MicroBlue

BlueLine series

euromex
microscopes holland

user manual

Introduction

Thank you for purchasing the Euromex MicroBlue

The Euromex MicroBlue type microscopes are developed for use at schools and laboratories. Specific attention to production methods resulted also in an excellent price/performance ratio

Please read this manual carefully before using this product to ensure correct and safe usage

- The contents of this manual are subject to change without notice
- The appearance of the actual product can differ from the models described in this manual
- Not all equipment mentioned in this manual has to be part of the set you have purchased
- All optics are anti-fungus treated and anti-reflection coated for maximum light throughput

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Notes on handling and Safety

Handle with care

- This product is a high quality optical instrument. Delicate handling is required
- Avoid subjecting it to sudden shocks and impacts
- Impacts, even small ones, can affect the precision of the objective

Handling the LED

Note: Always disconnect the power cord from your microscope before handling the LED bulb and power unit and allow the system approximately 35 minutes to cool down to avoid burns

- Never touch the LED with your bare hands
- Dirt or fingerprints will reduce the life span and can result in uneven illumination, lowering the optical performance
- Use only Euromex original replacement LEDs
- Use of other products may cause malfunctions and will void warranty
- During use of the microscope, the power unit will get hot; never touch it while in operation and allow the system approximately 35 minutes to cool down to avoid burns

Dirt on the lenses

- Dirt on, or inside the optical components, such as eyepieces, lenses, etc., affects the image quality of your system negatively
- Always try to prevent your microscope from getting dirty by using the dust cover, prevent leaving fingerprints on the lenses and clean the outer surface of the lens regularly
- Cleaning optical components is a delicate matter. Please read the cleaning instructions in this manual carefully

Environment, storage and use

- This product is a precision instrument and it should be used in a proper environment for optimal use
- Install your product indoors on a stable, vibration free and level surface
- Do not place the product in direct sunlight
- The ambient temperature should be between 5 to +40°C and humidity is maximum 80% at 31 degrees decreasing linearly to 50% at 40 degrees. Although the system is anti-mold treated, installing this product in a hot, humid location may still result in the formation of mold or condensation on lenses, impairing performance or causing malfunctions
- Never turn the right and left focus knobs in opposite directions at the same time or turn the coarse focus knob past its farthest point, this will damage the microscope
- Never use undue force when turning the knobs
- Make sure that the microscope system can dissipate its heat
- Keep the microscope approximately 15 cm free from walls and obstructions
- Never turn the microscope on when the dust cover is in place or when items are placed on the microscope
- Keep flammable fluids, fabric etc. well out of the way

Disconnect power

- Always disconnect your microscope from power before doing any maintenance, cleaning, assembling or replacing LEDs to prevent electric shocks

Prevent contact with water and other fluids

- Never allow water or other fluids to come in contact with your microscope, this can cause short circuiting your device, causing in turn malfunction and damage on your system

Moving and assembling

- The MicroBlue microscope is a relatively heavy system, consider this when moving and installing the system
- Always lift the microscope by holding the main body and base of the microscope
- Never lift or move the microscope by its focusing knobs, stage or head
- When needed, move the microscope with two persons instead of one

Models

The EUROMEX MicroBlue range microscopes are standard equipped with 1 or 2 widefield eyepieces WF10x (H) and Achromatic-objectives, as mentioned below table

Please note: On www.euromex.com you can find the latest updates about MicroBlue models and accessories

MODELS	Mono	Bino	Trino	Maximum objectives	4/10/S40x objectives	S60x objective	S100x objective	Mechanical X-Y stage	LED	NeoLED	Batteries
MB.1001	•			3	•				•		•
MB.1051	•			4	•			•	•		•
MB.1651	•			4	•	•		•	•		•
MB.1151	•			4	•		•	•	•		•
MB.1052		•		4	•			•		•	•
MB.1652		•		4	•	•		•		•	•
MB.1152		•		4	•		•	•		•	•
MB.1053			•	4	•			•		•	•
MB.1653			•	4	•	•		•		•	•
MB.1153			•	4	•		•	•		•	•

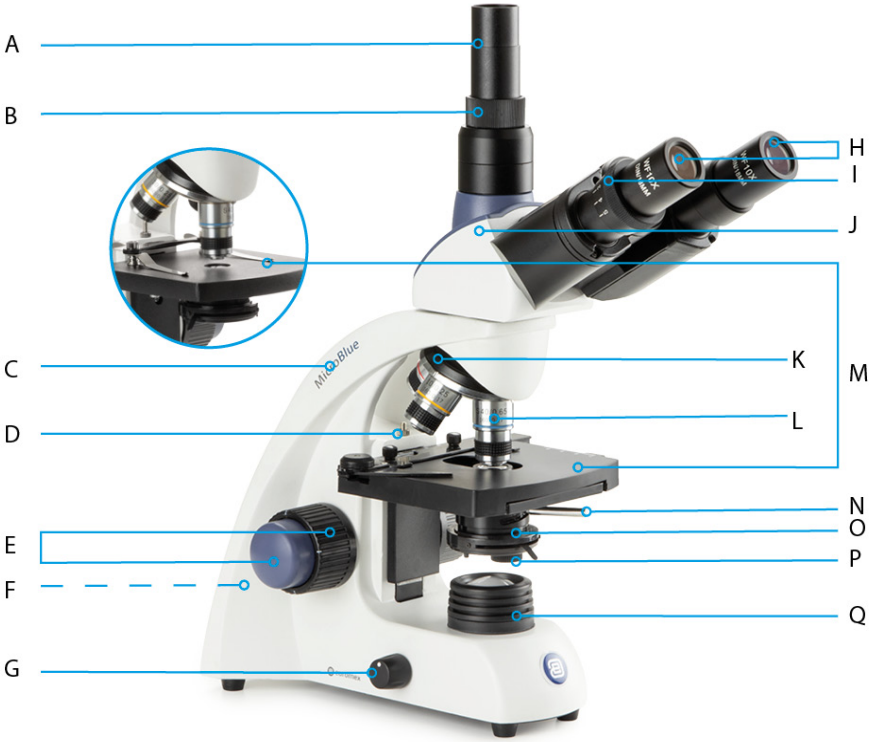
The S40x, S60x and S100x objectives are equipped with a spring mount, to prevent damage to the front lens and the slide. The Numeric Aperture - N.A. – of the objective is an indication for the resolving power of the objective. The total magnification can be calculated by multiplying the magnification of the eyepiece with the magnification of the objective. The magnifications are displayed in the table below:

Eyepiece	Objective	Magnification
10x	4x	40x
10x	10x	100x
20x	20x	400x
10x	40x	400x
10x	60x	600x
10x	100x	1000x

Components of the microscope

The names of the several parts are listed below and are indicated in the picture below:

A	Trinocular tube	I	Dioptric adjustment (bino/trino types only)
B	Camera focus adjustment ring	J	Head (mono/bino/trino 360° rotatable)
C	Stand arm	K	Revolving nosepiece for 3 or 4 objectives
D	Safety device	L	Objectives
E	Tension adjustment	M	Object stages (mechanical stage or clips)
F	On/Off switch (not visible)	N	Height adjustment lever condenser
G	Light intensity control	O	Condenser with irisdiaphragm + filterholder
H	Eyepiece(s)	P	Coaxial stage controls
		Q	Lamp housing



Preparing the MicroBlue microscope for use

Carefully remove the items from its packaging and place them on a flat, firm surface. Please do not expose the microscope to direct sun light, high temperatures, damp, dust or acute shake. Make sure the table or surface is flat and horizontal

When moving the microscope, use the left hand to hold the transport handle and hold the base of the microscope with the right hand

Hold the microscope at the top of the stand arm when it needs be moved. Holding the microscope by its stage or focusing knob will damage the microscope

Caution! If the bacterial solution or water splatters over the stage, objective or head, please pull out the power cord immediately and dry the microscope

Assembling Steps

Euromex Microscopes BV always tries to keep the number of assembly steps as low as possible for their customers but in some cases there are some steps to be taken. The steps mentioned below are often not necessary but nonetheless described for your convenience

Mounting the objectives

1. Rotate the coarse focusing knob to lower the stage to its lowest position
2. Install the objectives into the objective nosepiece from the lowest magnification to the highest in a clockwise direction from the rear side of the microscope. When using the microscope, start using the low magnification objective (4x or 10x) to find the specimen and focus, then continue with a higher magnification objective to observe in more detail

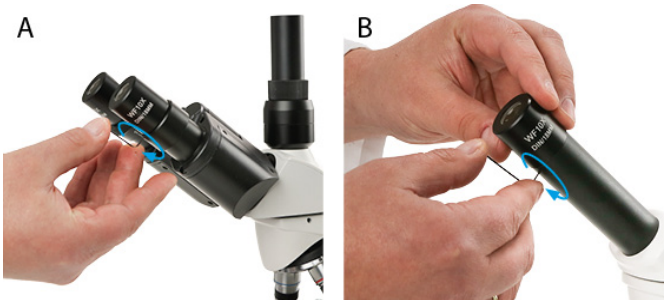
Placing the eyepieces

The 360° rotatable heads are equipped with WF10x eyepiece(s) (H). The monocular head version is equipped with a WF10x eyepiece (with pointer) which can be rotated and is locked with a screw. Please remove the screw before taking out the eyepiece to prevent damage

1. Remove the cover(s) of the eyepiece tube(s)
2. Insert the eyepiece(s) into the eyepiece tube(s)
3. Lock the eyepiece(s) with a hexagon screw

Locking the eyepieces

To lock the eyepieces in binocular models please find the screw as indicated in picture (A). Please note that location can be slightly rotated from model to model. For monocular models please find the right position of screw as indicated in picture (B)



The eyeshades (optional)

The eyepieces can be equipped with optional rubber eyeshades. They prevent damage to the eyepiece and prevent stray light. The eyeshade can simply be slipped over the eyepiece

Connecting the power adapter

The MicroBlue series supports a wide range of operating voltages: from 100 to 240V. Please use a grounded power connection

1. Make sure the power switch is off before connecting
2. Insert the connector of power cord into the MicroBlue power socket, and make sure it connects well
3. Insert the other connector of the adapter into the mains socket, and make sure it connects well

Do not bend or twist the power cord, it will be damaged. Use the power cord that is supplied by Euromex. If it is lost or damaged, choose one with the same specifications

Operation

Setting up the illumination:

For optimal contrast and resolution one should follow the procedure below:

A. Place a specimen on the object stage and focus, using the 4x objective, with a fully opened iris diaphragm
B. Turn light intensity to lowest position, then look through the eyepiece(s) and turn up to the comfortable light intensity level
C. Turn the condenser in the highest position
D. Close the iris diaphragm, until it is just visible on the edge of the field of view

The microscope is properly set for use with the 4x objective. For each other magnification in bright field use, this procedure should be repeated to ensure the best balance between contrast and resolution

Caution:
The maximum light intensity when using the 4x and 10x can damage the eyes!

Place the specimen slide

On the MB.1001 the slide is placed beneath the object clips. On the other models into the clamp of the mechanical stage and can be carefully moved into X- and Y- directions (M)

1. Push the arm of the specimen holder backwards
2. Release the arm slowly clamping the slide with the cover glass facing up
3. Rotating the X and Y-axis knob will move the specimen to the center for alignment with the center of the objective

Focusing and slide protection

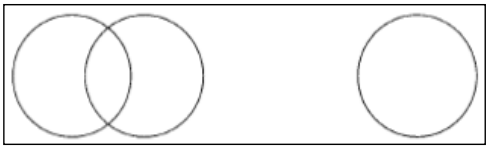
1. Select the 4x objective and make sure that it is placed correctly in the optical path
2. Rotate the coarse adjustment knob to top, observe the right eyepiece with your right eye. Rotate the coarse focusing knob until the image appears
3. Rotate the fine focusing knob to sharpen the image
4. When you perform focusing with a S100x objective, you need to lock the slide protection screw (D). The slide protection screw protects the slide by limiting the travel range of the mechanical stage. This way the objectives will not touch or break your slides. In case a standard version is purchased, including a S100x objective, this is pre-set at the factory

Eyepieces

A binocular (or trinocular) tube is less tiring for the eyes compared to a monocular tube. In order to obtain a smooth "compound" image, we recommend you to go through the steps below

1. The interpupillary distance

The correct interpupillary distance is reached when one round image is seen in the field of view (see image below). This distance can be set by either moving the tubes towards each other or moving them away from each other. This distance is different for each observer and thus should be set individually. When more users are working with the microscope it is recommended to remember your interpupillary distance for a quick set-up during new microscopy sessions



Field of view before adjustment

Field of view after adjustment

2. The correct eye point

The eye point is the distance from the eyepiece to the user's pupil. To obtain the correct eye point, move the eyes towards the eyepieces until a sharp image is reached at a full field of view

3. Adjusting the diopter

This chapter is only applicable for bino and trino's

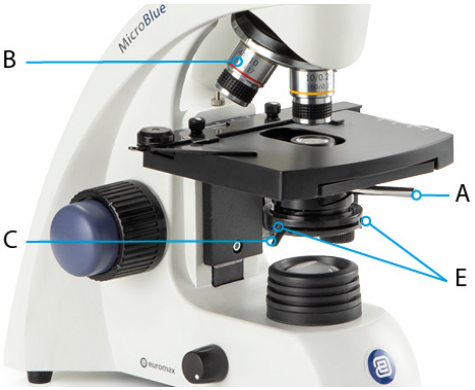
- Set diopter adjustment ring to zero (I)
- Close the left eye and focus the right tube by adjusting the coarse- and fine adjustment knobs (O)
- Close the right eye and focus the left tube with the diopter adjustment ring

This procedure should be followed by each individual user. When more users are working on the same microscope it is recommended to remember your own diopter setting for a quick set-up during new microscopy sessions

Abbe condenser

Beneath the object stage an Abbe condenser N.A. 1.25 is mounted (on all models except the MB.1001 and MB.1005-X models, which have a fixed 0.65 condenser). The condenser can be adjusted in height by moving the lever beneath the (mechanical) stage (N). By adjusting the condenser you can focus the light on the specimen for an optimized contrast. The condenser is factory pre-centered. If needed, the following procedure can be followed to center the condenser

A. Move the condenser to its highest position
B. Select the 4x objective and place it into the light path and focus the specimen
C. Slide the lever to adjust the diaphragm to the smallest position
D. Adjust the condenser height to the point where the image is the sharpest
E. Adjust the center adjustment screws using an allen key and move the image of the condenser ring to the center of the field of view
F. Open the diaphragm gradually
G. The condenser is centered correctly if the image remains in the center when you open the diaphragm



Use of the S100x oil-immersion objective

Some Euromex MicroBlue microscopes are equipped with an S100x N.A. 1.25 oil immersion objective. Please follow the instructions below on how to use this objective:

1. Remove the dust protection cap from the revolving nosepiece to mount the S100x objective (the objective can be premounted)
2. Focus the image with the S40x objective
   Turn the revolving nosepiece so the S100x objective almost reaches the click-stop
3. Put a small drop of immersion oil on the center of the slide (always use Euromex Immersion oil)
4. Now turn the S100x objective so that you feel the click stop
5. The front lens is in contact with the immersion oil
6. Look through the eyepiece and focus the image with the fine adjustment knobs
7. The distance between the lens of the objective and the slide is very small!
8. In case there are small bubbles visible, turn the S100x objective a couple of times from left to right so that the front of the objective moves in the oil and the bubbles will disappear
9. After using the S100x objective, loosen the slide protection handle and turn the table with the course adjustment knobs downwards until the front lens doesn't touch the oil any longer. Clean the front lens of the S100x objective

10. Always clean the front lens of the S100x objective with a piece of lens paper that is moistened with a drop of isopropanol. We recommend using Euromex lens paper and isopropanol
11. Clean the slide after use as well

Caution

- Never put a drop of xylol or alcohol directly on the lens of the objective. It could enter the objective and dissolve the glue that holds the lenses!
- Avoid oil contact with any of the other objectives!

Safety device

To prevent damage to the objective lens, or breaking the slide, all types are equipped with a pre-fixed safety device
It is recommended to use slides of 1.0 – 1.2 mm thickness (product numbers: PB.5150, PB.5155, PB.5160) in combination with cover glasses of 0.13 mm or 0.17 mm thickness (product numbers: PB.5165, PB.5168)

Illumination MicroBlue serie

The LED illumination of the MicroBlue is equipped with rechargeable batteries. The length of use after charging is about 48 hours. The full charging time is about 10 hours. At first use the batteries will have to be fully charged. Connect the external power supply unit to the power inlet socket. For all models with batteries it is highly recommended to use the microscope with power supply disconnected to keep the batteries in good working condition and recharge after batteries run empty

The illumination has the following specifications:

- LED/NeoLED : 1W, 300 mA (monocular)
- 1W NeoLED : 1W, 300mA equipped with Fresnel lens (for biocular and trinocular models)
- External Charger : Primary AC 85 – 100-240V Volt-50/60Hz 0.3A.
- Batteries : 3 NiMh, AA type, 1.2 Volt 1600 - 2000 mA.

Maintenance and cleaning

Always place the dust cover over your MicroBlue microscope after use. Always keep the eyepiece and objectives mounted on the microscope to avoid dust entering the instrument

Cleaning the optics

When the lens of the eyepiece or the front lens of the S40x, S60x or S100x objective is dirty, they can be cleaned by wiping a piece of lens paper over the surface (circular movements). When this does not help put a drop of alcohol on the lens paper and wipe it. Never put xylol or alcohol directly on the lens! Please note that Euromex offers a special microscope cleaning kit: PB.5275

It is not necessary – and not recommended – to clean the lens surfaces at the inner side of the objectives. Sometimes dust can be removed with high pressured air. There will never be dust in the objectives if the objectives are not removed from the revolving nosepiece

Caution
Cleaning cloths containing plastic fibers can damage the coating of the lenses!

Maintenance of the stand

Dust can be removed with a brush. In case the stand or table is really dirty then you can clean the surface with a non-aggressive cleaning product

Moving parts, like mechanical stage, contain ball bearings that are not dust sensitive. With a drop of sewing-machine oil you can lubricate the bearing

Changing the batteries of the MicroBlue

Caution:

Always remove the power cable from the mains supply!

- Open the small lid at of the bottom cover of the microscope by unscrewing the chrome screw
- Open battery compartment with small Philips screwdriver
- (Re)place the batteries and put the lid back into its place

Digital models and cameras

Digital models are equipped with a build in digital camera. Connect the supplied USB cable to camera and follow the dedicated software manual for use. The LED wich is placed beside the USB port will start to blink when activated in the software

MODELS	Digital LCD	Digital mono	1.3 MP	5.0 MP	Maximum objectives	4/10/S40x objectives	S60x objective	S100x objective	Mechanical X-Y stage	LED	Batteries
MB.1001-LCD*	•				3	•				•	•
MB.1051-LCD*	•				4	•			•	•	•
MB.1005-1		•	•		3	•				•	•
MB.1005-5		•		•	3	•				•	•
MB.1055-1		•	•		4	•			•	•	•
MB.1055-5		•		•	4	•			•	•	•
MB.1655-1		•	•		4	•	•		•	•	•
MB.1655-5		•		•	4	•	•		•	•	•
MB.1155-1		•	•		4	•		•	•	•	•
MB.1155-5		•		•	4	•		•	•	•	•

** models with LCD-screen*

Digital cameras are designed to be used on the photo port of the microscope head. It is also possible to use the digital camera in combination with a monocular or binocular head. Simply remove the eyepiece and place the camera with mounted c-mount adapter into the eyepiece tube (see image below). Focus the digital image with the coarse and fine controls of the microscope

For trinocular models, slide the camera with mounted c-mount adapter into the 23,2mm tube of the photo tubus. For focussing; loosen the ring (A) and slowly unscrew the tube (B) you will be able to match parfocality of the camera with the view through the eyepieces. Adjustment can be made by raising/lowering the height of the camera (C). Take an easy-to-view specimen and focus the image through the microscope's eyepieces (with dioptre adjustment set on "0"). Afterwards, perform this height adjustment procedure while watching the image on the computer screen. In this case, once you have obtained parfocality in the device, screw the ring (A) back (see image below)

Follow the manual that comes with the camera for camera operation

Trinocular MicroBlue head with mounted camera in photo port

Monocular MicroBlue microscope with camera replacing the original eyepiece

Accessories and spare parts

For current accessories and spares, please check our website www.euromex.com

Notes

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