Industrial Microscopes
ECLIPSE LV150/LV150A/LV100D
LV Focusing Modules
LV-IM/LV-IMA/LV-FM/LV-FMA
A versatile microscope system with a modular design

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

**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**

**Casts and Parts**
- OA equipment parts
- Cell phones, PDAs, DSC, PC parts
- Automobiles, aeronautics

**Optical Performance**
- Medium/small PCB
- FPC
- Interposer substrates

**Precision Molds**
- Precision molds

**FPD**
- LCD, color filters
- Polarizing filters
- Organic EL

**Improved Performance**

**Display Devices**
- CCD
- CMOS
- LCOS
- DMD

**IC Packages**
- LF/TA
- WL-CSP
- QFP
- SIP
- BGA, CSP, FC

**PCB**
- Precision molds

**A versatile microscope system with a modular design**
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.

### Versatility

#### 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.

#### 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.

#### 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 diascopic illumination.

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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.

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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 filters.

**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.

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.

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 5x or higher objectives, brightness is about 20% greater under episcopic illumination, 40-50% greater with diascopic illumination, than previous Nikon illuminators.

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**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.

**LV-EPILED White LED Illuminator**

With emphasis on lightweight 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.

**Extend your vision**

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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, 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.

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 covergloss 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 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 objective lens.

Environment Friendly

CFI LU Plan Fluor BD series does not contain harmful substances such as lead and arsenic.

The eco glass used in the CFI LU Plan Fluor and L Plan EPI CR series does not only with microscopes but also with other equipment for even greater versatility.

CFI60 Series Objectives

**Brightfield**

<table>
<thead>
<tr>
<th>Model</th>
<th>Magnification</th>
<th>NA</th>
<th>Working Distance (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFI Lu Plan BD</td>
<td>5X</td>
<td>0.15</td>
<td>18.0</td>
</tr>
<tr>
<td></td>
<td>10X</td>
<td>0.30</td>
<td>15.0</td>
</tr>
<tr>
<td></td>
<td>20X</td>
<td>0.45</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>50X</td>
<td>0.80</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>100X</td>
<td>1.00</td>
<td>0.7</td>
</tr>
<tr>
<td>CFI Lu Plan BD SLWD</td>
<td>200X</td>
<td>0.40</td>
<td>10.0</td>
</tr>
<tr>
<td>CFI Lu Plan BD SLWD</td>
<td>100X</td>
<td>0.80</td>
<td>9.5</td>
</tr>
<tr>
<td>CFI Lu Plan APO BD</td>
<td>50X</td>
<td>0.65</td>
<td>17.0</td>
</tr>
<tr>
<td></td>
<td>100X</td>
<td>0.95</td>
<td>9.3</td>
</tr>
<tr>
<td>CFI Lu Plan APO BD</td>
<td>150X</td>
<td>1.25</td>
<td>9.25</td>
</tr>
</tbody>
</table>

**With correction mechanism**

<table>
<thead>
<tr>
<th>Model</th>
<th>Magnification</th>
<th>NA</th>
<th>Working Distance (mm)</th>
<th>Glass Thickness</th>
<th>Correction Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFI Lu Plan C4</td>
<td>4X</td>
<td>0.45</td>
<td>17.0-19.0</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td>CFI Lu Plan C4</td>
<td>10X</td>
<td>0.65</td>
<td>1.2-1.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFI Lu Plan C4</td>
<td>20X</td>
<td>0.95</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFI Lu Plan C4</td>
<td>50X</td>
<td>1.25</td>
<td>0.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFI Lu Plan C4</td>
<td>100X</td>
<td>1.55</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Condensers**

<table>
<thead>
<tr>
<th>Model</th>
<th>NA</th>
<th>W (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLD Achromatic condenser</td>
<td>0.9</td>
<td>1.2</td>
</tr>
<tr>
<td>SLD-Achromatic condenser</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>SLD Achromatic condenser</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Achromatic condenser</td>
<td>0.9</td>
<td>1.2</td>
</tr>
<tr>
<td>SLD Achromatic condenser</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>SLD Achromatic condenser</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>SLD Achromatic condenser</td>
<td>1.8</td>
<td>1.2</td>
</tr>
<tr>
<td>SLD Achromatic condenser</td>
<td>2.0</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**Thorough ESD Protection**

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

<table>
<thead>
<tr>
<th>Model</th>
<th>NA</th>
<th>W (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-76 Noosepiece (Brightfield)</td>
<td>0.9</td>
<td>1.2</td>
</tr>
<tr>
<td>L-MDS Noosepiece (Bright/darkfield)</td>
<td>0.9</td>
<td>1.2</td>
</tr>
<tr>
<td>L-NUS Noosepiece (Universal)</td>
<td>0.9</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**Manual Nosepiece**

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

**Improved Performance**

Overall performance has been improved with better durability and rigidity.

**Tilting Trinocular Eyepiece Tube**

The newly developed LV-TT2 tilting trinocular eyepiece tube (rect image) offers comfort to all users, regardless of their stature or viewing positions. The optical path changeover of 100X/0.20 R0 allows simultaneous use of monitor.

**Highly Durable Motorized Universal Nosepieces**

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.

**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.

*NEPA-AD adapter 0.5x can be directly mounted to LV-TT2 and LV-T3 for the DS-2M series.
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)**

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 vertical stroke of 20mm, while the LV-FM FM Module (manual) has a vertical stroke of 30mm.
- The LV-FMA FM Module A (motorized) is the first to be equipped with an electronically controlled motorized nosepiece.
- The LV-FM FM Module (manual) is the first to be equipped with an externally controlled motorized focusing module.
- Both modules feature a unique control mechanism that allows for precise and smooth operation.

**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 USB1.1. 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
- USB1.1

* Nikon’s warranty covers Nikon equipment only.*
**LV150/LV150A**

*(Episcopic Illumination Type)*

- **LV-UEPI**
  - An illuminator that can be used for brightfield, darkfield, simple polarizing and DIC observations.

- **LV-NUSA Nosepiece**
  - A universal motorized nosepiece that is 10 times more durable than its predecessors.

- **LV-S6 6x6 Stage**
  - An episcopic illumination stage capable of inspecting 150mm wafers. (With 6" wafer holder)

- **LV150/LV150A**
  - The LV150 and LV150A microscopes are used for episcopic illumination.

- **LV-U50PC Precentered Lamphouse**
  - A low power-consumption 12V-50W halogen light source equivalent to or higher than the 12V-100W type.

- **CFI-LU Plan Fluor Series**
  - These objective lenses feature high NA, long working distances and improved transmission rate in the UV range.

- **LV150A controls**
  - Motorized nosepiece controls

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**LV100D**

*(Episcopic/Diascopic Illumination Type)*

- **LV-TT2 Tilting Trinocular Tube**
  - The LV-TT2 is a tilting trinocular tube that has an optical path changeover of 100/0:0/80.

- **LV-UEP2**
  - The LV-UEP2 illuminator enables brightfield, darkfield, DIC, simple polarizing, and UV excitation epifluorescence observations.

- **LV-NU5A Nosepiece**
  - Selectable from C-N6 (brightfield), L-NBD5 (bright/darkfield) and L-NU5 (universal) nosepieces.

- **LV-S32 3x2 Stage**
  - This small, industrial-use stage has a triple-plate design and can be used for episcopic and diascopic illumination.

- **LV-100D**
  - The LV100D microscope is capable of episcopic and diascopic illumination.

- **LV-U50PC 12V-50W Lamphouse**
  - A low power-consumption 12V-50W halogen light source equivalent to or higher than the 12V-100W type.

- **CFI-LU Plan Fluor Series**
  - These objective lenses feature high NA, long working distances and improved transmission rate in the UV range.
**Observation Methods**

**Brightfield**
The antiflare 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**
Standard or high contrast DIC sliders can be selected to suit the sample. This method is useful for the observation of various devices and precision molds.

**Epi-Fluorescence**
UV, V, 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.

**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.

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

**Applications**

- **Semiconductor (wafer)**
  - Brightfield
  - Darkfield
  - Epi-Fluorescence

- **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

- **LCD (conductive particle)**
  - Test reticle

- **Precision Mold**
  - DIC

- **Semiconductor (wafer)**
  - Brightfield
  - Darkfield
  - Epi-Fluorescence

- **Nodular Graphite Cast Iron**
  - Brightfield

- **Tourmaline**
  - Brightfield

- **Micro Bump**
  - Brightfield
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.

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**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 OSG 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 an 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” Microdrive and transferring them to other networked PCs is possible.

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.

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.

Two-pane display suitable for comparative observation

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

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**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 choice of many research, development, and analytical applications.* Nikon recommends using the DS-L2 control unit.

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**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.

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**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.

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**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.

**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.
Dimensional Diagrams

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
### Main Specifications

**LV150/150A**
- **Main body**
  - Baseless type (column riser insertable between arm and stand); Max. sample height 47mm (when configured with 3x2 stage/64 stage, 62mm 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-NAB5 Nosepiece (bright/darkfield quintuple, with flare prevention), L-NUS Nosepiece (universal quintuple, with flare prevention), LV-NUSA 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; ø25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer insertable
  - LV-U EPI2
    - 12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, no centering necessary); ø25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer/plate insertable, excitation balancer insertable
- **Epipolarization tube**
  - LV-T10 Trinocular (erect image, F.O.V. 22/25), LV-T12 Tilting Trinocular (erect image, F.O.V. 22/25), Y-T 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)**
  - 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-532 3x2 Stage or LV-564 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-NAB5 Nosepiece (bright/darkfield quintuple, with flare prevention), L-NUS 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; ø25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer insertable
  - LV-U EPI2
    - 12V-50W high-intensity halogen lamp; High-intensity mercury-fiber illuminator (with brightness control, no centering necessary); ø25mm filter (NCB11, ND16, ND4) insertable; Polarizer/analyzer/plate insertable, excitation balancer insertable
- **Epipolarization tube**
  - LV-T10 Trinocular (erect image, F.O.V. 22/25), LV-T12 Tilting Trinocular (erect image, F.O.V. 22/25), Y-T 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. 9.6kg

*Note: The diagrams and tables in the image are not clearly visible and may require manual interpretation.*
**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)
- LV-IM IM Module/LV-FM FM Module (manual)
- Motorized nosepiece: stroke 20mm, max. speed 2.5mm/sec. (resolving power 0.05µm)
- Motorized focusing module: LV-IMA, LV-FMA

### Nosepiece
- LV-NCNT Nosepiece (motorized)
- LV-NU5 Nosepiece (high-durability motorized universal quintuple)

### Objective Lens
- CFI60 series

### Eyepiece
- CFI eyepiece series

### Episcopic Illuminator
- LV-UEPI Universal halogen lamp; LV-UEPI2 Universal halogen lamp; LV-UEPI2A 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/plate insertable, excitation balance inseratable

### Nosepiece
- C-N6 Nosepiece (brightfield, sextuple), L-NBD5 Nosepiece (bright/darkfield quintuple)

### Eyepiece Tube
- LV-TE1 Trinocular (200 x 225), LV-TT2 Trinocular (200 x 225), Y-TT Trinocular (inverted image, F.O.V. 225 x 225), Y-TT Trinocular (inverted image, F.O.V. 225 x 225), TV tube lens unit 0.5x, 1x

### Eyepiece
- CF-eyepiece series

### Objective Lens
- CFI10xM

### Electrostatic decay time
- 100-1000 µsec.

### 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)
- Motorized 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
- Motorized focusing module: LV-IMA, LV-FMA
- Epi-Illuminator: LV-UEPI2A, LV-EPILED, high-intensity mercury fiber light source (PC-control type only)
- Nosepiece: LV-NCNT, LV-NU5A, LV-NU5AC (with centering mechanism)

### System Diagram
Universal Design Microscope LV-UDM

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.

- **Increased maximum sample height**
  The standard maximum specimen height is 38mm (33mm when combined with the LV-NUSAI nosepiece). Combined with a column riser, it is 73mm (or 68mm with the LV-NUSAI 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.

- **Expanded motorized nosepiece control**
  Motorized nosepiece changeover is not necessary. These microscopes enable a wide range of observation methods by combining illuminator, nosepiece, condenser and objective lenses.

- **Nosepiece**
  LV-NU5AI Universal
  LV-NU5AC Universal

- **Condenser**
  LV-CUD Universal
  LV-CON E

- **Illumination**
  LV-LH50PC Precentered Lamphouse
  LV-UEPI2A Universal Epi-Illuminator 2

- **High-intensity 12V-50W Halogen Light Source**
  LV-LH50PC Precentered Lamphouse

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

- **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-F1 or DS-5M2 with control units DS-2Mv 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.

- **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.

- **Control of Z positioning**
  Motorized focus control Automated control of the Z motor and positioning is the core of 3D sample inspection. Calibration and Scales are linked automatically with objectives. Specific configurations can be saved and recalled at later times or with different operators to help provide consistent image capture.

- **Switch Magnifications and Configurations**
  Calibration and Scales are linked automatically with objectives. Specific configurations can be saved and recalled at later times or with different operators to help provide consistent image capture.

- **Powerful Nosepiece Control**
  Switch Maganifications and Configurations

- **Fully automated image capture**
  Motorized focus control Automated control of the Z motor allows a consistent depth of focus (optional), composite images that have been captured in a different Z-axis can be combined to create an all-in-focus image.