

**Motic®**

MORE THAN MICROSCOPY



LS

**BA210E**

BASIC BIOLOGICAL MICROSCOPE



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With the introduction of the new BA210 Elite model, Motic again has listened to the educational market and its demands on a basic transmitted light microscope. Designed for ease of use and longevity, the BA210E features robust mechanics combined with improved optical performance for the student level.

The new EC-Plan Achromat objectives display the advanced quality level of Motic's CCIS® Infinity Optics and provide repeatable image quality for reliable results.

The rackless stage without prominent gear rack enables a safe x/y scanning especially for unexperienced users. The extended stage pole allows a simultaneous right-hand fine focussing.

The BA210 Elite's illumination system allows an easy replacement of its Halogen light source by LED modules of different color temperatures. Its efficient power resources guarantee upgrade options for contrast methods such as polarization, darkfield and phase contrast. Additionally the new Epi-LED S modules allow the implementation of the Fluorescence method in educational environments.

The manufacturing of the complete BA210E microscope follows current RoHS standards and thus avoids lead-containing materials in student environments. To protect the system from fungus growth in high-humidity environments, an anti-fungus treatment is applied to all parts of the microscope.

*Your Motic Team*



# BA210E

BASIC BIOLOGICAL MICROSCOPE



# THE MECHANICS

RACKLESS STAGE | EYEPIECE TUBES





## A STUDENT PROOF CONCEPT FOR ROUGH USE

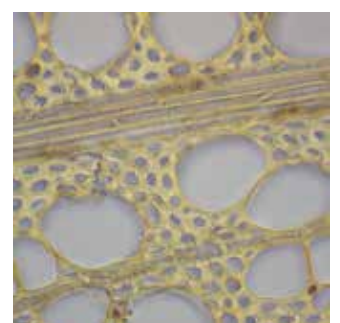
The ergonomic functionality of Motic's BA210E is visible in any aspect of its mechanical setup. Elegant and sturdy, the microscope stand follows all needs of educational environments.

The hard-coated stage allows a safe evaluation of transmitted light samples. The rackless stage is especially appreciated in teaching environments, where the x/y movement without prominent gear rack improves safety of unexperienced users.

Due to an ergonomic viewing angle and an easy adjustment of the interpupillary distance, the BA210E eyepiece tubes guarantee fatigue-free microscopic work for hours. Countersunk fixing screws prevent inadmissible removal of the eyepieces and confirm Motic's dedication to the daily demands of teachers. The trinocular tube option with a 20/80 light split if activated allows the adaption of a digital devices and the presentation of microscopic images to a larger audience.

Transport and storage of classroom microscopes are facilitated by an easy grip on the stand and a space saving power cord hanger.

EYEPIECE TUBES | Interpupillary distance adjustment



# THE OPTICS

OBJECTIVES | EYEPIECES





## SUPERB PERFORMANCE FOR AN EFFICIENT TEACHING

Motic's new EC Plan Achromat objectives deliver a remarkable level of optical performance. With excellent field flatness and resolution, the EC optics offers superior color fidelity and contrast through multi-layer coated glass lenses. An intermediate image without any colored fringes is delivered for professional digital results. The modern CCIS® Infinity concept guarantees maximum flexibility for optional upgrades.

Especially in educational environments, the increased working distances of the objectives greatly reduce contamination risk when changing from oil lenses to dry lenses, while protecting lenses in rough usage.

The standard eyepieces N-WF 10X/20 with high eyepoint for eyeglass wearers, made of high quality optical glasses with multi-layer coating, provide consistent diopter adjustment for both eyes.



# THE ILLUMINATION

ILLUMINATION SOURCES | CONDENSER





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## POWERFUL AND FLEXIBLE ILLUMINATION

A powerful and practical illumination is a basic necessity for any educational microscope. Motic has contributed a full interchangeability between Halogen light source and LED modules to the BA210E.

The importance of LEDs as safe and long-term illumination sources has increased especially in teaching environments as lifetime and reduced heat are superior to halogen bulbs. Nevertheless, experienced users may still prefer the “warm” halogen illumination with a large portion of long wavelengths. In the BA210E the user may choose his illumination source freely.

A high quality condenser with maximal NA 1.25 with aperture diaphragm is implemented for visualization of weakly or non-stained samples.



HALOGEN BULB



LED MODULE



# THE ACCESSORIES

CONTRAST METHODS





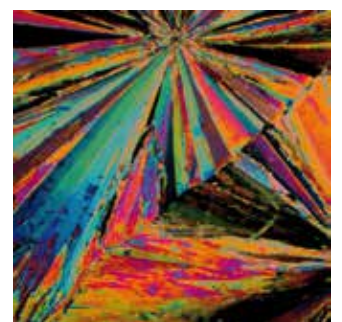
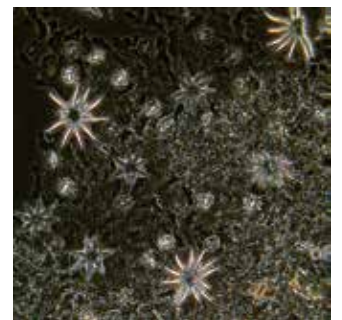
## MODULARITY FOR ADDITIONAL CONTRAST METHODS

Besides the standard packages, the BA210E accepts a variety of upgrades. For additional contrast methods, the standard condenser comes with a slot for phase contrast and darkfield sliders. For single phase contrast lenses, the respective phase slider has to be chosen, while the darkfield slider can be used with all objectives up to 40X magnification (up to NA 0.65).

Simple polarization can be performed with a set of polarizer/analyzer. Convenient and easy, the polarizer is placed on top of the collector lens and can be rotated freely for maximum extinction. The analyzer is placed between the eyepiece tube and the microscope body and may stay in the light path.



EC-H PLAN PHASE OBJECTIVES

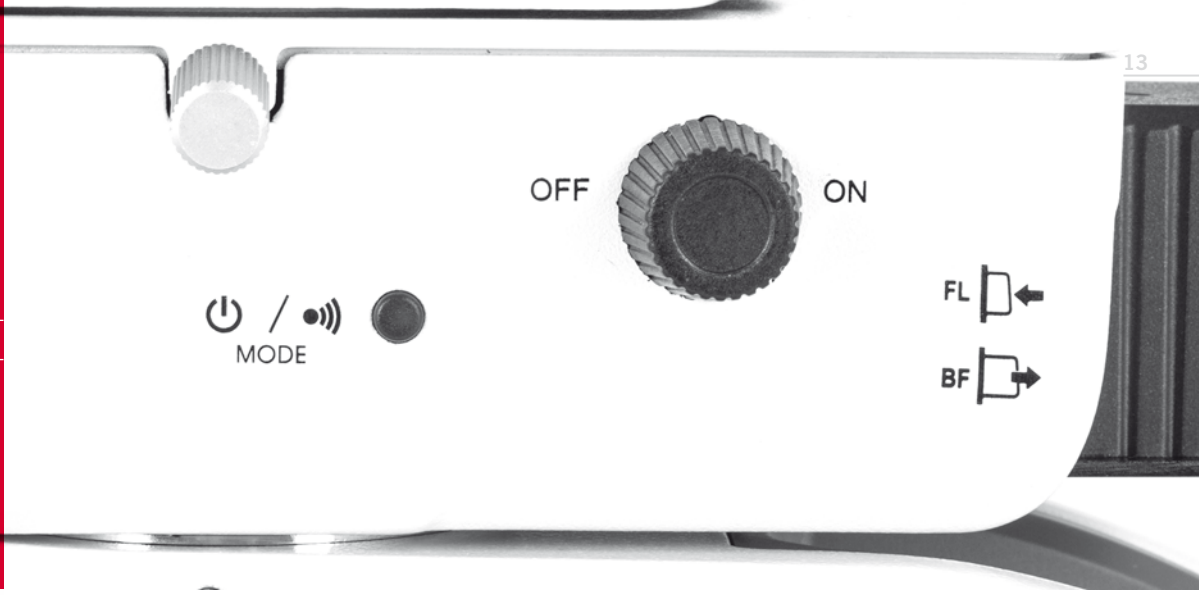


# THE ACCESSORIES

CONTRAST METHODS



- INTRODUCTION
- THE MECHANICS
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- THE ILLUMINATION
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## MODULARITY FOR ADDITIONAL CONTRAST METHODS

LED light sources for Fluorescence are starting to replace mercury bulb technology. This is a good message for all teachers and students in the biomedical field, as up to now due to safety reasons (heat development, risk of leakage of mercury, mercury disposal) the traditional mercury technology was kept away from young students.

The advantages of LEDs are numerous. No warm-up period has to be taken into consideration, so the teacher can quickly implement the fluorescence method into the daily curriculum. No special alignment of the illumination is needed. Just switch on the system and start working. A convenient intensity adjustment protects delicate and rare samples from bleaching. The initial costs for LED fluorescence are by far lower than for a mercury based system, and LED lifetime of minimum 20.000 hours reduces running costs significantly.

Motic's Epi-LED S modules for BA210E include a 3W LED light source, combined with a suitable filter combination. The module is placed as an add-on between microscope stand and eyepiece tube. A fast change from Bright field to Fluorescence and vice versa is possible by moving the LED module back and forth. A change in excitation is possible by simply exchanging the compact illumination module. The integrated IR-sensor detects the user and turns off the Fluorescence automatically when the microscope is left, again taking young users into consideration.

Epi-LED S Module Components



# DOCUMENTATION

STANDARD PHOTOMICROGRAPHY | DIGITAL DOCUMENTATION



REVIEW

## OPTIONS FOR IMAGE PRESENTATION AND DATABASE

In many educational institutions, limited resources increase the importance of image presentations to a greater audience. A fully-corrected intermediate image without colored fringes is accessible through the photo port of the trinocular tube. So best image quality is available for digital access. Besides, a step by step storage of images may finally lead to an image database for tutorials.

Standard photomicrography delivers high resolution images of small fields. Live images can be supplied in most cases by the camera's manufacturer software.

The combination of a BA210E with a member of the Moticam series of digital C-mount cameras delivers excellent live images, which can easily be presented through laptop, tablet or beamer. The appropriate adapter has to be chosen in relation to the chip size of the digital camera. All Motic cameras come equipped with software to transform the BA210E into an analysis and documentation station.

For limited bench-top space, Moticam 1080 with HDMI output delivers High Resolution images without computer. The images can be saved on an SD card. The Wi-Fi models Moticam X and Moticam X2 create a wireless signal to be shared by tablets and smartphones.



# SPECIFICATIONS

## BA210E STANDARD CONFIGURATION & OPTIONAL ACCESSORIES



General Specifications



Optional Configuration

Optical system	CCIS®	
Observation system	Siedentopf 30°	
Interpupillary distance (mm)	55-75	
Eyepieces	N-WF 10X/20	N-WF 12.5X/18; N-WF 15X/16
Eyepieces diopter adjustment	+/- 5 dpt	
Reticles (Ø25mm)		Crosshair 10mm/100 divisions Crossed double scale 10mm/100 divisions Pointer
Trinocular light split	20/80	
Nosepiece	Reversed quadruple	
Objectives EC-Plan Acromats	4X/0.10; 10X/0.25; 40X/0.65; 100X/1.25 Oil	20X/0.45; 60X/0.80;
Objectives EC-H Plan Achromats +/- Phase		10X/0.25; 20X/0.45; 40X/0.65; 100X/1.25 Oil
Objective mounting thread RMS standard (W 4/5" X 1/36")	Yes	
Built-in coaxial mechanical stage with sample holder	Yes	
Stage size (mm)	150 x 130	
Travel range (mm)	80 x 30; rackless	
Upper limit stop	Preset; adjustable	
Condenser	Abbe Focusable type N.A.1.25; with slot for Phase/DF sliders	
Focus mechanism	Coaxial; tension adjustment	
Fine focus precision (µm)	2	
Z-axis movement (mm)	20	
Filter holder with fixing cap	Yes	
Illumination	30W Halogen	3W LED / mirror
Halogen / LED interchangeability	Yes	
Illumination position	Built-in	
Transformer	Built-in	
Power supply	110-240V (CE)	
Filters	Blue	Green, yellow, green interference, neutral density, didymium
Dimensions (mm)	360 x 220 x 398	
Weight (Kg)	7,2	
<b>Contrast techniques</b>		
Brightfield	Yes	
Phase contrast		Slider
Simple Polarization		Yes
Darkfield		Slider
LED Fluorescence		Yes



# SPECIFICATIONS

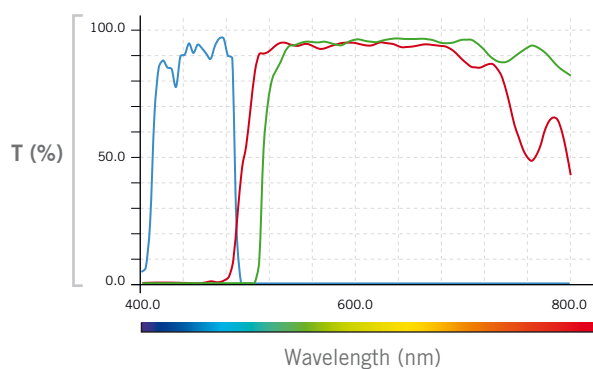
## BA210E

### EPI-LED S MODULE AVAILABLE FILTERS

#### Epi-LED S Fluorescence attachment - Auramine O

455nm LED

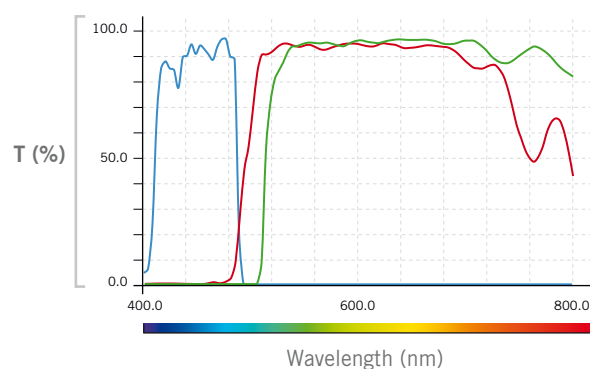
Exciter 480SP Dichroic 505LP Barrier 520LP



#### Epi-LED S Fluorescence attachment - MB

470nm LED

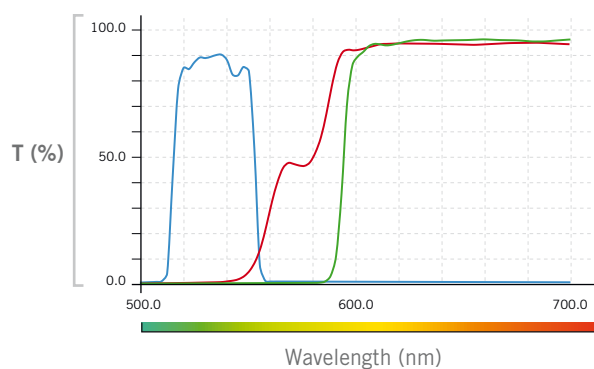
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#### Epi-LED S Fluorescence attachment - G

530nm LED

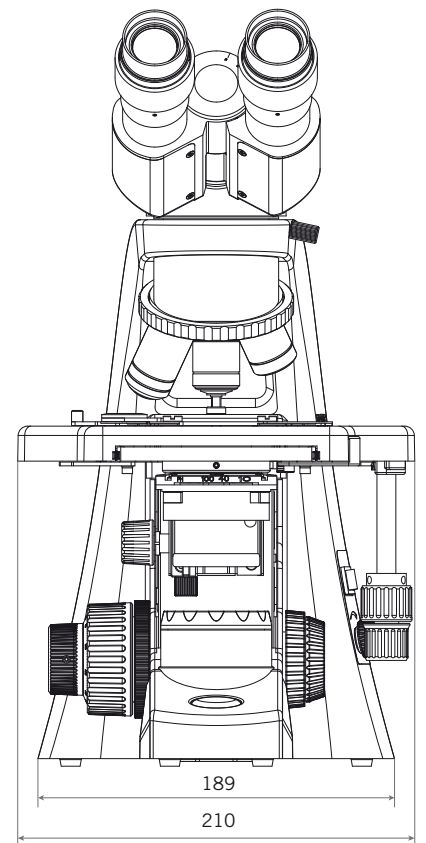
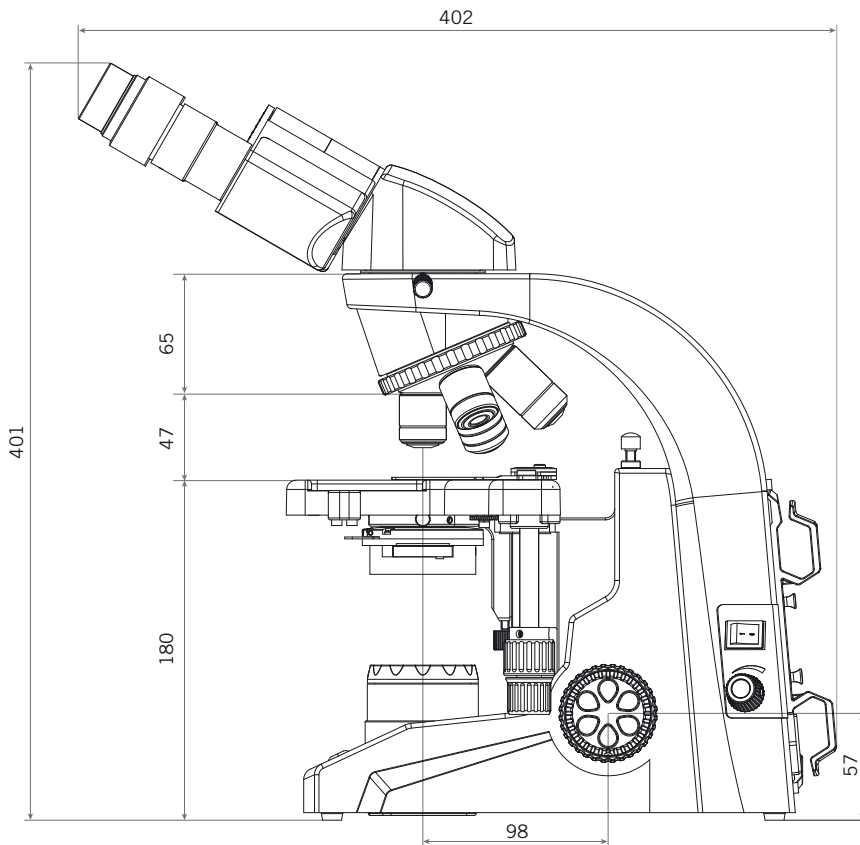
Exciter BP532/33 Dichroic 575LP Barrier 590LP



# SPECIFICATIONS

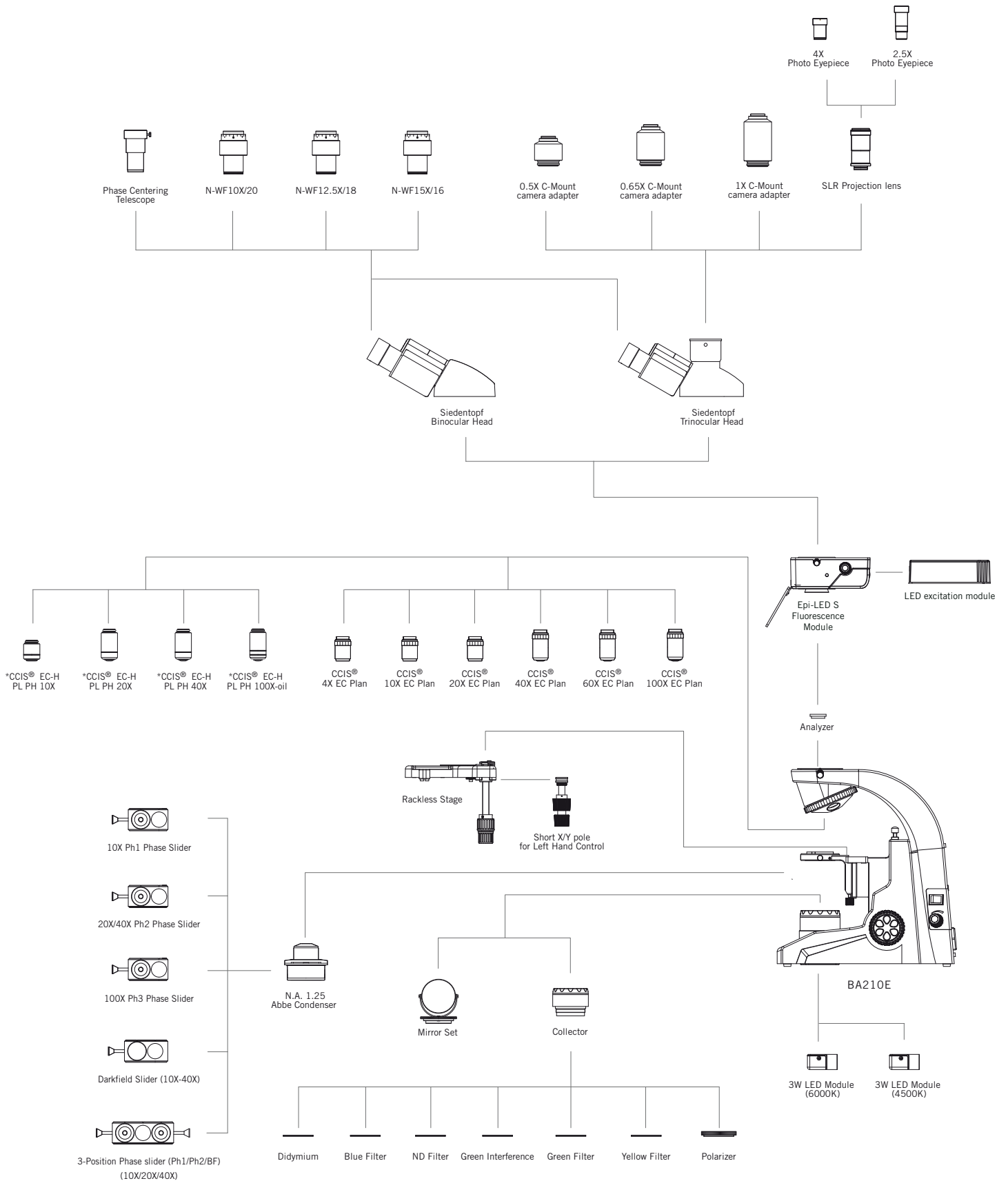
**BA210E**

SCHEMATIC DIAGRAMS (units: mm)



# SPECIFICATIONS

## BA210E SYSTEM DIAGRAM



\* Standard: positive phase; negative phase available on request

# Motic®

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Design Change: The manufacturer reserves the right to make changes in instrument design in accordance with scientific and mechanical progress, without notice and without obligation.

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