OPTIKA®
MICROSCOPES
ITALY

FLUO Series

Routine & Research Lab Fluorescence Microscopes

Fluorescence Microscopy

Epi Fluorescence microscopes

A fluorescence microscope is an optical microscope that uses fluorescence and phosphorescence instead of, or in addition to, reflection and absorption to study properties of organic or inorganic substances. The "fluorescence microscope" refers to any microscope that uses fluorescence to generate an image. The Epi Fluorescence microscope is equipped with a fluorescence illuminator wich generates incident fluorescence light.

Principle

The specimen is illuminated with light of a specific wavelength (or wavelengths) which is absorbed by the fluorophores, causing them to emit light of longer wavelengths (i.e., of a different color than the absorbed light). The illumination light is separated from the much weaker emitted fluorescence through the use of a spectral emission filter. Typical components of a fluorescence microscope are a light source (HBO mercury-vapor lamps are common; more advanced forms are high-power LEDs), the excitation filter, the dichroic mirror, and the emission filter. The filters and the dichroic mirror are chosen to match the spectral excitation and emission characteristics of the fluorophore used to label the specimen. In this manner, the distribution of a single fluorophore (color) is imaged at a time. Multi-color images of several types of fluorophores must be composed by combining several single-color images.

Most fluorescence microscopes in use are epifluorescence microscopes, where excitation of the fluorophore and detection of the fluorescence are done through the same light path (through the objective). These microscopes are widely used in biology and are the basis for more advanced microscope designs.

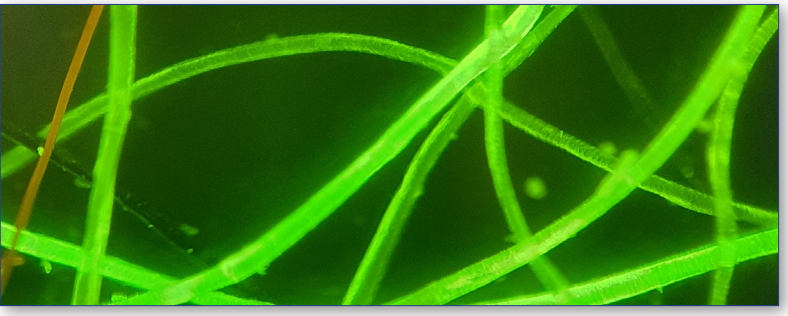
Icons

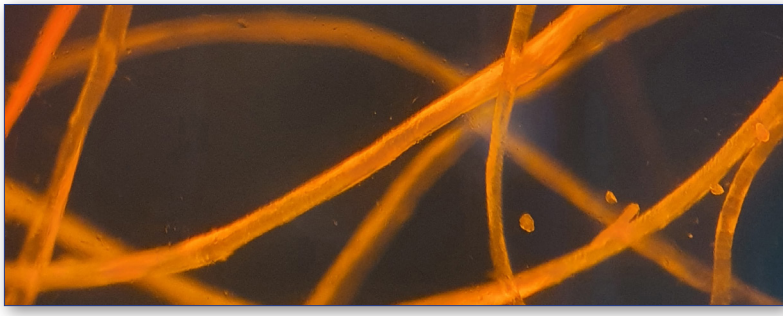
Field number	Transmitted light	Infinity corrected optics
Oil/Water 100x objective	X-LED illuminator	Fluorescence
Incident light	Multi-Plug low voltage power supply	Phase contrast
N-PLAN Objectives (20mm field of view)	W-PLAN Objectives (22mm field of view)	U-PLAN Objectives (25mm field of view)

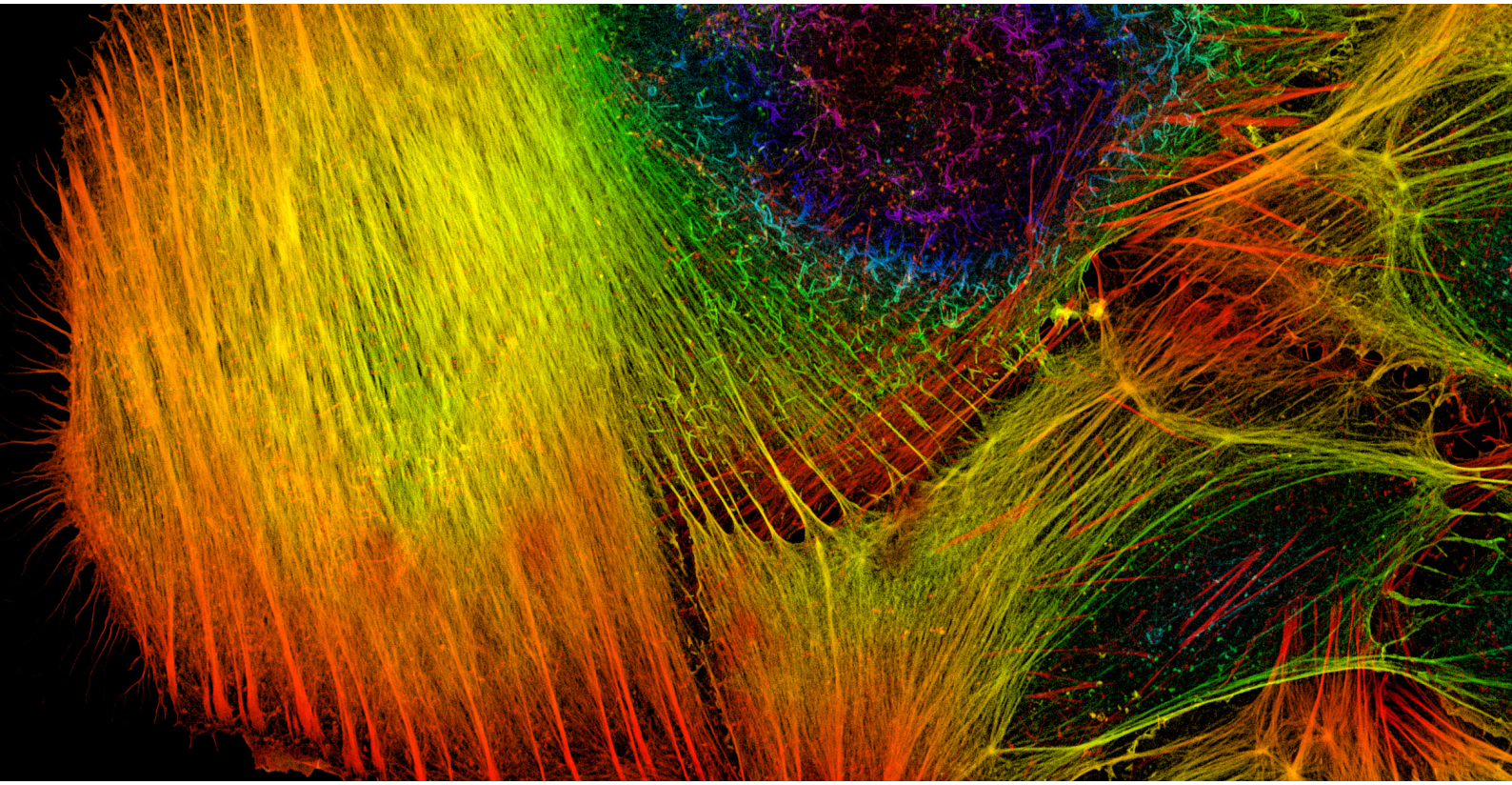
Fluorescence Microscopy

Epifluorescence microscopy

The majority of fluorescence microscopes, especially those used in the life sciences, are of the epifluorescence design. Light of the excitation wavelength illuminates the specimen through the objective lens. The fluorescence emitted by the specimen is focused to the detector by the same objective that is used for the excitation which for greater resolution will need objective lens with higher numerical aperture. Since most of the excitation light is transmitted through the specimen, only reflected excitatory light reaches the objective together with the emitted light and the epifluorescence method therefore gives a high signal-to-noise ratio. The dichroic beamsplitter acts as a wavelength specific filter, transmitting fluoresced light through to the eyepiece or detector, but reflecting any remaining excitation light back towards the source.







B-290LD - LED Fluorescence Microscopes

Fluorescence binocular and trinocular microscopes especially designed for tubercolosis and malaria analysis.

Observation mode: Brightfield.

Head: Binocular or trinocular, 360° rotating and 30° inclined. Interpupillary distance 48-75mm (bino version) 55-75mm (trino version).

Dioptric adjustement: On the left eyepiece tube.

Eyepieces: WF10x/20 mm, high eye-point and secured by a screw.

Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings.

Specimen stage: Double layer rackless mechanical sliding stage, 150x139 mm, 75x33 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1 mm.

Focusing: Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

Condenser: Abbe N.A. 1.25, with objective-coded iris diaphragm, focusable and centerable.

Brightfield Illumination (Fixed Koehler type): X-LED³ with white 3.6 W LED (6,300 K) and light intensity control.
Multi-plug 100-240Vac/6Vdc external power supply.

Fluorescence Illumination: Extra efficiency LED, with light intensity control. Peak wavelength: 465 nm, Power: 3.6W.

Epi Fluorescence Attachment: Slider with 3 positions (2 fluorescence, 1 brightfield), with 1 included filterset: Fluorescence B: EX 460-490, DM 505, EM 515LP: Acridine Yellow, Acridine Orange, Auramine, DiO, DTAF, FITC, GFP, YFP, etc.

Part number: B-292LD1.50

Equipped with binocular head and following objectives:
IOS N-PLAN 10x/0.25 (Cover/No Cover), with anti-fungus treatment
IOS N-PLAN 20x/0.40 (Cover/No Cover), with anti-fungus treatment
IOS N-PLAN 40x/0.65 (Cover/No Cover), with anti-fungus treatment
IOS W-PLAN MET 50x/0.75 (No Cover), with anti-fungus treatment.

Part number: B-293LD1.50

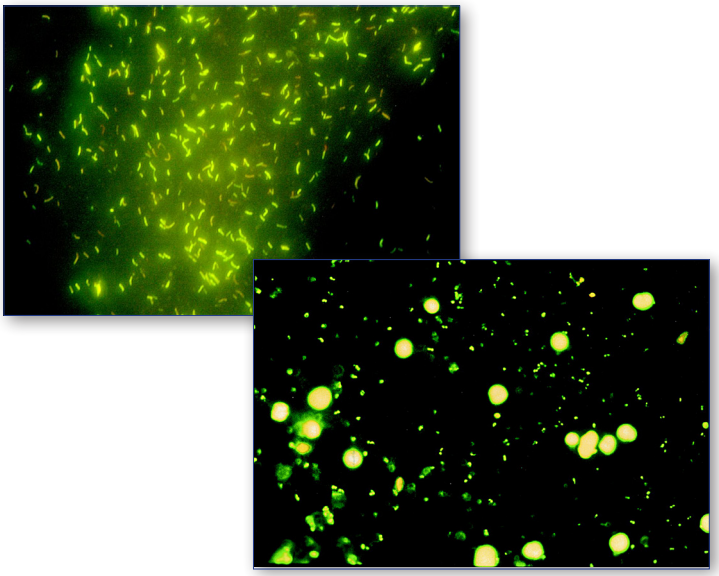
Trinocular version of B-292LD1.50.

Part number: B-292LD1

Equipped with binocular head and following objectives:
IOS N-PLAN 10x/0.25 (Cover/No Cover), with anti-fungus treatment
IOS N-PLAN 20x/0.40 (Cover/No Cover), with anti-fungus treatment
IOS N-PLAN 40x/0.65 (Cover/No Cover), with anti-fungus treatment
IOS W-PLAN 100x/0.80 (No Cover, Dry), with anti-fungus treatment.

Part number: B-293LD1

Trinocular version of B-292LD1.

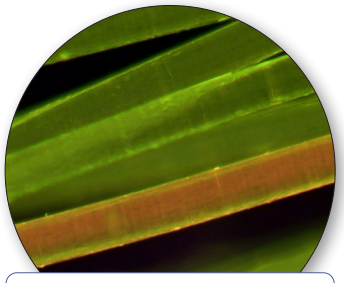


Standard filterset

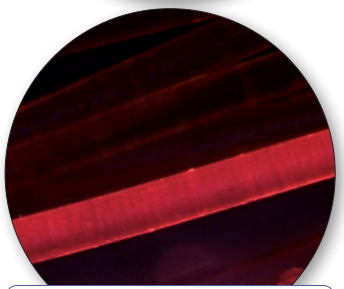
Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B (Blue)	460 – 490	505	515LP

B-383FL - HBO Fluorescence Microscope

Laboratory upright microscope for brightfield and fluorescence observations with IOS N-PLAN objectives.
The HBO fluorescence illuminator provides an outstanding flexibility of use, standing the blue and green filter sets (supplied as standard) for Auramine, FITC, GFP and YFP (with blue filter set) plus Rhodamine, Texas Red and TRITC (with the green one), yet giving the possibility to combine any other specific filter sets for future upgrade. Transmitted light through the exclusive ***X-LED³*** to ensure great-looking, rich and high-quality specimen view.



10x - Blue excitation



10x - Green excitation

Standard filterset

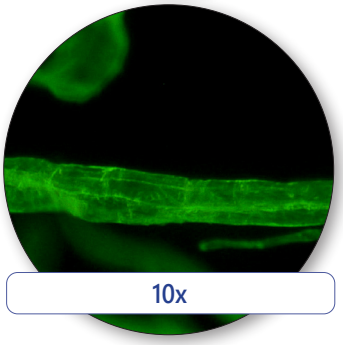
Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B Blue	460 – 490	505	515LP
G Green	510 – 550	570	575LP

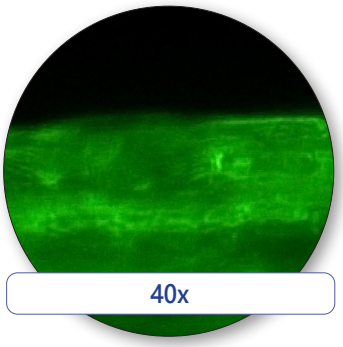
Part	Description
Observation mode:	Brightfield, HBO fluorescence.
Epi-illumination and filters:	HBO 100 W high pressure mercury lamp. 3-position filter holder; blue and green included.
Head:	Trinocular (fixed 50/50), 30° inclined, 360° rotating.
Interpupillary distance:	Adjustable between 48 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/20 mm, high eye-point and secured by screw.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS N-PLAN 4x/0.10 IOS N-PLAN 10x/0.25 IOS N-PLAN 20x/0.40 IOS N-PLAN 40x/0.65 IOS N-PLAN 100x/1.25 (Oil/Water) All with anti-fungus treatment.

Part	Description
Specimen stage:	Double layer rackless mechanical stage, 233x147 mm, 78x54 mm X-Y range.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	Abbe N.A. 1.25, with objective-coded iris diaphragm, focusable and centerable.
Transmitted illumination (Fixed Koehler type):	X-LED³ with white 3.6 W LED (6,300K) with brightness control. Multi-plug 100-240Vac/6Vdc external power supply.

B-383LD - LED Fluorescence Microscope

Entry-level laboratory upright microscope for brightfield and fluorescence observations with IOS N-PLAN objectives. The extremely powerful LED fluorescence illuminator is combined with blue excitation filter set for the visualization of the following fluorochromes: Acridine Yellow, Acridine Orange, Auramine, DiO, DTAF, FITC, GFP, YFP, etc. LED fluorescence ensures unparalleled convenience eliminating warm-up/cool-down times and all the inconveniences related lamp replacement and adjustment. Transmitted light through the exclusive ***X-LED³*** to ensure great-looking, rich and high-quality specimen view.





Standard filterset

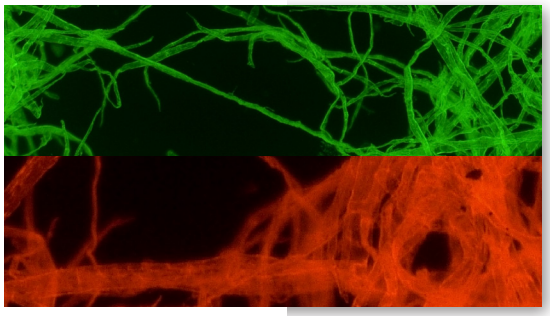
Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B Blue	460 – 490	505	515LP

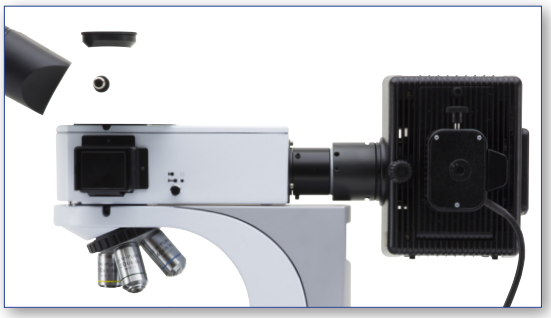
Part	Description
Observation mode:	Brightfield, LED fluorescence.
Epi-illumination and filter:	High-power blue LED with brightness control. 3-position filter holder; blue included.
Head:	Trinocular (fixed 50/50), 30° inclined, 360° rotating.
Interpupillary distance:	Adjustable between 48 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/20 mm, high eye-point and secured by screw.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS N-PLAN 4x/0.10 IOS N-PLAN 10x/0.25 IOS N-PLAN 40x/0.65 IOS N-PLAN 100x/1.25 (Oil/Water) All with anti-fungus treatment.

Part	Description
Specimen stage:	Double layer rackless mechanical stage, 233x147 mm, 78x54 mm X-Y range.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	Abbe N.A. 1.25, with objective-coded iris diaphragm, focusable and centerable.
Transmitted illumination (Fixed Koehler type):	X-LED³ with white 3.6 W LED (6,300K) with brightness control. Multi-plug 100-240Vac/6Vdc external power supply.

B-510FL - HBO Fluorescence Microscope

Advanced routine laboratory microscope for brightfield and fluorescence observations with Semi-Apo IOS W-PLAN F objectives to enhance the visibility of the sample and increase the overall contrast. The **HBO fluorescence** illuminator provides an outstanding flexibility of use, standing the blue and green filter sets (supplied as standard) for Auramine, FITC, GFP and YFP (with blue filter set) plus Rhodamine, Texas Red and TRITC (with the green one), yet giving the possibility to combine any other specific filter sets for future upgrade. Transmitted light through the exclusive ***X-LED³*** to ensure great-looking, rich and high-quality specimen view.





Standard filterset

Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B Blue	460 - 490	505	515LP
G Green	510 - 550	570	575LP

Additional filterset (optional)

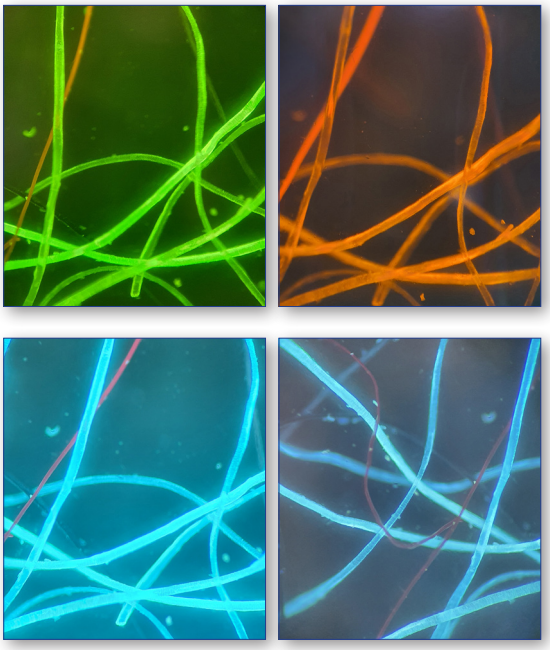
Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
V (Violet)	390 - 420	440	455LP
UV	325 - 375	415	435LP

Part	Description
Observation mode:	Brightfield, HBO fluorescence.
Epi-illumination and filter:	HBO 100 W high pressure mercury lamp. 4-position filter holder; blue & green included.
Head:	Trinocular (3-position 100/0, 50/50, 0/100), 30° inclined, 360° rotating.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS W-PLAN F 4x/0.13 IOS W-PLAN F 10x/0.30 IOS W-PLAN F 20x/0.50 IOS W-PLAN F 40x/0.75 All with anti-fungus treatment.

Part	Description
Specimen stage:	Double layer rackless mechanical stage, 233x147 mm, 78x54 mm X-Y range.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	Swing-out N.A. 0.2/0.9, with iris diaphragm, focusable and centerable.
Transmitted illumination (Full Koehler type):	X-LED³ with white 3.6 W LED (6,300K) with brightness control. Multi-plug 100-240Vac/6Vdc external power supply.

B-510LD4 - LED Fluorescence Microscope

Advanced routine fluorescence microscope for transmitted brightfield and fluorescence observations with IOS W-PLAN objectives. The extremely powerful LED Fluorescence Illuminators are combined with corresponding excitation filter sets for the visualization of most fluorochromes. LED fluorescence ensures unparalleled convenience eliminating warm-up/cool-down times and all the inconveniences related lamp replacement and adjustment. Transmitted light through the exclusive ***X-LED³*** to ensure great-looking, rich and high-quality specimen view.



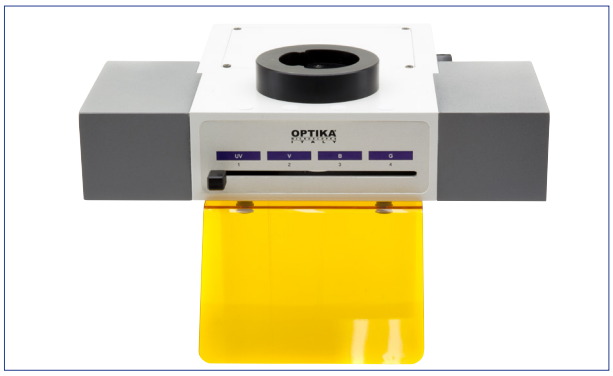
A new milestone achieved in Fluorescence Microscopy

- » Full-modular Fluorescence System
- » Interchangeable LED-Filtersets
- » 4 LED-Filtersets slots
- » 10% higher light intensity than HBO
- » 35% higher light intensity than Metal-Halide
- » Adjustable light intensity
- » The selection of filtersets automatically involves the switching on of the corresponding LEDs
- » Cost-effective, money saving technology
- » Ready for immediate operation
- » Eliminate warm-up/cool-down times
- » Forget lamp replacement & centering

Part	Description
Observation mode:	Brightfield, LED fluorescence.
Epi-illumination and filter:	High-power LED with brightness control. 4-position filter holder; none included.
Head:	Trinocular (3-position 100/0, 50/50, 0/100), 30° inclined, 360° rotating.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Object.: B-510LD4:	IOS W-PLAN 4x/0.10 IOS W-PLAN 10x/0.25 IOS W-PLAN 40x/0.65 IOS W-PLAN 100x/1.25 (Oil)
B-510LD4-SA:	IOS W-PLAN F 4x/0.13 IOS W-PLAN F 10x/0.30 IOS W-PLAN F 40x/0.75 IOS W-PLAN F 100x/1.3 (Oil) All with anti-fungus treatment.

Part	Description
Specimen stage:	Double layer rackless mechanical stage, 233x147 mm, 78x54 mm X-Y range.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	Swing-out N.A. 0.2/0.9, with iris diaphragm, focusable and centerable.
Transmitted illumination (Full Koehler type):	X-LED³ with white 3.6 W LED (6,300K) with brightness control. Multi-plug 100-240Vac/6Vdc external power supply.

B-510LD4 - LED Fluorescence Microscope



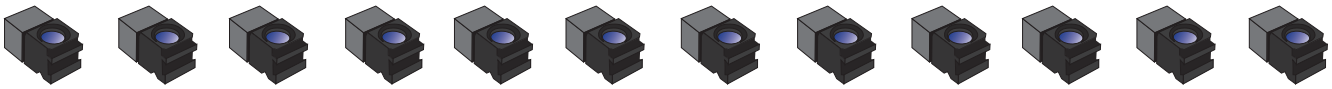
OPTIKA LED Fluorescence attachment is a revolutionary solution.
It consists of a 4-position selector for the use of 4 fluorescent illuminators, called LED Fluorescence Cubes.
Each Cube is composed of a filterset mounted on a filterblock and a high power LED with emission corresponding to the filters installed. In this way the selection of each filter controls the lighting up of the corresponding LED.

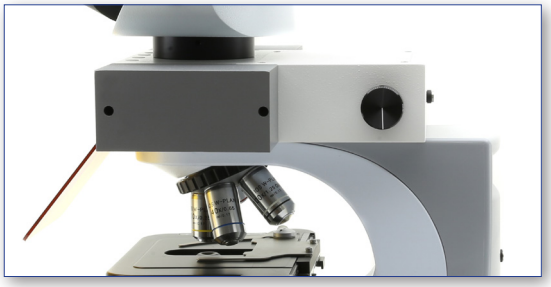
The microscope is supplied without any LED Fluorescence Cube. A selection of 9 types is available, as shown in the table below.

B-510LD4
Trinocular brightfield microscope, 1000x,
IOS W-PLAN objectives

B-510LD4-SA
Trinocular brightfield microscope, 1000x,
IOS W-PLAN F (Semi-Apo) objectives. **For UV Fluorescence**

M-1220 ... M-1228
LED Fluorescence Cubes (LED + Filterset)





LED Fluorescence Cubes available (LED + Filterset)

Name	LED emission (nm)	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
M-1220 - Blue	460	455 - 495	500	510LP
M-1220.1 - Blue (pass band)	460	455 - 495	500	518-542
M-1221 - Green	523	510 - 550	570	575LP
M-1221.1 - Green (pass band)	523	510 - 550	570	585-625
M-1222 - Violet	405	390 - 420	440	450LP
M-1223 - UV	365	325 - 375	415	435LP
M-1223.1 - UV (pass band)	365	340 - 390	405	420-470
M-1224 - Red 1 *	623	590 - 650	660	665LP
M-1225 - Red 2 *	623	595 - 645	655	665 - 715
M-1226 - Deep Red *	660	623 - 678	685	690 - 750
M-1227 - Far Red *	740	720 - 760	770	780LP
M-1228 - Amber	590	582 - 603	610	615 - 645

** If the use of a camera is needed, when used for red emission fluorescence wavelengths above 650nm, please order it by specifying with "AR GLASS"*

B-1000FL-HBO - HBO Fluorescence Microscope

The modular OPTIKA B-1000 can stand a HBO fluorescence attachment, helping you working in a comfortable way during extended periods of use and performing reliable, accurate and rapid diagnosis benefiting from modularity, which gives the chance to create customized configurations tailored on customer needs. Versatile, robust, durable and sturdy, B-1000 offers premium quality optics (including Semi-Apo objectives), the state-of-the-art, exclusive ***X-LED⁸*** (8 W) illumination system, designed by OPTIKA and the Koehler diaphragm.
B-1000 gives multiple options as manual or motorized configuration, with a variety of objectives, stages and condensers.

Standard filterset

Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B Blue	460 - 490	500	520LP
G Green	510 - 550	570	590LP

Additional filterset (optional)

Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
V (Violet)	400 - 410	455	455LP
UV	330 - 385	400	420LP

B-1000FL-HBO - Configuration Chart

Build the microscope that suites your needs by choosing among the components

M-781
PL10x/22 eyepiece, high eyepoint, with micrometric scale (10mm/100um) & rubber cup (retractable)

M-1001
PL10x/22 eyepieces (pair), high eyepoint, with rubber cup (retractable)

M-1003
PL15x/16 eyepieces (pair), high eyepoint

M-1011
Trinocular head, three positions (100/0, 50/50, 0/100)

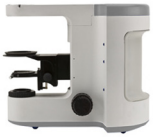
M-1012
Binocular ERGO head

M-1032
6-position HBO Fluorescence attachment, with standard Blue and Green filtersets (FITC & TRITC)

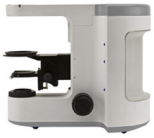
M-1165
Fluorescence filterset V (filterblock included)

M-1166
Fluorescence filterset UV (filterblock included)

M-1021B
Main body with focus system and X-LED[8] illumination, for general purposes



M-1021B+M-1156*+M-1149
Main body with motorized system and X-LED[8] illumination, for general purposes



M-1042
Sextuple reversed nosepiece, for RMS objectives with DIC slot

M-1043+M-1156*
Sextuple motorized reversed nosepiece, for RMS objectives with DIC slot

IOS W-PLAN F

M-1060 4x
M-1061 10x
M-1062 20x
M-1063 40x
M-1064 100x

IOS U-PLAN F

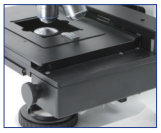
M-1075 4x
M-1076 10x
M-1077 20x
M-1078 40x
M-1079 100x

M-1140
Standard mechanical stage

M-1141
Rackless mechanical stage

M-1143
MPC (Mineral Solid Surface) rackless mechanical stage

M-1147+M-1156*
Motorized mechanical stage



M-1144
Heating stage, with digital temperature controller

M-1150
0.90 N.A. swing-out condenser

M-1151
1.2 N.A. swing-out condenser

M-618
Darkfield condenser for dry objectives

* Code M-1156 must be added only **once** for any motorized configuration

B-1000LD4 - LED Fluorescence Microscope

The modular OPTIKA B-1000 can stand a LED fluorescence attachment, helping you working in a comfortable way during extended periods of use and performing reliable, accurate and rapid diagnosis benefiting from modularity, which gives the chance to create customized configurations tailored on customer needs. Versatile, robust, durable and sturdy, B-1000 offers premium quality optics (including Apo and Semi-Apo objectives), the state-of-the-art, exclusive ***X-LED⁸*** (8 W) illumination system, designed by OPTIKA and the Koehler diaphragm.
B-1000 gives multiple options as manual or motorized configuration, with a variety of objectives, stages and condensers.

A new milestone achieved in Fluorescence Microscopy

- » Full-modular Fluorescence System
- » Interchangeable LED-Filtersets
- » 4 LED-Filtersets slots
- » 10% higher light intensity than HBO
- » 35% higher light intensity than Metal-Halide
- » Adjustable light intensity
- » The selection of filtersets automatically involves the switching on of the corresponding LEDs
- » Recommended for research applications
- » Cost-effective, money saving technology
- » Ready for immediate operation
- » Eliminate warm-up/cool-down times
- » Forget lamp replacement & centering

LED Fluorescence Cubes available (LED + Filterset)

Name	LED emission (nm)	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
M-1220 - Blue	460	455 - 495	500	510LP
M-1220.1 - Blue (pass band)	460	455 - 495	500	518-542
M-1221 - Green	523	510 - 550	570	575LP
M-1221.1 - Green (pass band)	523	510 - 550	570	585-625
M-1222 - Violet	405	390 - 420	440	450LP
M-1223 - UV	365	325 - 375	415	435LP
M-1223.1 - UV (pass band)	365	340 - 390	405	420-470
M-1224 - Red 1 *	623	590 - 650	660	665LP
M-1225 - Red 2 *	623	595 - 645	655	665 - 715
M-1226 - Deep Red *	660	623 - 678	685	690 - 750
M-1227 - Far Red *	740	720 - 760	770	780LP
M-1228 - Amber	590	582 - 603	610	615 - 645

** If the use of a camera is needed, when used for red emission fluorescence wavelengths above 650nm, please order it by specifying with "AR GLASS"*

B-1000LD4 - Configuration Chart

Build the microscope that suites your needs by choosing among the components

M-781
PL10x/22 eyepiece, high eyepoint, with micrometric scale (10mm/100um) & rubber cup (retractable)

M-1001
PL10x/22 eyepieces (pair), high eyepoint, with rubber cup (retractable)

M-1003
PL15x/16 eyepieces (pair), high eyepoint

M-1011
Trinocular head, three positions (100/0, 50/50, 0/100)

M-1012
Binocular ERGO head

M-1031M
4-position LED Fluorescence attachment, without LED Fluorescence Filtersets

M-1220 ... M-1228
LED Fluorescence Cubes (LED + Filterset)

M-1021B
Main body with focus system and X-LED[8] illumination, for general purposes

M-1021B+M-1156*+M-1149
Main body with motorized system and X-LED[8] illumination, for general purposes

M-1042
Sextuple reversed nosepiece, for RMS objectives with DIC slot

M-1043+M-1156*
Sextuple motorized reversed nosepiece, for RMS objectives with DIC slot

IOS W-PLAN

M-1049 2x
M-1125 4x
M-1126 10x
M-1127 20x
M-1128 40x
M-1129 60x
M-1130 100x

IOS W-PLAN F

M-1060 4x
M-1061 10x
M-1062 20x
M-1063 40x
M-1064 100x

IOS U-PLAN F

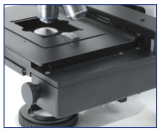
M-1075 4x
M-1076 10x
M-1077 20x
M-1078 40x
M-1079 100x

M-1140
Standard mechanical stage

M-1141
Rackless mechanical stage

M-1143
MPC (Mineral Solid Surface) rackless mechanical stage

M-1147+M-1156*
Motorized mechanical stage



M-1144
Heating stage, with digital temperature controller

M-1150
0.90 N.A. swing-out condenser

M-1151
1.2 N.A. swing-out condenser

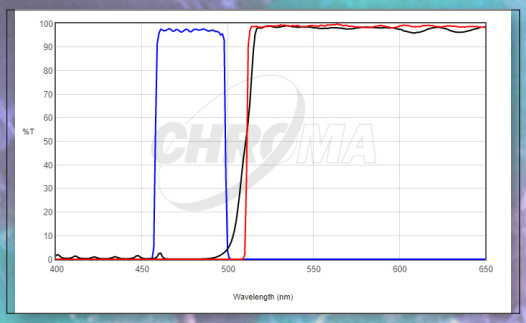
M-1155
0.9/0.25 N.A. swing-out condenser (to be used with objective M-1049)

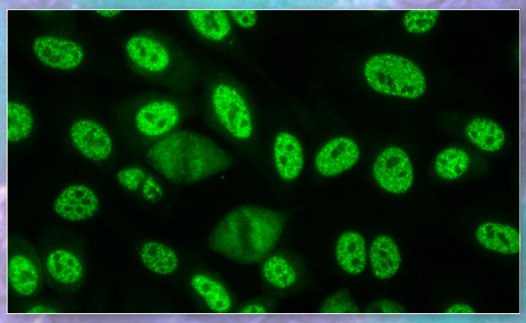
M-618
Darkfield condenser for dry objectives

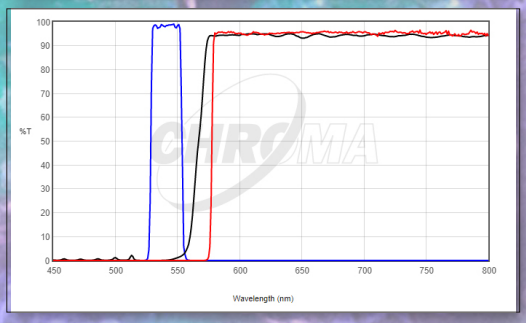
* Code M-1156 must be added only **once** for any motorized configuration

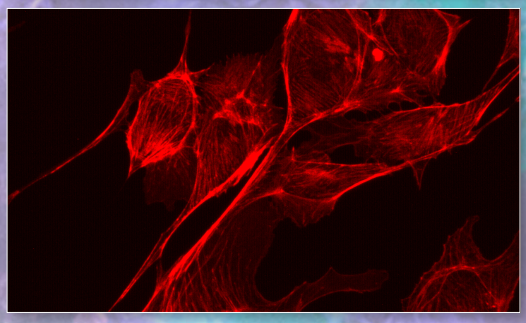
Fluorescence Filtersets

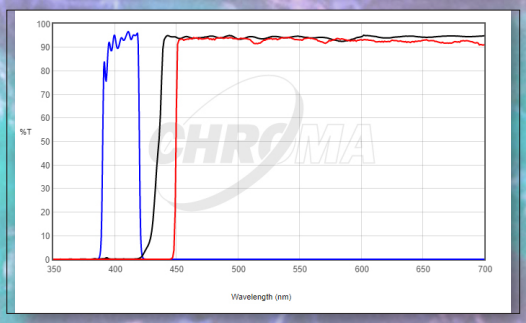
Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B (Blue)	460 – 490	505	515LP
G (Green)	510 – 550	570	575LP
V (Violet) optional	385 – 425	440	455LP
UV (Ultraviolet) optional	325 – 375	415	435LP

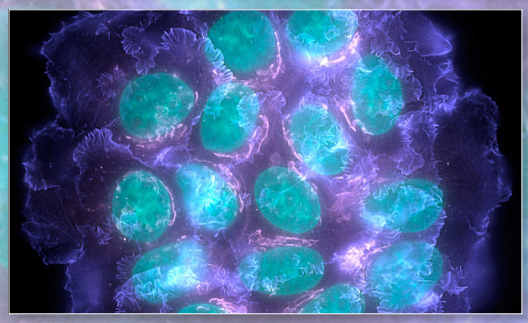


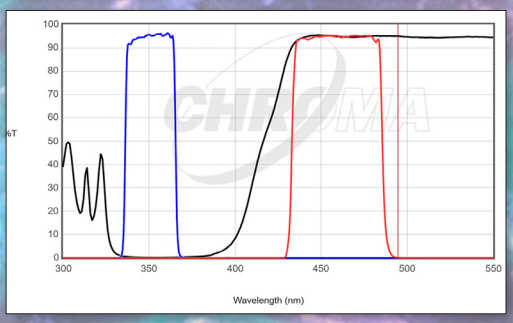


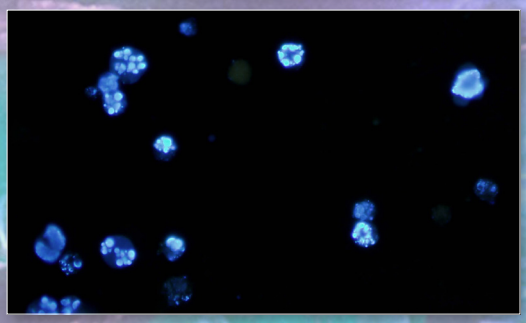












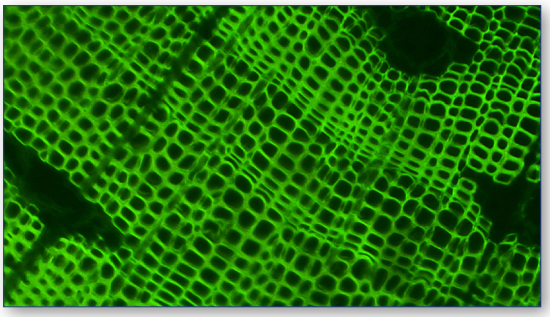
MANY MORE FILTERSETS AVAILABLE ON REQUEST

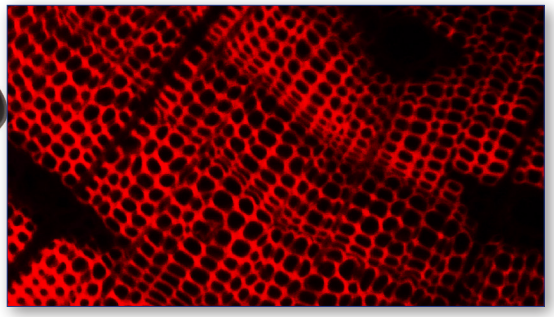
CHROMA TECHNOLOGY CORP
THE WORLD'S FINEST OPTICAL FILTERS

Specs are of B-510FL Filtersets

IM-3F - HBO Fluorescence Microscope

Routine inverted fluorescence microscope for transmitted brightfield, phase contrast and fluorescence observations with IOS LWD W-PLAN objectives.
The HBO fluorescence illuminator is combined with blue and green excitation filter set for the visualization of the following fluorochromes: Acridine Yellow, Acridine Orange, Auramine, DiO, DTAF, FITC, GFP, YFP, etc. (blue) plus Rhodamine, Texas Red and TRITC (green).
Transmitted light through the exclusive ***X-LED⁸*** to ensure great-looking, rich and high-quality specimen view.





Standard filtersets

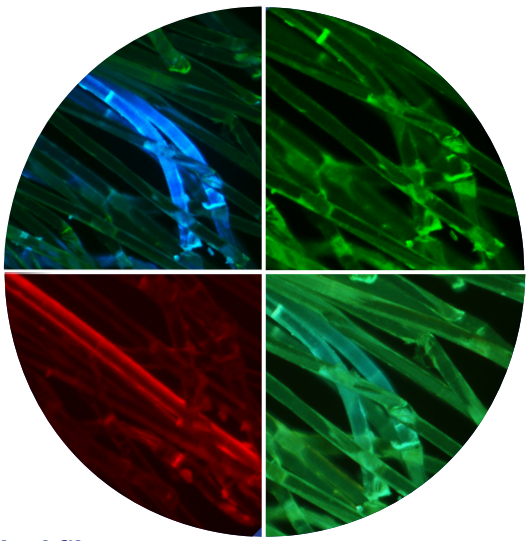
Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B (Blue)	450 – 490	495	520LP
G (Green)	527 – 553	565	575LP

Part	Description
Observation mode:	Brightfield, phase contrast, HBO fluorescence.
Epi-illumination and filter:	HBO 100 W high pressure mercury lamp. 3-position filter holder; blue & green included.
Head:	Trinocular (2-position 100/0, 0/100), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS LWD W-PLAN 4x/0.13 IOS LWD W-PLAN PH 10x/0.25 IOS LWD W-PLAN PH 20x/0.40 IOS LWD W-PLAN 40X/0.60 All with anti-fungus treatment.

Part	Description
Specimen stage:	Fixed stage, 250x160 mm, with glass and metal stage inserts.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	LWD pre-centered condenser, N.A. 0.30, W.D. 72 mm. With 4x/10x, 20x/40x phase contrast slider and brightfield. Removable to extend the working distance up to 150 mm.
Transmitted illumination:	X-LED⁸ with white 8 W LED (6,300K) with brightness control. With aperture diaphragm. Multi-plug 100-240Vac/6Vdc external power supply.

IM-3FL4 - HBO Fluorescence Microscope

Advanced inverted microscope for brightfield and fluorescence observations with Semi-Apo IOS LWD U-PLAN F objectives to enhance the visibility of the sample and increase the overall contrast. The HBO fluorescence illuminator provides an outstanding flexibility of use, standing the blue and green filter sets (supplied as standard) for Auramine, FITC, GFP and YFP (with blue filter set) plus Rhodamine, Texas Red and TRITC (with the green one), yet giving the possibility to combine any other specific filter sets for future upgrade. Transmitted light through the exclusive ***X-LED⁸*** to ensure great-looking, rich and high-quality specimen view.



Standard filterset

Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B Blue	460 - 490	500	520LP
G Green	527 – 553	565	575LP

Additional filterset (optional)

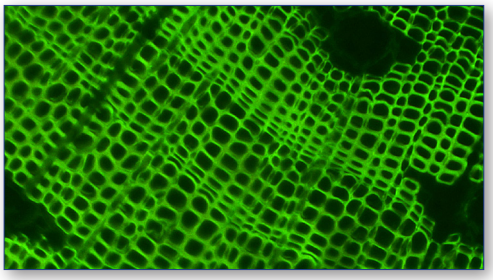
Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
V (Violet)	390 - 420	440	455LP
UV	325 - 375	415	435LP

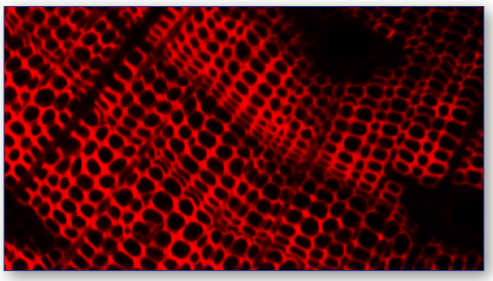
Part	Description
Observation mode:	Brightfield, HBO fluorescence.
Epi-illumination and filter:	HBO 100 W high pressure mercury lamp. 4-position filter holder; blue & green included.
Head:	Trinocular (2-position 100/0, 0/100), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS LWD U-PLAN F 10x/0.30 IOS LWD U-PLAN F 20x/0.45 IOS LWD U-PLAN F 40x/0.65 All with anti-fungus treatment.

Part	Description
Specimen stage:	Fixed stage, 250x160 mm, with glass and metal stage inserts.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	LWD pre-centered condenser, N.A. 0.30, W.D. 72 mm. Removable to extend the working distance up to 150 mm.
Transmitted illumination:	X-LED⁸ with white 8 W LED (6,300K) with brightness control. With aperture diaphragm. Multi-plug 100-240Vac/6Vdc external power supply.

IM-3LD2 - LED Fluorescence Microscope

Routine inverted fluorescence microscope for transmitted brightfield, phase contrast and fluorescence observations with IOS LWD W-PLAN PH objectives.
The LED fluorescence illuminators are combined with blue and green excitation filter set for the visualization of the following fluorochromes: Acridine Yellow, Acridine Orange, Auramine, DiO, DTAF, FITC, GFP, YFP, etc. (blue) plus Rhodamine, Texas Red and TRITC (green). LED fluorescence ensures unparalleled convenience eliminating warm-up/cool-down times and all the inconveniences related lamp replacement and adjustment. Transmitted light through the exclusive ***X-LED⁸*** to ensure great-looking, rich and high-quality specimen view.





A new milestone achieved in Fluorescence Microscopy

- » 10% higher light intensity than HBO
- » 35% higher light intensity than Metal-Halide
- » Adjustable light intensity
- » The selection of filtersets automatically involves the switching on of the corresponding LEDs
- » Recommended for routine applications
- » Cost-effective, money saving technology
- » Ready for immediate operation
- » Eliminate warm-up/cool-down times
- » Forget lamp replacement & centering

LED Fluorescence Cubes (LED + Filterset) included

Name	LED emission (nm)	Excita-tion filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
Blue	460	455 - 495	500	510LP
Green	523	510 - 550	570	575LP

Part	Description
Observation mode:	Brightfield, phase contrast, LED fluorescence.
Epi-illumination and filter:	High-power LED with brightness control. 3-position filter holder; blue and green filtesets included.
Head:	Trinocular (2-position 100/0, 50/50), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS LWD W-PLAN PH 10x/0.25 IOS LWD W-PLAN PH 20x/0.40 IOS LWD W-PLAN PH 40x/0.65 All with anti-fungus treatment.

Part	Description
Specimen stage:	Fixed stage, 250x160 mm, with glass and metal stage inserts. Mechanical stage as option.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	LWD pre-centered condenser, N.A. 0.30, W.D. 72 mm. With 4x/10x, 20x/40x phase contrast slider and brightfield. Removable to extend the working distance up to 150 mm.
Transmitted illumination:	X-LED⁸ with white 8 W LED (6,300K) with brightness control. With aperture diaphragm. 100-240Vac/12Vdc external power supply.

IM-3LD4 - LED Fluorescence Microscope

Advanced fluorescence inverted microscope for transmitted brightfield and fluorescence observations with IOS LWD U-PLAN F objectives. The extremely powerful LED Fluorescence Illuminators are combined with corresponding excitation filter sets for the visualization of most fluorochromes. LED fluorescence ensures unparalleled convenience eliminating warm-up/cool-down times and all the inconveniences related lamp replacement and adjustment. Transmitted light through the exclusive ***X-LED⁸*** to ensure great-looking, rich and high-quality specimen view.

A new milestone achieved in Fluorescence Microscopy

- » Full-modular Fluorescence System
- » Interchangeable LED-Filtersets
- » 4 LED-Filtersets slots
- » 10% higher light intensity than HBO
- » 35% higher light intensity than Metal-Halide
- » Adjustable light intensity
- » The selection of filtersets automatically involves the switching on of the corresponding LEDs
- » Recommended for research applications
- » Cost-effective, money saving technology
- » Ready for immediate operation
- » Eliminate warm-up/cool-down times
- » Forget lamp replacement & centering

LED Fluorescence Cubes available (LED + Filterset)

Name	LED emission (nm)	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
M-1230 - Blue	460	455 - 495	500	510LP
M-1230.1 - Blue (pass band)	460	455 - 495	500	518-542
M-1231 - Green	523	510 - 550	570	575LP
M-1231.1 - Green (pass band)	523	510 - 550	570	585-625
M-1232 - Violet	405	390 - 420	440	450LP
M-1233 - UV	365	325 - 375	415	435LP
M-1233.1 - UV (pass band)	365	340 - 390	405	420-470
M-1234 - Red 1 *	623	590 - 650	660	665LP
M-1235 - Red 2 *	623	595 - 645	655	665 - 715
M-1236 - Deep Red *	660	623 - 678	685	690 - 750
M-1237 - Far Red *	740	720 - 760	770	780LP
M-1238 - Amber	590	582 - 603	610	615 - 645

** If the use of a camera is needed, when used for red emission fluorescence wavelengths above 650nm, please order it by specifying with "AR GLASS"*

Part	Description
Observation mode:	Brightfield, LED fluorescence.
Epi-illumination and filter:	High -Power LED with brightness control. 4-position filter holder; none included.
Head:	Trinocular (2-position 100/0, 50/50), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS LWD U-PLAN F 10x/0.30 IOS LWD U-PLAN F 20x/0.45 IOS LWD U-PLAN F 40x/0.65 All with anti-fungus treatment.

Part	Description
Specimen stage:	Mechanical stage, 250x290 mm, with glass and metal stage inserts for slides and 54mm dia. Petri dishes.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	LWD pre-centered condenser, N.A. 0.30, W.D. 72 mm. Removable to extend the working distance up to 150 mm.
Transmitted illumination:	X-LED⁸ with white 8 W LED (6,300K) with brightness control. With aperture diaphragm. Multi-plug 100-240Vac/12Vdc external power supply.

IM-3LD4D - LED Fluorescence Microscope

Advanced fluorescence inverted microscope for transmitted brightfield and fluorescence observations with IOS LWD U-PLAN F objectives. The extremely powerful LED Fluorescence Illuminators are combined with corresponding excitation filter sets for the visualization of most fluorochromes. LED fluorescence ensures unparalleled convenience eliminating warm-up/cool-down times and all the inconveniences related lamp replacement and adjustment. Transmitted light through the exclusive ***X-LED⁸*** to ensure great-looking, rich and high-quality specimen view. This model is equipped with an Intel micro PC, a 12" screen, a 6Mpx high-sensitivity color camera, Optika ProView image analisys software for fluorescence and wireless mouse and keyboard.

A new milestone achieved in Fluorescence Microscopy

- » Full-modular Fluorescence System
- » Interchangeable LED-Filtersets
- » 4 LED-Filtersets slots
- » 10% higher light intensity than HBO
- » 35% higher light intensity than Metal-Halide
- » Adjustable light intensity
- » The selection of filtersets automatically involves the switching on of the corresponding LEDs
- » Recommended for research applications
- » Cost-effective, money saving technology
- » Ready for immediate operation
- » Eliminate warm-up/cool-down times
- » Forget lamp replacement & centering

LED Fluorescence Cubes available (LED + Filterset)

Name	LED emission (nm)	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
M-1230 - Blue	460	455 - 495	500	510LP
M-1230.1 - Blue (pass band)	460	455 - 495	500	518-542
M-1231 - Green	523	510 - 550	570	575LP
M-1231.1 - Green (pass band)	523	510 - 550	570	585-625
M-1232 - Violet	405	390 - 420	440	450LP
M-1233 - UV	365	325 - 375	415	435LP
M-1233.1 - UV (pass band)	365	340 - 390	405	420-470

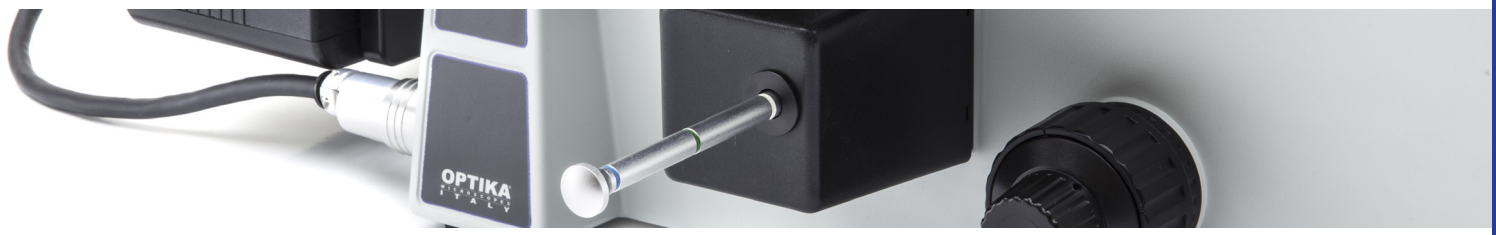
Part	Description
Observation mode:	Brightfield, LED fluorescence.
Epi-illumination and filter:	High -Power LED with brightness control. 4-position filter holder; none included.
Head:	Trinocular (2-position 100/0, 50/50), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives:	IOS LWD U-PLAN F 10x/0.30 IOS LWD U-PLAN F 20x/0.45 IOS LWD U-PLAN F 40x/0.65 All with anti-fungus treatment.

Part	Description
Specimen stage:	Mechanical stage, 250x290 mm, with glass and metal stage inserts for slides and 54mm dia. Petri dishes.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with upper limit stop.
Condenser:	LWD pre-centered condenser, N.A. 0.30, W.D. 72 mm. Removable to extend the working distance up to 150 mm.
Transmitted illumination:	X-LED⁸ with white 8 W LED (6,300K) with brightness control. With aperture diaphragm. Multi-plug 100-240Vac/12Vdc external power supply.
Digital equipment:	Intel micro PC with Image analisys software for Fluorescence. 12" screen; 6Mpx high-sensitivity color camera. Supplied with wireless mouse & keyboard.

IM-5FLD - LED Fluorescence Microscope

Phase contrast, brightfield and darkfield (dry) LED fluorescence trinocular inverted microscope, with freely configurable lenses according to customer's preferences, FN 24 high eyepoint, infinity corrected optical system, coaxial focusing, mechanical stage, Abbe condenser and powerful, uniform, white color temperature 8 W ***X-LED8***. The 4-position epi-fluorescence attachment is powered by extremely powerful 5 W LEDs fluorescence illuminator and combined with blue, green and UV excitation filters for the visualization of the following fluorochromes: Acridine Yellow, Acridine Orange, Auramine, DiO, DTAF, FITC, GFP, YFP (blue filter) plus Rhodamine, Texas Red and TRITC (green filter) plus Alexa Fluor® 350, 7- Amino-4-methylcoumarin, 6-Aminoquinoline, Calcofluor® White, Dansyl cadaverine, DAPI, Dapoxyl, DIDS, Europium (III) Chloride, Fluoro-Gold™, Fura-2, Hoechst 33342 & 33258, 1,5 IAEDANS, Indo-1, Marina Blue®, 4-Methylumbelliferone, PBF1, Pyrene, SBFI, Y66F, Y66H (UV filter) among the others. LED fluorescence ensures unparalleled convenience eliminating warm-up/ cool-down times and all the inconveniences related lamp replacement and adjustment. Sturdy and incredibly reliable, it is equipped with all the main controls in ergonomic position and with long lasting, efficient LED illumination to provide over 20 years of use.

IM-5FLD - Specifications



Part	Description
Head:	Trinocular (split ratio: 100/0, 0/100), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	Both eyepieces.
Eyepieces:	WF10x/24 mm, high eyepoint and with retractable rubber cups.
Epi-fluorescence illumination & filters:	High-power 5 W LEDs with brightness control, motorized LED selection with centrable field diaphragm, 4-position filter holder; blue (EX 450-490, DM 495, EM 500-550), green (EX 540-580, DM 585, EM 608-682) and UV (EX 340-390, DM 400, EM 420LP) excitation filters included.
Nosepiece:	Quintuple ball bearings revolving nosepiece, reversed.
Objectives:	Selectable according to customer's preferences. All with anti-fungus treatment.
Specimen stage:	Fixed stage, 215x250 mm and attachable mechanical stage, 290x250 mm, 120x80 mm X-Y movement range.
Focusing:	Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.
Condenser:	Abbe N.A. 0.50, removable, with iris diaphragm and slider for phase contrast.
Transmitted illumination (Full Koehler):	X-LED[8] with white 8 W LED and brightness control. Color temperature: 6,300 K. Multi-plug 100-240Vac/12Vdc external power supply.

Fluorescence filtersets

Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B (Blue)	450 – 490	495	500 - 550
G (Green)	540 – 580	585	607 - 682
UV (Ultraviolet)	340 -390	400	420LP

IM-5FLD is freely configurable in terms of objectives, by choosing among:

Included ■ Optional □

Infinity-corrected Plan-Achromatic, Long Working Distance objectives, field flatness up to F.N. 22:		
M-782	IOS LWD W-PLAN objective 4x/0.13	□
M-773	IOS LWD W-PLAN objective 40x/0.60	□
M-786	IOS LWD W-PLAN objective 60x/0.70	□

Positive Phase Contrast Infinity-corrected Plan-Achromatic, Long Working Distance objectives, field flatness up to F.N. 22:		
M-782.1	IOS LWD W-PLAN PH objective 4x/0.13	□
M-783N	IOS LWD W-PLAN PH objective 10x/0.25	□
M-784N	IOS LWD W-PLAN PH objective 20x/0.40	□
M-785	IOS LWD W-PLAN PH objective 40x/0.65	□

Infinity-corrected Semi-Apochromatic, Long Working Distance objectives, field flatness up to F.N. 25:		
M-800	IOS LWD U-PLAN F objective 4x/0.13	□
M-801	IOS LWD U-PLAN F objective 10x/0.30	□
M-802	IOS LWD U-PLAN F objective 20x/0.45	□
M-803	IOS LWD U-PLAN F objective 40x/0.65	□
M-804	IOS LWD U-PLAN F objective 60x/0.75	□

Positive Phase Contrast Infinity-corrected Semi-Apochromatic, Long Working Distance objectives, field flatness up to F.N. 25:		
M-1177	IOS LWD U-PLAN F PH objective 20x/0.45	□
M-1178	IOS LWD U-PLAN F PHobjective 40x/0.65	□

v 6.7 - OPTIKA reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products at any time without notice.

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