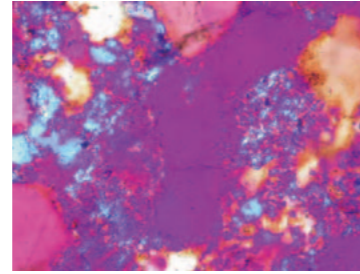


Michelson (TI) and Mirau (DI) types of episcopic double-beam interferometry can be carried out. A filar micrometer eyepiece can be used to examine or measure samples while avoiding direct contact.



Episcopic double-beam Interferometry Equipment TI/DI

## Simple Polarizing



In addition to simple polarizing, a lambda plate can be inserted into the optical path to achieve first-order red compensator observation. This is useful for liquid crystal inspections (when used in combination with the LV-UEPI2/2A).

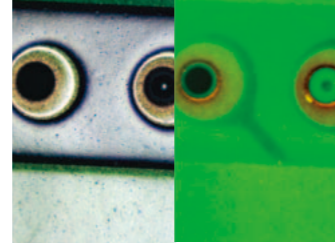


YM-PO Polarizer L-AN Analyzer



LV-PO Polarizer LV-FLAN FL Analyzer LV-XP lambda Plate

## Epi-Fluorescence



Brightfield

Epi-fluorescence B-2A

UV, V, BV, B or G excitation fluorescence filter blocks can be selected. This method is perfect for the observation of OLED, ion migration and other substrate uses (when used in combination with the LV-UEPI2/2A).

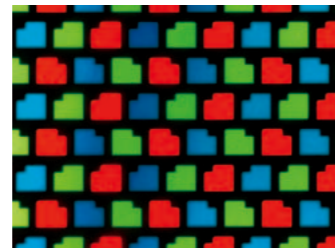


Fluorescence filter blocks



LV-UVPO Polarizer LV-FLAN FL Analyzer

## Diascopic Illumination



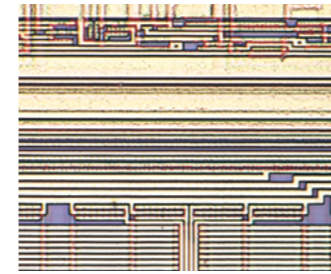
Diascopic illumination is used to observe optical parts, FPD and other samples that transmit light.



Condensers

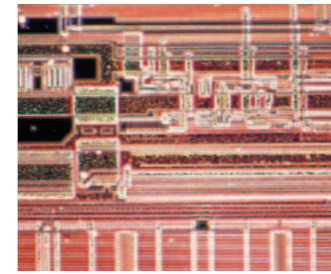
# Applications

## Semiconductor (wafer)



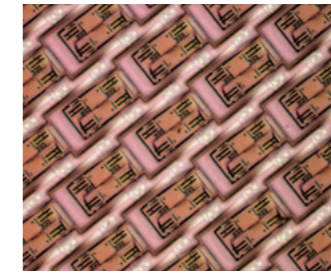
Brightfield

## Semiconductor (wafer)



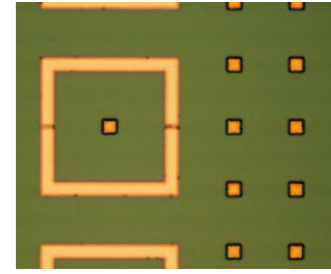
Darkfield

## MEMS (optical switch)



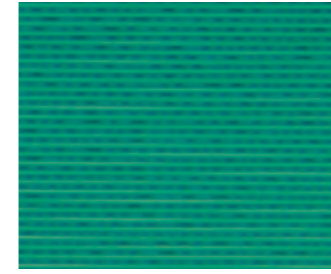
Brightfield

## Micro Bump



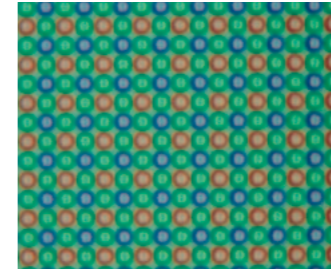
Brightfield

## Compact Disc (CD)



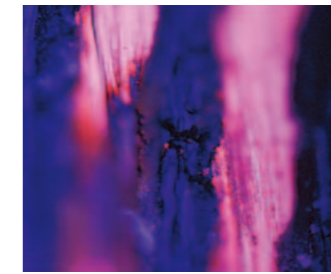
Simple polarizing

## Image Sensors (CCD)



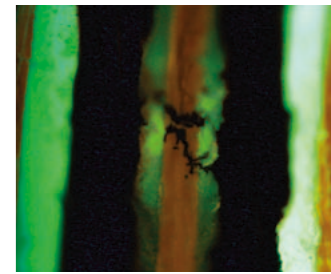
Brightfield

## PCB (ion migration)



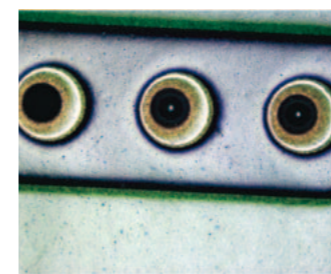
Brightfield

## PCB (ion migration)



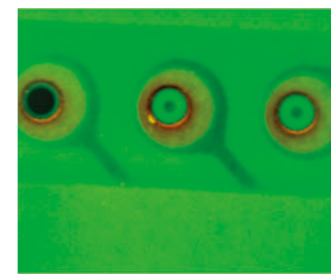
Epi-fluorescence

## PCB



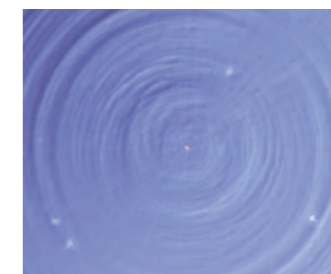
Brightfield

## PCB



Epi-fluorescence

## Precision Mold



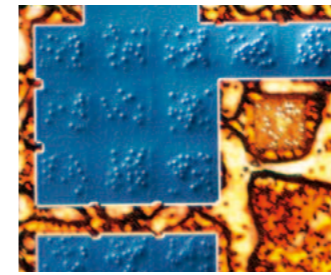
DIC

## LCD (color filter)



Diascopic brightfield

## LCD (conductive particle)



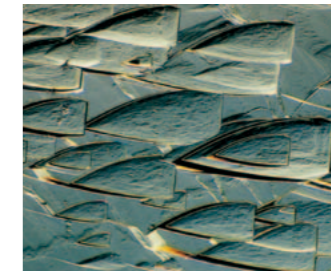
DIC

## Test reticle



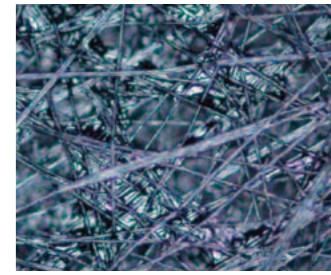
Diascopic brightfield

## Spodumene



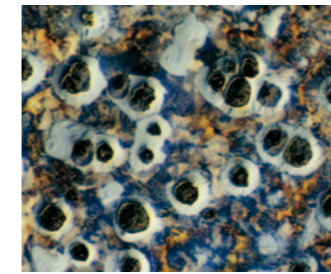
DIC

## Carbon Paper



Brightfield

## Nodular Graphite Cast Iron



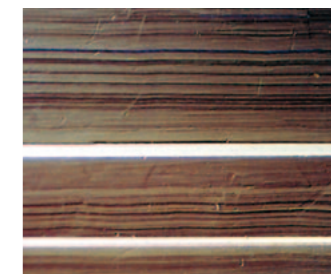
DIC

## Tourmaline



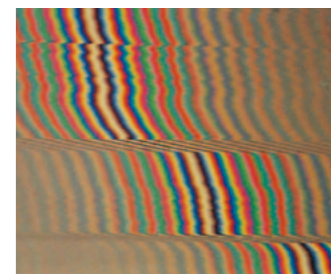
Brightfield

## Tourmaline



DIC

## Tourmaline



Double-beam interferometry



# Digital Cameras for Microscopes

Digital Cameras for Microscopes

## DIGITAL SIGHT SERIES

A camera head and a control unit can be flexibly configured according to the workpiece and observation purpose.

For more information, see the Digital Sight series catalog.



### Camera Heads

High-definition Color Camera Head

#### DS-Ri1

With 12.7 megapixel output, true color reproduction, low noise and wide dynamic range, this color documentation camera is an ideal choice. Superb spatial resolution and accurate color rendition make the DS-Ri1 the camera of choice for many research, development, and analytical applications.

\* Nikon recommends using the DS-U3 control unit.

High-definition Color Camera Head

#### DS-Fi2

High-speed image acquisition up to 21 fps\* is possible. With a high-definition 5.0-megapixel color CCD, wide dynamic range and excellent red sensitivity, the DS-Fi2 is suitable for imaging of brightfield, darkfield and Nomarski DIC observation.

\* When using DS-L3 and FAST mode.

High-speed Color Camera Head

#### DS-Vi1

With a high frame rate, 2.0-megapixel color CCD, the DS-Vi1 enables the smooth display of live images and provides high quality images.

## DS-L3

Equipped with a large touch panel monitor and a rich feature set, the DS-L3's ease of operation enables quick image acquisition even without a PC or computer monitor.



### High-definition touch panel monitor

Built-in 8.4" 1024 x 768 monitor. Easy to see and easy to use, the large touch-panel monitor allows simple setting and operation of the camera head with a touch of a finger or stylus.



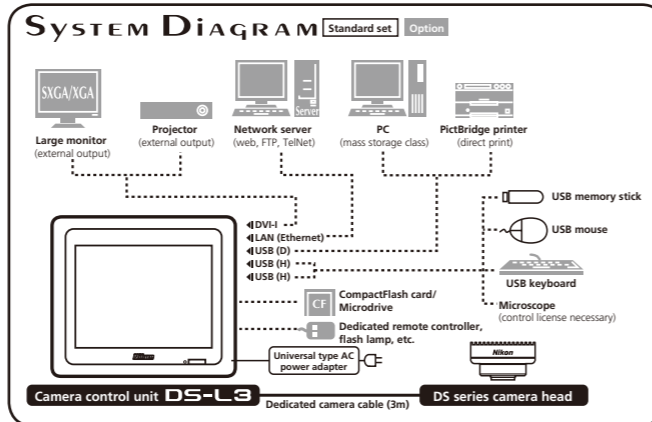
### GUI for intuitive operation

The DS-L3's icon-based menu screens offer excellent recognizability. From image acquisition to setting of shooting parameters, measurement, and export of image data, all operations can be performed easily by touching the screen.



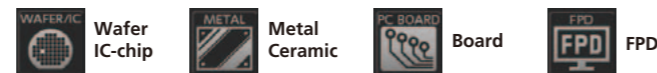
Main menu/Tool menu GUI

### Standalone Control Unit



### Scene mode provides optimal photography with ease

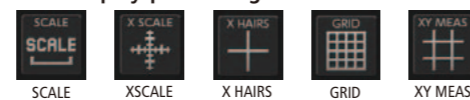
Optimal imaging parameters are preset for different sample types. Up to seven custom modes can be set.



### Various measurement/positioning functions

Calibration of reference length (up to seven can be registered), allows easy measuring and positioning.

### Scale display/positioning functions



### Measurement functions



### Drawing functions

- Input and display of lines and comments are possible.
- Free straight line (arrowed line setting possible)
- Free curved line
- Count mark
- Text input

### PC-use Control Unit



## DS-U3

Operations from capture and display of live images, image processing and analysis are all operated from a PC. The DS-U3 can be used flexibly for a wide range of applications.

### Simple, high-speed IEEE1394b connection

The IEEE 1394b device port enables high-speed live image display and fast response at speeds surpassing the previous model.

### SYSTEM DIAGRAM



For more information, see the Digital Sight series catalog.



## Newly developed imaging software NIS-Elements

The NIS-Elements is employed as control software. It conducts from basic image capture to measurement, analysis and management of captured images. It is also possible to add plug-ins to meet specific needs and applications.

Free bundle

### F NIS-Elements F package

Display of the scale on a live image and full-screen image display are possible. Images are captured easily using the simple operation screen.

Standard

### D NIS-Elements Documentation

This package provides measurement and report generation functions. It can be universally used for microscopy image acquisition in the industrial field. Expanded functionality is possible through the addition of optional plug-ins, such as EDF and database plug-ins.

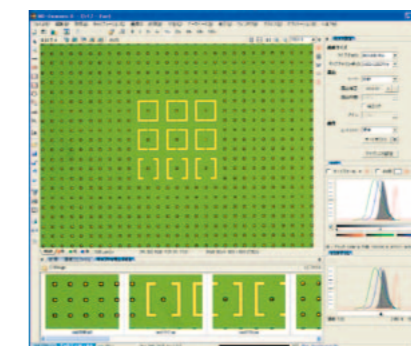
Option

### Br NIS-Elements Basic Research

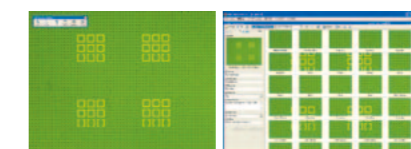
In addition to the measurement and report generation functions of NIS-Elements D, automatic measurement, including object extraction of binary images, is possible. Expanded functionality is possible through the addition of optional plug-ins, such as EDF and database plug-ins.

### Operation screen

Screen layout can be flexibly selected depending on requirements.



Docked control screen



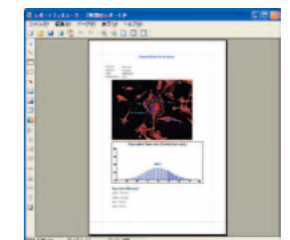
Organizer screen

### Measurement

Measurement of the object number, length, radius, angle, area and brightness profile is possible.

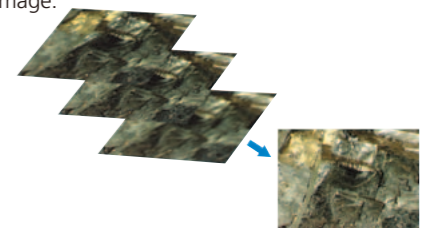
### Report generator

Reports can be easily created using captured images and links to measured data. PDF files can be created directly from NIS-Elements. It is also possible to create PDF files directly from NIS-Elements.



### Extended Depth of Focus

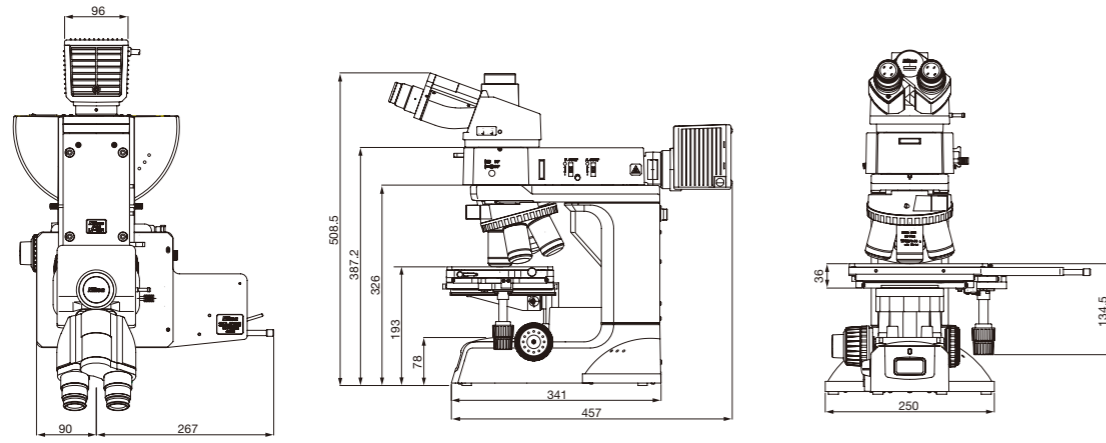
With this plug-in, images that have been captured in a different Z-axis can be used to create an all-in-focus image and virtual 3D image.



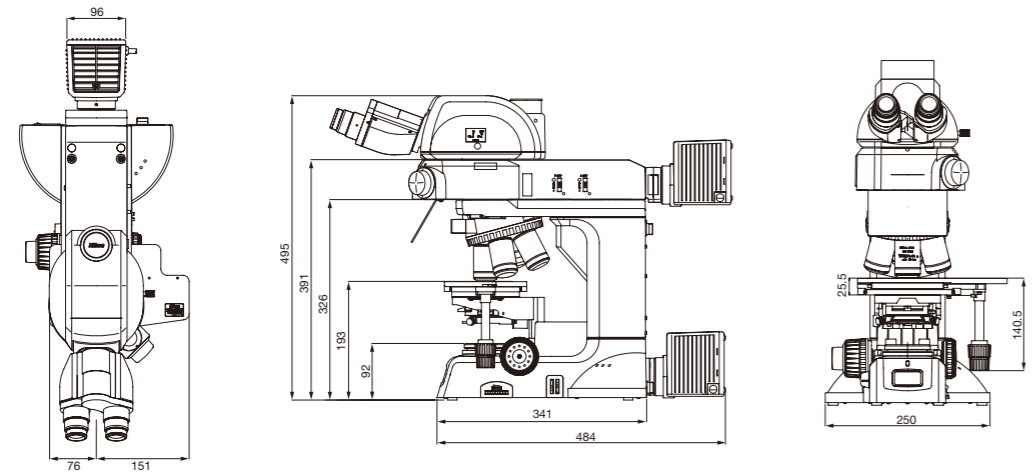
# Dimensional Diagrams

Unit: mm

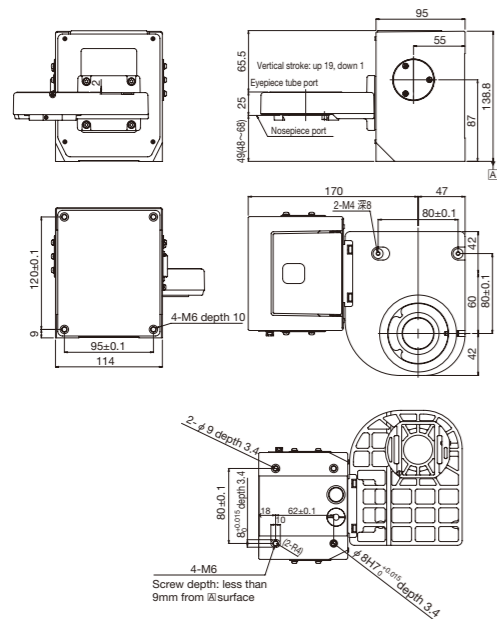
LV150A/LV150



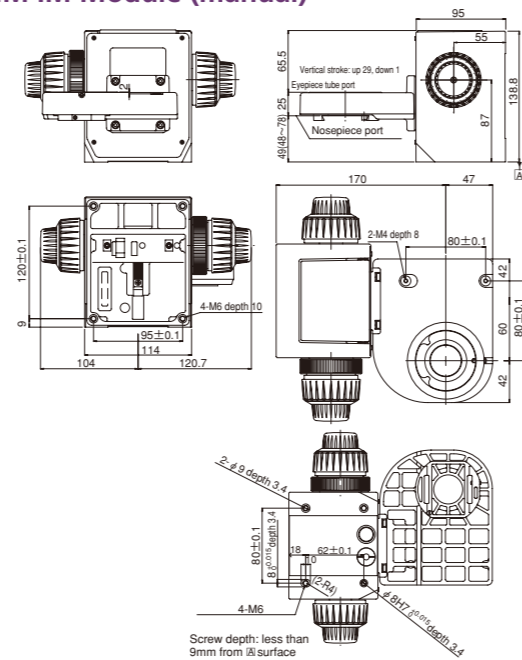
LV100D



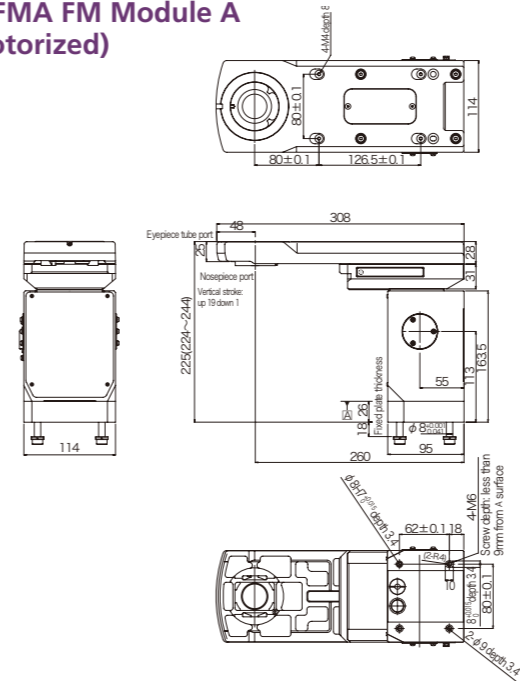
LV-IMA IM Module A (motorized)



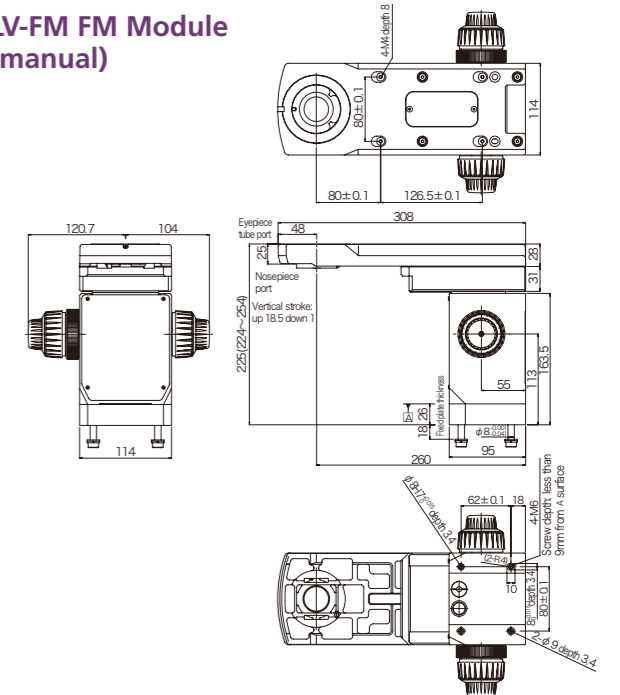
LV-IM IM Module (manual)



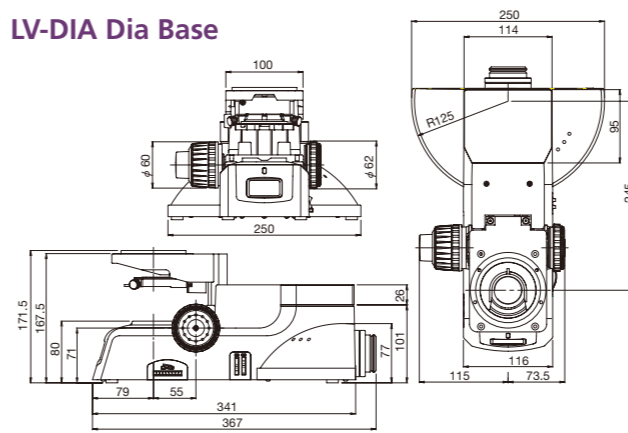
LV-FMA FM Module A (motorized)



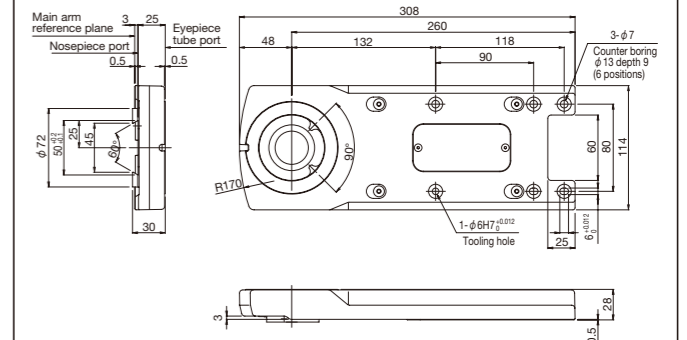
LV-FM FM Module (manual)



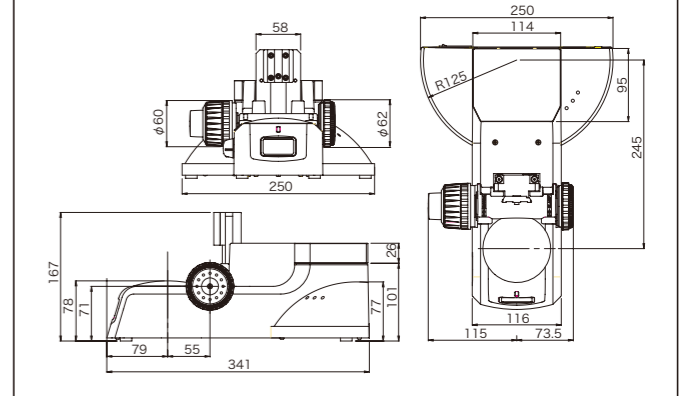
LV-DIA Dia Base



LV-ARM Basic Arm



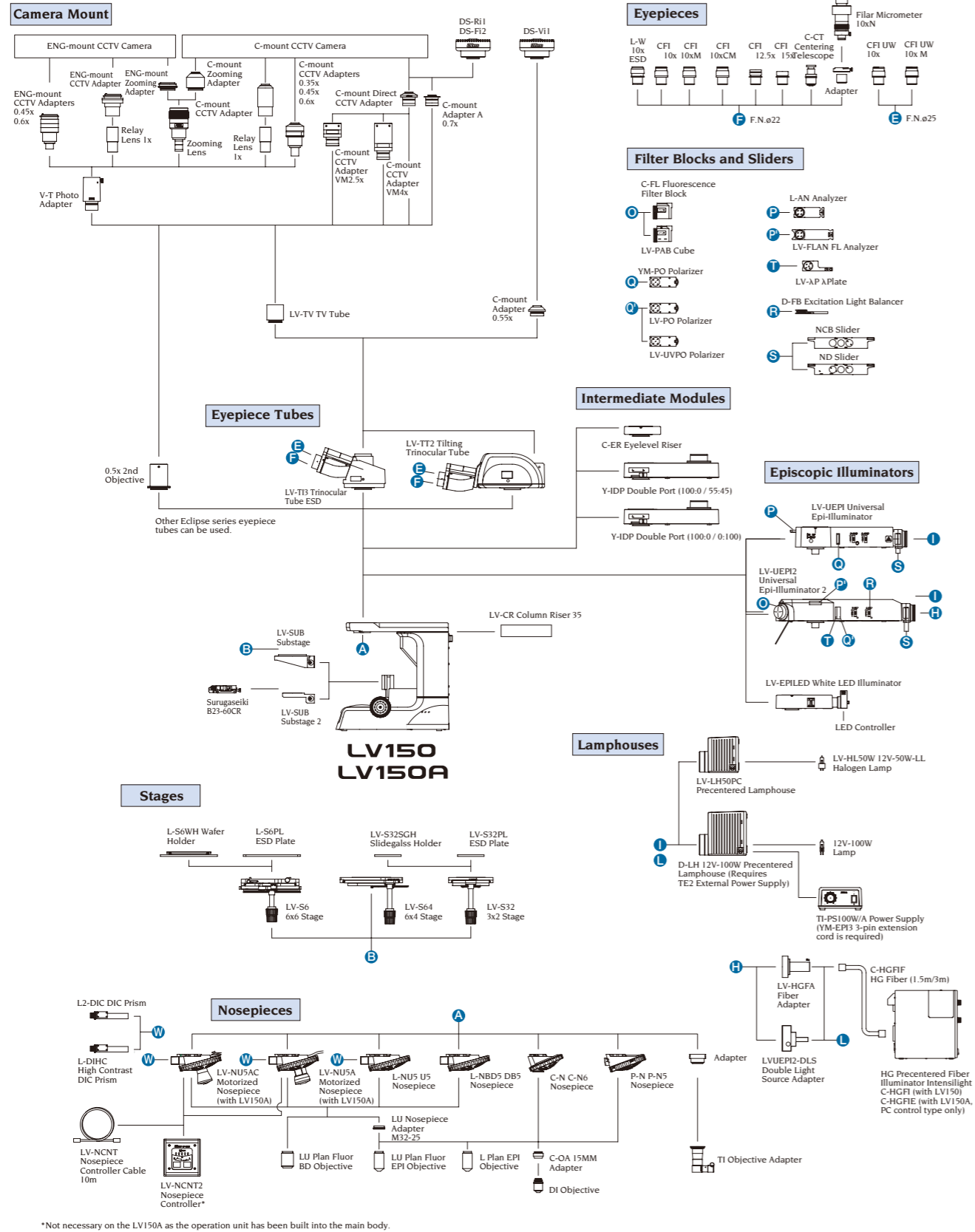
LV-EPI Epi Base



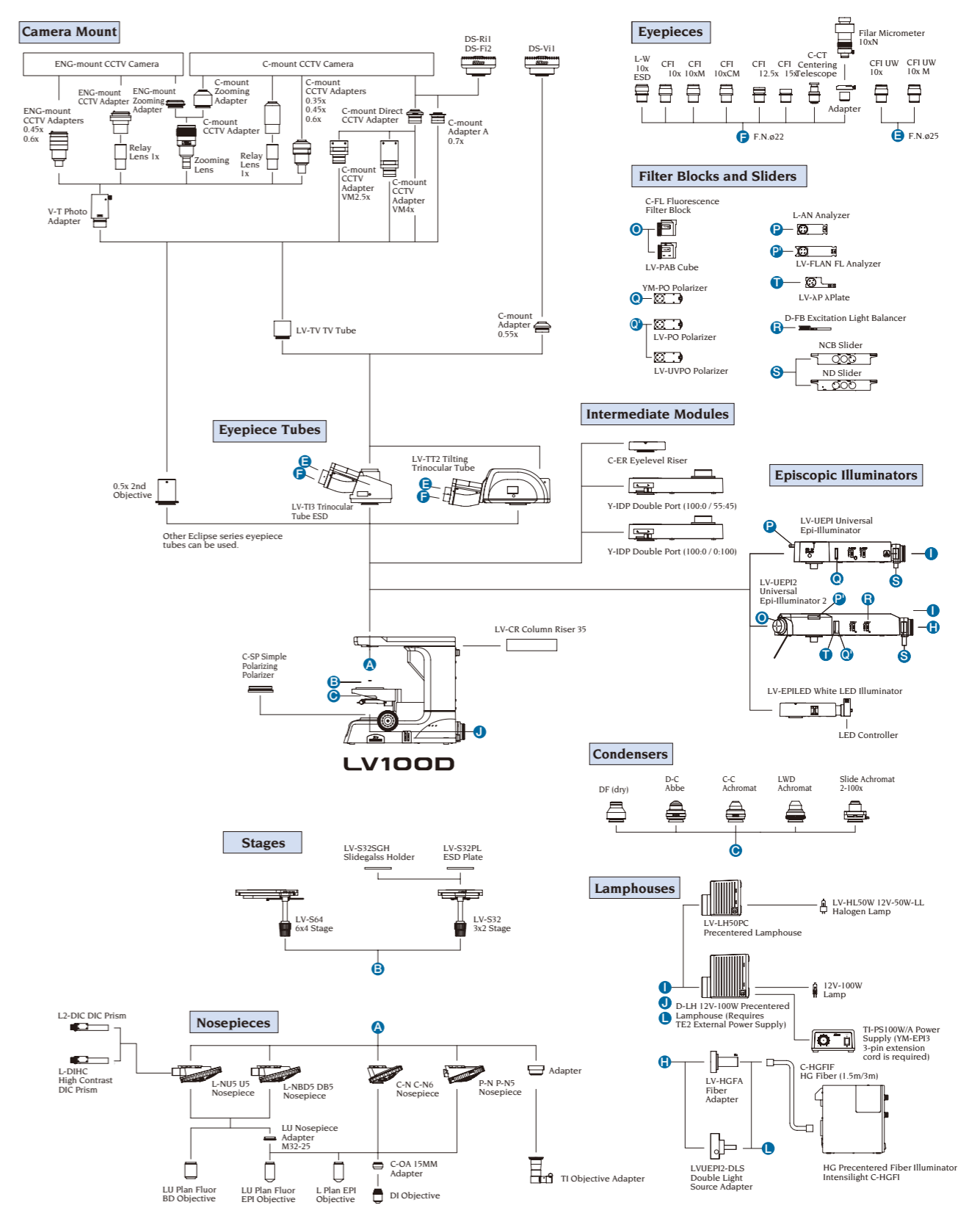


# System Diagram

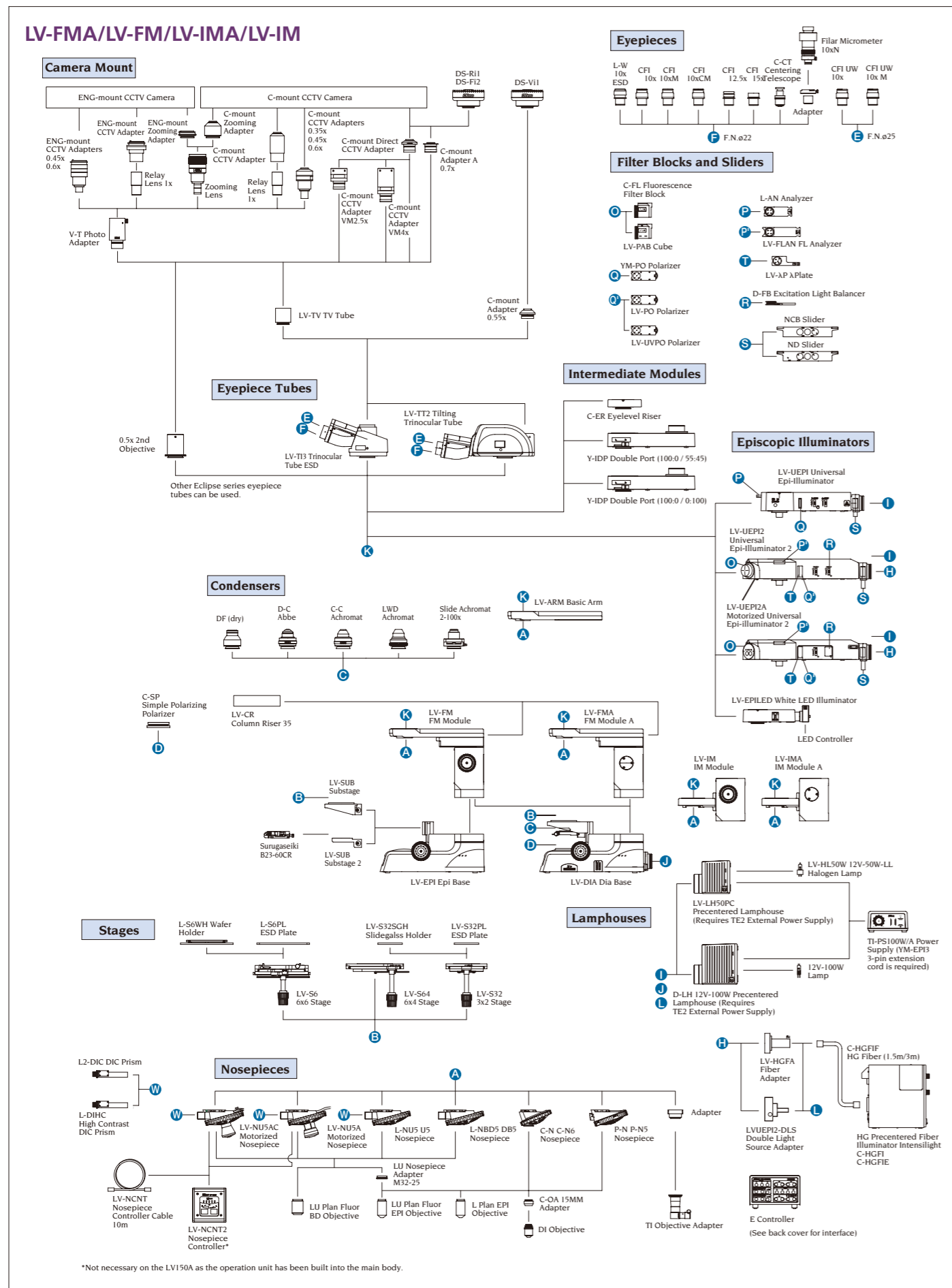
## LV150/LV150A



## LV100D



# System Diagram



\*Not necessary on the LV150A as the operation unit has been built into the main body.

# Main Specifications

## LV150/150A

Main body	Baseless type (column riser insertable between arm and stand); Max. sample height 47mm (when configured with 3x2 stage/6x4 stage), 82mm with column riser, 116.5mm with Suruga Seiki B23-60CR; 12V-50W brightness control transformer built in
Focusing mechanism	Coaxial coarse/fine focus knob, left: coarse/fine, right: fine; Stroke 40mm, coarse 14.0mm/rotation (torque adjustable, with refocusing mechanism), fine focusing 0.1mm/rotation (1µm/increments)
Nosepiece	C-N6 Nosepiece (brightfield, sextuple), L-NBD5 Nosepiece (bright/darkfield quintuple, with flare prevention), L-NU5 Nosepiece (universal quintuple, with flare prevention), LV-NU5AC (for LV150A, high-durability motorized universal quintuple, with flare prevention and centering mechanism), LV-NU5A Nosepiece (for LV150A, high-durability motorized universal quintuple, with flare prevention)
Episcopic illuminator LV-UEPI	12V-50W high-intensity halogen lamp; Field (centerable) and aperture diaphragms synchronized with B/D changeover; ø25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer insertable
Episcopic illuminator LV-UEPI2	12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, manual control/PC control and no centering necessary); Centerable field and aperture diaphragms synchronized with B/D changeover; ø25mm filter (NCB11, ND16, ND4) insertable; 2 epi-filter cubes insertable; Polarizer/analyzer/λ plate insertable, excitation balancer insertable
Eyepiece tube	LV-TI3 Trinocular (erect image, F.O.V. 22/25), LV-TT2 Tilting Trinocular (erect image, F.O.V. 22/25), Y-TF Trinocular (inverted image, F.O.V. 22/25), Y-TT Trinocular (inverted image, F.O.V. 22/25)
Stage	LV-S32 3x2 Stage (stroke: 75x50 mm including glass plate) LV-S64 6x4 Stage (stroke: 150x100 mm including glass plate) LV-S6 6x6 Stage (stroke: 150x150 mm; only for episcopic illumination)
Eyepiece	CFI eyepiece series
Objective lens	CFI60 series
Electrostatic decay time	1000-10V, within 0.2 sec.
Power consumption	1.2A/75W
Weight (main body)	LV150: approx. 8.6kg; LV150A: approx. 8.7kg

## LV100D

Main body	Baseless type (column riser insertable between arm and stand); Max. sample height 29mm (with LV-S32 3x2 Stage or LV-S64 6x4 Stage), 64mm with column riser; 12V-50W brightness control transformer built in
Focusing mechanism	Coaxial coarse/fine focus knob, left: coarse/fine, right: fine; Stroke 30mm, coarse 14.0mm/rotation (torque adjustable, with refocusing mechanism), fine focusing 0.1mm/rotation (1µm/increments)
Nosepiece	C-N6 Nosepiece (brightfield, sextuple), L-NBD5 Nosepiece (bright/darkfield quintuple, with flare prevention), L-NU5 Nosepiece (universal quintuple, with flare prevention)
Episcopic illuminator LV-UEPI	12V-50W high-intensity halogen lamp; Field (centerable) and aperture diaphragms synchronized with B/D changeover; ø25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer insertable
Episcopic illuminator LV-UEPI2	12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, manual control/PC control and no centering necessary); Centerable field and aperture diaphragms synchronized with B/D changeover; ø25mm filter (NCB11, ND16, ND4) insertable; 2 epi-filter cubes insertable; Polarizer/analyzer/λ plate insertable, excitation balancer insertable
Diascopic illuminator	12V-50W high-intensity halogen lamp; Field (centerable) and aperture diaphragms; Filters (ND8, NCB11) insertable
Condenser	LWD Achromat, Sliding Achromat 2-100x, C-C Abbe, C-C Achromat, Darkfield (dry)
Eyepiece tube	LV-TI3 Trinocular (erect image, F.O.V. 22/25), LV-TT2 Tilting Trinocular (erect image, F.O.V. 22/25), Y-TF Trinocular (inverted image, F.O.V. 22/25)
Stage	LV-S32 3x2 Stage (stroke: 75x50 mm including glass plate) LV-S64 6x4 Stage (stroke: 150x100 mm including glass plate)
Eyepiece	CFI eyepiece series
Objective lens	CFI60 series
Electrostatic decay time	1000-10V, within 0.2 sec.
Power consumption	1.2A/75W
Weight (main body)	Approx. 9.4kg