Industrial Microscopes LV150N/LV150NL/LV150NA/LV100ND/LV100NDA

ECLIPSE LV-N

Industrial Microscopes

Together with new optics, ECLIPSE is evolving to the next stage.

Modularized to meet industrial microscope applications in diverse fields of industry, including semiconductor devices, packaging, FPDs, electronic components, materials, and precision molds.

The ECLIPSE LV Series continues to evolve while offering various stand and illumination units selectable according to the observation method and purpose.

Four types – motorized and manual types plus dedicated reflected illumination and combined reflected/transmitted illumination types – are available to meet any application.

Illuminators

Expanded lineup

Added a compact LED illuminator to the existing lineup.
With the use of LED, Nikon illuminators are power saving and achieve long life.

CFI60-2

Evolved optical performance

Nikon's CFI60 optical system, highly evaluated for its unique concept of high NA combined with long working distance has further evolved to achieve the apex in long working distance, chromatic aberration correction, and light weight.

Easy Operation

Combination with digital camera

Detection of microscope information, including objective lens information, and motorized unit microscope operation are now possible using the digital control unit, for more efficient observation and image capture.

Observation Methods

Diverse observation methods

Combinations of a full range of accessories expand the observation methods available when using transmitted illumination, allowing adaptability to a greater diversity of samples.
All models enable brightfield, darkfield, differential interference, fluorescence, polarizing, and two-beam interferometry observation, while the LV100ND and LV100NDA also allow transmission-type differential interference, darkfield, polarizing, and phase contrast observation.

LV-N Series

Model features

LV150N

LV150NL

LV150NA

LV100ND

LV100NDA

Dedicated reflected illumination models

Microscope type

LV150N / LV150NL: Manual type

LV150NA: Motorized type
(Nosepiece)

Compatible observation methods

		Brightfield	Darkfield	DIC	Fluorescence	Polarizing	Two-beam Interferometry
LV150/ LV150NA	Episcopic	○	○	○	○	○	○
	Episcopic (LED)	○	○	○	—	△	—
LV150NL	Episcopic	○	—	○	—	○	○

* Use an objective lens appropriate to the observation method.
△: only simple polarizing observation

Compatible stages

- LV-S32 3x2 stage (Stroke: 75 x 50 mm with glass plate)
  *Can be fitted with LV-S32SPL ESD plate
- LV-S6 6x6 stage (Stroke: 150 x 150 mm)
  *Can be fitted with LV-S6WH wafer holder / LV-S6PL ESD plate
- LV-SRP P revolving stage
- P-GS2 G stage 2 (Used with stage adapter LV-SAD)

Integration with Digital Sight cameras for microscopes

DS-L4 (Microscope camera control unit)

LV150N / LV150NL:
- Objective lens information detection
  (when used with combination of Intelligent Nosepiece LV-NU5I and LV-INAD)

LV150NA:
- Objective lens information detection and control

DS-Ri2 or **DS-Fi3** + NIS-Elements (Microscope camera + imaging software)

LV150N / LV150NL:
- Objective lens information detection
  (when used with combination of Intelligent Nosepiece LV-NU5I and LV-INAD)

LV150NA:
- Objective lens information detection and control

Combined reflected/transmitted illumination models

Microscope type

LV100ND: Manual type

LV100NDA: Motorized type
(Nosepiece / light intensity / aperture stop / observation method selector)

Compatible observation methods

		Brightfield	Darkfield	DIC	Fluorescence	Polarizing	Two-beam Interferometry	Phase-contrast
LV100ND/ LV100DA-U	Episcopic	○	○	○	○	○	○	—
	Episcopic (LED)	○	○	○	—	△	—	—
	Diascopic	○	○	○	—	○	—	○

* Use an objective lens appropriate to the observation method.
△: only simple polarizing observation

Compatible stages

- LV-S32 3x2 stage (Stroke: 75 x 50 mm with glass plate)
  *Can be fitted with LV-S32SGH slide glass holder
- LV-S64 6x4 stage (Stroke: 150 x 100 mm with glass plate)
- LV-SRP P revolving stage
- P-GS2 G stage 2 (Used with stage adapter LV-SAD)
- NIU-CSRR2 Ni-U right handle rotatable ceramic stage (Stroke: 78 x 54 mm)
- C-SR2S right handle stage (Stroke: 78 x 54 mm: Used with stage adapter LV-SAD)

Integration with Digital Sight cameras for microscopes

DS-L4 (Microscope camera control unit)

LV100ND:
- Objective lens information detection
  (when used with combination of Intelligent Nosepiece LV-NU5I and LV-INAD)

LV100NDA:
- Information detection of objective lens, light intensity, aperture stop, and observation method
  (brightfield / darkfield / fluorescence)

DS-Ri2 or **DS-Fi3** + NIS-Elements (Microscope camera + imaging software)

LV100ND:
- Objective lens information detection
  (when used with combination of Intelligent Nosepiece LV-NU5I and LV-INAD)

LV100NDA:
- Information detection and control of objective lens, light intensity, aperture stop, and observation method (brightfield / darkfield / fluorescence)

CFI60-2

Evolved optical performance

Nikon's CFI60 optical system, highly evaluated for its unique concept of high NA and long working distance, has achieved the apex in long working distance, chromatic aberration correction, and light weight.

T Plan & TU Plan Fluor & TU Plan Apo Lenses

Standard Plan objective lenses

Standard objective lenses

TU Plan Fluor Series

EPI/BD 5x/10x/20x/50x/100x

Long WD | Semi-apo | Light weight | Fly-eye lens

Enable brightfield, darkfield, simple polarizing, sensitive polarizing, differential interference, and epi-fluorescence observations with just one lens. Achieves superior chromatic aberration performance with long working distance for all magnifications to adapt to any application.

*Brightfield observation (EPI) objective lens

Model	Magnification	NA	Working Distance (mm)
TU Plan Fluor EPI (brightfield type)	5×	0.15	23.5
	10×	0.30	17.5
	20×	0.45	4.5
	50×	0.80	1.0
	100×	0.90	1.0
TU Plan Fluor BD (brightfield/darkfield type)	* 5×	0.15	18.0
	* 10×	0.30	15.0
	* 20×	0.45	4.5
	50×	0.80	1.0
	100×	0.90	1.0

* Uses fly-eye lens.

Low-magnification objective lenses

T Plan EPI

EPI 1x/2.5x

Semi-apo | Wide field of view

Both clear observation using a conventional analyzer/polarizer and operability-oriented observation without the need of an analyzer/polarizer are possible.

Model	Magnification	NA	Working Distance (mm)
T Plan EPI (brightfield type)	1×	0.03	3.8
	2.5×	0.075	6.5

Apochromatic objective lenses

TU Plan Apo Series

EPI/BD 50x/100x/150x

Long WD | Apo | Light weight

By using phase Fresnel lenses, these objective lenses achieve significantly longer operating distances while maintaining the superior chromatic aberration performance of apochromatic lenses.

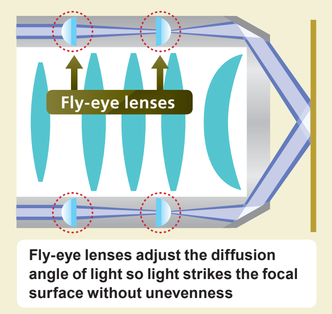
*Brightfield observation (EPI) objective lens

Model	Magnification	NA	Working Distance (mm)
TU Plan Apo EPI (brightfield type)	50×	0.8	2.0
	100×	0.9	2.0
	150×	0.9	1.5
TU Plan Apo BD (brightfield/darkfield type)	50×	0.8	2.0
	100×	0.9	2.0
	150×	0.9	1.5

Dark Field Illumination

Fly-eye lens

Through the use of fly-eye lenses, the CFI60-2 optical system offers bright darkfield illumination throughout the field of view with little unevenness, even for low-magnification lenses.

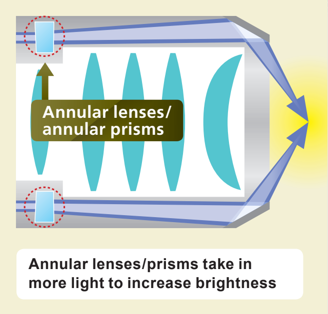


Fly-eye lenses adjust the diffusion angle of light so light strikes the focal surface without unevenness

New darkfield illumination system

As NA and W.D. improve, objective lenses increase in outside diameter. However, as the width of incident light is fixed, light intensity decreases with conventional illumination systems.

The new illumination system uses annular lenses or annular prisms to increase captured light and achieve bright darkfield illumination with no deterioration.



Annular lenses/prisms take in more light to increase brightness

TU Plan ELWD & T Plan SLWD Lenses

Long working distance / Super-long working distance objective lenses

Long working distance objective lenses

TU Plan ELWD Series

EPI/BD 20x/50x/100x

Long WD | Semi-apo | Light weight

With the phase Fresnel lenses, these objective lenses enable long working distances while offering higher level chromatic aberration correction than conventional objective lenses. This improves operability for samples with different heights.

*Brightfield observation (EPI) objective lens

Model	Magnification	NA	Working Distance (mm)
TU Plan EPI ELWD (brightfield type)	20×	0.4	19.0
	50×	0.6	11.0
	100×	0.8	4.5
TU Plan BD ELWD (brightfield/darkfield type)	* 20×	0.4	19.0
	* 50×	0.6	11.0
	* 100×	0.8	4.5

* Uses new darkfield illumination system.

Super-long working distance objective lenses

T Plan EPI SLWD

EPI 10x/20x/50x/100x

Long WD | Semi-apo | Light weight

Improving on chromatic aberration while prioritizing working distance, the T Plan SLWD Series achieve the best-in-class super-long working distance. The SLWD 10x (WD: 37 mm) lens enables use with a greater diversity of samples.

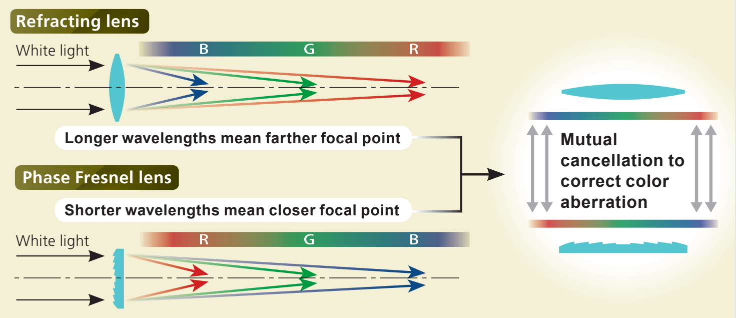
Model	Magnification	NA	Working Distance (mm)
T Plan EPI SLWD (brightfield type)	10×	0.2	37.0
	20×	0.3	30.0
	50×	0.4	22.0
	100×	0.6	10.0

Phase Fresnel

Color aberration correction and longer working distance through phase Fresnel lenses

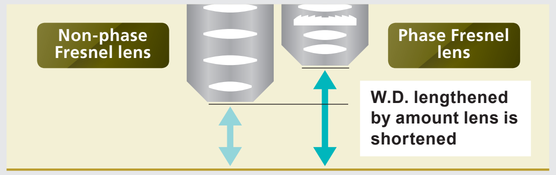
Color aberration correction

Conventional lenses rely upon the refraction of light to form an image. As the strength of refraction varies according to color (wavelength), the image is formed starting with the light closest to the lens, in the order of blue, green, and red. In contrast, a phase Fresnel lens uses the diffraction of light to form an image starting with the light closest to the lens, this time, red, green, and blue, yielding a property opposite that of refraction. Combining these two lenses cancels out the color aberration of each and enables an image with little color aberration.



Realization of Long Working Distance

Correction of color aberration, even with short distances between lenses, is possible with the use of phase Fresnel lenses. This enables longer working distance than that of conventional lenses.



Other objective lenses

Objective lenses with glass thickness correction features

CFI L Plan EPI CR

20x/50x/100x

Equipped with corrective features that enable high contrast observation of cells or patterns, these observation lenses are unaffected by the glass substrate.

Model	Magnification	NA	Working Distance (mm)
CFI L Plan EPI CR (brightfield type)	20× CR	0.45	10.90 - 10.00
	50× CR	0.70	3.90 - 3.00
	100× CRA	0.85	1.20 - 0.85
	100× CRB	0.85	1.30 - 0.95

Objective lenses for interferometry / Objective lenses for two-beam interferometry

CF IC EPI Plan TI/DI

DI 10x/20x/50x/100x **TI** 2.5x/5x

These Michelson (TI) and Mirau (DI) two-beam interferometry lenses allow inspection and measurement of fine level differences without contact with the sample.

Model	Magnification	NA	Working Distance (mm)
CF IC EPI Plan TI (for interferometry)	2.5×A	0.075	10.30
	5×A	0.130	9.30
CF IC EPI Plan DI (for two-beam interferometry)	10×A	0.30	7.40
	20×A	0.40	4.70
	50×A	0.55	3.40
	100×	0.70	2.00

Easy Operation

Combination with digital camera

LV150N / LV100ND / LV150NA

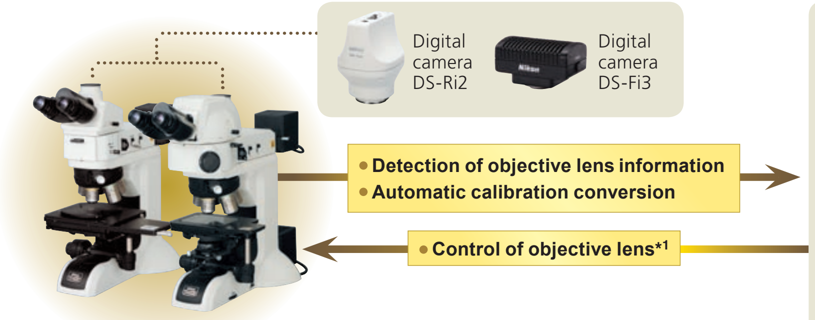
Objective lens information detection and control

Information about the objective lens being used can be detected via the camera control unit when combining the Intelligent Nosepiece LV-NU5I and the Nosepiece Adaptor LV-INAD. The information is automatically converted to appropriate calibration data when changing the magnification.

In addition, the LV150NA allows switching of objective lenses via the camera control unit or the imaging software.


LV-NU5I
Intelligent Nosepiece


LV-INAD
Nosepiece Adaptor

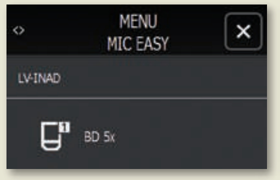


- Detection of objective lens information
- Automatic calibration conversion

- Control of objective lens*[1]

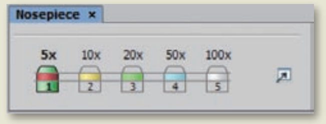
LV150N / LV100ND / LV150NA


Microscope camera control unit DS-L4



(When using LV-INAD combined with LV150N)

Imaging Software
NIS-Elements
(with Digital camera DS-Ri2 /
Digital camera DS-Fi3)



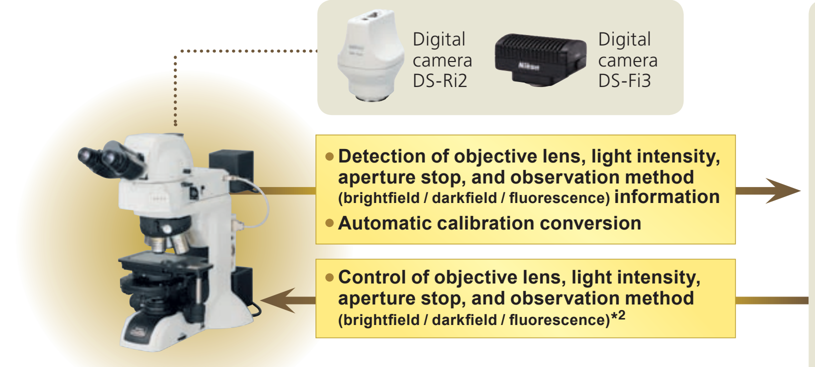
(When using LV-INAD combined with LV150N)

[1] Control of the nosepiece from the camera control unit is available with the LV150NA, or with the LV150N/LV100ND in combination with the Motorized Nosepiece and the LV-NCNT-N Motorized Nosepiece Controller.

LV100NDA

Microscope information detection and control

The LV100NDA allows detection of information and control*[2] of objective lenses, light intensity, aperture stop, and observation method (brightfield / darkfield / fluorescence) via the camera control unit or the imaging software, enabling optimization of the conditions vital for image acquisition.

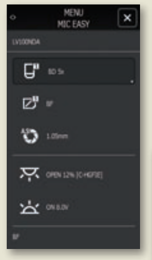


- Detection of objective lens, light intensity, aperture stop, and observation method (brightfield / darkfield / fluorescence) information
- Automatic calibration conversion

- Control of objective lens, light intensity, aperture stop, and observation method (brightfield / darkfield / fluorescence)*[2]

LV100NDA


Microscope camera control unit DS-L4



Imaging Software NIS-Elements
(with Digital camera DS-Ri2 /
Digital camera DS-Fi3)

[2] Information detection only, when the control unit DS-L4 is connected. Control of the objective lens, light intensity, aperture stop, and observation method (brightfield / darkfield / fluorescence) is possible when the DS-Ri2 or DS-Fi3 (with NIS-Elements) is connected.

Compatibility Chart of Information Detection and Control by Model

◎ : Information detection and control possible ○ : Information detection only

	LV150N/LV100ND (When using LV-NU5I and LV-INAD)		LV150NA		LV100NDA (When using LV-UEPI2A Illuminator)	
	DS-L4	DS-Ri2/DS-Fi3 (+NIS-Elements)	DS-L4	DS-Ri2/DS-Fi3 (+NIS-Elements)	DS-L4	DS-Ri2/DS-Fi3 (+NIS-Elements)
Objective lens	○	○	◎	◎	○	◎
Reflected illumination (ON/OFF, light intensity adjustment) *When using LV-LH50PC	—	—	—	—	○	◎
Transmitted illumination (ON/OFF, light intensity adjustment)	—	—	—	—	○	◎
Aperture stop	—	—	—	—	○	◎
Observation method selector (brightfield / darkfield / fluorescence)	—	—	—	—	○	◎

* NIS-Elements F (free package) is not compatible with information detection and control. Please use NIS-Elements D/Br/Ar.

Camera System

Digital camera system for microscopes "Digital Sight System"

Microscope Camera **Stand-Alone Model**

DS-Ri2

Capable of expressing images as is, DS-Ri2 offers high resolution, color reproduction, and frame rate. The Stand-Alone Model enables high-definition image acquisition without a control unit.

16.25 megapixel **Color** **High-resolution**

Microscope Camera

DS-Fi3

Features high-resolution, high sensitivity/low noise, and high-speed live display, all in one camera.

5.9 megapixel **Color** **High-resolution**

	DS-Ri2	DS-Fi3
Frame Rate	45fps (1636×1088)	30fps (1440×1024)
Max Recording Pixels	4908×3264	2880×2048

Microscope camera control unit

DS-L4

DS-Fi3 can be connected to the DS-L4 tablet-style control unit, eliminating the need and space requirements of a desktop PC.
DS-L4 has a large number of built-in security for network connectivity.

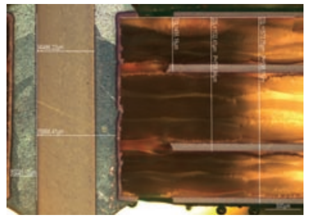
Scene Mode

Optimal imaging parameters for each sample type and observation method can easily be set through the icons.

- Wafer/IC
- Metal, Ceramic/Plastic
- Circuit board
- Flat Panel Display

Variety of Tool Features

Enables easy measurements directly on the images, with input of lines and comments. Measurements can be written and saved with the image, and data can be output.


Measurement
(two-point distance)

Measurement function

- Point to line distance
- Point to line distance
- Circle distance
- Angle
- Circle (Diameter, Radius)
- Area
- Pitch distance

Position and size comparison functions

- Scale indication
- Cross-hairs
- Grid
- XY scale
- XY measurement

Drawing functions

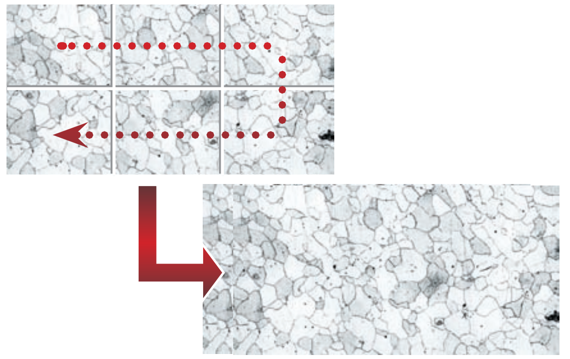
- Count marking
- Text input
- Pen drawing (Straight/Curved)

Imaging software

NIS-Elements series

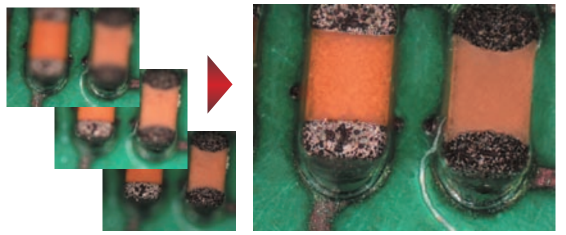
Image Stitching

Stitches together images acquired from multiple fields of view to create one image.



EDF (Extended Depth of Focus)

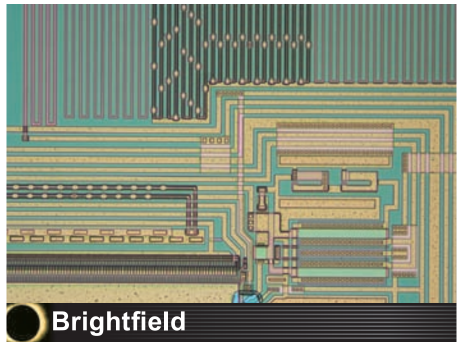
Create a single, all-in-focus image from images of differing focus.



*** See the "Digital Camera Digital Sight Series for Microscopes" catalog for details on Digital Sight features.**

Observation Methods

Compatible with a wide range of observation methods: brightfield, darkfield, polarizing, differential interference, epi-fluorescence, and two-beam interferometry.

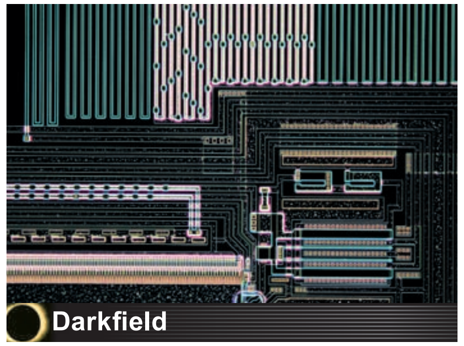


Brightfield

LV150N LV150NA LV100ND LV100NDA

Semiconductors (IC wafers)

From its objective lenses to its illumination systems, the LV-N Series offers thorough measures against flare and provides bright, high-contrast images.

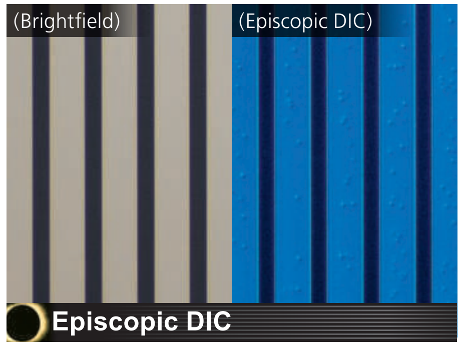


Darkfield

LV150N LV150NA LV100ND LV100NDA

Semiconductors (IC wafers)

The use of Nikon's unique concepts in the objective lens darkfield illumination system enables bright darkfield observation and provides high-sensitivity detection of level differences and defects in samples.

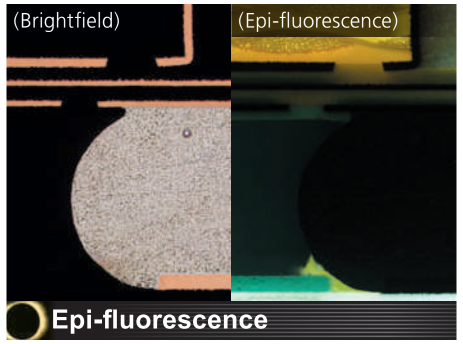


Episcopic DIC

LV150N LV150NA LV100ND LV100NDA

Substrate

Standard-type and high-contrast-type DIC sliders are available to match samples. The LV-N Series is effective for applications such as observation of minute level differences in devices and precision molds.

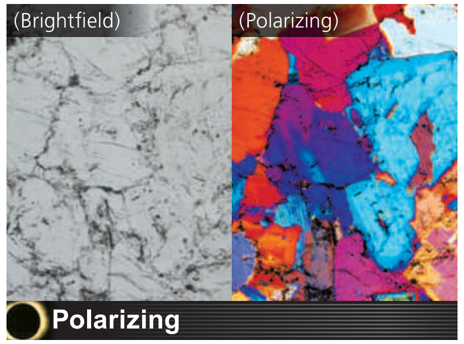


Epi-fluorescence

LV150N LV150NA LV100ND LV100NDA

Substrate (solder)

The LV-N Series demonstrates superiority in the observation of samples with fluorescent properties, such as organic ELs or mounted substrates.

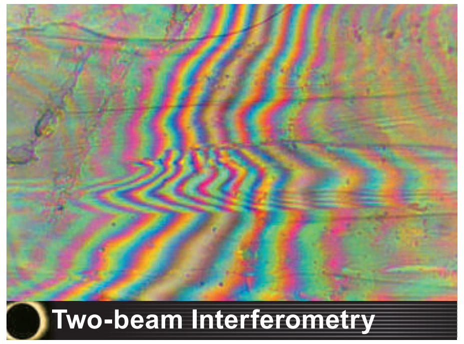


Polarizing

LV150N LV150NA LV100ND LV100NDA

Minerals

The LV-N Series is effective in the observation of samples with birefringent properties, such as liquid crystals or plastics/glass containing distortion.

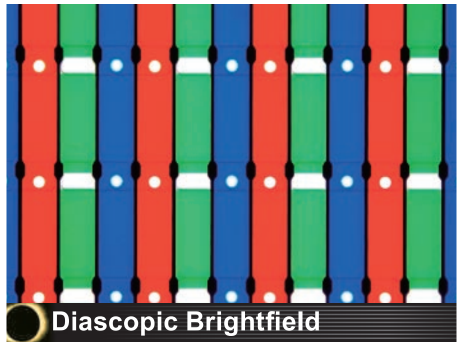


Two-beam Interferometry

LV150N LV150NA LV100ND LV100NDA

Mica

Michelson (TI) and Mirau (DI) reflection-type two-beam interferometry is possible with the LV-N Series. When used with micrometer eyepieces, minute level differences can be detected and measured without contact with the sample.

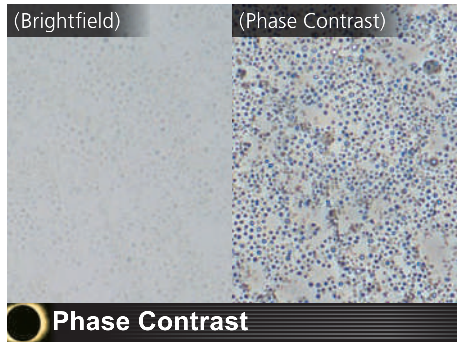


Diascopic Brightfield

LV150N LV150NA LV100ND LV100NDA

LCD (color filter)

The LV-N Series is effective in the observation of samples with transparency, such as optical components, FPDs, and slide glass samples. When used in conjunction with the C-SP Simple Polarizer and analyzers, transmitted simple polarized observation is possible.

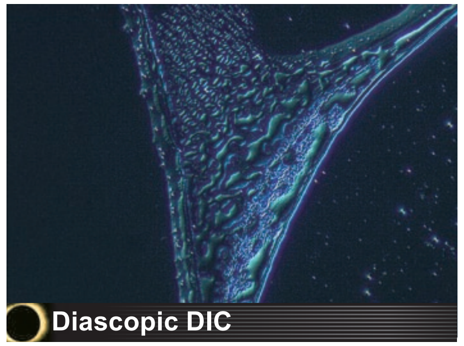


Phase Contrast

LV150N LV150NA LV100ND LV100NDA

Emulsion

Colorless, transparent samples can be made visible through bright/dark contrast and the use of diffraction and interference, two properties of light.



Diascopic DIC

LV150N LV150NA LV100ND LV100NDA

Nanoparticle (silver)

Colorless, transparent samples can be observed in three dimensions by using polarization to create interference between two beams of light.

Specifications

	LV150N	LV150NA	LV150NL
Base unit	Maximum sample height: 38 mm (when used with LVNU5A U5A nosepiece and LV-S32 3x2 stage / LV-S64 6x4 stage) * 73 mm when used with one column riser 12V50W internal power source for dimmer, coarse and fine adjustment knobs Left: coarse and fine adjustment / Right: fine adjustment, 40 mm stroke Coarse adjustment: 14 mm/turn (with torque adjustment, refocusing mechanism) Fine adjustment: 0.1 mm/turn (1 µm/graduation) Stage mounting hole intervals: 70 x 94 (fixed by 4-M4 screw)		Maximum sample height: 38 mm (when used with LV-S32 3x2 stage) * 73 mm when used with one column riser Internal LED illumination power source, coarse and fine adjustment knobs Left: coarse and fine adjustment / Right: fine adjustment, 40mm stroke Coarse adjustment: 14 mm/turn (with torque adjustment, refocusing mechanism) Fine adjustment: 0.1 mm/turn (1 µm/graduation) Stage mounting hole intervals: 70 x 94 (fixed by 4-M4 screw)
Nosepieces	C-N6 ESD Sextuple Nosepiece ESD LV-NU5 Universal Quintuple Nosepiece ESD LV-NBD5 BD Quintuple Nosepiece ESD LV-NU5I Intelligent Universal Quintuple Nosepiece ESD	LV-NU5A Motorized Universal Quintuple Nosepiece ESD LV-NU5AC Motorized Universal Quintuple Nosepiece ESD	C-N6 ESD Sextuple Nosepiece ESD LV-NU5 Universal Quintuple Nosepiece ESD
Episcopic Illuminator	**LV-UEPI-N** LV-LH50PC 12V50W Precentered Lamphouse, LV-LL LED Lamphouse Bright/darkfield switch and linked aperture stop (centerable), field diaphragm (centerable) Accepts ø 25 mm filter (NCB11, ND16, ND4), polarizer/analyzer, λ plate, excitation light balancer; equipped with noise terminator **LV-UEPI2** LV-LH50PC 12V50W Precentered Lamphouse, LV-LL LED Lamphouse HG precentered fiber illuminator: C-HGFIE (with light adjustment) *option Bright/darkfield switch and linked aperture stop (centerable), field diaphragm (centerable), automated optical element switching feature matched to brightfield, darkfield, and epi-fluorescence switch Accepts ø 25 mm filter (NCB11, ND16, ND4), polarizer/analyzer, λ plate, excitation light balancer; equipped with noise terminator		1.1W white LED Accepts polarizer/analyzer
Eyepiece tubes	LV-TI3 trinocular eyepiece tube ESD (Erected image, FOV: 22/25) LV-TT2 TT2 tilting trinocular eyepiece tube (Erected image, FOV: 22/25) C-TB binocular tube (Inverted image, FOV: 22) P-TB Binocular Tube (Inverted image, FOV: 22) P-TT2 Trinocular Tube (Inverted image, FOV: 22)		LV-TI3 trinocular eyepiece tube ESD (Erected image, FOV: 22/25) C-TB binocular tube (Inverted image, FOV: 22) P-TB Binocular Tube (Inverted image, FOV: 22) P-TT2 Trinocular Tube (Inverted image, FOV: 22)
Stages	LV-S32 3x2 stage (Stroke: 75 x 50 mm with glass plate) ESD compatible LV-S64 6x4 stage (Stroke: 150 x 100 mm with glass plate) ESD compatible LV-S6 6x6 stage (Stroke: 150 x 150 mm) ESD compatible		LV-S32 3x2 stage (Stroke: 75 x 50 mm with glass plate) ESD compatible LV-S6 6x6 stage (Stroke: 150 x 150 mm) ESD compatible
Eyepieces	CFI eyepiece series		
Objective lenses	Industrial Microscope CFI$_{60}$-2/CFI$_{60}$ optical system Objective lens series: Combinations in accordance with the observation method		
ESD performance	1,000 to 10V, within 0.2 sec. (excluding certain accessories)		
Power consumption	1.2 A / 75 W		0.1A / 3W
Weight	Approx. 8.6 kg	Approx. 8.7 kg	Approx. 8.6 kg

	LV100ND	LV100NDA
Base unit	Maximum sample height: 38 mm (when used with LV-NU5 U5 nosepiece and LV-S32 3x2 stage / LV-S64 6x4 stage) 12V50W internal power source for dimmer, coarse and fine adjustment knobs Left: coarse and fine adjustment / Right: fine adjustment, 40 mm stroke Coarse adjustment: 14 mm/turn (with torque adjustment, refocusing mechanism) Fine adjustment: 0.1 mm/turn (1 µm/graduation)	Maximum sample height: 33 mm (when used with LVNU5AI U5AI nosepiece and LV-S32 3x2 stage / LV-S64 6x4 stage) 12V50W internal power source for dimmer, coarse and fine adjustment knobs Left: coarse and fine adjustment / Right: fine adjustment, 40 mm stroke Coarse adjustment: 14 mm/turn (with torque adjustment, refocusing mechanism) Fine adjustment: 0.1 mm/turn (1 µm/graduation)
Nosepieces	C-N6 ESD Sextuple Nosepiece ESD, LV-NU5 Universal Quintuple Nosepiece ESD LV-NBD5 BD Quintuple Nosepiece ESD, LV-NU5I Intelligent Universal Quintuple Nosepiece ESD D-ND6 Sextuple DIC Nosepiece	LV-NU5AI Motorized Universal Quintuple Nosepiece (High-durability motorized 5-hole universal nosepiece)
Episcopic Illuminators	**LV-UEPI-N** LV-LH50PC 12V50W Precentered Lamphouse, LV-LL LED Lamphouse Bright/darkfield switch and linked aperture stop (centerable), field diaphragm (centerable), accepts ø 25 mm filter (NCB11, ND16, ND4), polarizer/analyzer; equipped with noise terminator **LV-UEPI2** LV-LH50PC 12V50W Precentered Lamphouse, LV-LL LED Lamphouse HG precentered fiber illuminator: C-HGFIE (with light adjustment) *option Bright/darkfield switch and linked aperture stop (centerable), field diaphragm (centerable), automated optical element switching feature matched to brightfield, darkfield, and epi-fluorescence switch Accepts ø 25 mm filter (NCB11, ND16, ND4), polarizer/analyzer, λ plate, excitation light balancer; equipped with noise terminator	**LV-UEPI2A** LV-LH50PC 12V50W Precentered Lamphouse, LV-LL LED Lamphouse HG precentered fiber illuminator: C-HGFIE (with light adjustment: PC controlled) *option Motorized operation and control of illumination selector turret Motorized aperture stop linked to bright/darkfield selector (automatic optimization matched to objective lens), field diaphragm (centerable) Accepts ø 25 mm filter (NCB11, ND16, ND4), polarizer/analyzer, λ plate, excitation light balancer; equipped with noise terminator
Diascopic Illuminator	LV-LH50PC 12V50W Precentered Lamphouse (Fly Eye optical system) Internal aperture, field diaphragm, filter (ND8, NCB11); transmitted/reflected selector switch; 12V100W also available (option)	
Eyepiece tubes	LV-TI3 trinocular eyepiece tube ESD (Erected image, FOV: 22/25), LV-TT2 TT2 tilting trinocular eyepiece tube (Erected image, FOV: 22/25), P-TB Binocular Tube (Inverted image, FOV: 22), P-TT2 Trinocular Tube (Inverted image, FOV: 22)	
Stages	LV-S32 3x2 stage (Stroke: 75 x 50 mm with glass plate) / LV-S32SGH slide glass holder LV-S64 6x4 stage (Stroke: 150 x 100 mm with glass plate), LV-SRP P revolving stage / P-GS2 revolving stage: Used with stage adapter LV-SAD NIU-CSRR2 Ni-U right handle rotatable ceramic stage (Stroke: 78 x 54 mm), C-SR2S right handle stage (Stroke: 78 x 54 mm: Used with stage adapter LV-SAD)	
Condensers	LWD achromat condenser (brightfield), LV-CUD U condenser dry (phase contrast, diascopic DIC, darkfield), Achromat 2x-100x slide condenser (brightfield), DF dry condenser (darkfield), and others	
Eyepieces	CFI eyepiece series	
Objective lenses	Industrial Microscope CFI$_{60}$-2/CFI$_{60}$ optical system Objective lens series: Combinations in accordance with the observation method	
ESD performance	1,000 to 10V, within 0.2 sec. (excluding certain accessories)	
Power consumption	1.2 A / 75 W	1.2 A / 90 W
Weight	Approx. 9.5 kg	Approx. 10 kg

Lens Specifications

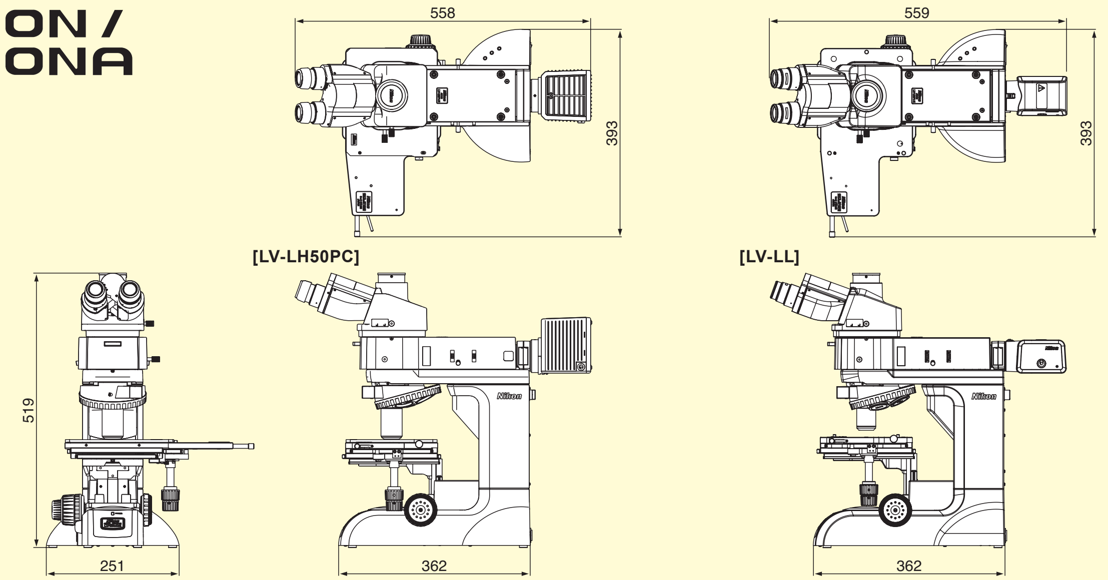
	Type	Model	Magnification	Product Code No.	NA	Working Distance (mm)
CFI60-2	Brightfield	T Plan EPI Plan (Semi-apochromat)	1×	MUE12010	0.03	3.8
			2.5×	MUE12030	0.075	6.5
		TU Plan Fluor EPI Universal Plan Fluor (Semi-apochromat)	5×	MUE12050	0.15	23.5
			10×	MUE12100	0.3	17.5
			20×	MUE12200	0.45	4.5
			50×	MUE12500	0.8	1.0
			100×	MUE12900	0.9	1.0
		TU Plan Apo EPI Universal Plan Apo (Apochromat) ◠	50×	MUC11500	0.8	2.0
			100×	MUC11900	0.9	2.0
			150×	MUC11150	0.9	1.5
	Polarizing	TU Plan Fluor EPI P Polarizing Universal Plan Fluor (Semi-apochromat)	5×	MUE13050	0.15	23.5
			10×	MUE13100	0.3	17.5
			20×	MUE13200	0.45	4.5
			50×	MUE13500	0.8	1.0
			100×	MUE13900	0.9	1.0
	Brightfield Long Working Distance	TU Plan EPI ELWD Long Working Distance Universal Plan (Semi-apochromat) ◠	20×	MUE21200	0.4	19.0
			50×	MUE21500	0.6	11.0
			100×	MUE21900	0.8	4.5
	Brightfield Super-long Working Distance	T Plan EPI SLWD Super-long Working Distance Plan (Semi-apochromat) ◠	10×	MUE31100	0.2	37.0
			20×	MUE31200	0.3	30.0
			50×	MUE31500	0.4	22.0
			100×	MUE31900	0.6	10.0
	Brightfield/Darkfield	TU Plan Fluor BD Universal Plan Fluor (Semi-apochromat)	5×	MUE42050	0.15	18.0
			10×	MUE42100	0.3	15.0
			20×	MUE42200	0.45	4.5
			50×	MUE42500	0.8	1.0
			100×	MUE42900	0.9	1.0
		TU Plan Apo BD Universal Plan Apo (Apochromat) ◠	50×	MUC41500	0.8	2.0
			100×	MUC41900	0.9	2.0
			150×	MUC41150	0.9	1.5
	Brightfield/Darkfield Long Working Distance	TU Plan BD ELWD Long Working Distance Universal Plan (Semi-apochromat) ◠	20×	MUE61200	0.4	19.0
			50×	MUE61500	0.6	11.0
			100×	MUE61900	0.8	4.5

● ◠ : Phase Fresnel lens (diffraction optical element) type ● A circular polarizing plate and depolarizer are built into T Plan EPI 1×/2.5×. (Circular polarizing plate can be attached/detached.)

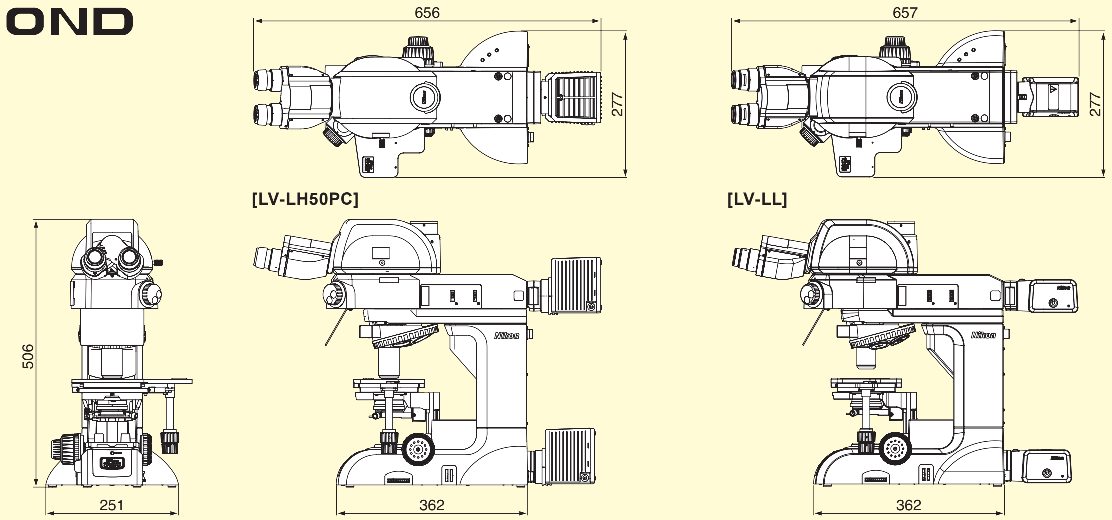
	Type	Model	Magnification	Product Code No.	NA	Working Distance (mm)
CFI60	Brightfield With Correction Mechanism	L Plan EPI CR For Inspecting LCDs Plan	20×	MUE35200	0.45	10.9 - 10.0
			50×	MUE35500	0.7	3.9 - 3.0
			100×	MUE35900	0.85	1.2 - 0.85
			100×	MUE35910	0.85	1.3 - 0.95
	Brightfield	L Plan EPI Plan (Achromat)	40×	MUE00400	0.65	1.0
	Brightfield Super-long Working Distance	LU Plan EPI SLWD Super-long Working Distance Plan (Achromat)	20×	MUE30201	0.35	24.0
			50×	MUE30501	0.45	17.0
			100×	MUE30901	0.7	6.5
	Brightfield	LU Plan Apo EPI Universal Plan Apo (Apochromat)	100×	MUC00090	0.95	0.4
			150×	MUC10151	0.95	0.3
	Brightfield/Darkfield	LU Plan Apo BD Universal Plan Apo (Apochromat)	100×	MUC40900	0.9	0.51
			150×	MUC50151	0.9	0.42
CF&IC	Interferometry	CF IC EPI Plan TI For Interferometry Plan	2.5×	MUL42031	0.075	10.3
			5×	MUL42051	0.13	9.3
		CF IC EPI Plan DI For Two-beam Interferometry Plan	10×	MUL40101	0.3	7.4
			20×	MUL40201	0.4	4.7
			50×	MUL40501	0.55	3.4
			100×	MUL40900	0.7	2.0
	Brightfield	CF IC EPI Plan Apo Plan Apochromat	50×	MUT10051	0.95	0.4
			100×	MUT10101	0.95	0.3
			150×	MUT10153	0.95	0.2

Dimensions

LV150N / LV150NA



LV100ND



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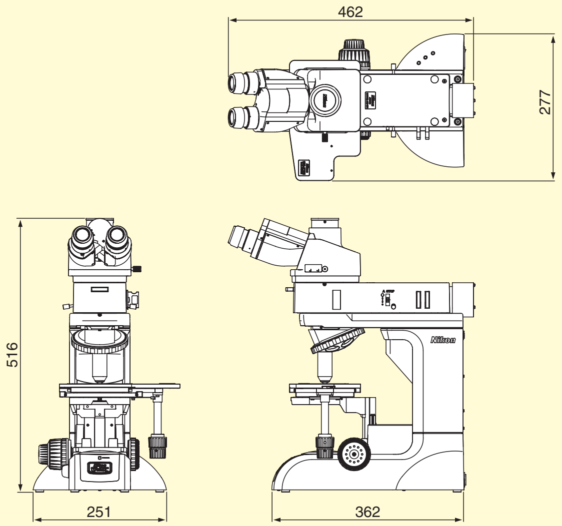

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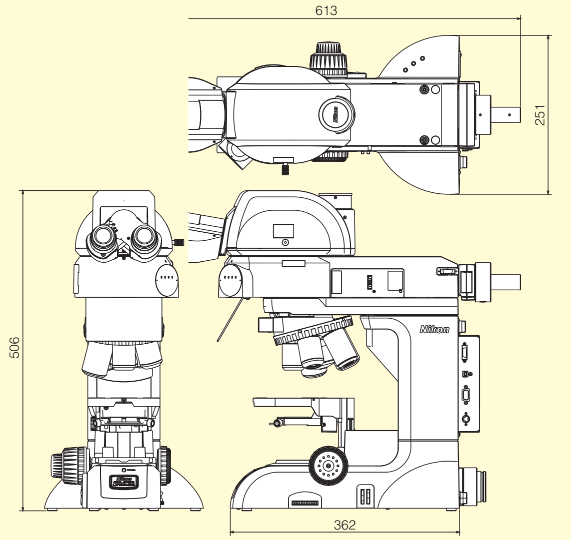
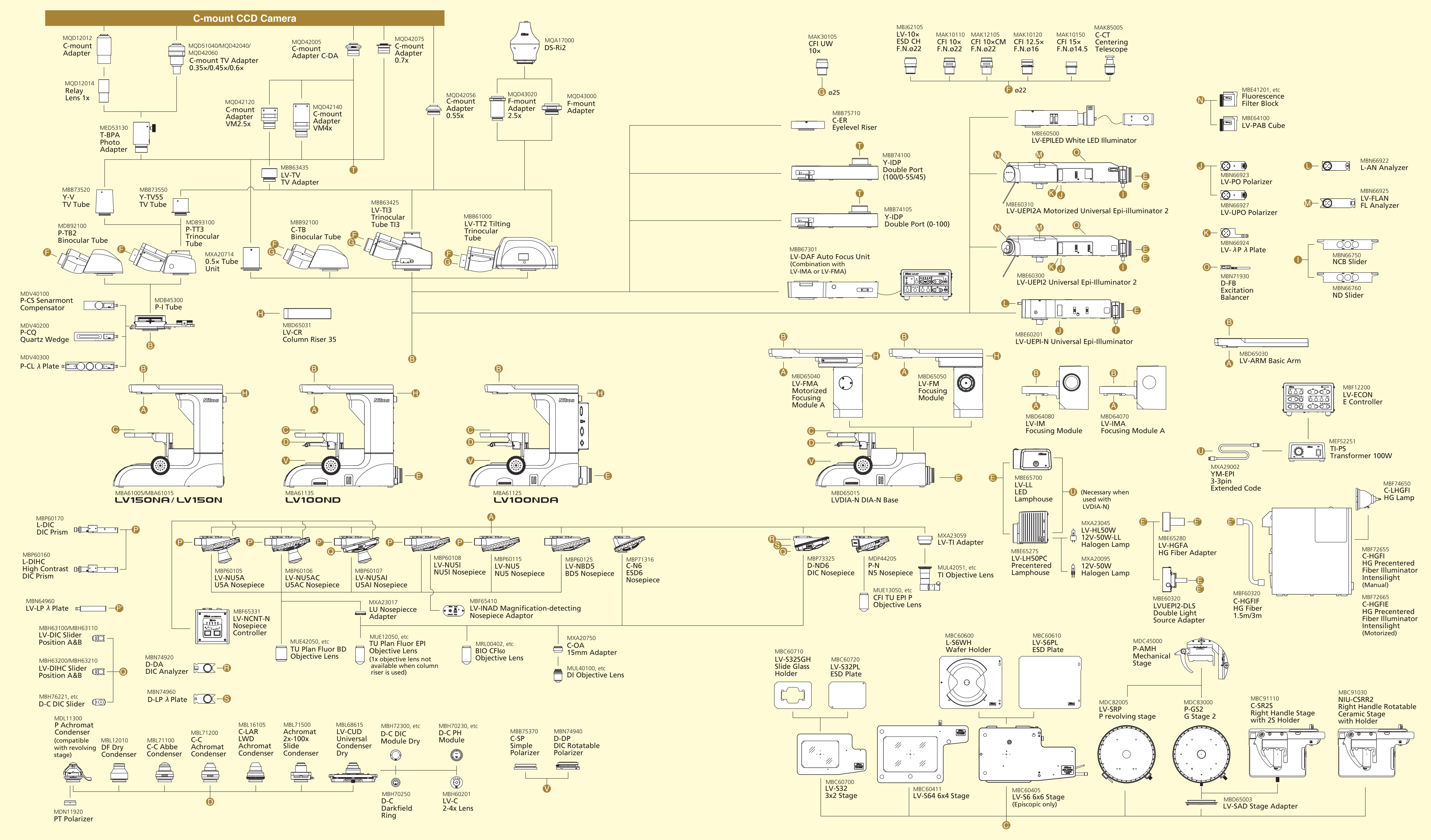


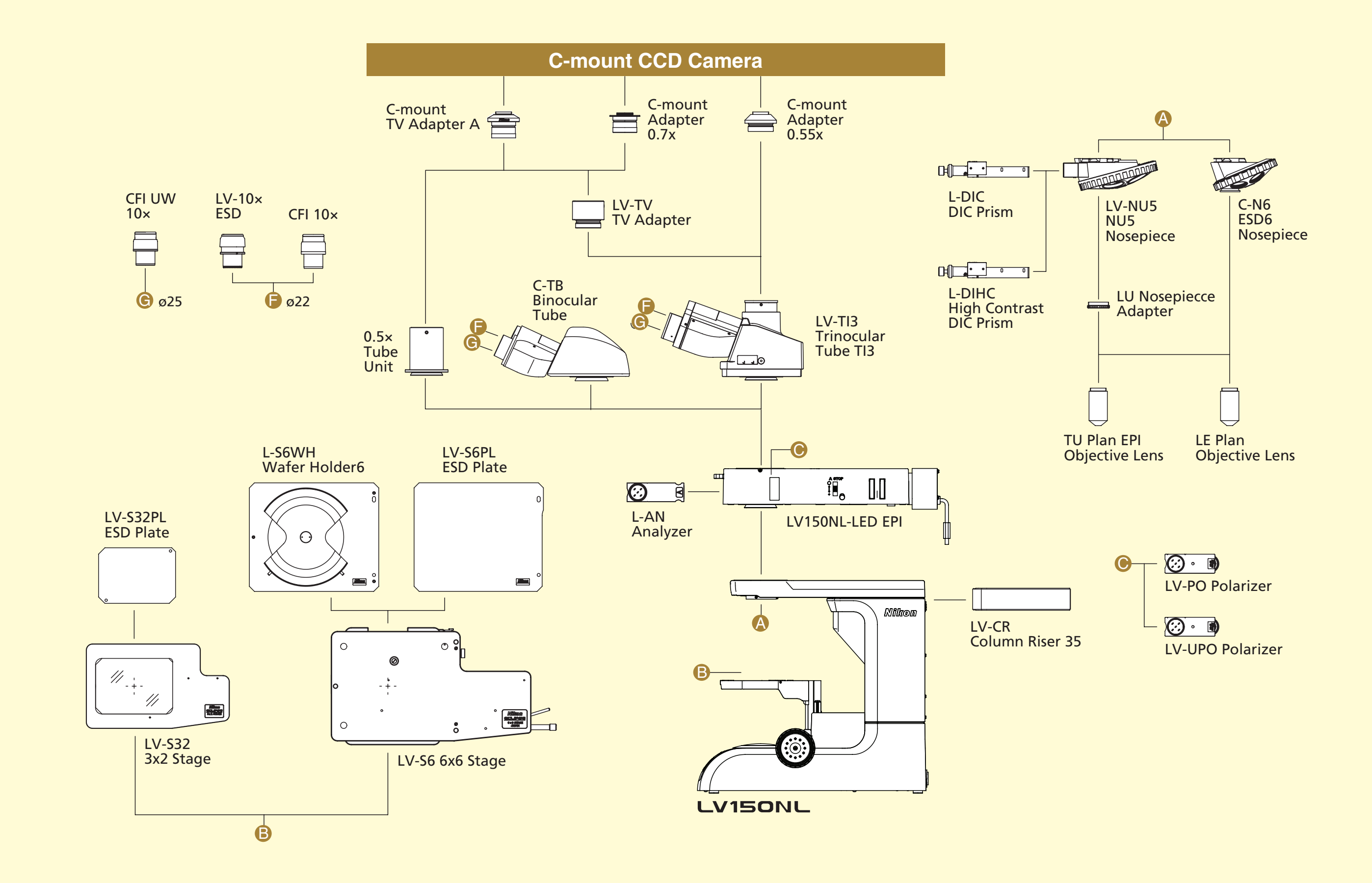
System Diagram

for LV150N/LV150ND/LV100NDA/LV100NDA



System Diagram

for LV150NL



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*Products: Hardware and its technical information (including software)

⚠ **WARNING** TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING THE EQUIPMENT.

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