

BA310MET ADVANCED METALLURGICAL MICROSCOPE



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otic 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.



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





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.

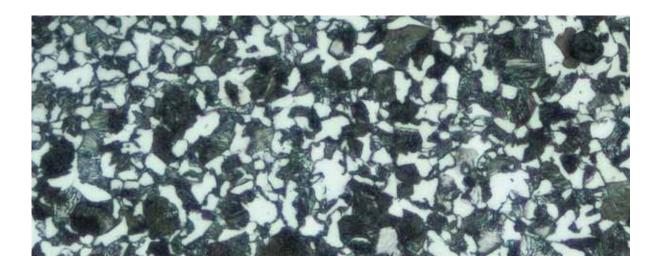
For extended demands, a 6"x4" (300x180mm) stage with a movement of 150x100mm can be supplied with the BA310MET-T.

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.



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

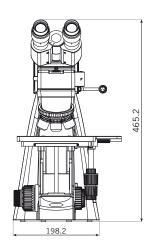
A set of CCD adapters, following the ISO standard with 38mm diameter, display improved optical performance to greatly enhance image reproduction quality. The appropriate adapter has to be chosen in relation to the chip size of the used digital camera. The following "magnifications" are available: 1X,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

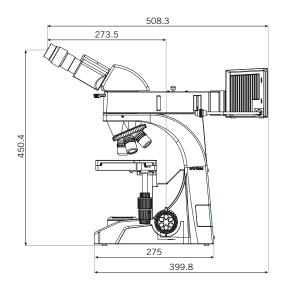
BA310MET / MET-T Standard Specifications

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

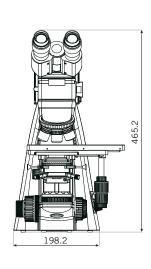
BA310MET-H Standard Specifications

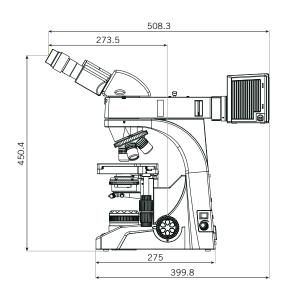
Specimen thickness	Max. 120mm	
	Halogen bulb exchangeable with 3W LED (4500K,6000K), >20,000 hrs life span	
Incident light	12V/50W Halogen illuminator with external power supply	
Fine focus	2μm minimum increment	
Focus	Brass gears; Z-Axis movement 30mm	
Stage	180x140mm surface; 100x80mm movement; coaxial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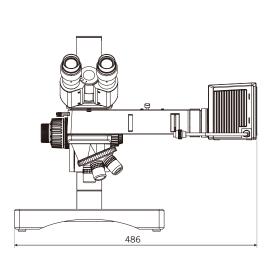


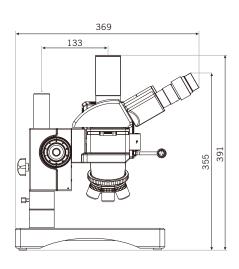
BA310MET-T Schematic Diagram (unit:mm)



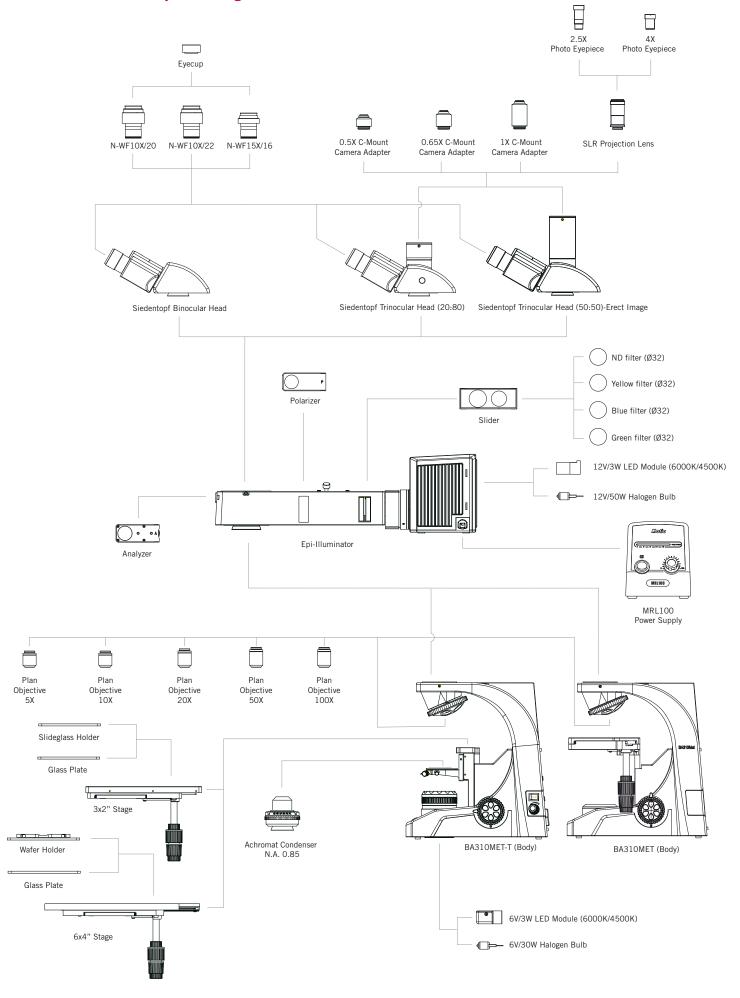


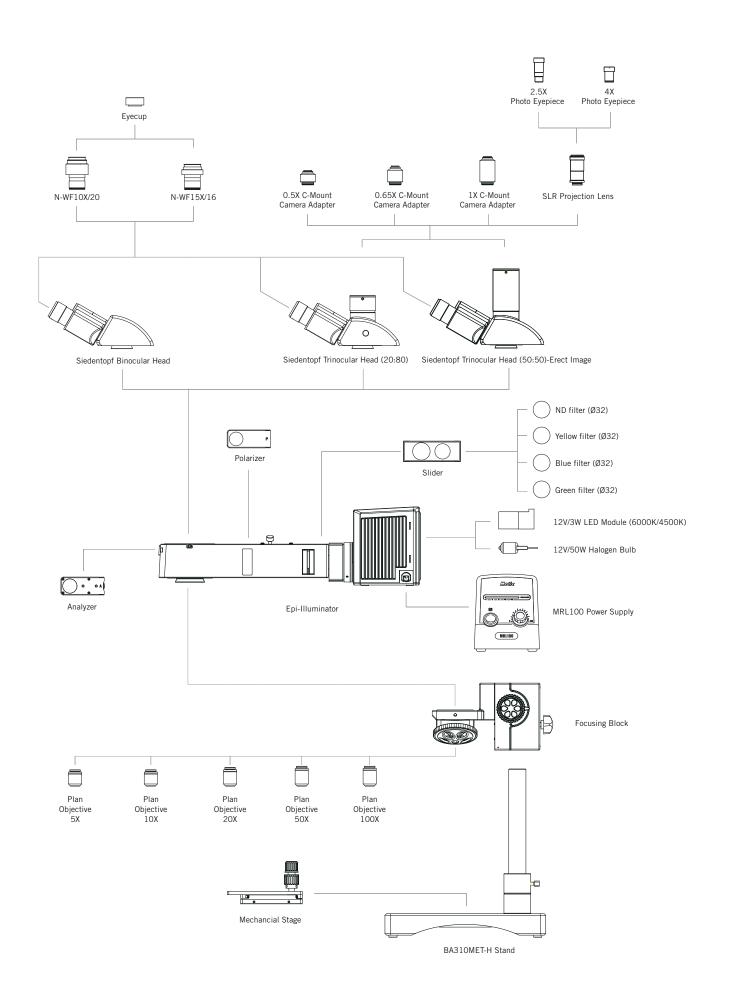
BA310MET-H Schematic Diagram (unit:mm)





BA310MET / MET-T 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.







