

## B-150 Series



**Middle-Level Biological Microscopes For Students**

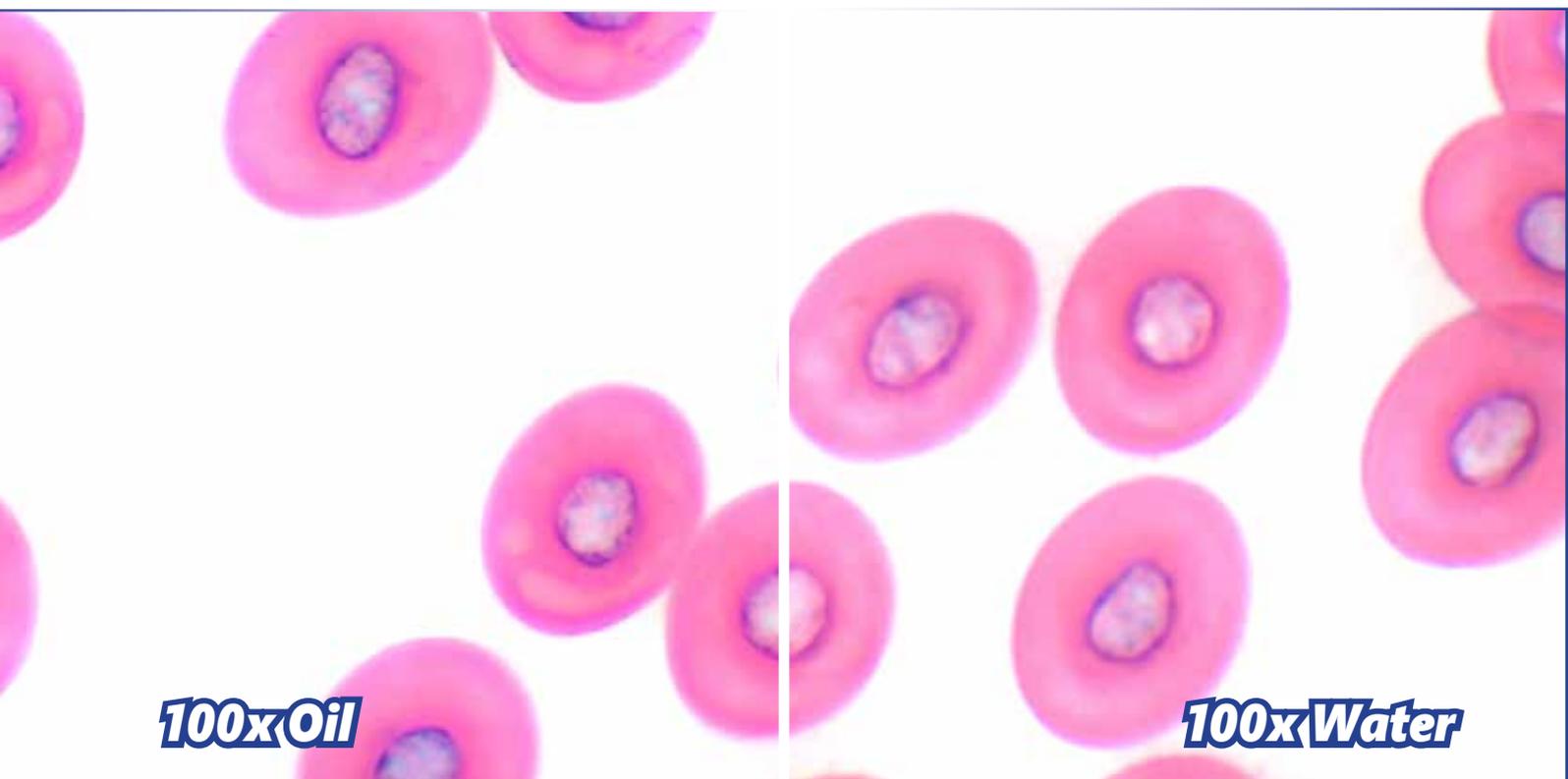
# 100x With Water – A New Frontier In Education

## SAME OBJECTIVE FOR OIL AND WATER USE

- » Oil represents the best media for high numerical apertures
- » Water combines relevant results with convenience
- » Water is recommended especially for educational purposes

## UNPARALLELED TIME & MONEY SAVINGS

- » Save time by forgetting about tedious cleaning
- » No time-wasting procedures
- » No additional expenses due to inappropriate cleaning & maintenance



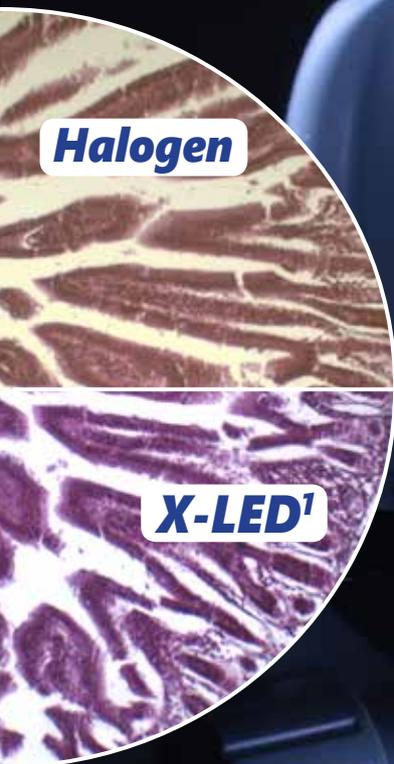
# X-LED<sup>1</sup> – Only Available at OPTIKA

## POWERFUL AND UNIFORM ILLUMINATION

- » Uncomparable light intensity, exclusive lens and collector design
- » Constant pure-white colour temperature at all intensity levels
- » Unmatched colour fidelity and brightness of your specimen

## MONEY & ENERGY SAVING

- » High energy efficiency at a limited cost, only 1 W
- » More efficient brightness than a 20 W halogen lamp
- » LED long lifetime (65.000 hours = 22 years at 8 hours/day usage)



Halogen

X-LED<sup>1</sup>



Multi-plug power supply

# ALC – Only Available At OPTIKA

## 3-STEPS EASY SETTING

- » Choose the light intensity you prefer
- » Press the button and set the light
- » Change the objectives or close the diaphragm aperture: the microscope will keep the same light intensity!

## AUTOMATIC LIGHT CONTROL & ADJUSTMENT

- » When another objective is used
- » When the aperture diaphragm changes
- » When processing another sample with different opacity

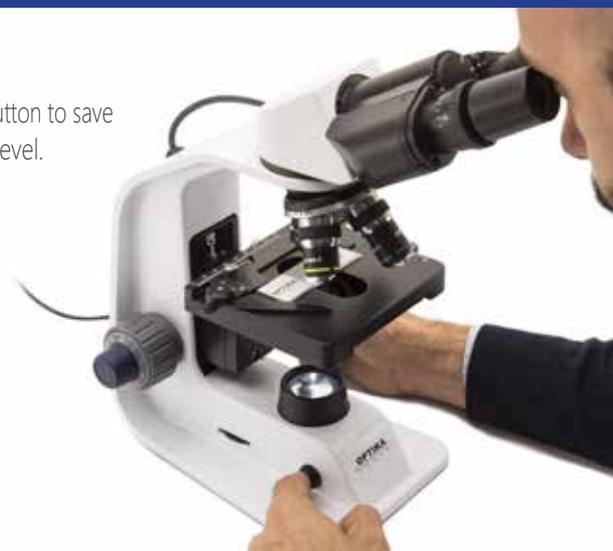
### STEP 1

Set the brightness according to your preferences.



### STEP 2

Press the ALC button to save the brightness level.



### STEP 3

#### **Forget about the illumination!**

The microscope will automatically adjust the brightness for you, in case of:

- Another objective is used
- The diaphragm aperture is changed
- Another specimen with different opacity is processed



Regulation of diaphragm aperture

# Li-Ion Batteries – Only Available at OPTIKA

1

Educational

## LI-ION BATTERIES PROS (on B-150R models):

- » **Reliable:** Significantly lower self-discharge rate than NiMH
- » **Faster recharge:** Li-Ions can be charged in about 6 hours
- » **Temperature tolerance:** Li-Ion batteries can better stand low temperature and warmer environments compared to NiMH cells
- » **Higher energy density:** Li-Ion batteries carries more charge per gram than NiMH batteries
- » **High number of charges:** Li-Ion batteries can be normally recharged 2000 times with satisfactory quantity of charge
- » **No "Memory Effect":** Li-Ion batteries can be charged at any time, without any "Voltage Depression" effect.

## NIMH BATTERIES CONS (on conventional microscopes):

- » **High self discharge rate:** NiMH lose a large percentage of their charge every month. The number is around 5% on the first week after the charge and about 50% on the first month
- » **Long charging time:** The standard charge time of a NiMH is 12 hours. Fast charging these cells can result in damage
- » **Low number of charges:** NiMH batteries can be normally recharged 500 times with satisfactory quantity of charge
- » **Sensitive "Memory Effect":** NiMH batteries must be charged when totally exhaust only. Charging these batteries when even a small quantity of charge is present, decreases their maximum quantity of charge.





## B-150 Series

The B-150 series has been designed to fulfill all requirements of educational laboratories. Obtain clear images at three (40x, 100x and 400x) or four (40x, 100x, 400x and 600x or 1000x) magnifications with 18mm field number. All in a compact and easy to carry size. The entire series is equipped with 1W X-LED<sup>1</sup> illumination for bright and uniform light. If a cordless microscope is needed, the R Models are your choice as they come with a rechargeable battery.

### Incorporating The Most Wanted Features In A Student Microscope

Get all the controls and features common to higher level microscopes: mechanical stage, binocular head, coaxial focus knob, adjustable condenser, and 1000x maximum magnification. An extremely simple but well-equipped solution, in a modern and ergonomic design.

### The Most Comprehensive Series Dedicated to Students

B-150 comes in a variety of models to meet your needs. Standard brightfield, models with internal rechargeable batteries (R Models), with automatic light control (ALC Models), a version ready for polarization analysis (P Models), and models with built-in camera (D Models) for image acquisition.

### LED With Rechargeable Battery - Optimized Illumination

Money & energy saving thanks to LED long lifetime (65.000 hours, 22 years in case of 8 hours/day) which is more than 20 times compared to a standard halogen bulb.

Rechargeable models are equipped with N-PLAN objectives and have internal lithium rechargeable battery for up to 15 hours (at medium intensity) of outdoor use.

All other models can be equipped with the optional external solar battery pack for field use.



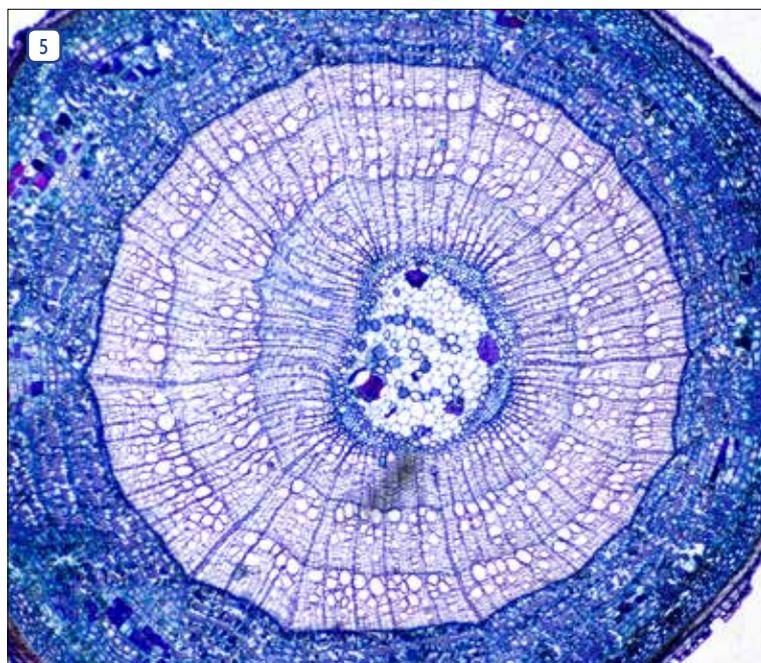
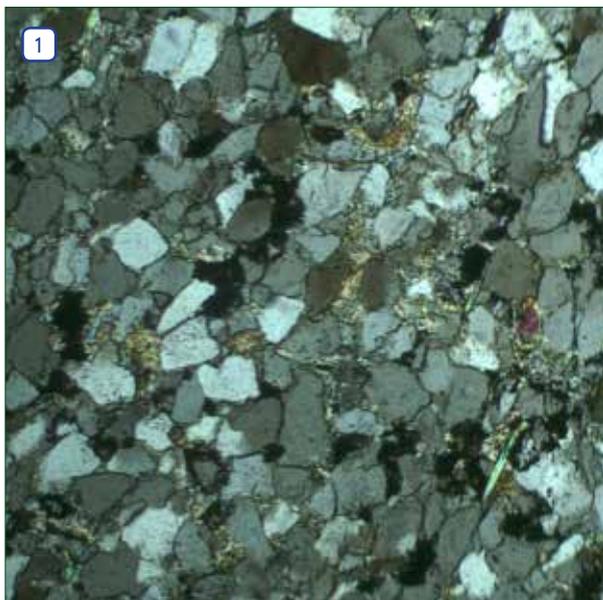
### ALC - Automatic Light Control, Only Available At OPTIKA

#### Incomparable Comfort With The Exclusive Automatic Light Control (ALC)

Light intensity is automatically adjusted by the microscope itself in order to maintain the same level as the one the user has previously chosen. No matter if the aperture of the diaphragm changes, if another objective is used, and if the opacity of the sample is different...the microscope will set the light for you according to your preferences.

On **ALC Models**.

# Middle-Level Biological Microscopes For Students



## Legend

1. Polarized light observation of quartzite with B-150P-MRPL and 10x objective.
2. Monocular polarizing microscope B-150P-MRPL during on-site use.
3. B-150 adjustable condenser to concentrate light from the illumination source.
4. Three achromatic objectives (4x, 10x, 40x) of B-151 ensuring great viewing experience.
5. Brightfield observation of tilia three-year stem with B-159 and 20x objective.

# B-150 Series - Standard Models

## B-151



Reliable model with fixed stage and efficient X-LED<sup>1</sup> illumination for ultra-bright images.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**  
 - High Contrast Achromatic 4x/0.10, with anti-fungus treatment  
 - High Contrast Achromatic 10x/0.25, with anti-fungus treatment  
 - High Contrast Achromatic 40x/0.65, with anti-fungus treatment

**Specimen stage:** Fixed stage, 130x120 mm. With sample clips.

**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:** N.A. 0.65, pre-centered, fixed with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/5Vdc external power supply.

## B-151ALC



Same as B-151 but with the exclusive **ALC** technology for Automatic Light Control.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**  
 - High Contrast Achromatic 4x/0.10, with anti-fungus treatment  
 - High Contrast Achromatic 10x/0.25, with anti-fungus treatment  
 - High Contrast Achromatic 40x/0.65, with anti-fungus treatment

**Specimen stage:** Fixed stage, 130x120 mm. With sample clips.

**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:** N.A. 0.65, pre-centered, fixed with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. With **ALC** (Automatic Light Control). Multi-plug 100-240Vac/5Vdc external power supply.

# B-150 Series - Standard Models

## B-151R-PL



Same as B-151 but with **N-PLAN** objectives and with rechargeable battery for very long outdoor operation up to 15 hours.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

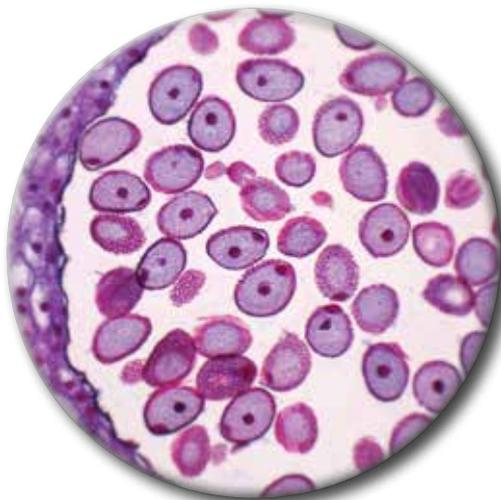
- N-PLAN 4x/0.10, with anti-fungus treatment
- N-PLAN 10x/0.25, with anti-fungus treatment
- N-PLAN 40x/0.65, with anti-fungus treatment

**Specimen stage:** Fixed stage, 130x120 mm. With sample clips.

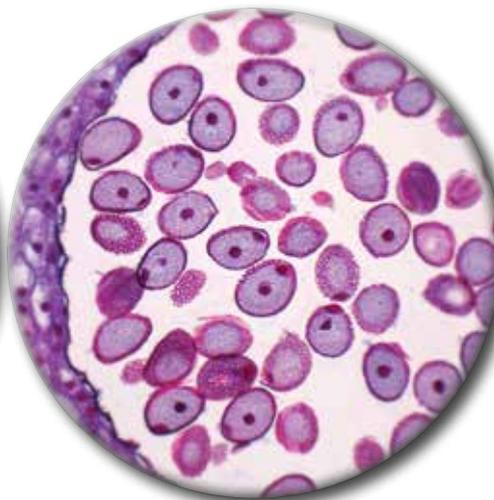
**Focusing:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

**Condenser:** N.A. 0.65, pre-centered, fixed with iris diaphragm.

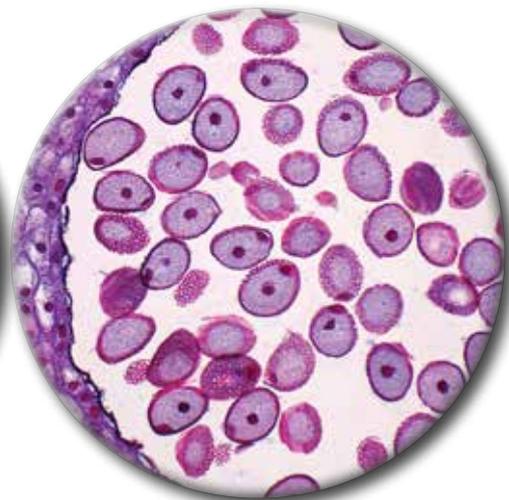
**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.



Lily Anther, Mature Pollen Grains, c.s.  
Conventional Achromatic Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA HC** Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA N-PLAN** Objective



**HC**

**N-PLAN**

**OPTIKA HC:** This series of objectives ensures a versatile and reasonably priced entry-level solution for brightfield and simple polarization applications. They are specifically designed to achieve optimal contrast and thus maximize yield on an instrument intended for education on F.N. 18.

**OPTIKA N-PLAN:** In addition to the advantages of the HC objectives, the total flatness of the field and an even greater contrast are achieved with the N-PLAN series.

# B-150 Series - Standard Models

## B-153



Advanced monocular model with up to 600x total magnification and a precise, accurate positioning of the slide thanks to smooth movement of the mechanical stage. With efficient **X-LED<sup>1</sup>** illumination.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- High Contrast Achromatic 4x/0.10, with anti-fungus treatment
- High Contrast Achromatic 10x/0.25, with anti-fungus treatment
- High Contrast Achromatic 40x/0.65, with anti-fungus treatment
- High Contrast Achromatic 60x/0.85, with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/5Vdc external power supply.

## B-153ALC



Same as B-153 but with the exclusive ALC technology for Automatic Light Control.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- High Contrast Achromatic 4x/0.10, with anti-fungus treatment
- High Contrast Achromatic 10x/0.25, with anti-fungus treatment
- High Contrast Achromatic 40x/0.65, with anti-fungus treatment
- High Contrast Achromatic 60x/0.85, with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. With **ALC** (Automatic Light Control). Multi-plug 100-240Vac/5Vdc external power supply.

# B-150 Series - Standard Models

## B-152R-PL / B-153R-PL



Same as B-153 but with **N-PLAN** objectives and with rechargeable battery for very long outdoor operation up to 15 hours.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

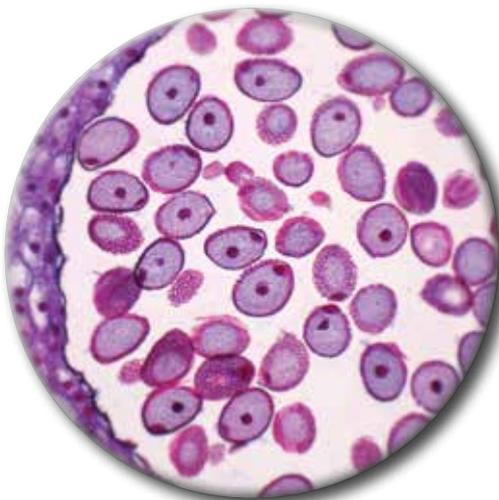
- N-PLAN 4x/0.10, with anti-fungus treatment
- N-PLAN 10x/0.25, with anti-fungus treatment
- N-PLAN 40x/0.65, with anti-fungus treatment
- N-PLAN 60x/0.85, with anti-fungus treatment (only on B-153R-PL)

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

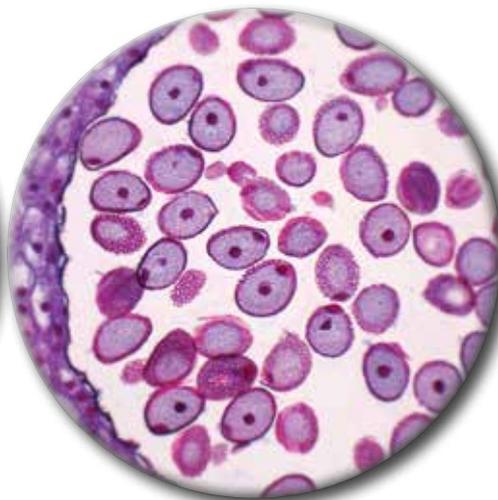
**Focusing:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

**Condenser:** Abbe N.A. 1.25, pre-centered, focusable, with iris diaphragm.

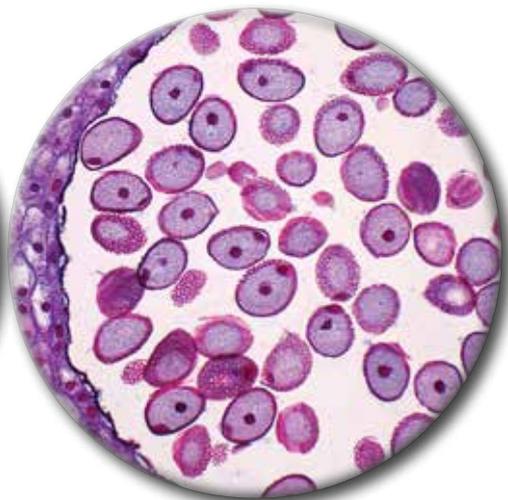
**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.



Lily Anther, Mature Pollen Grains, c.s.  
Conventional Achromatic Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA HC** Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA N-PLAN** Objective



**HC**

**N-PLAN**

**OPTIKA HC:** This series of objectives ensures a versatile and reasonably priced entry-level solution for brightfield and simple polarization applications. They are specifically designed to achieve optimal contrast and thus maximize yield on an instrument intended for education on F.N. 18.

**OPTIKA N-PLAN:** In addition to the advantages of the HC objectives, the total flatness of the field and an even greater contrast are achieved with the N-PLAN series.

# B-150 Series - Standard Models

## B-155



WATER



Advanced monocular model with up to 1000x total magnification and a precise, accurate positioning of the slide thanks to smooth movement of the mechanical stage. With efficient **X-LED<sup>1</sup>** illumination.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- High Contrast Achromatic 4x/0.10, with anti-fungus treatment
- High Contrast Achromatic 10x/0.25, with anti-fungus treatment
- High Contrast Achromatic 40x/0.65, with anti-fungus treatment
- High Contrast Achromatic 100x/1.25 (Oil/Water), with anti-fungus treat.

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/5Vdc external power supply.

## B-155ALC



WATER



Same as B-155 but with the exclusive **ALC** technology for Automatic Light Control.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- High Contrast Achromatic 4x/0.10, with anti-fungus treatment
- High Contrast Achromatic 10x/0.25, with anti-fungus treatment
- High Contrast Achromatic 40x/0.65, with anti-fungus treatment
- High Contrast Achromatic 100x/1.25 (Oil/Water), with anti-fungus treat.

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. With **ALC** (Automatic Light Control) Multi-plug 100-240Vac/5Vdc external power supply.

# B-150 Series - Standard Models

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Educational

## B-155R-PL



Same as B-155 but with **N-PLAN** objectives and with rechargeable battery for very long outdoor operation up to 15 hours.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

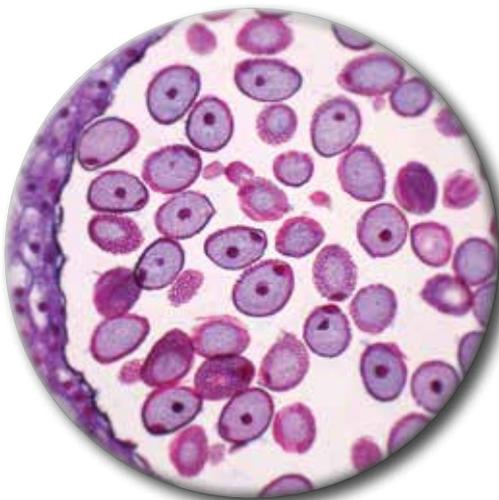
- N-PLAN 4x/0.10, with anti-fungus treatment
- N-PLAN 10x/0.25, with anti-fungus treatment
- N-PLAN 40x/0.65, with anti-fungus treatment
- N-PLAN 100x/1.25 (Oil/Water), with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

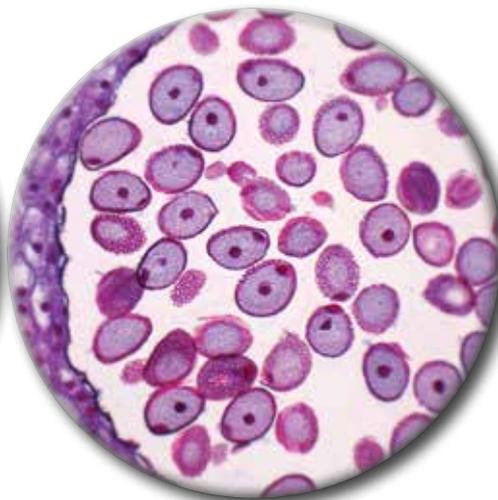
**Focusing:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

**Condenser:** Abbe N.A. 1.25, pre-centered, focusable, with iris diaphragm.

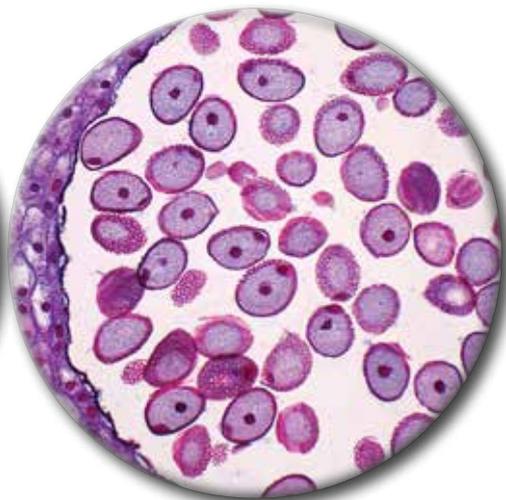
**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.



Lily Anther, Mature Pollen Grains, c.s.  
Conventional Achromatic Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA HC** Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA N-PLAN** Objective



**HC**

**N-PLAN**

**OPTIKA HC:** This series of objectives ensures a versatile and reasonably priced entry-level solution for brightfield and simple polarization applications. They are specifically designed to achieve optimal contrast and thus maximize yield on an instrument intended for education on F.N. 18.

**OPTIKA N-PLAN:** In addition to the advantages of the HC objectives, the total flatness of the field and an even greater contrast are achieved with the N-PLAN series.

# B-150 Series - Standard Models

## B-157



Advanced binocular model with up to 600x total magnification, and a precise and accurate positioning of the slide thanks to smooth movement of the mechanical stage. With efficient **X-LED<sup>1</sup>** illumination.

**Observation mode:** Brightfield.

**Head:** Binocular, 30° inclined; 360° rotating.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- High Contrast Achromatic 4x/0.10 , with anti-fungus treatment
- High Contrast Achromatic 10x/0.25 , with anti-fungus treatment
- High Contrast Achromatic 40x/0.65 , with anti-fungus treatment
- High Contrast Achromatic 60x/0.85 , with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/5Vdc external power supply.

## B-157ALC



Same as B-157 but with the exclusive **ALC** technology for Automatic Light Control.

**Observation mode:** Brightfield.

**Head:** Binocular, 30° inclined; 360° rotating.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- High Contrast Achromatic 4x/0.10 , with anti-fungus treatment
- High Contrast Achromatic 10x/0.25 , with anti-fungus treatment
- High Contrast Achromatic 40x/0.65 , with anti-fungus treatment
- High Contrast Achromatic 60x/0.85 , with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. With **ALC** (Automatic Light Control). Multi-plug 100-240Vac/5Vdc external power supply.

# B-150 Series - Standard Models

## B-157R-PL



Same as B-157 but with **N-PLAN** objectives and with rechargeable battery for very long outdoor operation up to 15 hours.

**Observation mode:** Brightfield.

**Head:** Binocular, 30° inclined; 360° rotating.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

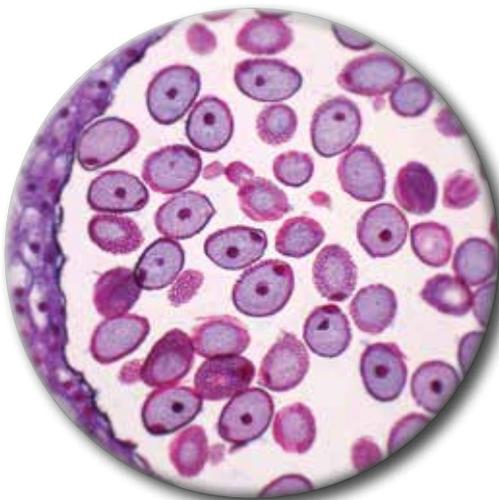
- N-PLAN 4x/0.10 , with anti-fungus treatment
- N-PLAN 10x/0.25 , with anti-fungus treatment
- N-PLAN 40x/0.65 , with anti-fungus treatment
- N-PLAN 60x/0.85 , with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

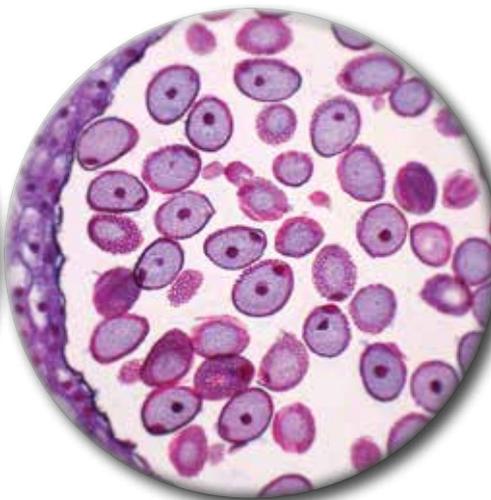
**Focusing:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

**Condenser:** Abbe N.A. 1.25, pre-centered, focusable, with iris diaphragm.

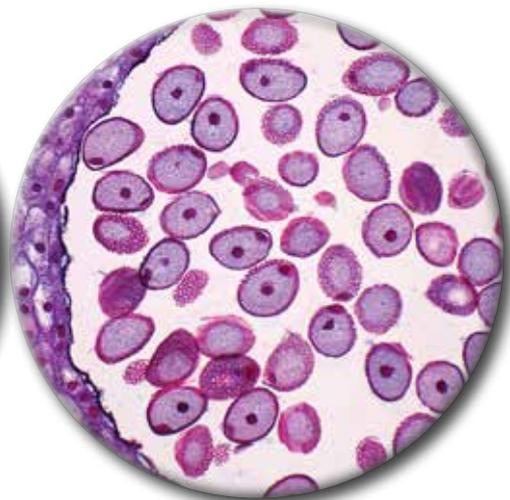
**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.



Lily Anther, Mature Pollen Grains, c.s.  
Conventional Achromatic Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA HC** Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA N-PLAN** Objective



**HC**

**N-PLAN**

**OPTIKA HC:** This series of objectives ensures a versatile and reasonably priced entry-level solution for brightfield and simple polarization applications. They are specifically designed to achieve optimal contrast and thus maximize yield on an instrument intended for education on F.N. 18.

**OPTIKA N-PLAN:** In addition to the advantages of the HC objectives, the total flatness of the field and an even greater contrast are achieved with the N-PLAN series.

# B-150 Series - Standard Models

## B-159



Advanced binocular model with up to 1000x total magnification and a precise and accurate positioning of the slide thanks to smooth movement of the mechanical stage. With efficient **X-LED<sup>1</sup>** illumination.

**Observation mode:** Brightfield.

**Head:** Binocular, 30° inclined; 360° rotating.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- High Contrast Achromatic 4x/0.10, with anti-fungus treatment
- High Contrast Achromatic 10x/0.25, with anti-fungus treatment
- High Contrast Achromatic 40x/0.65, with anti-fungus treatment
- High Contrast Achromatic 100x/1.25 (Oil/Water), with anti-fungus treat.

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/5Vdc external power supply.

## B-159ALC



Same as B-159 but with the exclusive **ALC** technology for Automatic Light Control.

**Observation mode:** Brightfield.

**Head:** Binocular, 30° inclined; 360° rotating.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Objectives:**

- High Contrast Achromatic 4x/0.10, with anti-fungus treatment
- High Contrast Achromatic 10x/0.25, with anti-fungus treatment
- High Contrast Achromatic 40x/0.65, with anti-fungus treatment
- High Contrast Achromatic 100x/1.25 (Oil/Water), with anti-fungus treat.

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. With **ALC** (Automatic Light Control). Multi-plug 100-240Vac/5Vdc external power supply.

# B-150 Series - Standard Models

## B-159R-PL



Same as B-159 but with **N-PLAN** objectives and with rechargeable battery for very long outdoor operation up to 15 hours.

**Observation mode:** Brightfield.

**Head:** Binocular, 30° inclined; 360° rotating.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

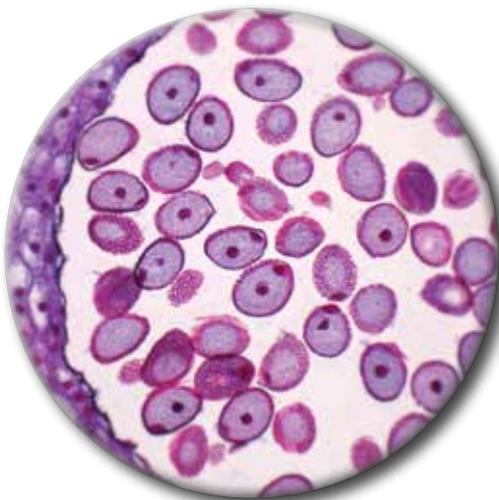
- N-PLAN 4x/0.10 , with anti-fungus treatment
- N-PLAN 10x/0.25 , with anti-fungus treatment
- N-PLAN 40x/0.65 , with anti-fungus treatment
- N-PLAN 100x/1.25 (Oil/Water) , with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

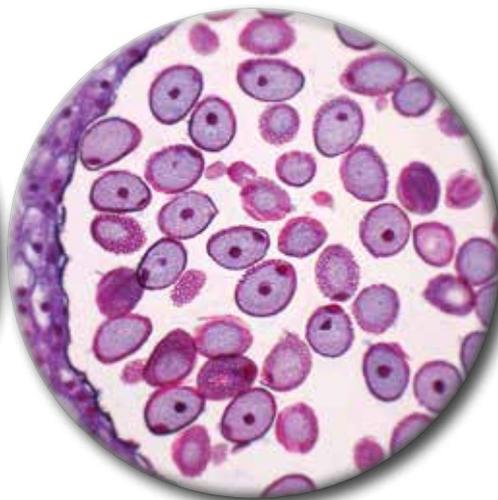
**Focusing:** Coaxial coarse and fine focusing mechanism with limit stop to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.

**Condenser:** Abbe N.A. 1.25, pre-centered, focusable, with iris diaphragm.

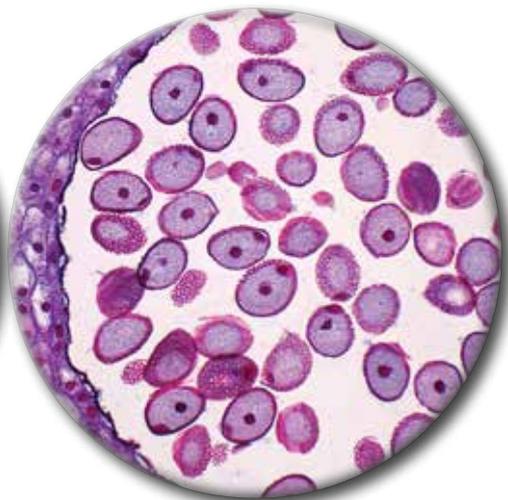
**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.



Lily Anther, Mature Pollen Grains, c.s.  
Conventional Achromatic Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA HC** Objective



Lily Anther, Mature Pollen Grains, c.s.  
**OPTIKA N-PLAN** Objective



**HC**

**N-PLAN**

**OPTIKA HC:** This series of objectives ensures a versatile and reasonably priced entry-level solution for brightfield and simple polarization applications. They are specifically designed to achieve optimal contrast and thus maximize yield on an instrument intended for education on F.N. 18.

**OPTIKA N-PLAN:** In addition to the advantages of the HC objectives, the total flatness of the field and an even greater contrast are achieved with the N-PLAN series.

# B-150 Series - Polarizing Models

## B-150P-MRPL



Monocular polarizing microscope with rechargeable battery for very long outdoor operation up to 15 hours. Equipped with rotatable stage and efficient **X-LED'** illumination. With **N-PLAN** objectives.

**Observation mode:** Brightfield, Polarized Light.

**Head:** Monocular, 30° inclined; 360° rotating.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- N-PLAN 4x/0.10, with anti-fungus treatment
- N-PLAN 10x/0.25, with anti-fungus treatment
- N-PLAN 40x/0.65, with anti-fungus treatment

**Specimen stage:** Rotatable round stage, 120 mm diameter.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED' with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.

**Polarizing filters:** Rotating Polarizer (swing-out) and fixed Analyzer (sliding-out).

## B-150P-BRPL



Binocular polarizing microscope with rechargeable battery for very long outdoor operation up to 15 hours. Equipped with rotatable stage and efficient **X-LED'** illumination. With **N-PLAN** objectives.

**Observation modes:** Brightfield, Polarized Light.

**Head:** Binocular, 30° inclined; 360° rotating.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- N-PLAN 4x/0.10, with anti-fungus treatment
- N-PLAN 10x/0.25, with anti-fungus treatment
- N-PLAN 40x/0.65, with anti-fungus treatment

**Specimen stage:** Rotatable round stage, 120 mm diameter.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED' with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.

**Polarizing filters:** Rotating Polarizer (swing-out) and fixed Analyzer (sliding-out).

# B-150 Series - Digital Models

1

Educational

## B-150D-MRPL



Monocular digital microscope with rechargeable battery for very long outdoor operation up to 15 hours. Equipped with mechanical stage and efficient **X-LED** illumination. With **N-PLAN** objectives.

**Observation mode:** Brightfield.

**Head:** Monocular, 30° inclined; 360° rotating. With integrated 1.3 MP camera.

**Eyepiece:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- N-PLAN 4x/0.10 , with anti-fungus treatment
- N-PLAN 10x/0.25 , with anti-fungus treatment
- N-PLAN 40x/0.65 , with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.

## B-150D-BRPL



Binocular digital microscope with up to 1000x total magnifications and rechargeable battery for very long outdoor operation. Equipped with mechanical stage, efficient **X-LED** illumination and **N-PLAN** objectives.

**Observation mode:** Brightfield.

**Head:** Binocular, 30° inclined; 360° rotating. With integrated 3.1 MP camera.

**Eyepieces:** WF10x/18 mm, secured by screw.

**Nosepiece:** Quadruple ball bearings revolving nosepiece.

**Objectives:**

- N-PLAN 4x/0.10 , with anti-fungus treatment
- N-PLAN 10x/0.25 , with anti-fungus treatment
- N-PLAN 40x/0.65 , with anti-fungus treatment
- N-PLAN 100x/1.25 (Oil/Water) , with anti-fungus treatment

**Specimen stage:** Mechanical stage, 125x116mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

**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, pre-centered, focusable, with iris diaphragm.

**Illumination:** X-LED<sup>1</sup> with white 1 W LED and light intensity control. Color temperature: 6,300 K. Li-Ion battery for long lasting operation. Multi-plug 100-240Vac/5Vdc external power supply.

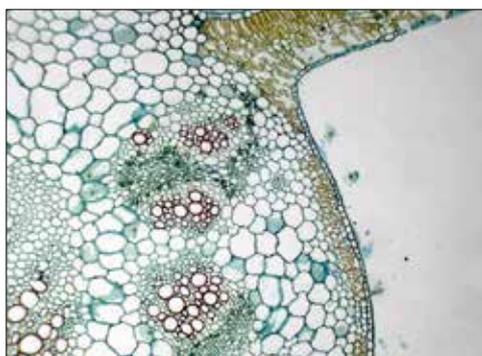
# B-150 Series - B-150D Camera specifications

	B-150D-MRPL	B-150D-BRPL
Resolution	1280x1024 pixels (1.3 MP)	2048x1536 pixels (3.14 MP)
Sensor	1/3.2" CMOS	1/2.5" CMOS
Pixel size	2.8x2.8 $\mu\text{m}$	2.2x2.2 $\mu\text{m}$
Resolution & Frame Rate	1280x1024 - 15 fps	2048x1536 - 4 fps
	640x480 - 30 fps	1280x1024 - 8 fps
		640x480 - 30 fps
Sensitivity	1.0 V/Lux-sec	0.53 V/Lux-sec
White Balance	Auto / Manual	Auto / Manual
S/N Ratio	$\geq 40$ dB	$\geq 40$ dB
Dynamic Range	$\geq 66.5$ dB	$\geq 66.5$ dB
Digital Port	USB 2.0	USB 2.0
Imaging Software	OPTIKA Vision Lite	OPTIKA Vision Lite
System Requirements	Operating system: Windows XP, Vista, Win7, Win8, Win10, 32-64 bit	

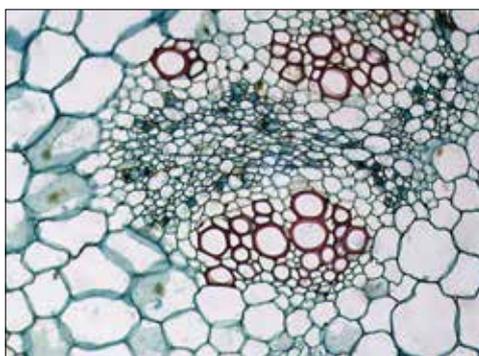
## B-150 Series - Optical performance

Eyepiece		10x (M-002.1)			16x (M-003)	
Field number (mm)			18		12	
Objective	N.A.	W.D. (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
4x	0.1	18	40x	4.5	64x	3
10x	0.25	7	100x	1.8	160x	1.2
20x	0.4	2	200x	0.9	320x	0.6
40x	0.65	0.53	400x	0.45	640x	0.3
60x	0.8	0.45	600x	0.3	960x	0.2
100x	1.25 (oil/water)	0.13	1000x	0.18	1600x	0.12

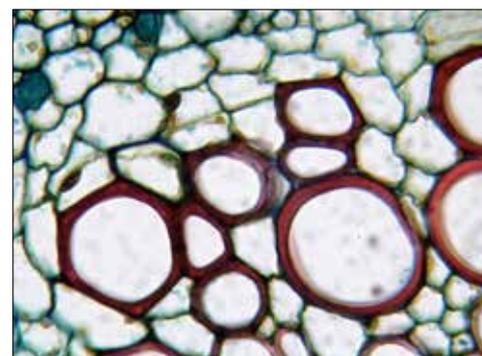
## B-150 Series - Zoom comparison



Monocot and dicot - B-157 - 4x objective



Monocot and dicot - B-157 - 10x objective



Monocot and dicot - B-157 - 40x objective

# B-150 Series - Comparison charts

## B-150 - Standard Models, with HC Objectives

Model	Head	Eyepiece(s)	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-151</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x	Fixed, 130x120 mm, with sample clips	Coaxial coarse and fine, limit stop	N.A. 0.65, iris diaphragm, fixed	1 W X-LED <sup>1</sup> , manual brightness control
<b>B-153</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control
<b>B-155</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control
<b>B-157</b>	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control
<b>B-159</b>	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control

## B-150 - ALC Models, with Automatic Light Control and HC Objectives

Model	Head	Eyepiece(s)	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-151ALC</b>	Monocular, 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x	Fixed, 130x120 mm, with sample clips	Coaxial coarse and fine, limit stop	N.A. 0.65 fixed, with diaphragm	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
<b>B-153ALC</b>	Monocular, 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
<b>B-155ALC</b>	Monocular, 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
<b>B-157ALC</b>	Binocular, 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>
<b>B-159ALC</b>	Binocular, 30° inclined	WF 10x/18	Quadruple	HC (high contrast) 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual and <b>automatic brightness control</b>

## B-150 - Cordless Models, with N-PLAN Objectives and Li-Ion Rechargeable Batteries

Model	Head	Eyepiece(s)	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-151R-PL</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x	Fixed, 130x120 mm, with sample clips	Coaxial coarse and fine, limit stop	N.A. 0.65 fixed, with diaphragm	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
<b>B-152R-PL</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
<b>B-153R-PL</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
<b>B-155R-PL</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
<b>B-157R-PL</b>	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x, 60x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
<b>B-159R-PL</b>	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery

## B-150 - Polarized Light Cordless Models, with N-PLAN Objectives and Li-Ion Rechargeable Batteries

Model	Head	Eyepiece(s)	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-150P-MRPL</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x	Round, 360° rotating, 120 mm diameter, with sample clips	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, fixed	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
<b>B-150P-BRPL</b>	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x	Round, 360° rotating, 120 mm diameter, with sample clips	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, fixed	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery

## B-150 - Digital Cordless Models, with N-PLAN Objectives and Li-Ion Rechargeable Batteries

Model	Head	Eyepiece(s)	Nosepiece	Objectives	Stage	Focusing	Condenser	Illumination
<b>B-150D-MRPL</b>	Monocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery
<b>B-150D-BRPL</b>	Binocular, 30° inclined, 360° rotating	WF 10x/18	Quadruple	<b>N-PLAN</b> 4x, 10x, 40x, 100x	Double layer, 125x116 mm, moving range 70x30 mm	Coaxial coarse and fine, limit stop	Abbe N.A. 1.25, iris diaphragm, focusable	1 W X-LED <sup>1</sup> , manual brightness control, <b>Li-Ion</b> rechargeable battery

# B-150 Series - Accessories

## ACCESSORIES FOR B-150 SERIES

M-001	Huygens 5x eyepiece
M-002.1	WF10x/18 eyepiece
M-003	WF16x/12 eyepiece
M-004	WF10x/18 eyepiece, with micrometric scale (10mm/100um)
M-008	WF10x/18 eyepiece, with pointer
M-137	HC (high contrast) objective 4x/0.10
M-138	HC (high contrast) objective 10x/0.25
M-139	HC (high contrast) objective 20x/0.40
M-141	HC (high contrast) objective 40x/0.65
M-142	HC (high contrast) objective 60x/0.85
M-143	HC (high contrast) objective 100x/1.25 (oil/water)
M-164	N-PLAN objective 4x/0.10
M-165	N-PLAN objective 10x/0.25
M-166	N-PLAN objective 20x/0.40
M-167	N-PLAN objective 40x/0.65
M-168	N-PLAN objective 60x/0.80
M-169	N-PLAN objective 100x/1.25 (oil/water)
M-040	Attachable mechanical stage (only for B-151 models)
M-155	Polarizing set (filters only)
M-972	Plane-concave mirror, with base for B-150 Series
M-005	Micrometric slide, 26x76mm, with 2 X scales (1mm/100div. for biological / 10mm/100div. for stereo)
M-069	Solar charger
DC-002	Plastic dust cover, medium 490(l)x490(h) mm
15104	Cleaning kit
15008	OPTIKA immersion oil 10ml

## M-069 - Solar charger

Included battery: rechargeable – Lithium-Poly. Capacity: 2600 mAh.  
Output voltage: 5,5Vdc. - Dimensions: 120x73x10 mm.  
Autonomy: over 6 hours at medium intensity (X-LED<sup>3</sup>).  
Charging modes: with solar panel (12h),  
with external USB power supply (not included)  
or from PC USB port (5h).

**Not compatible with R models.**



## 15104 - Cleaning kit

It cleans glass quickly and effectively,  
without leaving residue or odor.  
Ideal for precision lens or prism cleaning.



### How to connect the cameras to our microscopes.

Please refer to the Adapter reference list on Digital section.

v 1.2.0 - OPTIKA reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products at any time without notice.

## Headquarters and Manufacturing Facilities

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