



Industrial Microscopes
ECLIPSE LV150/LV150A/LV100D
LV Focusing Modules
LV-IM/LV-IMA/LV-FM/LV-FMA



ECLIPSE

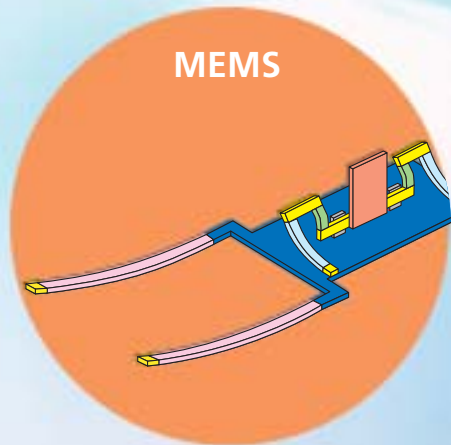
Industrial Microscopes

**LV150/LV150A
LV100D**

LV Focusing Modules

**LV-IM/LV-IMA
LV-FM/LV-FMA**

CFI60

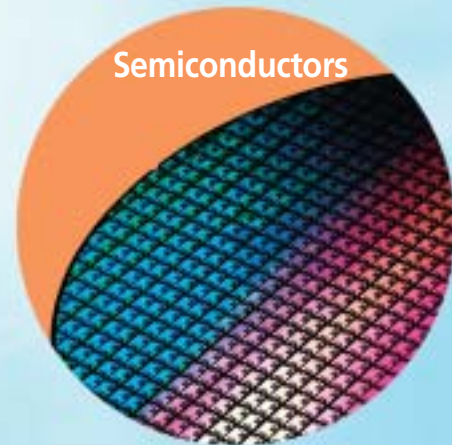


MEMS

- Printer heads
- Micro sensors
- Optical switches
- GMR heads for HDD

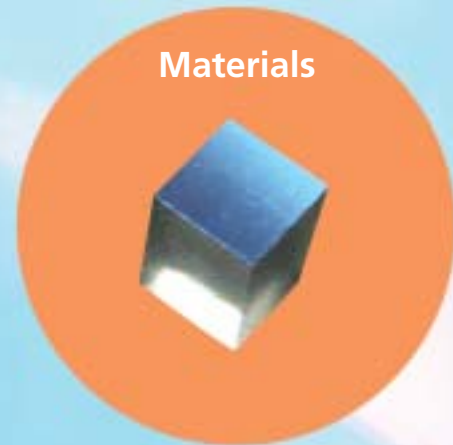


Versatility



Semiconductors

- Bare wafers
- Lithography process
- Probe, test processes
- Post-dicing

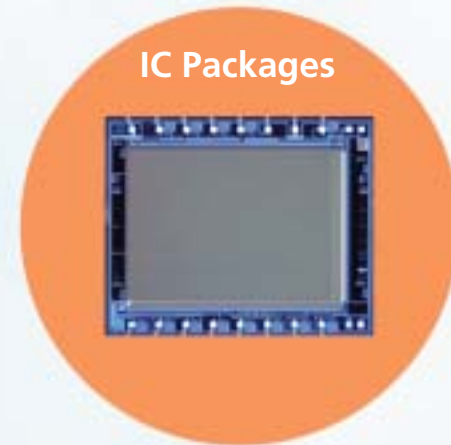


Materials

- Macromolecules, monomeric materials
- Organic/inorganic materials
- Polymers
- Thin film
- Magnetic materials
- Crystals
- Metallography



Extend Your Vision



IC Packages

- LF/TAB
- QFP
- BGA, CSP, FC
- WL-CSP
- SIP



Casts and Parts

- OA equipment parts
- Cell phones, PDAs, DSC, PC parts
- Automobiles, aeronautics



LV150



LV150A



LV100D



LV-ECON

LV-IMA

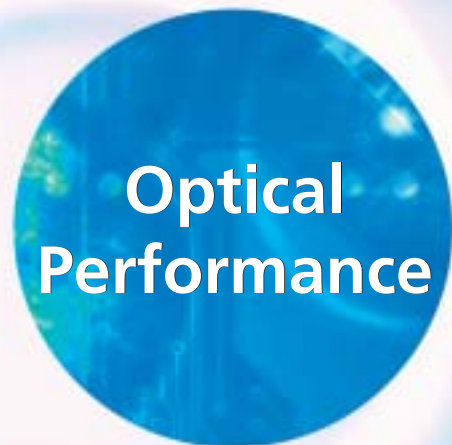
**LV-IM/LV-IMA
LV-FM/LV-FMA**

A versatile microscope system with a modular design

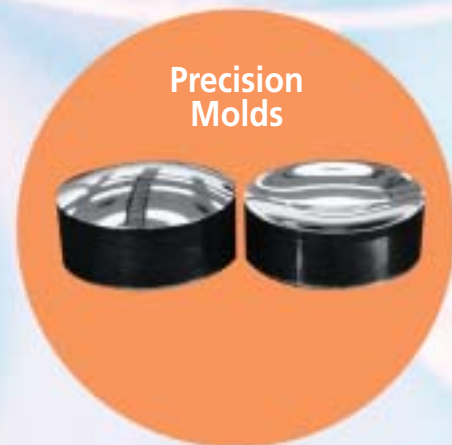


PCB

- Medium/small PCB
- FPC
- Interposer substrates

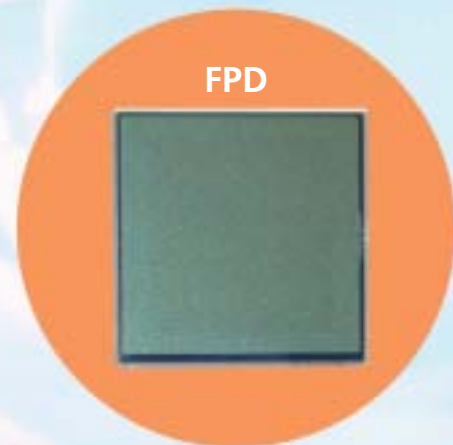


Optical Performance



Precision Molds

- Precision molds

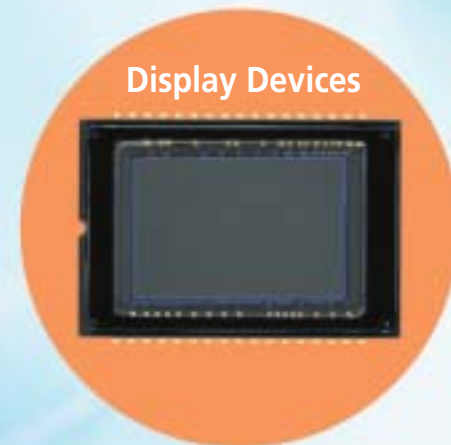


FPD

- LCD, color filters
- Polarizing filters
- Organic EL



Improved Performance



Display Devices

- CCD
- CMOS
- LCOS
- DMD

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

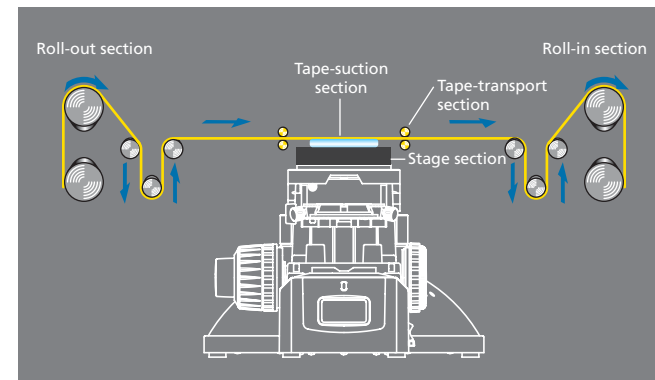
Major parts of the microscope main body—arm, stand, base, etc.—have been modularized for greater flexibility according to use. The LV-ARM Basic Arm, LV-FM FM Module, LV-FMA FM Module A, LV-EPI Epi Base, and LV-DIA Dia Base can be freely combined or incorporated into the system.



Modular Design



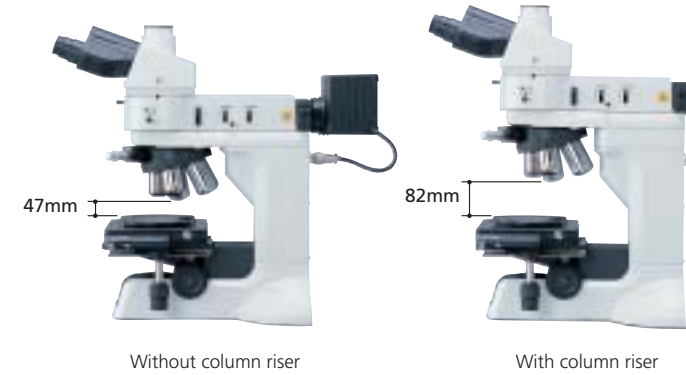
If the LV-DIA Dia Base is used, a diascope illuminator can be incorporated into the system*.
 * An optional power source, the TE2-PS100W, and related options are needed to perform diascope illumination.



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

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.



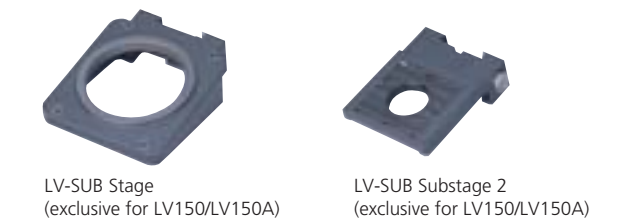
Combination of LV-150 with LV-SUB Substage 2 and Suruga Seiki B23-60CR stage

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 diasopic 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 epifluorescence 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

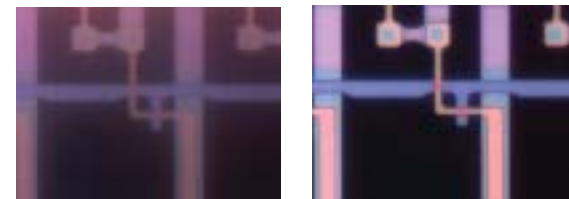


CFI60 L Plan EPI CR series of objective lenses with correction ring

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	20X	0.35	24.0
	50XA	0.45	17.0
	100X	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-2M series.

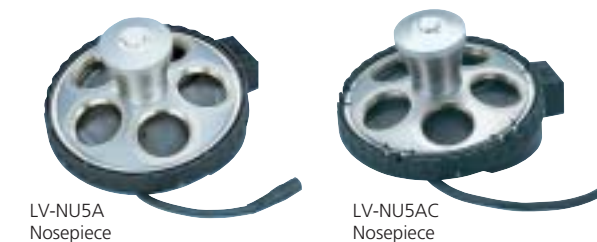
Thorough ESD Protection



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-NCNT nosepiece controller and LV-ECON controller.

Manual Nosepiece

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



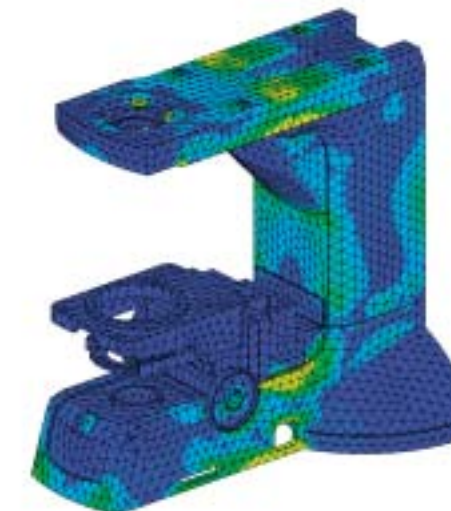
C-N6 Nosepiece (Brightfield)

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.



Focusing Modules and Controller Amply Support Motorized Control

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)



An example configuration of the LV-IMA



LV-IMA IM Module A

LV-IM IM Module

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)



Nosepiece moves up and down.

An example configuration of the LV-FMA



LV-FMA FM Module A

LV-FM FM Module

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)
- PC-control type high-intensity mercury fiber light source
- 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



LV-UEPI2A Motorized Universal Illuminator



LV-EPILED White LED Illuminator



LV-IMA IM Module A



LV-ECON Controller



LV-NU5AC Nosepiece



LV-FMA FM Module A



LV-NU5A Nosepiece

LV150/LV150A

(Episcopic Illumination Type)



An example configuration of the LV150A

Motorized nosepiece controls



LV100D

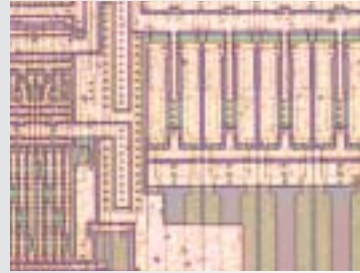
(Episcopic/Diascopic Illumination Type)



An example configuration of the LV100D

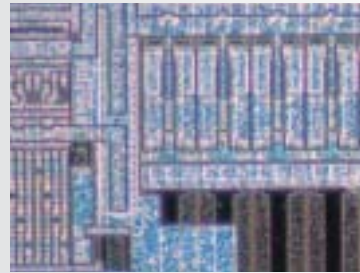
Observation Methods

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



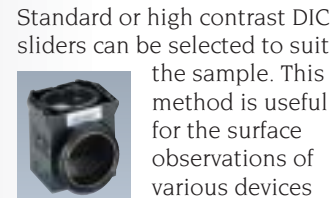
L-DIC DIC Prism (standard)



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)

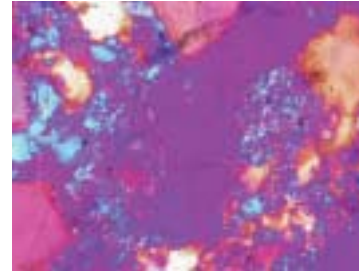


Michelson (TI) and Mirau (DI) types of episcopic double-beam interferometry can be carried out. A filar micrometer eyepiece can be used to examine or measure samples while avoiding direct contact.



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-UEPI 2).

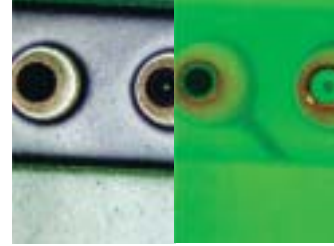


YM-PO Polarizer L-AN Analyzer



LV-PO Polarizer LV-FLAN FL Analyzer LV-λP λ 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.

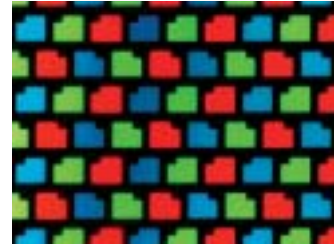


Fluorescence filter blocks



LV-UVPO Polarizer LV-FLAN FL Analyzer

Diascopic Illumination



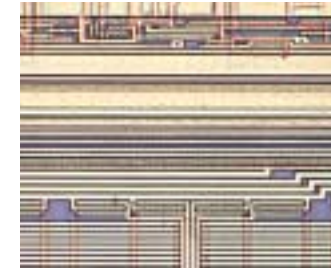
Diascopic illumination is used to observe optical parts, FPD and other samples that transmit light.



Condensers

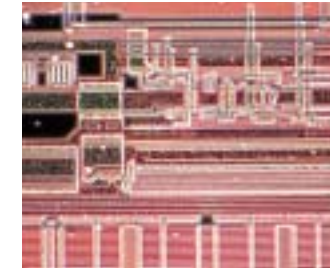
Applications

Semiconductor (wafer)



Brightfield

Semiconductor (wafer)



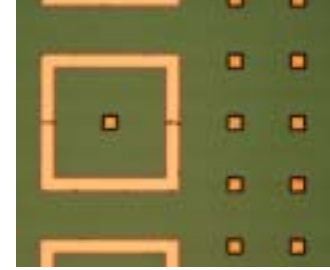
Darkfield

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



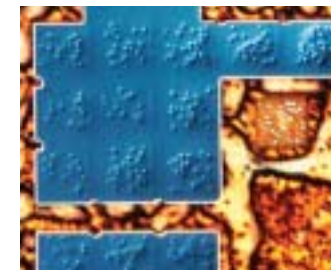
DIC

LCD (color filter)



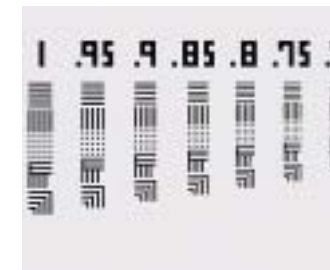
Diascopic brightfield

LCD (conductive particle)



DIC

Test reticle



Diascopic brightfield

Spodumene



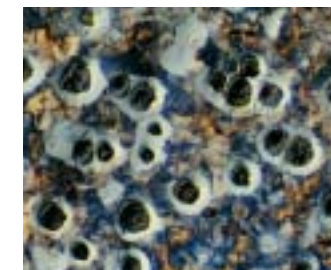
DIC

Carbon Paper



Brightfield

Nodular Graphite Cast Iron



DIC

Tourmaline



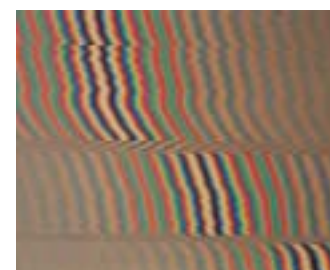
Brightfield

Tourmaline



DIC

Tourmaline



Double-beam interferometry

Eyepiece Tubes



LV-TI3 Trinocular Eyepiece Tube

LV-TT2 Tilting Trinocular Eyepiece Tube

Eyepieces

Model	F.O.V.	Remarks
CFI 10x	22	
CFI 10xM	22	Photomask included
CFI 10xCM: for C-TE binocular ergo tube	22	Crosshairs and micrometer included
CFI 12.5x	16	
CFI 15x	14.5	
CFI UW 10x	25	
CFI UW 10xM	25	Photomask included
Mirometer eyepiece 10xN	20	Stroke 10 mm Main scale: 0.1 mm/increments Sub scale: 0.01 mm/increments

Illuminators



LV-UEPI



LV-UEPI2



LV-UEPI2A

White LED Illuminator



LV-EPILED

Double Port



Y-IDP Double Port (Ratio 100:0/55:45)
Y-IDP Double Port 0/100 (Ratio 100:0/0:100)

Polarizing/DIC accessories

Simple Polarizing



YM-PO Polarizer L-AN Analyzer

Observation with First-Order Red Compensator



LV-PO Polarizer LV-FLAN FL Analyzer LV-λP λ Plate

UV Polarizing with Epi-Fluorescence



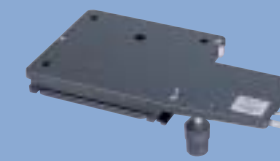
LV-UV PO UV Polarizer

DIC

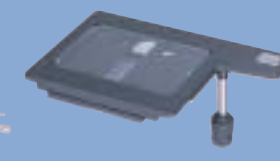


YM-PO Polarizer L-AN Analyzer L2-DIC DIC Prism L-DIHC DIC Prism HC

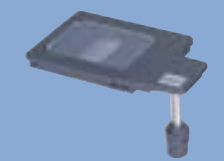
Substages (LV150/LV150A)



LV-S6 6x6 Stage



LV-S64 6x4 Stage

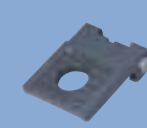


LV-S32 3x2 Stage

Substages (for LV150/LV150A)



LV-SUB Stage



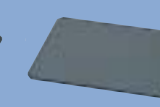
LV-SUB Stage 2

Holders

For LV-S6 6x6 Stage

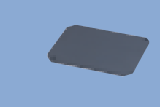


L-S6WH Wafer Holder



L-S6PL ESD Plate

For LV-S32 3x2 Stage



LV-S32PL ESD Plate



LV-S32SGH Slideglass Holder

Nosepieces



C-N6 Nosepiece (Brightfield)



L-NBD5 Nosepiece (Bright/darkfield)



L-NU5 Nosepiece (Universal)



LV-NU5A Motorized Nosepiece (Universal)



LV-NU5AC Motorized Nosepiece (Universal; with centering mechanism)

Objective Lenses



CFI LU PLAN FLUOR EPI series



CFI L PLAN EPI CR series



CFI LU PLAN FLUOR BD series



CFI L PLAN EPI series

Objective Adapters



LU Objective Adapter M32-25



C-OA 15mm Adapter

Diascopic Illumination Condensers



LWD Achromat

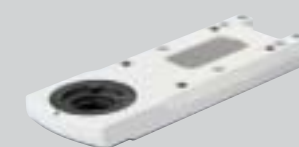
Slide Achromat 2-100x

C-C Abbe

C-C Achro

Darkfield (Dry)

Arm



LV-ARM Basic Arm

Focusing Modules



LV-FM FM Module (manual)



LV-FMA FM Module (motorized)

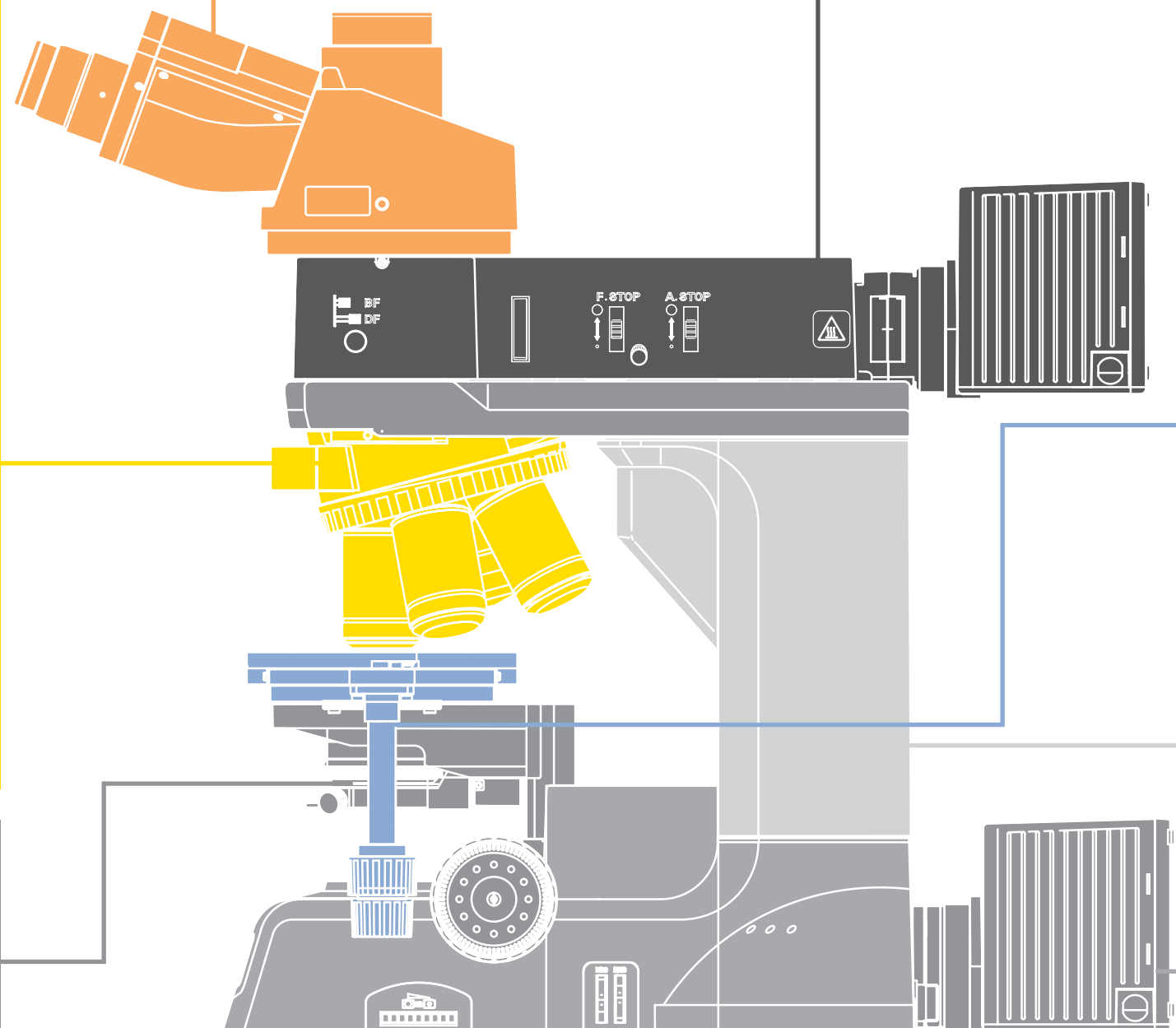
Bases



LV-EPI Epi Base



LV-DIA Dia Base



Modular Design

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-U2 control unit.

High-definition Color Camera Head

DS-Fi1

With a high-definition 5.0-megapixel color CCD, wide dynamic range and excellent red sensitivity, the DS-Fi1 is suitable for imaging of brightfield, darkfield and Nomarski DIC observation.

High-speed Color Camera Head

DS-2Mv

With a high frame rate, 2.0-megapixel color CCD, the DS-2Mv enables the smooth display of live images and provides high quality images.



Standalone Control Unit

DS-L2

With a built-in high-definition large LCD monitor and versatile functions, the DS-L2 eliminates the necessity of PC connection and allows easy operation.



Large monitor displays high-quality images

A high-definition 1024 x 768 pixel, 8.4-in. color TFT LCD monitor is incorporated.

On-screen menu allows easy control

With an OSD system, camera control, state confirmation and settings can be manipulated by keyboard operation or simple mouse click on icons or the onscreen menu.

Storage and print functions for a wide range of applications

Saving the data on a USB memory stick, CompactFlash card, Microdrive and transferring them to other networked PCs is possible. Direct print with a PictBridge printer is possible as standard. "Real 10" modes that allow setting and adjustment of printing magnification are incorporated.

Easy-to-use shortcut menu

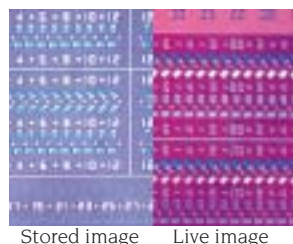
Frequently used functions can be displayed as buttons. They can be operated without impeding the display of captured images. It is also possible to customize the buttons.



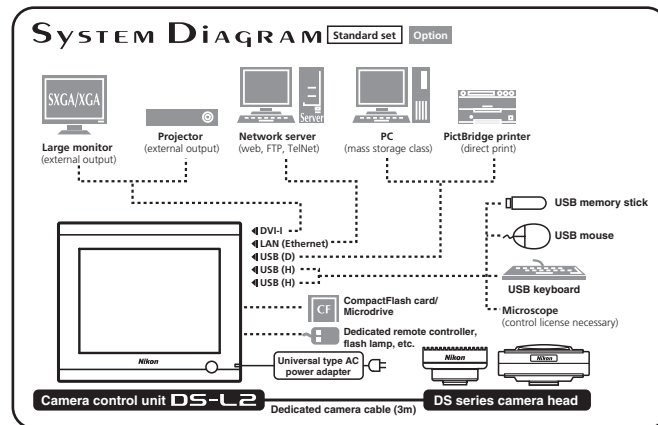
Shortcut menu example (left: Short/right: Large)

Two-pane display suitable for comparative observation

The capability to simultaneously display stored and live images is convenient for comparative observation.



Stored image Live image



Imaging mode provides optimal photography with ease

Optimal imaging parameters are preset for three different sample types. Also, up to seven custom modes can be set.



Various measuring tools

• Measurement/positioning function

With calibration of reference length (up to seven can be registered), measuring and positioning can be conducted.

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
- Super imposition (translucent image for comparison)



PC-use Control Unit

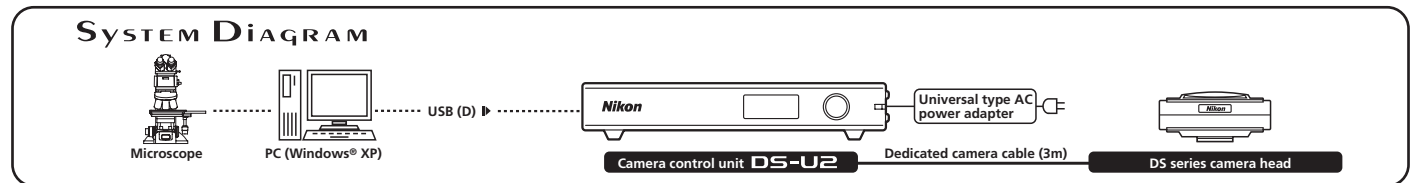


DS-U2

Operations from capture and display of live images, image processing and analysis are all operated from a PC. The DS-U2 can be used flexibly for a wide range of applications.

Simple, high-speed USB 2.0 connection

PC connection via USB 2.0 interface allows comfortable operation.



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.

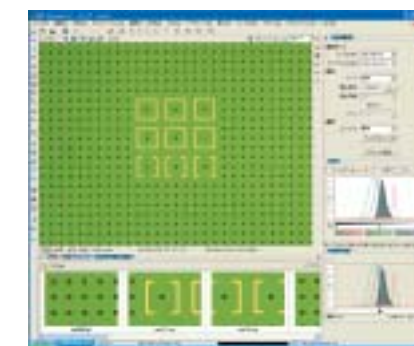
Operating environment

The following PC environment is recommended to achieve optimal performance of NIS-Elements.

CPU	Intel® Pentium® IV processor, 3.2GHz or more
RAM	1GB or more
OS	Microsoft® Windows® XP SP2 (Japanese/English version)
HDD	600MB or more required for installation
Display	1280 x 1024 or higher (TrueColor mode)

Operation screen

Screen layout can be flexibly selected depending on requirements.



Docked control screen



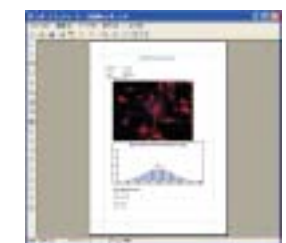
Organizer screen

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

Option

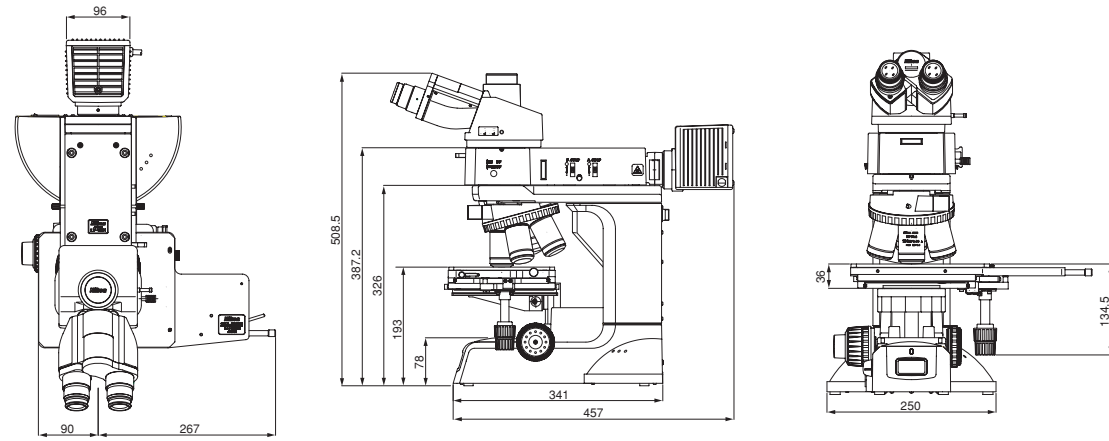
With this plug-in, images that have been captured in a different Z-axis can be used to create an all-in-focus image and virtual 3D image.



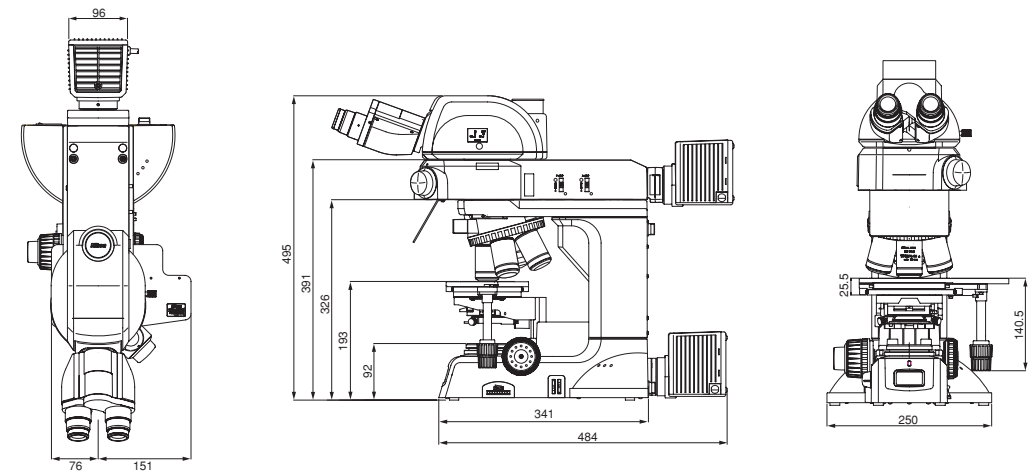
Dimensional Diagrams

Unit: mm

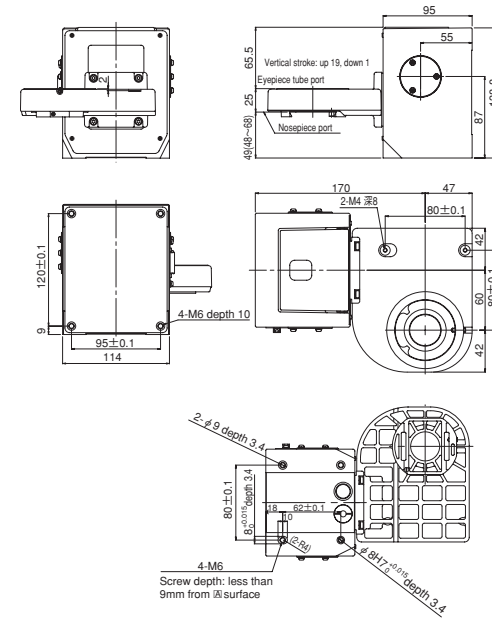
LV150A/LV150



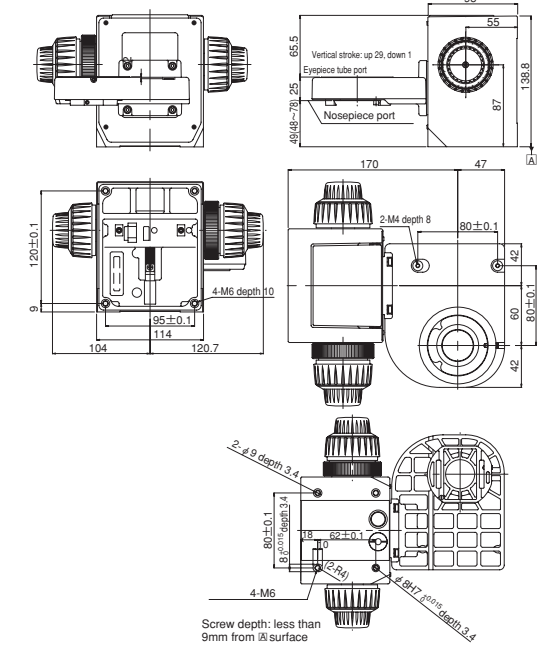
LV100D



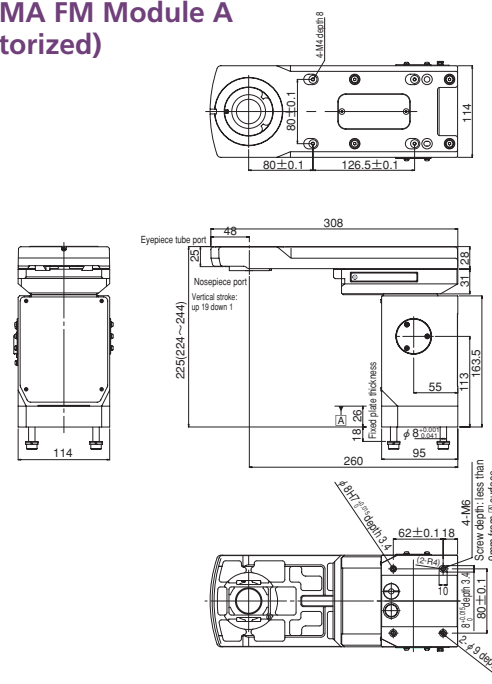
LV-IMA IM Module A (motorized)



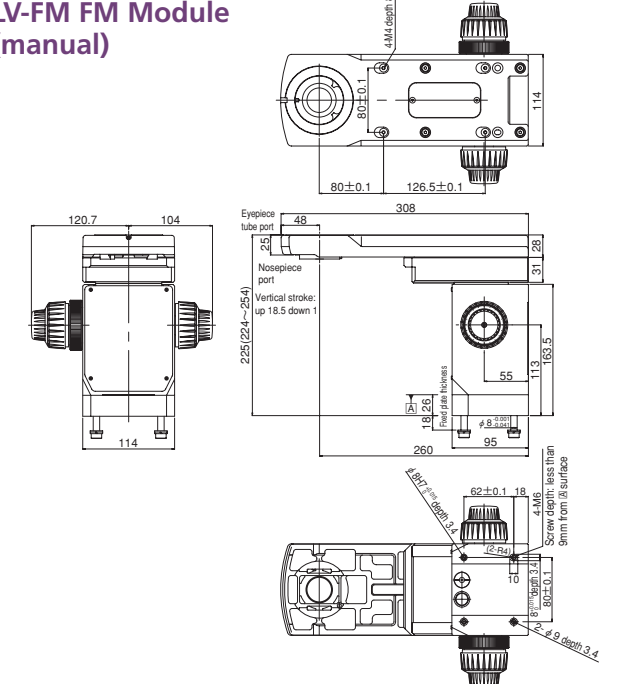
LV-IM IM Module (manual)



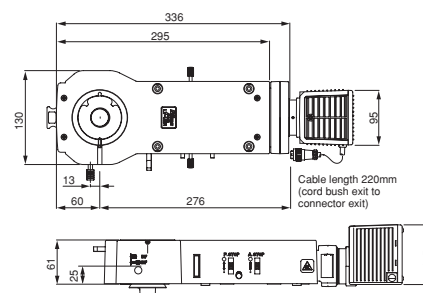
LV-FMA FM Module A (motorized)



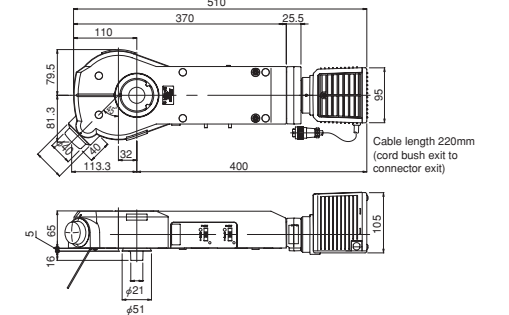
LV-FM FM Module (manual)



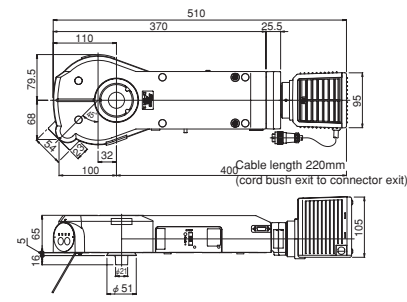
LV-UEPI Universal Epi-Illuminator



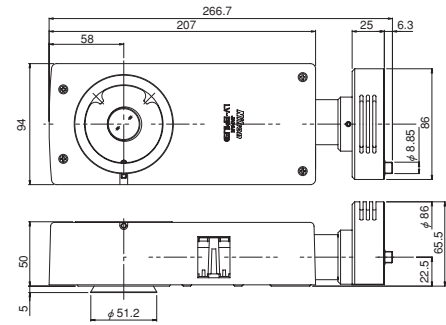
LV-UEPI2 Universal Epi-Illuminator 2



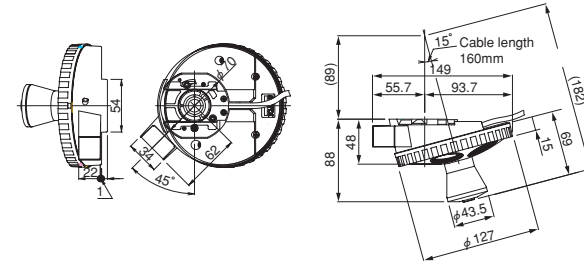
LV-UEPI2A Motorized Universal Epi-Illuminator 2



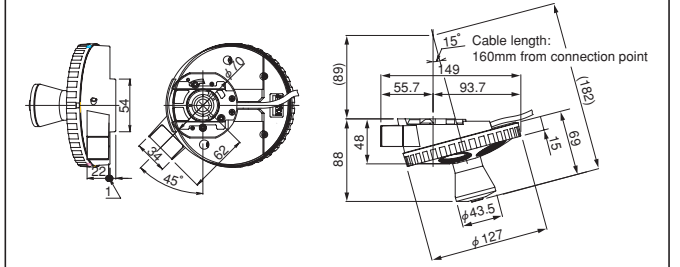
LV-EPIED White LED Illuminator



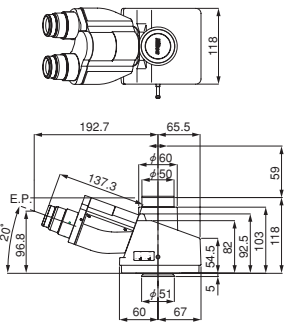
LV-NU5AC Nosepiece



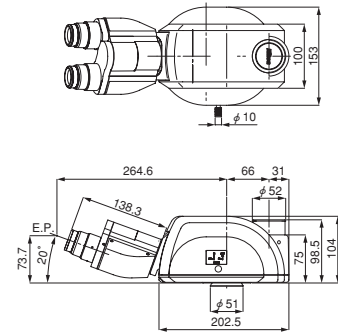
LV-NU5A Nosepiece



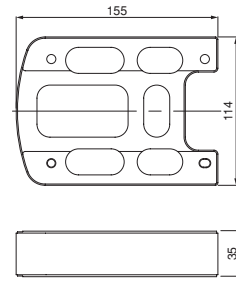
LV-T13 Trinocular Tube ESD



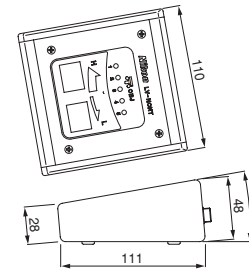
LV-TT2 Tilting Trinocular Tube



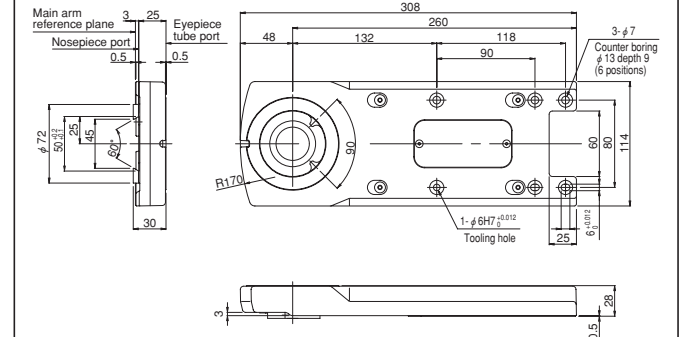
LV-CR Column Riser 35



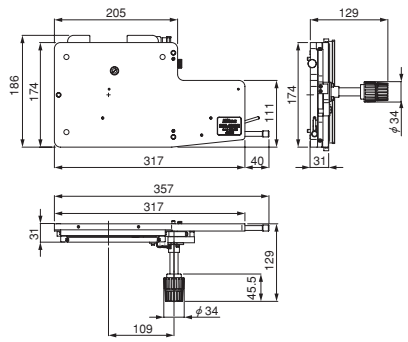
LV-NCNT Nosepiece Controller 2



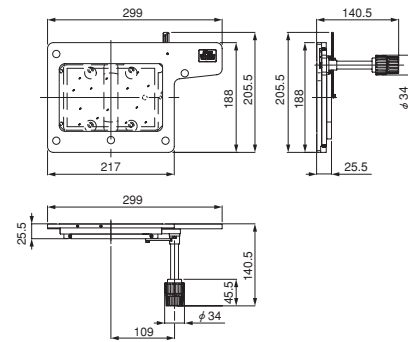
LV-ARM Basic Arm



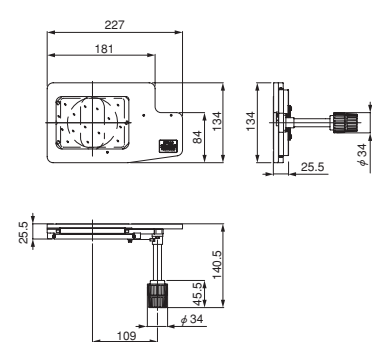
LV-S6 6x6 Stage



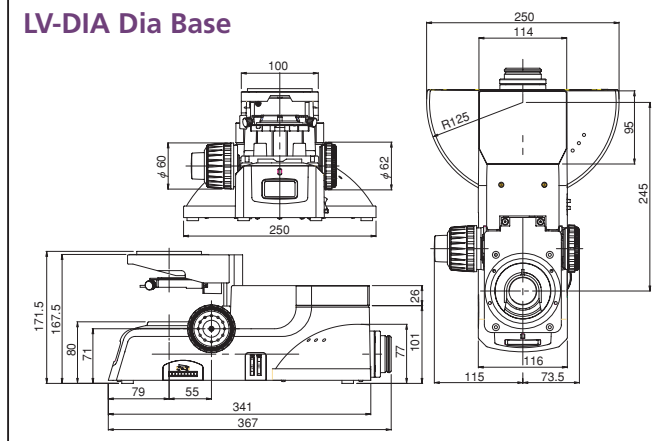
LV-S64 6x4 Stage



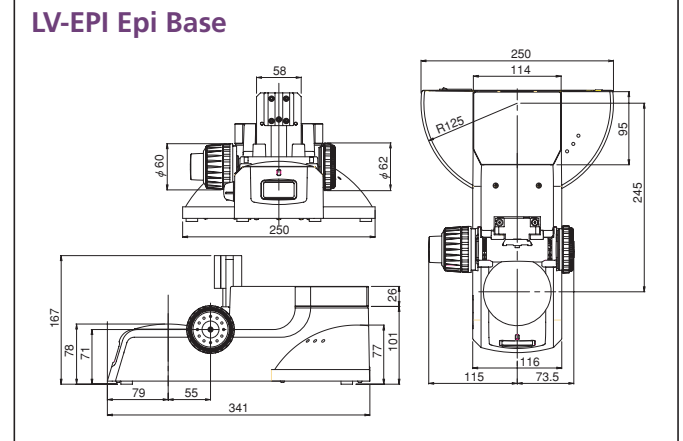
LV-S32 3x2 Stage



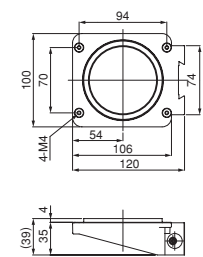
LV-DIA Dia Base



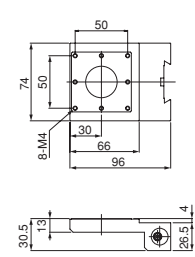
LV-EPI Epi Base



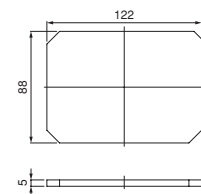
LV-SUB Stage



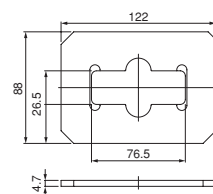
LV-SUB Stage 2



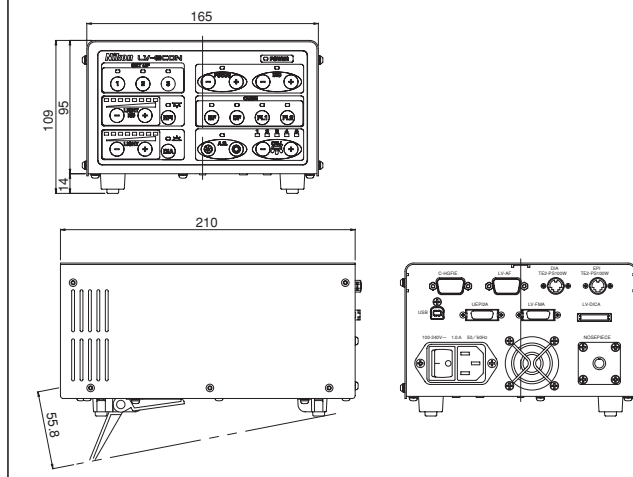
LV-S32PL ESD Plate



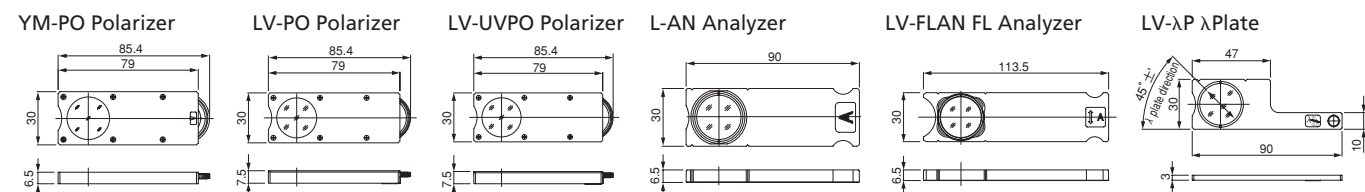
LV-S32SGH Slide Glass Holder



LV-ECON E Controller



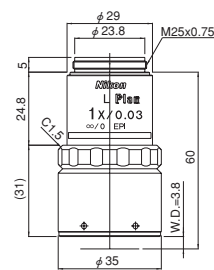
Polarizers/Analyzers/ λ Plate



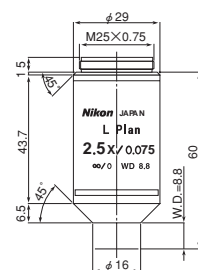
Objective Lenses

CFI L PLAN EPI

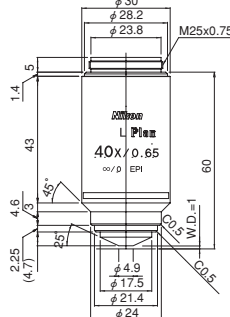
CFI L Plan EPI 1X



CFI L Plan EPI 2.5X

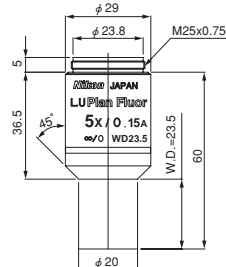


CFI L Plan EPI 40X

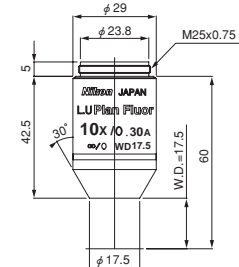


CFI LU PLAN FLUOR

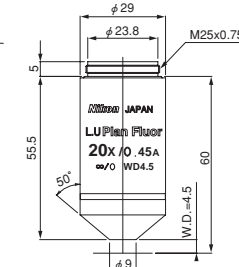
CFI LU Plan Fluor EPI 5X



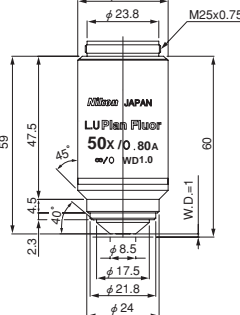
CFI LU Plan Fluor EPI 10X



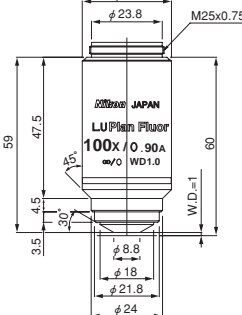
CFI LU Plan Fluor EPI 20X



CFI LU Plan Fluor EPI 50X

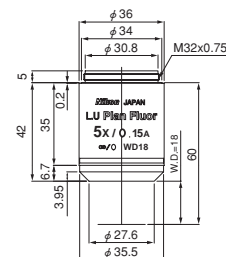


CFI LU Plan Fluor EPI 100X

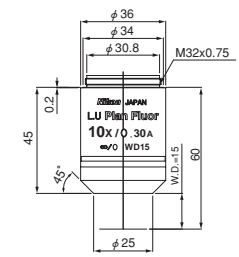


CFI LU PLAN FLUOR BD

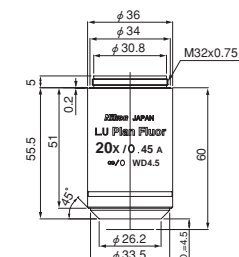
CFI LU Plan Fluor BD 5X



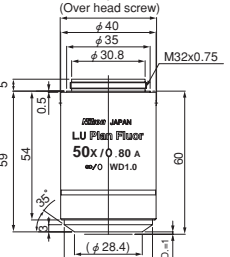
CFI LU Plan Fluor BD 10X



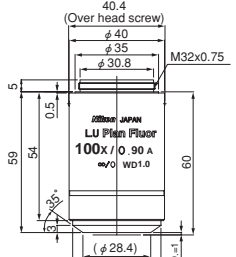
CFI LU Plan Fluor BD 20X



CFI LU Plan Fluor BD 50X

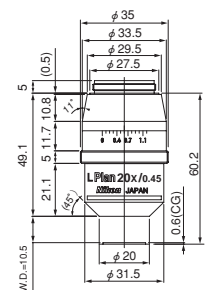


CFI LU Plan Fluor BD 100X

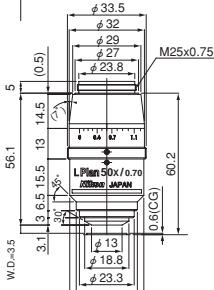


CFI L PLAN EPI CR

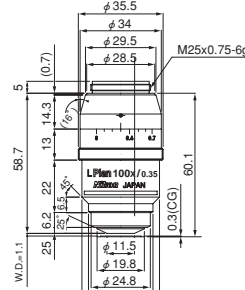
CFI L PLAN EPI 20XCR



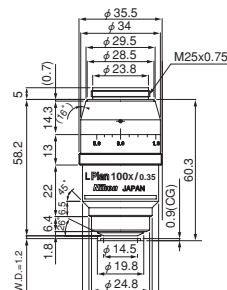
CFI L PLAN EPI 50XCR



CFI L PLAN EPI 100XCRA



CFI L PLAN EPI 100XCRB



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 (1 μ m/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 (for LV150A, high-durability motorized universal quintuple, with flare prevention)
Episcopic illuminator LV-U EPI	12V-50W high-intensity halogen lamp; Field (centerable) and aperture diaphragms synchronized with B/D changeover; ϕ 25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer insertable
Episcopic illuminator LV-U EPI2	12V-50W high-intensity halogen lamp; 120W high-intensity mercury-fiber illuminator (with brightness control, no centering necessary) mountable; Centerable field and aperture diaphragms synchronized with B/D changeover; ϕ 25mm filter (NCB11, ND16, ND4) 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 (1 μ m/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-U EPI	12V-50W high-intensity halogen lamp; Field (centerable) and aperture diaphragms synchronized with B/D changeover; ϕ 25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer insertable
Episcopic illuminator LV-U EPI2	12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, no centering necessary); Centerable field and aperture diaphragms synchronized with B/D changeover; ϕ 25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer/ λ plate insertable, excitation balancer insertable
Diascopic illuminator	12V-50W high-intensity halogen lamp; Field (centerable) and aperture diaphragms synchronized with B/D changeover; 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), 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)
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

Main Specifications

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

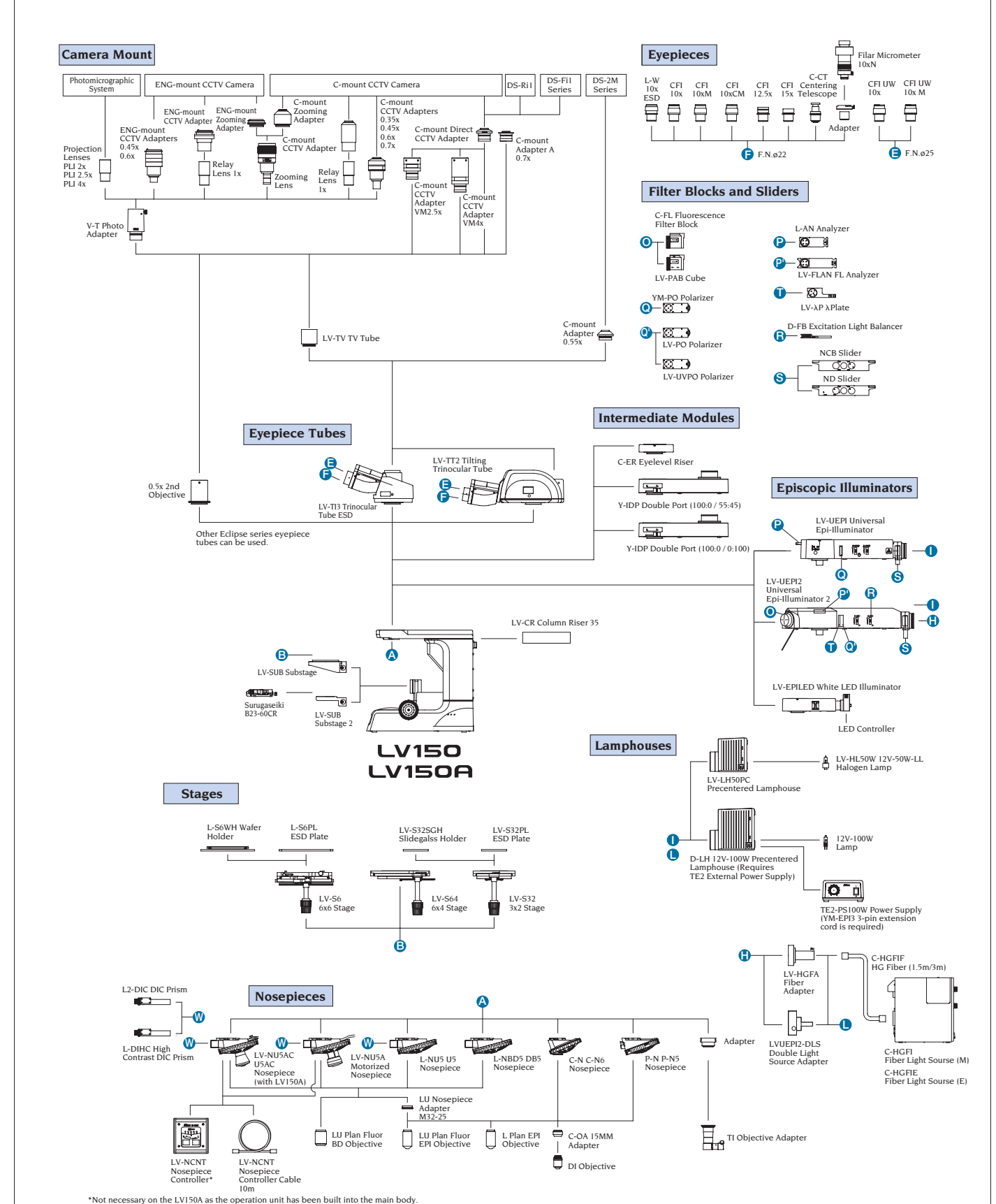
Main body	LV-IMA IM Module/LV-FMA FM Module A (motorized) Motorized nosepiece up/down section: stroke 20mm, resolving power 0.025µm, max. speed 2.5mm/sec. (resolving power 0.05µm) LV-IM IM Module/LV-FM FM Module (manual) Coarse/fine focus knob: stroke 30mm, coarse 5.2mm/rotation, fine 0.1mm/rotation (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); 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-U EPI2A	12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, PC control); 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, high-intensity mercury fiber light source (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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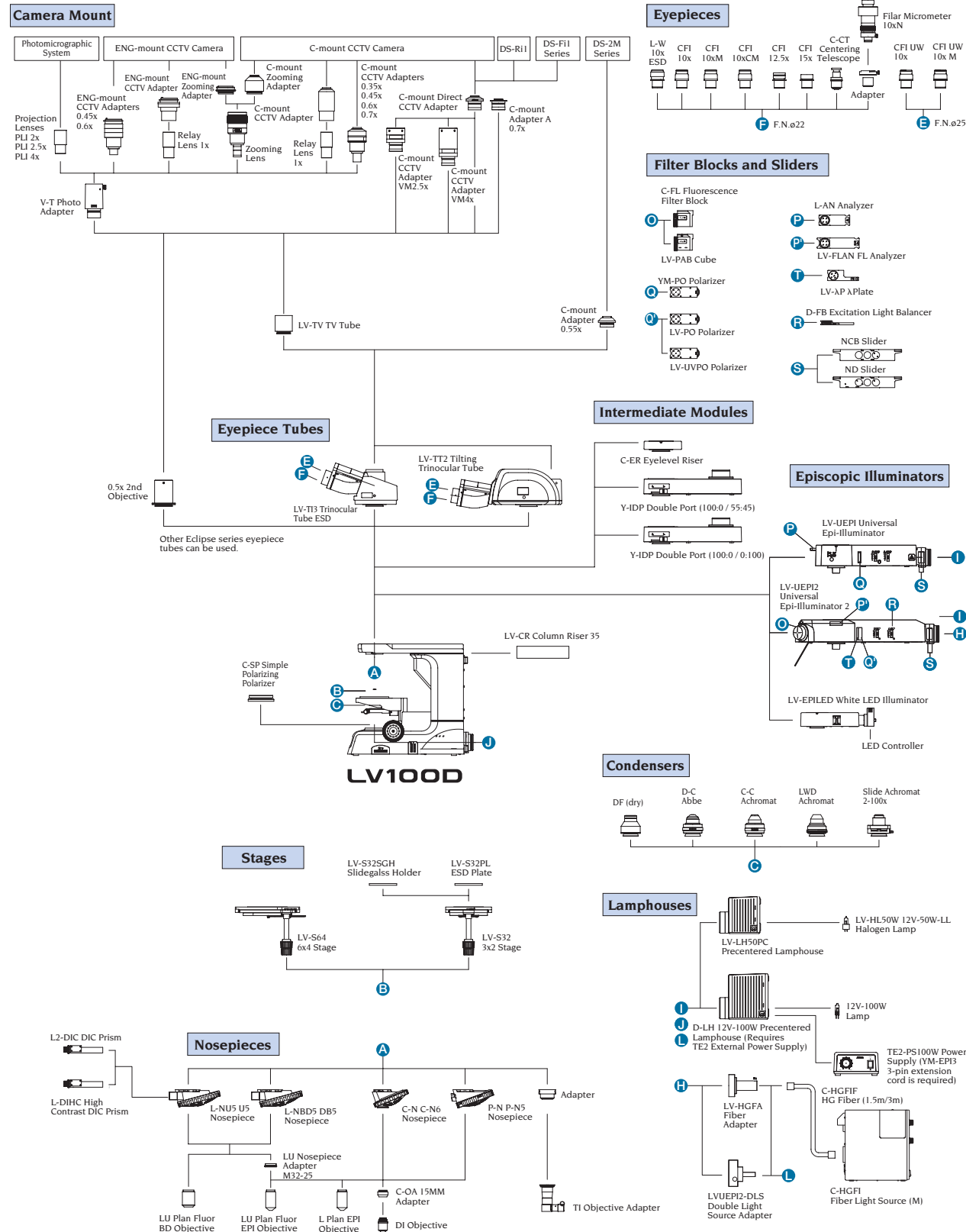
System Diagram

LV150/LV150A

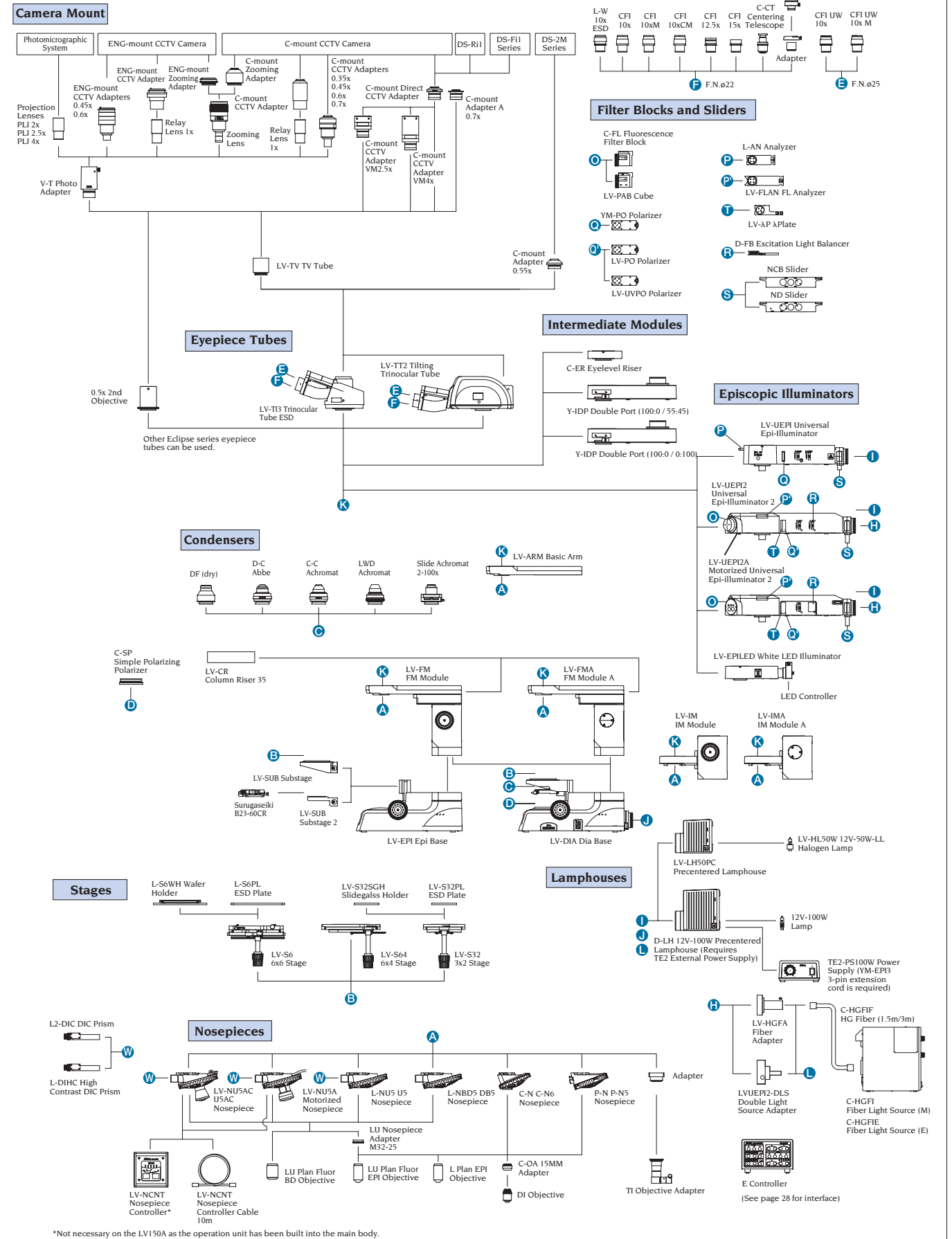


System Diagram

LV100D



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



Universal Design Microscope LV-UDM

For more information, see the LV-UDM catalog.

The new Eclipse LV100DA-U and LV100D-U bring together Nikon's world renowned CFI60 optical system on one universal microscope platform. Materials ranging from thin films, plastics, fibers, nanoparticles, emulsions, to material science, metallography, FPDs and microcircuits can be easily visualized and documented with a single microscope. A true solution for both routine and R&D applications.



LV100D-U (Manual)



LV100DA-U (Motorized)

► Increased maximum sample height

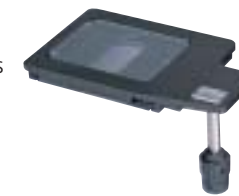
The standard maximum specimen height is 38mm (33mm when combined with the LV-NU5AI nosepiece). Combined with a column riser, it is 73mm (or 68mm with the LV-NU5AI nosepiece), and with a combination of the LV-DIA-U DIA Base U and LV-FM FM module, specimens with a height up to 102mm (or 97mm) can be accommodated.

* With diasopic illumination, the maximum specimen height depends on the focal length of the condenser used.



► Accepts various stages

In addition to the LV-S32 3x2 Stage, users can select a wide variety of stages according to their needs, including the LV-S64 6x4 Stage for larger specimens, or the LV-SRP Fine Rotating Stage for polarized light microscopy.



► Optimized digital image capture

The motorized model LV100DA-U meets all requirements for digital imaging and analysis. Used in conjunction with the motorized universal episcopic illuminator LV-UEPI2A, digital cameras DS-Ri1, DS-Fi1 or DS-2Mv with control units DS-L2 or DS-U2, and Elements imaging software, observation methods and illumination conditions can be optimized for image capture. The LV100DA-U also supports external quantitative control, and data communication and control of the magnification information required for measurement functions and display of scale.



LV100DA-U+DS-Fi1+DS-U2

► Enables a wide range of observation methods

These microscopes enable a wide range of observation methods by combining illuminator, nosepiece, condenser and objective lenses.

	Brightfield	Darkfield	DIC	Fluorescence	Polarizing	Phase-contrast	Double-Beam Interferometry
Episcopic	○	○	○	○	○	—	○
Diascopic	○	○	○	—	○	○	—

► LV-NU5AI Universal Motorized Quintuple Nosepiece

No nosepiece changeover necessary

The LV100DA-U features a newly developed motorized nosepiece. In addition to brightfield and darkfield observation, the LV-NU5AI Universal Nosepiece enables a wide range of observation methods including episcopic and diasopic DIC. The LV-NCNT2 motorized nosepiece controller can be used in combination with the LV-NU5AI on the LV100D-U.



► LV-CUD Universal Condenser Dry

More diasopic features

Brightfield, darkfield, DIC, Pol and phase contrast observation are all possible. Simply select the condenser position for the method you wish to use.

- Darkfield: D-C Darkfield Ring
- Phase-contrast: D-C PHModule
- DIC: D-C DIC Module Dry



► 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.



Automated microscope control provide a streamlined workflow

Integration of automated microscope control of motorized components such as illumination, Z position and nosepiece rotation allow for easy image capture and sample inspection.



Microscope control window (LV-PAD)

► Control of illumination

Recording and replay of illumination conditions

Stored illumination settings, which integrate shutter control, lamp voltage, illumination method (brightfield, darkfield, fluorescence) are easily applied to image capture. Specific configurations can be saved and recalled at later times or with different operators to help provide consistent image capture.



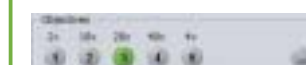
LV100DA-U LV-ECON E Controller

LV-UEPI2A Motorized Universal Epi-Illuminator 2

► Powerful Nosepiece Control

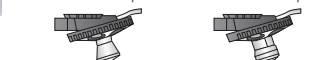
Switch Magnifications and Configurations

Calibration and Scales are linked automatically with objectives. Changing magnifications is seamlessly linked to the appropriate spatial calibration. These setting can also be tied to camera parameters to ensure the correct measurements are applied to the captured images.



LV100DA-U LV-ECON E Controller

LV-NU5AC Motorized Nosepiece



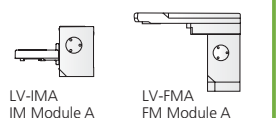
► Control of Z positioning

Motorized focus control

Automated control of the Z motor and positioning is the core of 3D image capture and autofocusing. Linked with the EDF (extended depth of focus) module (optional), composite images that have been captured in a different Z-axis can be combined to create an all-in-focus image.



LV-ECON E Controller



Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. November 2008. ©2007-8 NIKON CORPORATION



WARNING

TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING YOUR EQUIPMENT.



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