FPD/LSI Inspection Microscopes

ECLIPSE
L300N/L300ND
L200N/L200ND
With improved observation and operation, and environmentally friendlier, the four ECLIPSE models are ideally suited for inspection of large FPD/LSI.

Enhanced observation performance

- Brightfield observation of wafer pattern
- Darkfield observation
- DIC observation
- Epi-fluorescence observation of organic substance on wafer

Motorized mercury fiber illuminator Intensilight for Epi-fluorescence observation (L300N/L300ND/L200ND only)

- A motorized mercury precentered fiber illuminator is employed.
- Lamp-centering and focus adjustment are not necessary, even after lamp replacement.
- The light source can be placed away from the microscope, reducing heat near the microscope and preventing defocusing.
- Variable light intensity and shutter control provide excellent flexibility.
- The light source can be placed away from the microscope, reducing heat near the microscope and preventing defocusing.
- Lamp centering and focus adjustment are not necessary, even after lamp replacement.
- A motorized mercury precentered fiber illuminator is employed.
- Highly beneficial in inspection of semiconductor resist residues and organic electroluminescence displays.
- The “fly-eye” lens array, which provides uniform illumination throughout
- Provides clear, high-contrast brightfield images by minimizing flare.
- Nikon’s original CFI60-2 optics offer both image brightness through high NA and wider sample range and access with long WD.
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- The “fly-eye” lens array, which provides uniform illumination throughout the visual field, is employed for darkfield illumination optics, allowing remarkably bright, high-resolution darkfield images.

CFI60-2 optics offer long working distance and high NA

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Four times brighter than conventional Diascopic observation (L300ND only)

- The L300ND employs a new light source and advanced optics to provide four times brighter illumination for Diascopic observation.

Enhanced environmental consideration and operation

High-intensity 12V-50W halogen illuminator is brighter than that of a standard 12V-100W illuminator

- The UV-HG/PC precentered lamp, which offers greater brightness than that of a 12V-100W illuminator at half the power consumption. It is adequate for observation of semiconductors and LCDs.
- Incorporating a lamphouse rear mirror and optimizing the size of the lamp filament allows effective and uniform illumination on the pupil plane, critical in an optical system. Objectives with a magnification of 5x or higher benefit from an increased brightness of 20 percent compared to the standard 12V-100W illuminator.
- Features environmentally-friendly design and reduces thermal induced defocus.

Antistatic coatings for stronger safeguards against contamination

- Antistatic coatings have been applied to the body, stage, eyepiece tube and other various controls. These coatings strengthen safeguards against contamination and help prevent damage to samples caused by electrostatic charges, thus contributing to higher yields.

Tilting trinocular eyepiece tube for observation at optimum eyepoint level

- Ultrawide 25-mm field of view and eyepiece angle adjustment between 0° and 30°
- Allows operators to adjust eyepoint level to ensure a comfortable viewing position

Fixed-position X-Y fine movement control

- The X-Y fine movement control is positioned close to the operator.
- All controls are located near each other, allowing stage movements and focusing to be carried out with ease.

Target for easier focusing

- Inserting a focusing target in the optical path allows easy and accurate focusing on low-contrast samples, such as bare wafers.

Controls located at microscope front

- The main control knobs and buttons are located at the front of the microscope for easy access.
- Quick and easy microscope operation while viewing samples is possible.
- Minimizes fatigue during lengthy observations.
Improved functionality between the microscope and digital cameras provides ideal imaging

- Nikon’s simultaneous development of microscopes, digital cameras and imaging software has enabled it to develop a highly functional easy-to-use digital imaging microscopy system.
- All aspects of image flow are supported, including setup for best viewing conditions, digital image capturing, processing and analysis.

**Camera control unit DS-U3**
- Operations, from advanced image capture to image processing and analysis, are all controlled from a PC.
- Control of the camera, peripherals and microscope are all integrated within NIS-Elements imaging software.
- The IEEE 1394b device port enables high-speed live image display and fast response at speeds surpassing the previous model.

**NIS-Elements**

**Interactive measurement**
NIS-Elements offers diverse measurement parameters, such as distance, area, radius and angle profile. Results can be saved as an Excel file.

**Large image stitching**
Composition of large-area images with high magnification is possible by stitching adjacent ultrahigh-resolution images.

**EDF (Extended Depth of Focus)**
Images that have been captured at different points along the Z-axis can be combined to create an all-in-focus image and a virtual 3D image.

**Automatic measurement**
Some 80 different object and field features—length, area, density, RGB values, etc.—can be measured automatically.

**Classifier**
The classifier allows segmentation of the image pixels according to different user-defined conditions and is based on different pixel features such as intensity values, RGB values, HSI values or HS values.

Camera Heads can be selected depending on use

**High-definition cooled color camera head DS-Ri1**
- 2/3-inch 12.7-megapixel CCD

**High-definition color camera head DS-fi2**
- 2/3-inch 5.0-megapixel color CCD

**High-speed color camera head DS-Vi1**
- 1/1.8-inch 2.0-megapixel color CCD

**Camera control unit DS-L3**
- With a large, built-in, high-definition, 8.4-inch touch panel LCD monitor, the DS-L3 eliminates the necessity for a PC connection.
- At the touch of an icon, Scene mode automatically sets the optimal imaging parameters for the chosen observation method.
- When used with L200N/L300N, the DS-L3 can automatically recall information such as objective magnification.

**High-definition touch panel monitor**
Large, easy-to-view, easy-to-use touch panel monitor allows camera head setting and operation at the touch of a finger or stylus.

**Scene mode provides optimal photography with ease**
Optimal imaging parameters are preset for different sample types. Up to seven custom modes can be set.

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

Scale display/positioning functions:
- Set
- Scale
- Area
- Angle
- Distance
- Perpendicular
- Circle
- Area
- Distance
- DVD
- RGB

Measurement functions:
- Area
- Angle
- Distance
- Perpendicular
- Circle
- Area
- Distance
- DVD
- RGB
For LSI inspection

Wafer loaders NWL200 series

In combination with the ECLIPSE L200N, the NWL200 meets the requirements for inspection of the latest wafers. Nikon’s outstanding proprietary technology ensures reliable loading of ultra-thin 100 µm wafers.

Support for ultra-thin 100 µm wafers

- Nikon's new chuck system allows reliable loading of ultra-thin 100 µm wafers.
- In combination with the ECLIPSE L200N, the NWL200 series provides levels of safety and reliability that meet all requirements for inspection of the latest wafers.

Improved wafer-sensing functions

- With optimal arrangement of the wafer sensor beams, accurate detection of wafer distortion is possible.
- The wafer-slot buttons offer improved operability.

The wafer-slot buttons allow operators to select any wafer from its slot with a single button.

Remote access tool

- Because the loader is equipped with a Web server function, connecting a PC to an intuitive dialogue for smooth progress through the steps.
- Inspection recipes can be easily backed up and restored.
- Equipment maintenance
- Recipe preparation support functions
- Because the loader is equipped with a Web server function, connecting a PC to a LAN makes it easy to create inspection recipes and backup data from a PC.
- Remote access tool

Equipment maintenance

Support for ultra-thin 100 µm wafers

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Specifications  

| ECLIPSE L300N  
(Episcopic illumination type) | ECLIPSE L300ND  
(Diascopic/Episcopic illumination type) | ECLIPSE L200N  
(Episcopic illumination type) | ECLIPSE L200ND  
(Diascopic/Episcopic illumination type) |
|-----------------------------|-------------------------------------|-----------------------------|-------------------------------------|

**Main body**  
12V-50W halogen lamp light source built in. Power sources for motorized control built in. Motorized control for nosepiece, light intensity control, aperture diaphragm control.

Nosepiece: Motorized universal sextuple nosepiece with nosepiece centering function.

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**Focusing mechanism**  
Cross travel: 29 mm  
Fine: 0.1 mm per rotation (in 1µm increments)

**Episcopic illuminator**  
12V-50W halogen lamp light source built in.  
Motorized aperture diaphragm (centerable). Fixed field diaphragm (with focus target).  
Pinhole slider (optional). Four ø5 mm filters (NCB11, N016, ND4). Polarizer and analyzer can be mounted.

Observation methods: Brightfield, Darkfield, Simple polarizing, DIC, Epi-fluorescence.*  
*L300NL300ND/L200ND only

**Diascopic illuminator**  
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12V-50W halogen lamp light source built in.  
Aperture diaphragm built in.  
LWD condenser built in.

**Interface**  
USB x 1, RS232C (for Intensilight) x 1

**Eyepiece tubes**  
L2-T2A Ultrawidefield erect-image tilting trinocular eyepiece tube (tilt angle: 0-30 °)  
FOV: 22/25; Beamsplit ratio 100:0/0:100

L2-TTA Ultrawidefield erect-image tilting trinocular eyepiece tube (tilt angle: 0-30 °)  
FOV: 22/25; Beamsplit ratio 100:0/0:100

LV-T Trinocular eyepiece tube (erect image)  
FOV: 22/25; Beamsplit ratio 100:0/0:100

**Eyepieces**  
CF I eyepiece lens series

**Objectives**  
CFI TUL: Plan series

**Stages**  
T4 x 12 stage, stroke: 354 x 328 mm  
(Diascopic observation range: 354 x 268 mm)

Coarse/Fine-movement changeover possible  
Fixed-position X-Y fine-movement controls

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**Antistatic mechanism**  
1000-10 V, within 0.2 sec

**Power consumption**  
1.2 A/90 W

**Dimensions**  
Approx. 360 (W) x 951 (D) x 581 (H) mm (at tilt angle 10 °)  
Approx. 360 (W) x 860 (D) x 580 (H) mm (at tilt angle 10 °)

**Weight**  
Approx. 40 kg (Body only)  
Approx. 30 kg (Body only)  
Approx. 64 kg (When L2-S8A 8 x 8 stage and L2-TTA eyepiece tube are used)  
Approx. 45 kg (When L2-S8A 8 x 8 stage and L2-TTA eyepiece tube are used)

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**Dimensions diagrams Unit: mm**

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

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. January 2015 ©2010-15 NIKON CORPORATION

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