

B-190 Series



Advanced Biological Microscopes For Students

Fulfill the Next Generation Learning Challenges

FOR SKILLFUL STUDENTS AND CLASSROOM USE

- » Extremely reliable microscopes for educational purposes
- » Particularly recommended for secondary school
- » Ideal for teaching and learning biology

YOUR FAVOURITE EDUCATIONAL MICROSCOPES

- » Choose among monocular, binocular and trinocular heads
- » 18mm field number
- » Achromatic lenses for standard brightfield applications



B-190TB - A Completely New, Revolutionary Experience

1

HANDY, YET EXTREMELY STABLE

- » Get accurate, dependable results in one click
- » Equipped with the most reliable OS, Windows 10
- » Holding solution for open discussion, 360° rotating and tilting

OPTIMUM AND UNPARALLELED COMFORT IN USE

- » Large touch screen with fast, responsive and smooth control
- » Simultaneous camera and power connection for long-term operation
- » Easily detachable, can be used as a laptop (keyboard included)

Educational



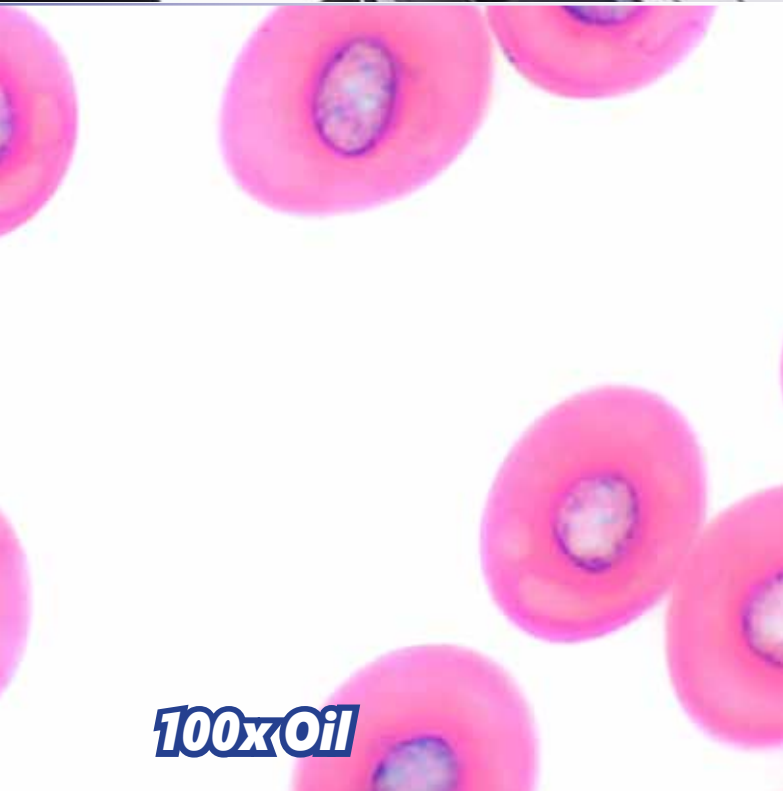
100x With Water – A New Frontier In Education

SAME OBJECTIVE FOR OIL AND WATER USE

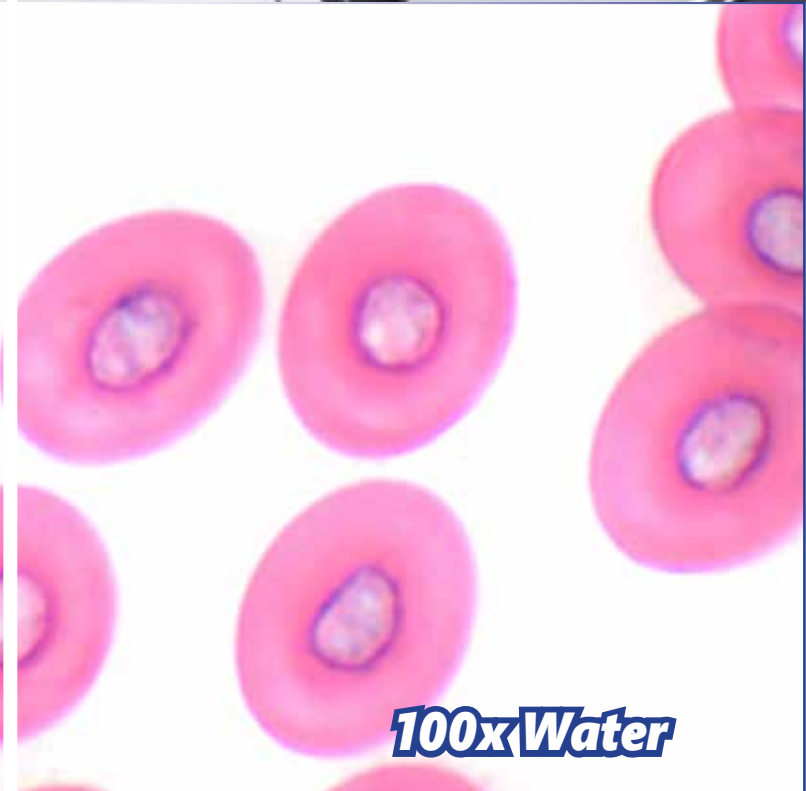
- » Oil represents the best media for high numerical apertures
- » Water combines relevant results with convenience
- » Water is recommended especially for educational purposes

UNPARALLELED TIME & MONEY SAVINGS

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



100x Oil



100x Water

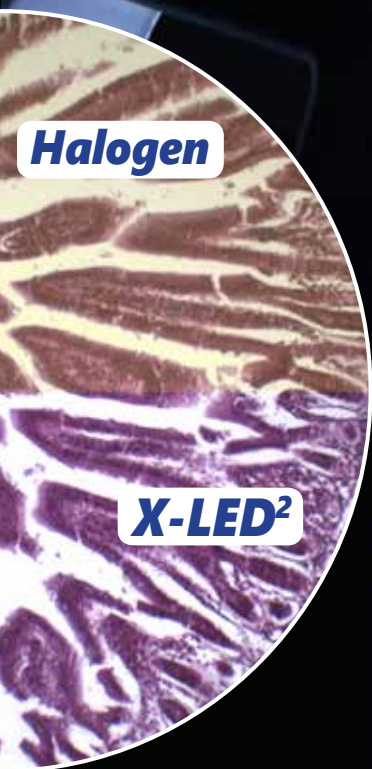
X-LED² – Only Available At OPTIKA

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 3 W
- » More efficient brightness than a 30 W halogen lamp
- » LED long lifetime (65.000 hours = 22 years at 8 hours/day usage)



Halogen

X-LED²



Multi-plug power supply



B-190 Series

B-190 is the result of a perfect fusion between years of experience in microscopy and a refined design study. It represents our product philosophy at its best: quality, reliability and innovation, all in one. B-190 Series, the answer of OPTIKA Microscopes to the challenge of the future in the educational field.



Original, Compact And Robust

The original design of B-190 series is based on robustness, yet keeping the extreme portability of the instrument, with a dedicated handle on the back. The built-in LED illuminator and the patented version with Windows tablet improve the reliability of one of the best-sellers of OPTIKA in the educational field.

Incorporating The Most Wanted Features In A Student Microscope

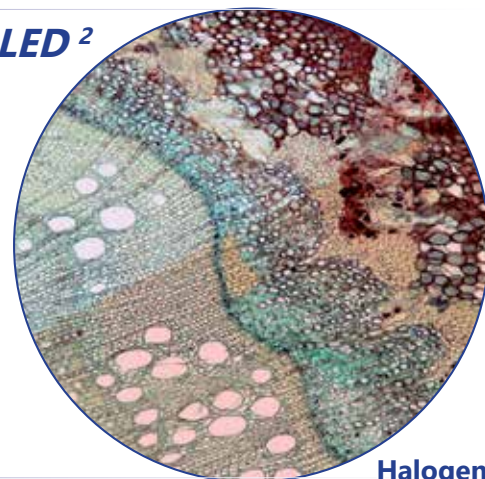
Get all the controls and features common to higher level microscopes: mechanical stage, binocular or trinocular head, coaxial focus knob, adjustable condenser, and 1000x maximum magnification (standard). An extremely simple but well equipped solution, in a modern and ergonomic design.

X-LED² Exclusive Lighting Source

A special design of the lens in front of the LED gives a very high light intensity, while ensuring optimal uniformity of illumination on the whole field number. Relevant money & energy saving thanks to the incredibly low energy consumptions allow you to cut the electricity bills by 90%!

The electric consumption (3 W only) proves the high efficiency of this system: incredibly high light intensity combined with low consumption.

X-LED²



Halogen



Advanced Biological Microscopes For Students And Teachers

Optimum And Unparalleled Comfort In Use

The B-190TB offers you a unique, incomparable solution. It includes a built-in camera of 3.1 MP and a Windows tablet with large touch screen, for a responsive and smooth control. Simultaneous camera and power connection ensure long-term operation, with dependable results in one click. It provides a reliable and comfortable solution for open discussion: 360° rotating and tilting tablet, easily detachable, that can be used as a laptop.



Get the most out of our accessories

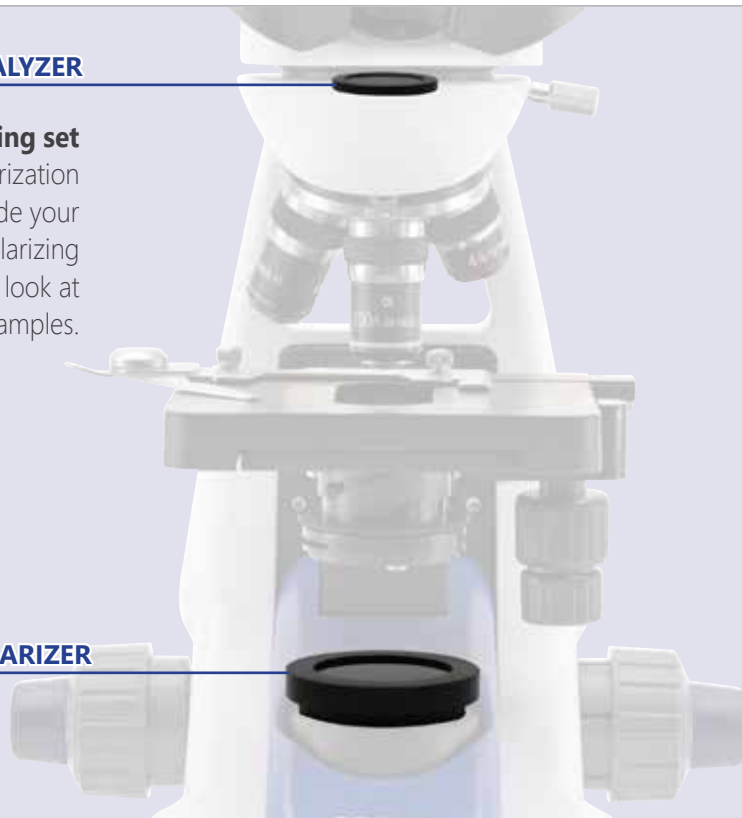
ANALYZER

M-190 - Polarizing set

Set for simple polarization analysis. Upgrade your B-190 to a polarizing microscope and look at birefringent samples.



POLARIZER

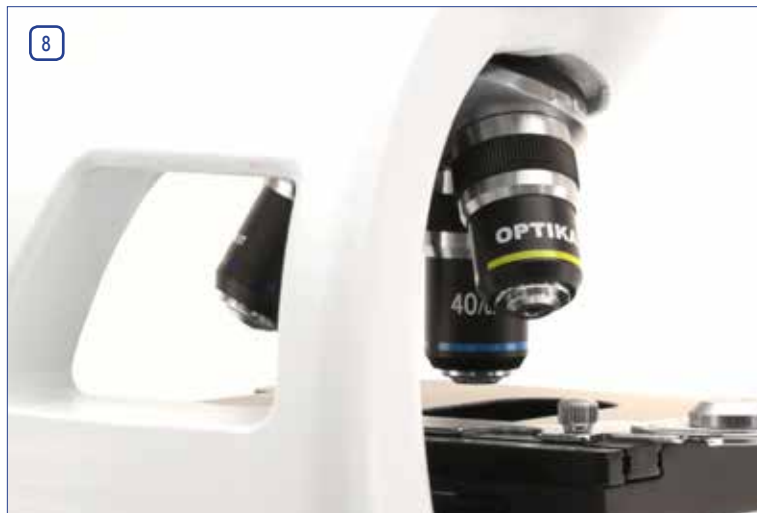
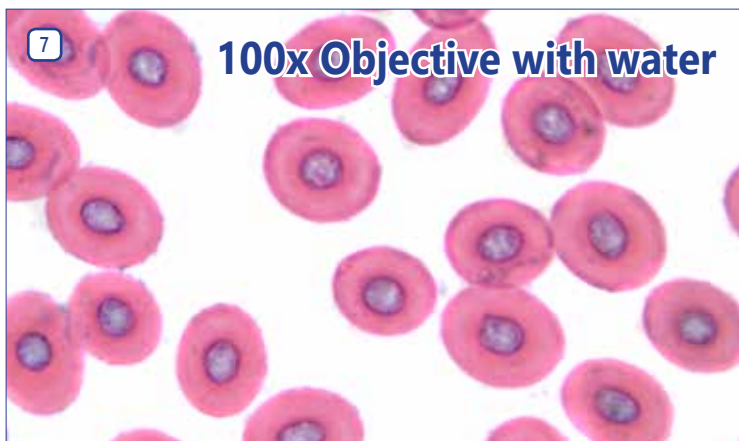
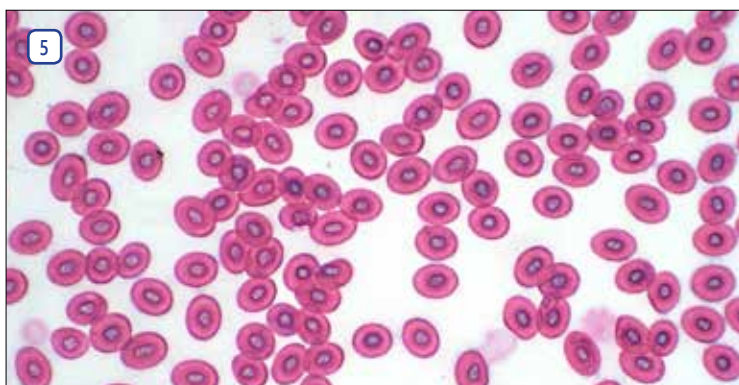
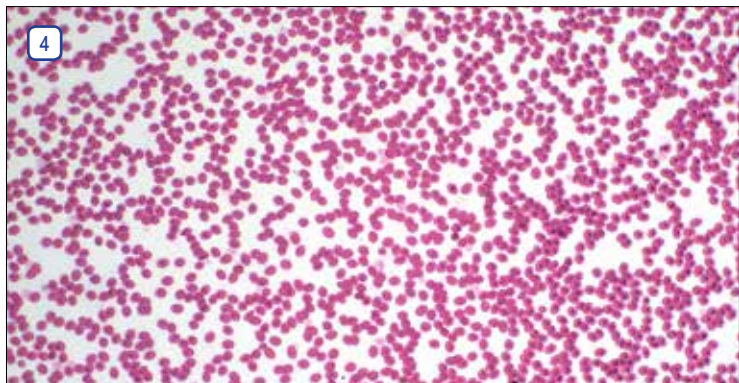


B-190 Series

Legend

1. B-190 Series lens containing X-LED² illumination system.
2. B-190 Series WF10x/18mm eyepieces for large specimen view and interpupillary adjustment.
3. B-191 pre-centered condenser with achromatic objectives.
4. Frog Blood Smear, with B-192 and 10x objective.
5. Frog Blood Smear, with B-192 and 40x objective.
6. Frog Blood Smear, with B-192 and 100x objective.
7. Frog Blood Smear, with B-192 and 100x objective with water.
8. B-190 Series handle for easy transportation.
9. B-190TB digital microscope with Widows tablet PC.
10. B-190 Series adjustable condenser in height.





B-190 Series - Range

Educational

B-191s



Advanced monocular microscope up to 600x total magnification. The exclusive **X-LED²** provides unmatched performance for powerful and uniform illumination.

Observation mode: Brightfield.

Head: Monocular, 360° rotating and 30° inclined.

Eyepiece: WF 10x/18 mm, secured by screw.

Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings.

Objectives:

HC - High Contrast Achromatic 4x/0.10 with anti-fungus treatment.

HC - High Contrast Achromatic 10x/0.25 with anti-fungus treatment.

HC - High Contrast Achromatic 40x/0.65 with anti-fungus treatment.

HC - High Contrast Achromatic 60x/0.85 with anti-fungus treatment.

Specimen stage: Double layer mechanical sliding stage, 125x115 mm, 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, adjustable height with iris diaphragm.

Illumination: X-LED² with white 3 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/6Vdc external power supply.

B-191



Advanced monocular microscope up to 1000x total magnification, with oil/water. The exclusive **X-LED²** provides unmatched performance for powerful and uniform illumination.

Observation mode: Brightfield.

Head: Monocular, 360° rotating and 30° inclined.

Eyepiece: WF 10x/18 mm, secured by screw.

Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings.

Objectives:

HC - High Contrast Achromatic 4x/0.10 with anti-fungus treatment.

HC - High Contrast Achromatic 10x/0.25 with anti-fungus treatment.

HC - High Contrast Achromatic 40x/0.65 with anti-fungus treatment.

HC - High Contrast Achromatic 100x/1.25 (Oil/Water) with anti-fungus treatment.

Specimen stage: Double layer mechanical sliding stage, 125x115 mm, 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, adjustable height with iris diaphragm.

Illumination: X-LED² with white 3 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/6Vdc external power supply.

B-190 Series - Range

1

Educational

B-192s



Advanced binocular microscope up to 600x total magnification. The exclusive **X-LED²** provides unmatched performance for powerful and uniform illumination.

Observation mode: Brightfield.

Head: Binocular, 360° rotating and 30° inclined. Interpupillary distance from 48 to 75 mm; dioptic adjustment on left eyepiece.

Eyepieces: WF 10x/18 mm, secured by screw.

Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings.

Objectives:

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

Specimen stage: Double layer mechanical sliding stage, 125x115 mm, 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, adjustable height with iris diaphragm.

Illumination: X-LED² with white 3 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/6Vdc external power supply.

B-192



Advanced binocular microscope up to 1000x total magnification, with oil/water. The exclusive **X-LED²** provides unmatched performance for powerful and uniform illumination.

Observation mode: Brightfield.

Head: Binocular, 360° rotating and 30° inclined. Interpupillary distance from 48 to 75 mm; dioptic adjustment on left eyepiece.

Eyepieces: WF 10x/18 mm, secured by screw.

Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings.

Objectives:

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

Specimen stage: Double layer mechanical sliding stage, 125x115 mm, 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, adjustable height with iris diaphragm.

Illumination: X-LED² with white 3 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/6Vdc external power supply.

B-190 Series - Range

B-193



Advanced trinocular microscope up to 1000x total magnification, with oil/water, mechanical stage and exclusive **X-LED²** for unmatched performance for powerful and uniform illumination. All the OPTIKA cameras can be easily mounted and used straight away.

Observation mode: Brightfield.

Head: Trinocular, 360° rotating and 30° inclined. Interpupillary distance from 48 to 75 mm; dioptic adjustment on left eyepiece.

Eyepieces: WF 10x/18 mm, secured by screw.

Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings.

Objectives:

HC - High Contrast Achromatic 4x/0.10 with anti-fungus treatment.

HC - High Contrast Achromatic 10x/0.25 with anti-fungus treatment.

HC - High Contrast Achromatic 40x/0.65 with anti-fungus treatment.

HC - High Contrast Achromatic 100x/1.25 (Oil/Water) with anti-fungus treatment.

Specimen stage: Double layer mechanical sliding stage, 125x115 mm, 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, adjustable height with iris diaphragm.

Illumination: X-LED² with white 3 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/6Vdc external power supply.

B-190TB



3.1 MP Built-in camera and 10.8" Windows tablet PC up to 1000x total magnification, mechanical stage and exclusive **X-LED²** for unmatched performance for powerful and uniform illumination.

Observation mode: Brightfield.

Head: Binocular, 360° rotating and 30° inclined. Interpupillary distance from 48 to 75 mm; dioptic adjustment on left eyepiece. Built-in 3.1 MP camera.

Eyepieces: WF 10x/18 mm, secured by screw.

Nosepiece: Quadruple revolving nosepiece, rotation on ball bearings.

Objectives:

HC - High Contrast Achromatic 4x/0.10 with anti-fungus treatment.

HC - High Contrast Achromatic 10x/0.25 with anti-fungus treatment.

HC - High Contrast Achromatic 40x/0.65 with anti-fungus treatment.

HC - High Contrast Achromatic 100x/1.25 (Oil/Water) with anti-fungus treatment.

Specimen stage: Double layer mechanical sliding stage, 125x115 mm, 70x30 mm X-Y movement range. Vernier scale on the two axes, accuracy: 0.1mm.

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, pre-centered, adjustable height with iris diaphragm.

Illumination: X-LED² with white 3 W LED and light intensity control. Color temperature: 6,300 K. Multi-plug 100-240Vac/6Vdc external power supply. Color temperature: 6,300 K.

B-190TB - Digital Microscope with Camera & Tablet

The latest OPTIKA digital microscopes with Windows tablet PC open new microscopy horizons, combining high-end optics with innovative digital technology for microscopic imaging. B-190TB includes a 3.1 MP camera with a 10.8" Windows tablet. View, capture, analyze and share your images with simplicity and reliability.

Intuitive, Yet Powerful Software

Simple and user-friendly, ideal for students and experienced users.

PATENTED



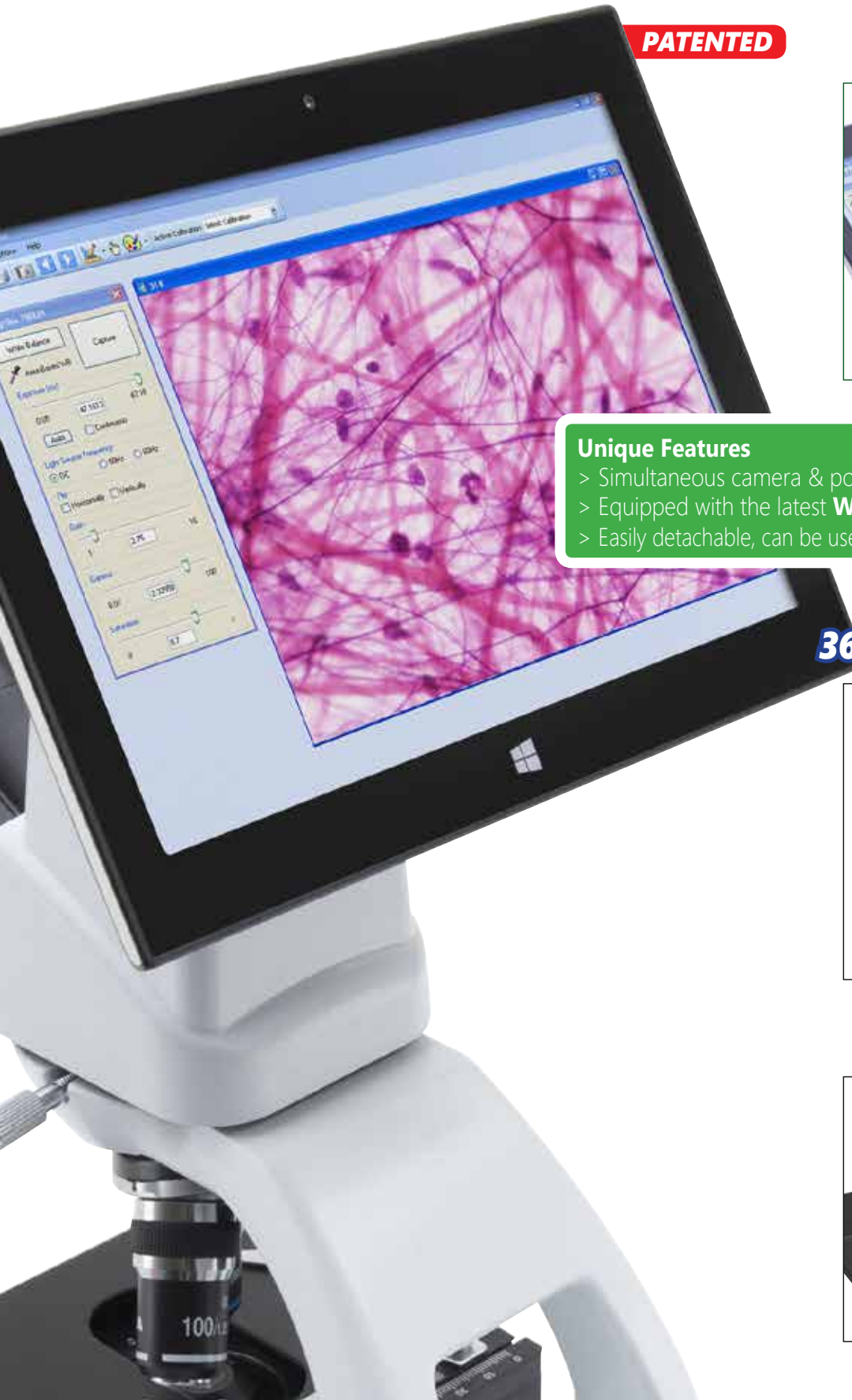
Unique Features

- > Simultaneous camera & power connection
- > Equipped with the latest **Windows OS & Intel** processor
- > Easily detachable, can be used as a laptop (keyboard included)

360° Rotating & Tilting



Detachable



B-190TB - Digital microscope with camera & tablet

Tilting

TABLET TECHNICAL SPECIFICATIONS

Model	Tablet 10.8"
Operating System	Windows 10 32-bit
Language	Multilanguages already installed
Image capturing software	OPTIKA Vision lite
CPU	Intel® Atom™ Z3735F, Quad core
CPU speed	1.44 GHz
Graphics Card	Intel® HD Graphics 3D Accelerator
Memory	Ram 2,048 GB DDR3L
LCD display	LED 10.1" IPS Multi Touch Screen
LCD resolution	1920 x 1280, 16/10 (WXGA)
Storage	HDD 64GB
Network	Wireless, Bluetooth 4.0
Input/output ports	Micro USB-B - USB - Microphone - MicroSD card reader - Mini HDMI - Head-phone
Control Buttons	Auto rotate off, volume control
Battery Technology	Lithium-ion battery, 2x cell
Battery capacity	8400 mAh
Max load	15 W
Dimensions	Thickness 10,5 mm, Height 17,4 cm, Width 25,7 cm
Weight	720 g
Cables included	USB-B to USB-A / OTG cable (Micro USB-B to USB-A)
Also included	Instruction manual, Keyboard with touchpad, touch pen.

CAMERA TECHNICAL SPECIFICATIONS

Digital camera resolution	3.14 MPixel
Signal output	USB 2.0
Sensor Size	1/2.5"
Sensor technology	CMOS
Image format	4\3
Full Image size	2048 x 1536
Pixel size	2.2 x 2.2 micron
Frame rate full resolution	5 frames\sec
Frame rate other resolutions	8 FPS (1280x1024) - 30FPS (640x480)
Automatic White Balance	Auto - Man
Automatic Gain Control	Auto - Man
Automatic Back light control	Auto - Man
Exposure control	Auto - Man

B-190 Series - Optical performance

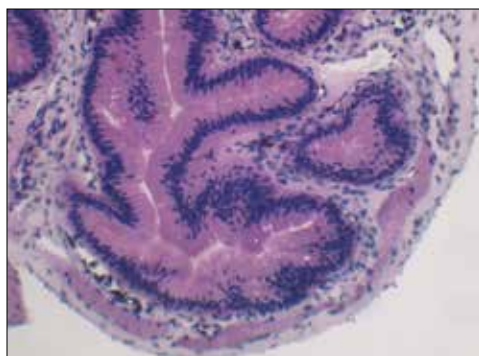
Eyepiece		10x (M-002.1)			16x (M-003)	
Field number (mm)		18			12	
Objective	N.A.	W.D (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
4x	0.1	18	40x	4.5	64x	3
10x	0.25	7	100x	1.8	160x	1.2
20x	0.4	2	200x	0.9	320x	0.6
40x	0.65	0.53	400x	0.45	640x	0.3
60x	0.85	0.45	600x	0.3	960x	0.2
100x	1.25 (oil/water)	0.13	1000x	0.18	1600x	0.12



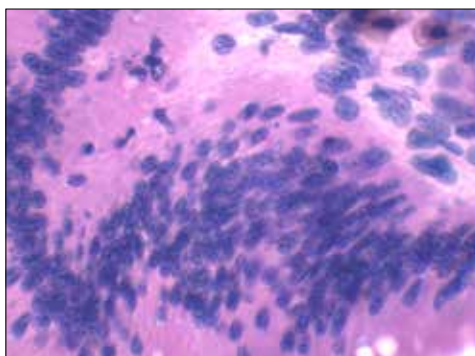
HC

OPTIKA HC objectives ensure a versatile and reasonably priced entry-level lenses for brightfield, darkfield 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.

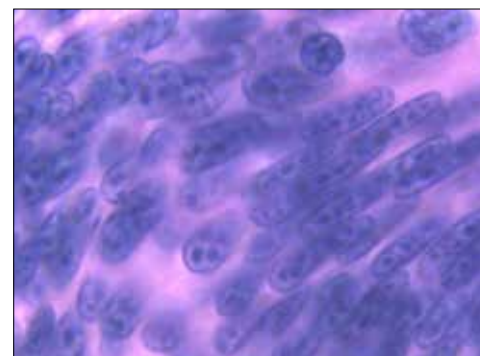
B-190 Series - Zoom comparison



Frog small intestine - B-193 - 10x HC objective



Frog small intestine - B-193 - 40x HC objective



Frog small intestine - B-193 - 100x Oil HC objective

B-190 Series - Comparison chart

Model	Head	Eyepiece(s)	Nosepiece	Objectives	Stage	Focusing	Condenser	Illuminator
B-191s	Monocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 4x, 10x, 40x, 60x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED ² , brightness control
B-191	Monocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED ² , brightness control
B-192s	Binocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 4x, 10x, 40x, 60x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED ² , brightness control
B-192	Binocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED ² , brightness control
B-193	Trinocular, 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED ² , brightness control
B-190TB	Binocular, digital 360° rotating, 30° inclined	Wide Field 10x/18mm	Quadruple, reversed	HC Achromatic 4x, 10x, 40x, 100x	Double layer, 125x115 mm with 70x30mm X-Y moving range	Coaxial coarse and fine focusing	N.A. 1.25 Abbe type with adjustable height and iris diaphragm	3 W X-LED ² , brightness control

B-190 Series - Accessories

ACCESSORIES FOR B-190 SERIES

- M-001 Huygens 5x eyepiece.
 M-002.1 WF10x/18 eyepiece, high eyepoint.
 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-174 Polarising set (filters only) for B-190 & B-290 series.
 M-974 Blue filter, 32 mm diameter.
 M-976 Green filter, 32 mm diameter.
 M-978 Yellow filter, 32 mm diameter.
 M-988 Frosted glass filter, 32 mm diameter.
 M-971 Plane-concave mirror, with base for B-190 & B-290 Series.
 M-114 0.5x C-Mount projection lens.
 M-115 0.35x C-Mount projection lens.
 M-118 0.75x C-Mount projection lens.
 M-173 Photo adapter for APS-C and Full Frame Reflex cameras.
 DC-002 Plastic dust cover, medium 490(l)x490(h) mm.
 DC-003 TNT dust cover, medium 600(l)x550(h) mm (for B-290TB).
 M-069 Solar charger.
 15008 OPTIKA immersion oil 10ml.
 M-005 Micrometric slide, 26x76mm, with 2 X scales (1mm/100div. for biological / 10mm/100div. for stereo).
 15104 Cleaning kit.
 VP-190 IQ/OQ/PQ Validation Protocols.

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-LED³). Charging modes: with solar panel (12h), with external USB power supply (not included) or from PC USB port (5h).



B-192 Powered by solar battery pack (M-069)

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

Headquarters and Manufacturing Facilities

OPTIKA® S.r.l. Via Rigla, 30 - 24010 Ponteranica (BG) - ITALY - Tel.: +39 035.571.392 - info@optikamicroscopes.com

Optika Sales branches

OPTIKA® Spain spain@optikamicroscopes.com
OPTIKA® China china@optikamicroscopes.com
OPTIKA® India india@optikamicroscopes.com

OPTIKA® USA usa@optikamicroscopes.com
OPTIKA® Central America camerica@optikamicroscopes.com