Motic®

MORE THAN MICROSCOPY

BA310MET | ADVANCED METALLURGICAL MICROSCOPE

BA310MET ADVANCED METALLURGICAL MICROSCOPE

Motic is expanding the success of its popular BA Series microscope line into the Industrial market, and is pleased to introduce the **new BA310MET series,** an affordable and powerful **Metallurgical microscope line** of robust Incident light microscopes.

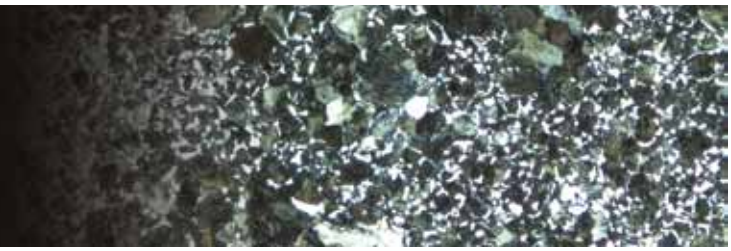
Now Industrial quality control can be performed **for all opaque materials** like minerals and metal samples with ease and efficiency. Also, the BA310MET performs well in **Educational** environments of **engineering** and **material** professions, where affordability and ease-of-use are key demands.

Two other additions are also available. The **BA310MET-T** model has a Transmitted light option that allows easy handling and viewing also of transparent samples and greatly increases the number of industrial applications. The **BA310MET-H** setup contains a more **flexible focusing device,** dedicated to the examination of **large samples** with only little limitation in size.

BA310 MET

BA310 MET-T

BA310 MET-H



The New BA310MET Series

Daily industrial work environments need a reliable microscope which focuses on ease-of-use as well as on work efficiency. Motic has paid careful attention to these market requirements in order to optimize the BA310MET's features. The **Epi-Illuminator** with a **12V/50W Halogen illumination** offers a powerful and adjustable light source ideal for all reflective samples. For increased illumination options, an easy **replacement** of the **Halogen bulb** is possible **by an LED module** of different color temperatures **(4500K, 6000K)**. A built-in **field diaphragm** and **aperture diaphragm** help to optimize image quality by reducing stray light and increasing contrast.

Also Motic's new **Long-Working Distance Plan Achromatic objectives** for Incident light provide optimal image contrast through a **multi-layer lens coating**. Together with a **fully corrected tube lens** an intermediate image without color fringes is created, accessible through the Trinocular port and making digital images as clean and crisp as those seen through the eyepieces. The BA310MET design also includes a standardized ISO photo exit.

Depending on the chosen model, a **hard coated** and chemical resistant **stage** with a **minimum** of **75x50mm travel range** is offered. Depending on the application, larger stages with extended travel are available, as well as stage options for Transmitted light usage. For **maximum sized samples**, the **BA310MET-H** model is recommended.

Objectives

For improved optical performance of the BA310MET series, Motic introduces a new generation of **Metallurgical LWD objectives**. These Plan Achromatic Objectives are made of high quality glass and follow the successful Motic **CCIS® Optical concept**. Multi-layer coating ensures improved contrast and image quality. The tube lens provides a **completely corrected intermediate image**, accessible by the photo port exit of the Trinocular head option. Documentation therefore is based on maximum image quality. The ball bearing **5-fold nosepiece** shows a reversed orientation of the lenses and ensures parcentration and repeatability with every magnification change.

Description	N.A.	W.D.(mm)
Plan 5X	0.13	11.5
Plan 10X	0.30	6.80
Plan 20X	0.40	11.10
Plan 50X	0.55	8.20
Plan 100X	0.80	2.00

Illumination

The **Epi-Illuminator** of the BA310MET models is based on a **12V/50W Halogen** light source. The unit's power supply is separated from the stand to avoid unnecessary heat surrounding the microscope.

Like in other Motic models, the **Halogen bulb** can be replaced by an **LED module** (4500K or 6000K), simply plugged into the Halogen lamp socket. With an adjustable **field diaphragm** and **aperture diaphragm**, homogenous illumination is guaranteed. Careful use of both diaphragms creates a maximum image quality in terms of contrast. The simple **polarization set** (polarizer & analyzer) enables a useful **"POL contrast"** and helps to improve image contrast especially in low power objectives.

LED Module

Halogen Bulb

The BA310MET-T stand offers an **additional Transmitted light** option. Equipped with a standard **Koehler 6V/30W Halogen** setup including the Field diaphragm, a replacement of the Halogen bulb by LED modules of different color temperatures (4500K, 6000K) is also possible. To ensure the best possible illumination quality, a **new Achromatic N.A 0.85 condenser** is an integral part of this new microscope. With these components, **imaging of transparent samples with Full Koehler quality** is ensured. Also, the collector lens assembly offers a secure, screw-on **filter holder** for any kind of desired filter - while the fixed cap prevents the filter from dropping when the instrument is stored.

EPI Illuminator Module

Eyepiece Tubes

Designed with an ergonomic **viewing angle of 30°** and incorporating an **interpupillary distance of 55-75mm**, the BA310MET observation tubes guarantee hours of fatigue free viewing. A large **Field of View (20mm)** enables fast and comfortable screening. The Trinocular tube allows digital documentation by using a wide variety of digital cameras, with a 20/80 light split through the photo/video port. **On special demand**, a Trinocular tube with an **erect image** and a **fixed 50/50 light split** can be supplied. As a standard, an anti-fungus treatment has been applied to the eyepiece tubes to ensure a long lifetime of the microscope in humid environments.

Eyepieces

The **standard eyepieces, N-WF 10X/20** with high eyepoint for eyeglass wearers, made of high quality optical glass, provide consistent diopter adjustments for both eyes. This enables perfect usage of reticles for measuring purposes. Lockable countersunk screws to fix the eyepieces prevent inadmissible removal and confirm Motic's dedication to a student proof quality. For BA310MET and BA310MET-T, eyepieces with **FOV 22mm** are **optional**.

MET-H stage

Description	F.N.(mm)
Widefield N-WF 10X	20
Widefield N-WF 10X	22
Widefield N-WF 15X	16

For measuring purposes,
the following reticles are available:

Graduated linear hair point
0.1mm/10mm

Graduated cross hair point
0.1mm/10mm

Plain cross hair

MET-T 3"x2"stage

MET-T 6"x4"stage

Stages

Depending on the application, four different stages for BA310MET series are available. All stages provide a convenient sample movement with their **triple-plate design.**

The **standard stage** for BA310MET comes with an area of 180x140mm and **75x50mm travel range**.

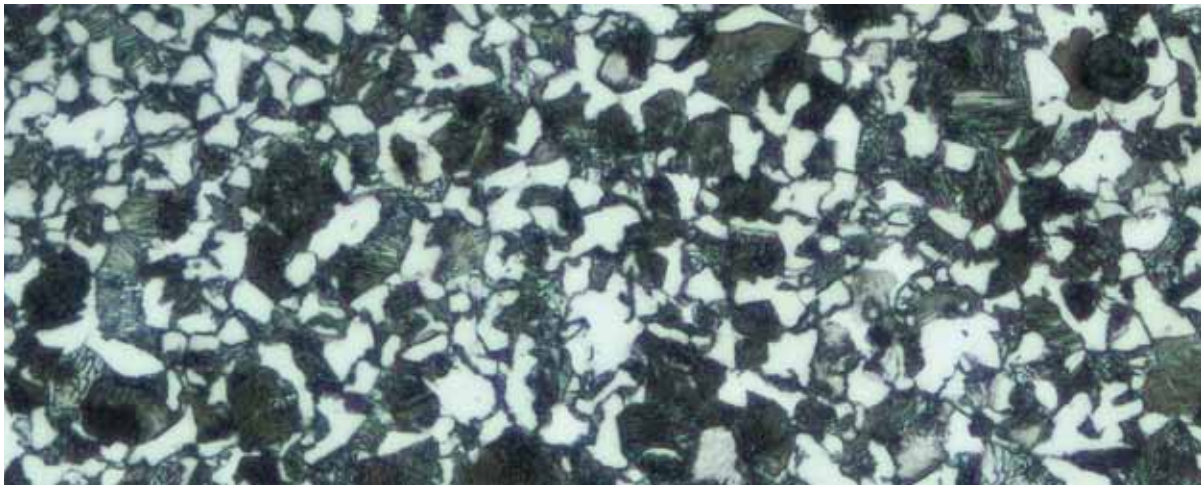
A larger area is offered with the 3"x2"stage for the BA310MET-T. 240x140mm can carry larger samples, while the movement is 75x50mm. For **Transmitted light** inspections, a **glass stage insert** is provided, while a slide holder is optional.

For extended demands, a 6"x4" (300x180mm) stage with a movement of 150x100mm can be supplied with the BA310MET-T.

The **BA310MET-H** setup for extremely **large samples** and maximum handling freedom carries a 180x140mm stage with a travel range of 100x80mm. This model is dedicated to bulky samples. The Epi-Illuminator here is combined with a focusing block of 30mm focusing range and 2 microns minimum increment.

Documentation

Today, accurate documentation has been established as an important part in natural sciences and industrial quality control. The new BA310MET system offers the choice between several imaging options.



Standard Photomicrography

The traditional use of a single lens reflex camera (analogue or digital) requires the Trinocular version of the BA310MET. The adaptation of the camera consists of a **mechanical adapter combined with a photo eyepiece** (2.5X or 4X)

The necessary T2 adapter referring to the camera model is supplied by the camera manufacturer. This setup delivers **high resolution images of small fields.**

Digital Documentation

A more convenient setup is provided through Motic's philosophy of easy image digitization. The combination of the BA310MET with a member of the **Moticam** series of digital cameras delivers **excellent live images**, which can easily be stored for future usage. **All Motic cameras come** equipped **with software** to transform the BA310MET into an analysis and documentation station.

Motic offers a complete range of digital cameras starting with a basic resolution of 1.0MP up to 10MP (CMOS chips). The Research grade Moticam Pro Line (CCD), with a maximum of 5MP, including Monochrome and Cooled versions, are dedicated to professional demands in sensitivity and color fidelity. These Moticam cameras deliver sharp live images with easy post-capture handling.

For further details on our range of cameras, as well as the different CCD adapters, please contact your nearest Motic office or your local authorized Motic reseller.

CCD Adapter

A set of CCD adapters, following the ISO standard with 38mm diameter, display improved optical performance to greatly enhance image reproduction quality. The **appropriate adapter** has to be chosen **in relation to the chip size** of the used digital camera. The following "magnifications" are available: **1X, 0.65X, 0.5X.**

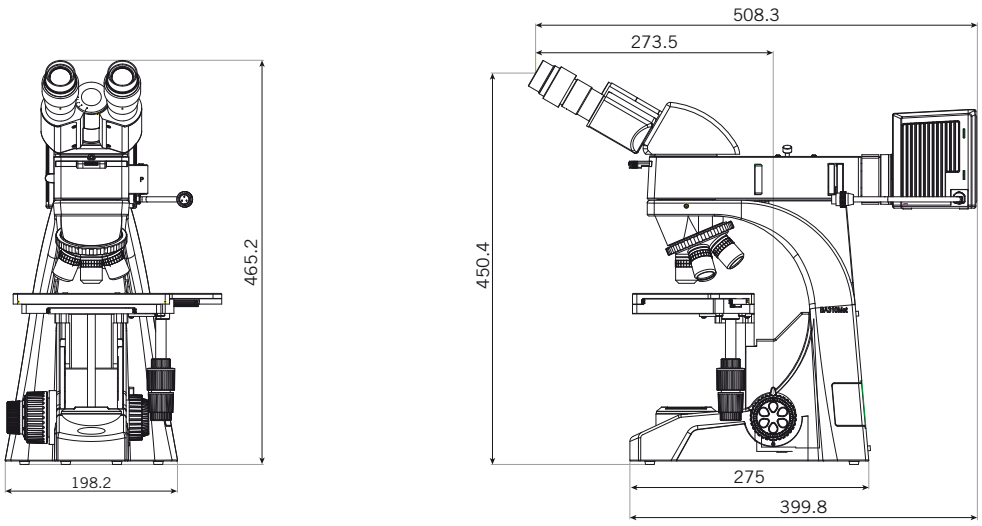
BA310MET / MET-T Standard Specifications

Model	BA310MET/MET-T
Optical System	Color Corrected Infinity Optical System [CCIS®]
Eyepieces	N-WF 10X/20mm, with diopter adjustment
Observation Tubes	Widefield binocular 30° [F.N. 20] Widefield trinocular 30° [F.N. 20] - light distribution 100:0/20:80 Widefield trinocular 30° [F.N. 20] - light distribution 50:50 fixed, erect image
Nosepiece	Reversed quintuple
Stage	BA310MET: 180x140mm surface; 75x50mm movement; coaxial controls BA310MET-T: 240x140mm surface; 75x50mm movement; coaxial controls (3”x2”) BA310MET-T: 300x180mm surface; 150x100mm movement; coaxial controls (6”x4”)
Focus	Brass gears; Z-Axis movement 30mm
Fine focus	2µm minimum increment
Incident light	12V/50W Halogen illuminator with external power supply Halogen bulb exchangeable with 3W LED (4500K,6000K), >20,000 hrs life span
Transmitted light	BA310MET-T: Built-in 6V/30W Halogen Koehler illumination Halogen bulb exchangeable with 3W LED (4500K,6000K), >20,000 hrs life span
Condenser	BA310MET-T: N.A. 0.85; focusable and centrable
Specimen thickness	Max. 30mm

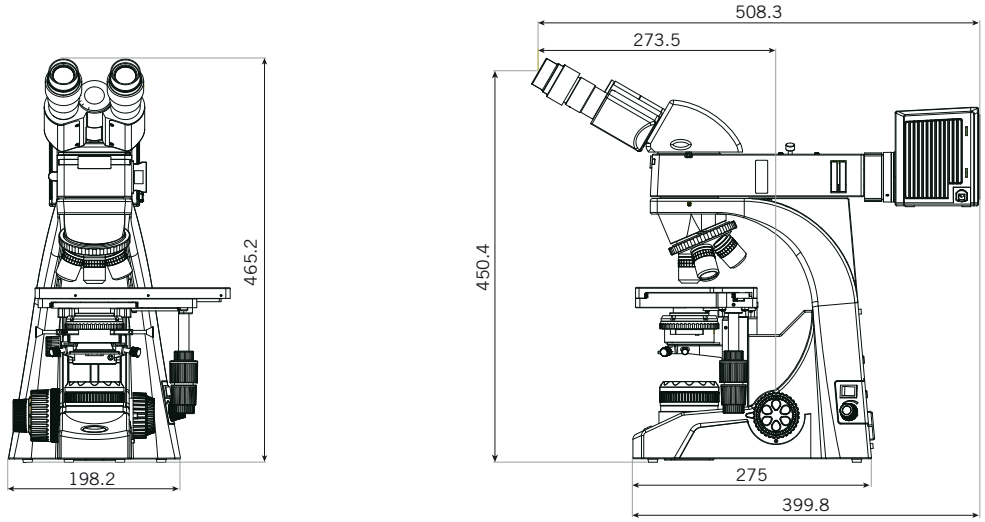
BA310MET-H Standard Specifications

Model	BA310MET-H
Optical System	Color Corrected Infinity Optical System [CCIS®]
Eyepieces	N-WF 10X/20mm, with diopter adjustment
Observation Tubes	Widefield binocular 30° [F.N. 20] Widefield trinocular 30° [F.N. 20] - light distribution 100:0/20:80 Widefield trinocular 30° [F.N. 20] - light distribution 50:50 fixed, erect image
Nosepiece	Reversed quintuple
Stage	180x140mm surface; 100x80mm movement; coaxial controls
Focus	Brass gears; Z-Axis movement 30mm
Fine focus	2µm minimum increment
Incident light	12V/50W Halogen illuminator with external power supply Halogen bulb exchangeable with 3W LED (4500K,6000K), >20,000 hrs life span
Specimen thickness	Max. 120mm

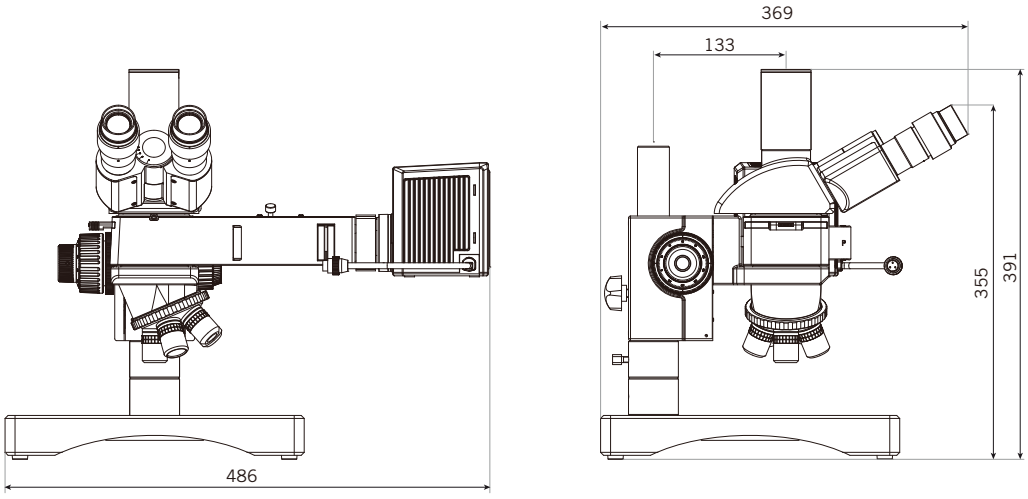
BA310MET Schematic Diagram (unit:mm)



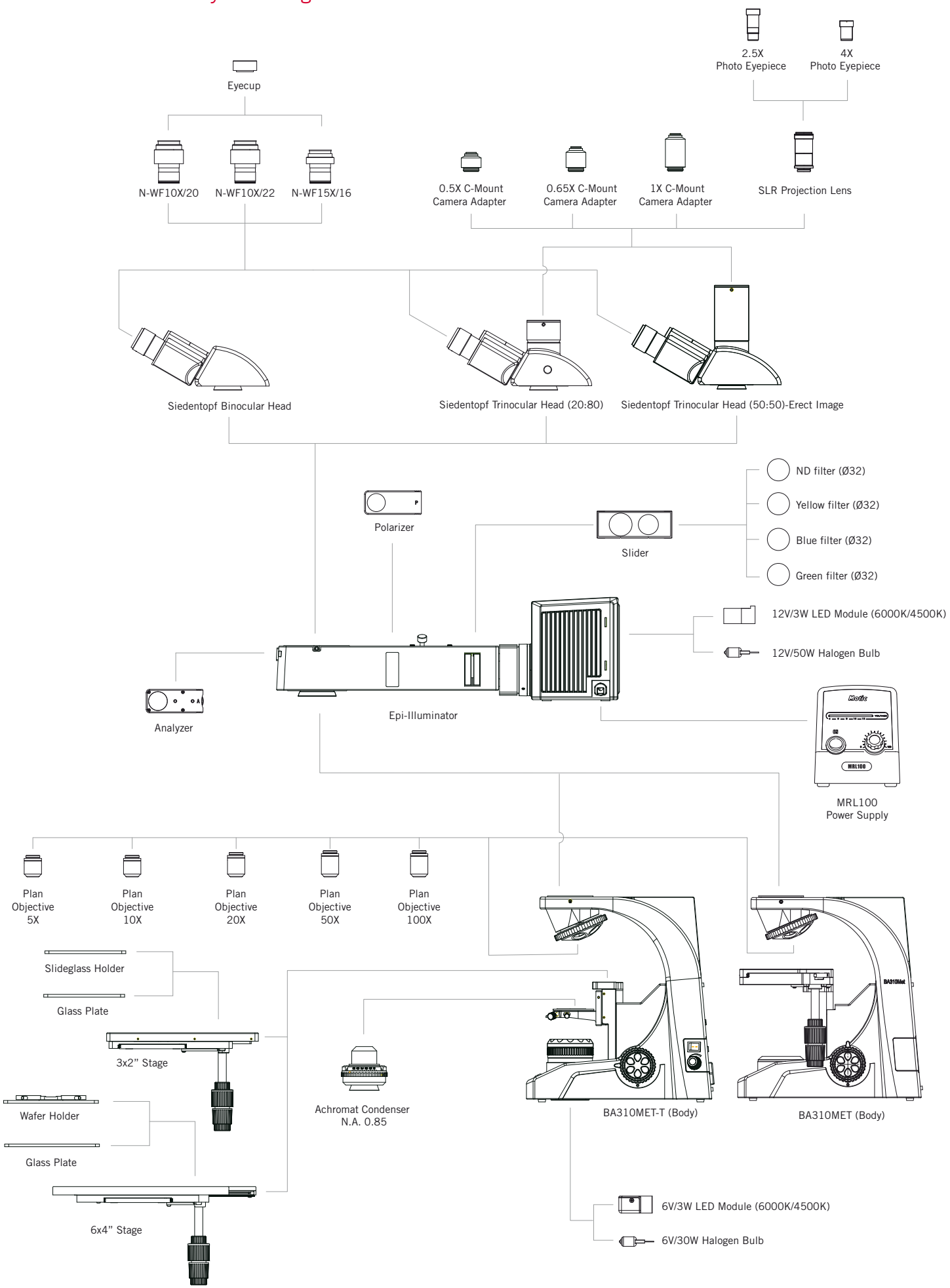
BA310MET-T Schematic Diagram (unit:mm)



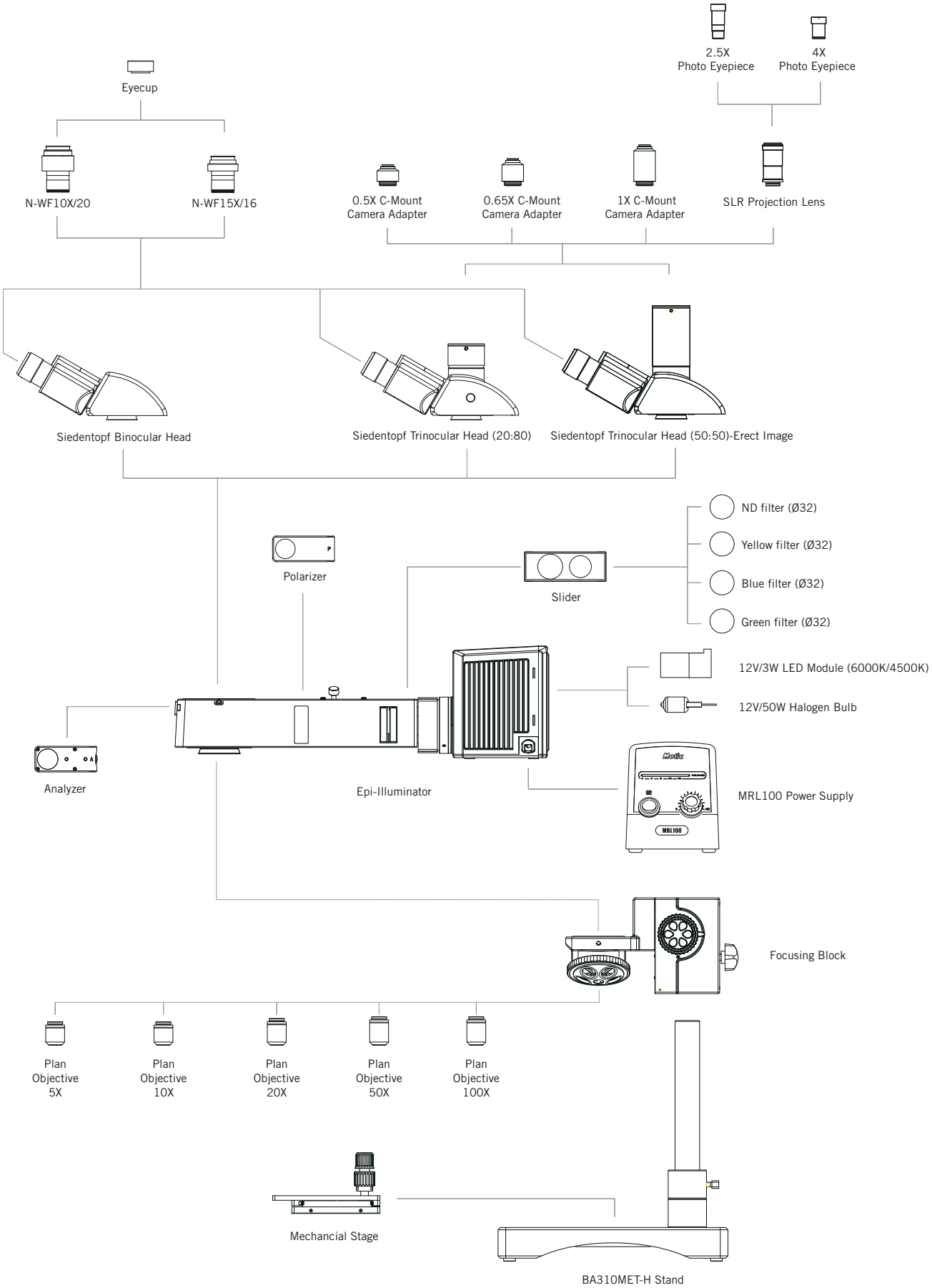
BA310MET-H Schematic Diagram (unit:mm)



BA310MET / MET-T System Diagram



BA310MET-H System Diagram



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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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