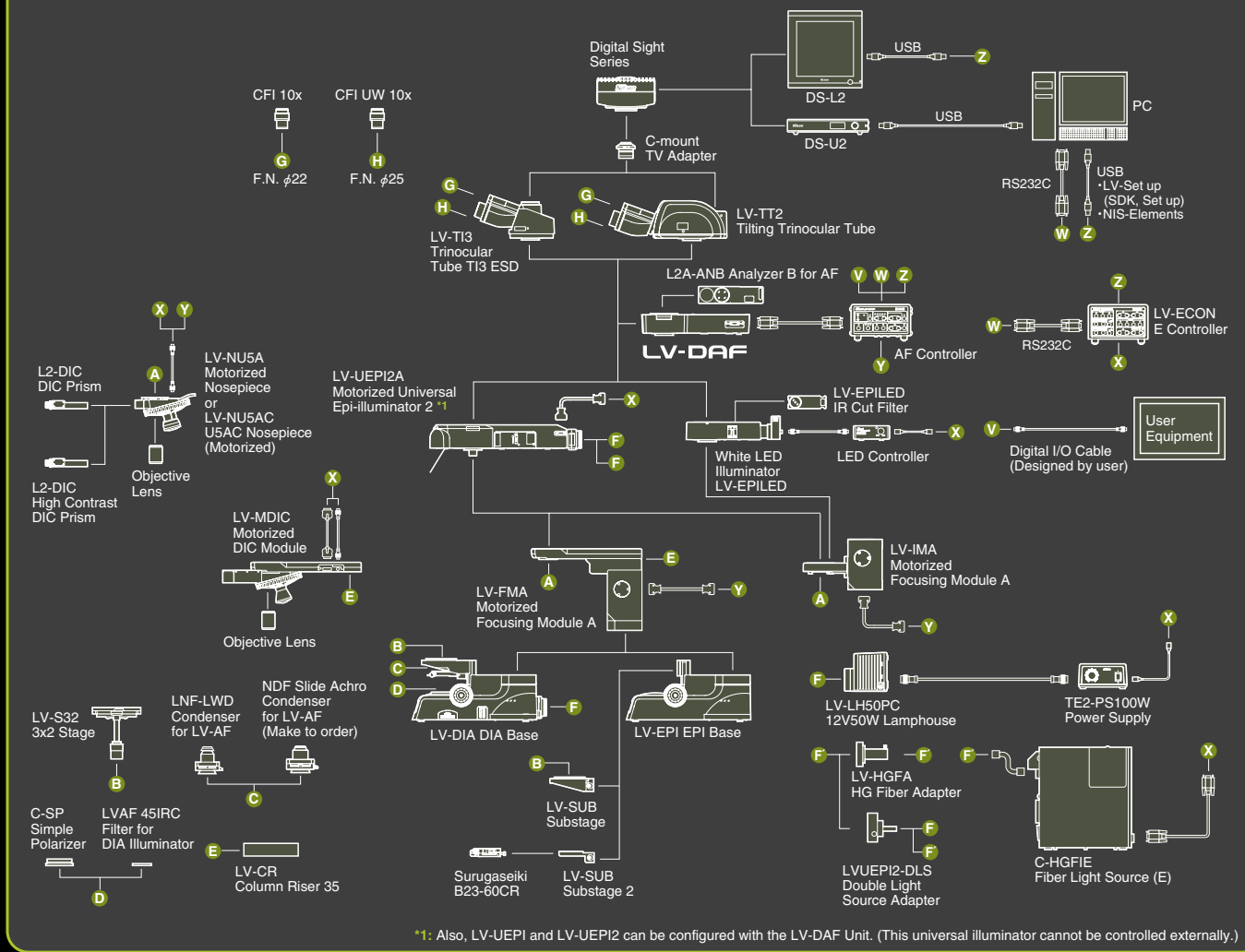


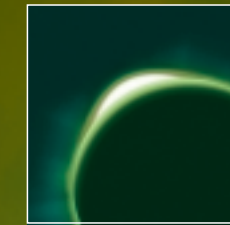
## SYSTEM DIAGRAM



\*1: Also, LV-UEPI and LV-UEPI2 can be configured with the LV-DAF Unit. (This universal illuminator cannot be controlled externally.)



Dynamic Auto-Focus Unit for Microscope System Integration LV-DAF



ECLIPSE

Dynamic Auto-Focus Unit for Microscope System Integration

# LV-DAF



Delivers fast, versatile auto-focus with the newly developed and unique Hybrid Auto-Focus system. The LV-DAF makes the most of two types of auto-focus systems.

Comes with Nikon's Auto-Adjustment Program, increasing efficiency by ensuring rapid startup.

Supports a variety of observation methods, including brightfield, darkfield, and differential interference contrast (DIC), as well as various transparent samples such as liquid crystal and glass panels.

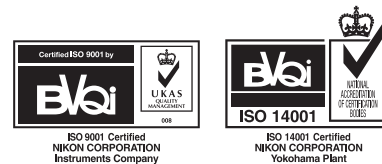
Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. March 2008 ©2008 NIKON CORPORATION

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



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# LV-DAF



## The Hybrid Auto-Focus features large focus range and fast tracking ability

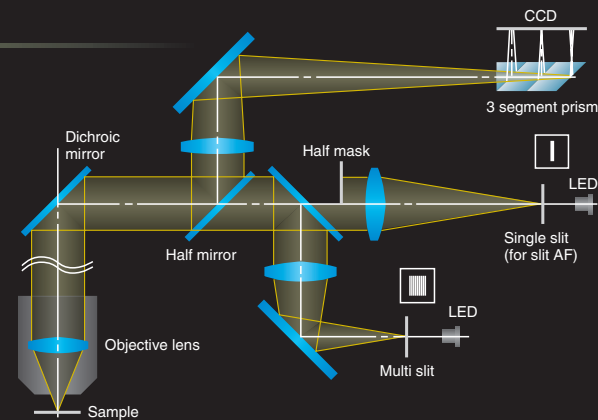
### What is Hybrid Auto-Focus?

There are two common types of auto-focus systems for microscopes: slit projection and contrast detection.

**Slit projection system** projects a slit image and then detects the shift in the reflected light. This system is useful when a large focal range is necessary.

**Contrast detection system** projects a slit pattern and then detects the contrast of the reflected light. This system is useful when focus accuracy is needed. This is possible because this auto-focus system is less affected by sample surface variation.

Hybrid Auto-Focus combines the advantages of both systems and makes the most of their paired potential.



### Features

- 1 Focal range is remarkably larger than with contrast detection alone. This means that samples with distortions on their surface, such as a liquid crystal substrate, can be rapidly tracked, thereby enabling speedy focusing.
- 2 The LV-DAF uses a bright LED for the auto-focus light source. And since it also automatically adjusts the auto-focus light volume for the sample, it can support samples ranging from low to high reflectivity.
- 3 A wide range of observation methods is supported, including brightfield, darkfield, and DIC. Reflective samples and transparent samples are also both supported.
- 4 The Auto-Adjustment Program, that is included as standard, enables simple and speedy system setup. The program performs immediate auto-adjustment after the user focuses the system and presses the button to start the setup. It is also possible to automatically set/register optimal parameters for each type of sample and recall them in accordance to the sample being photographed.
- 5 The LV-DAF can be controlled from a PC or a DS-L2 digital camera system for microscopes via USB or RS232C.
- 6 The LV-DAF can be combined with other LV series products. When combined with the LV-ECON, it enables observation under the optimal conditions for each particular sample.
- 7 The controller features the same hardware design as the LV-ECON and has a compact footprint that allows them to be stacked on each other and used anywhere.
- 8 Nikon provides a software development kit (SDK) for integrating the LV-DAF into a variety of systems. (Compatibility is only guaranteed for Nikon products.)

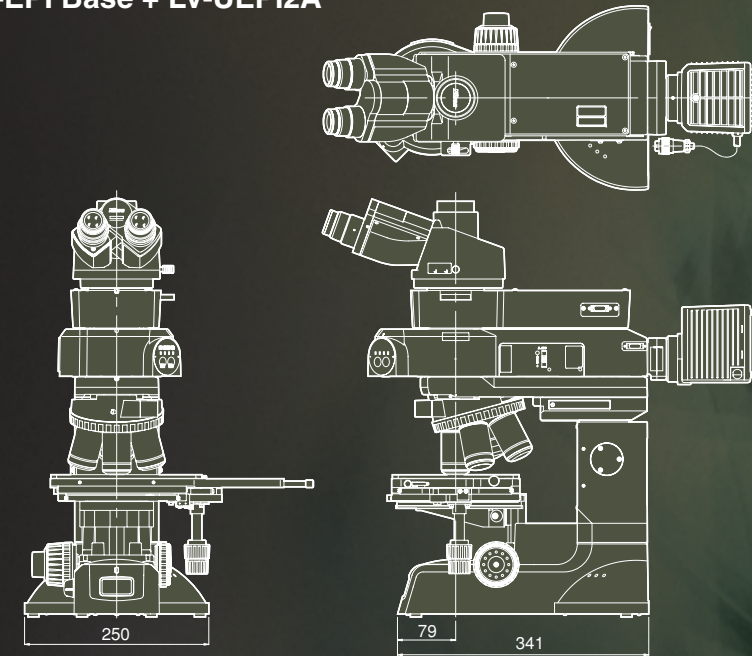
### Product specifications

Detection system	Hybrid system combining slit projection with contrast detection
Auto-focus light source	Near-IR LED ( $\lambda = 770 \text{ nm}$ )
Objective lens	CF160 objective lens 2.5x-100x (includes extra-long working distance (ELWD), super-long working distance (SLWD), and CR for LCD substrate inspection)*1
Auto-focus modes	Continuous mode and search mode (single, continuous)
Focal range	Focal range without searching (brightfield)*2 2.5x: 5.5 mm or more, 5x: 4.5 mm or more, 10x: 1.3 mm or more, 20x: 320 $\mu\text{m}$ or more, 50x: 50 $\mu\text{m}$ or more, 100x: 10 $\mu\text{m}$ or more
Focal time	0.7 seconds or less (20x: 200 $\mu\text{m}$ with no search)*2 *3
Focal precision (repeated reproducibility)	1/2 or less of focal depth*2 *3
AF offset feature	Enables observation with precise adjustment of focal position while applying auto-focus
Minimum drive resolution	0.05 $\mu\text{m}$ *1
External communication	RS232C, USB, and parallel I/O
Power source	100-240 V AC, 1.0 A, 50/60 Hz

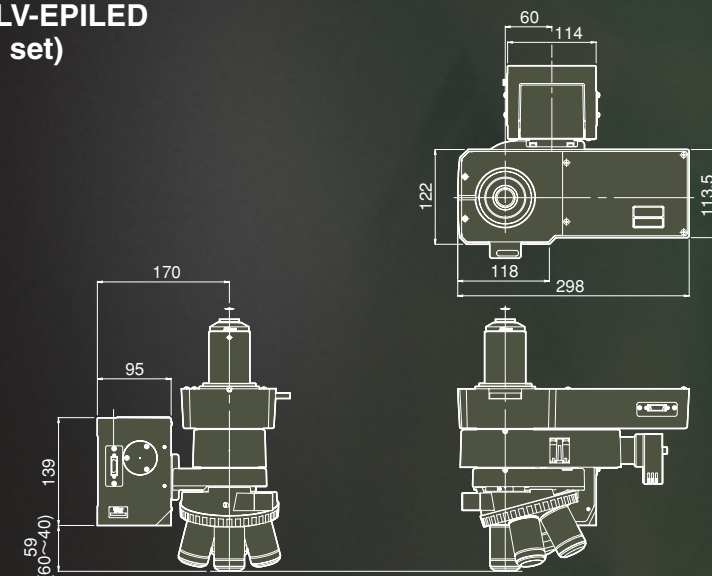
\*1. Some limitations for 2.5x and 100x. \*2. Using Nikon's standard Cr vapor deposition sample. \*3. Using the LV-IMA or LV-FMA.  
Note: The LV-ECON Controller (available separately) is required when using a motorized revolver.

## DIMENSIONS

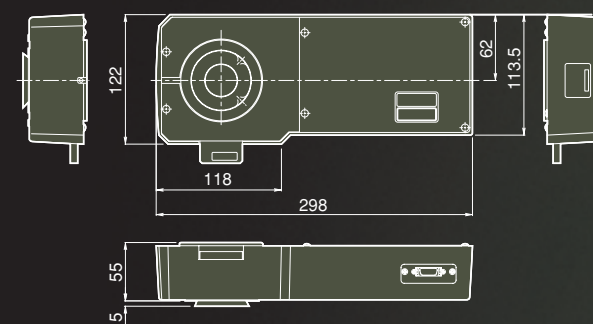
### LV-DAF + LV-FMA + LV-EPI Base + LV-UEPI2A (Microscope set)



### LV-DAF + LV-IMA + LV-EPILED (System integration set)



### LV-DAF (unit)



### LV-DAF (controller)

