

USCAMEL BW004

USCAMEL 40X-2000X Monocular Biological Laboratory Microscope User Manual

Model: BW004

1. INTRODUCTION

This user manual provides comprehensive instructions for the safe and effective use of your USCAMEL 40X-2000X Monocular Biological Laboratory Microscope. Designed for students, beginners, and enthusiasts, this microscope offers a wide range of magnifications and features dual LED illumination for clear observation of various specimens. Please read this manual thoroughly before operating the microscope and retain it for future reference.

2. SAFETY INFORMATION

- Always handle the microscope with care to prevent damage to optical components.
- Keep the microscope away from direct sunlight, high temperatures, dust, and moisture.
- Ensure the microscope is placed on a stable, level surface during use.
- Disconnect the power adapter when not in use or during cleaning.
- Do not attempt to disassemble or repair the microscope yourself. Contact qualified personnel for service.
- Keep small parts and accessories out of reach of young children to prevent choking hazards.
- Use only the provided power adapter or one with compatible specifications (240 Volts).

3. PACKAGE CONTENTS

Verify that all items listed below are included in your package:



Image: Overview of the USCAMEL microscope package contents.

- USCAMEL Monocular Biological Microscope
- Wide-field Eyepieces: WF10X, WF25X
- Objective Lenses: 4X, 10X, 40X
- 2X Extender Lens
- Phone Adapter
- Prepared Slides (10 pieces)
- Blank Slides (5 pieces)
- Experimental Tool Set (10 pieces)
- Power Adapter
- Lens Cleaning Cloth
- Instruction Manual

4. MICROSCOPE COMPONENTS

Familiarize yourself with the main parts of your microscope:



Image: Key components of the USCAMEL microscope.

1. **Eyepiece (Ocular):** Where you look to view the specimen. Includes WF10X and WF25X.
2. **Eyepiece Tube:** Holds the eyepiece. Designed with a 45° incline for comfortable viewing.
3. **Objective Lenses:** Revolving nosepiece holds 4X, 10X, and 40X objective lenses.
4. **Stage:** Flat platform where the specimen slide is placed.
5. **Stage Clips:** Secure the specimen slide on the stage.
6. **Coarse Focus Knob:** Large knob for initial focusing and large adjustments of the stage height.
7. **Fine Focus Knob:** Smaller knob for precise focusing and detailed adjustments.
8. **Illuminator (Light Source):** Dual LED illumination, with upper and lower lights.
9. **Diaphragm (Disk Diaphragm):** Located beneath the stage, used to adjust the amount of light passing through the specimen. Features 6 color filters.

10. **Brightness Control:** Adjusts the intensity of the LED illumination.
11. **Base:** Provides stability for the microscope.

5. SETUP

5.1 Unpacking and Placement

- Carefully remove all components from the packaging.
- Place the microscope on a stable, flat, and clean surface.

5.2 Power Connection

- Connect the provided power adapter to the microscope's power input port.
- Plug the adapter into a standard electrical outlet (240V).
- Alternatively, the microscope can be powered by batteries (not included) for portable use.

5.3 Eyepiece and Objective Lens Installation



Image: Eyepieces, objective lenses, and extender lens components.

- Insert your desired eyepiece (WF10X or WF25X) into the eyepiece tube.
- For higher magnification, you can insert the 2X extender lens into the eyepiece tube first, then insert an eyepiece into the extender.
- Rotate the revolving nosepiece to select the 4X objective lens for initial observation.

6. OPERATING INSTRUCTIONS

6.1 Powering On and Illumination Adjustment



Image: Dual LED light source controls.

- Turn on the microscope using the power switch.
- Use the brightness control knob to adjust the intensity of the LED light.
- Select between the upper (incident) and lower (transmitted) LED light sources based on your specimen type. The lower light is for transparent specimens, and the upper light is for opaque specimens.

6.2 Placing a Specimen

- Place a prepared slide or your own specimen slide onto the stage.
- Secure the slide using the stage clips.
- Center the specimen area you wish to observe directly under the objective lens.

6.3 Focusing and Magnification

- Start with the lowest magnification (e.g., 4X objective with WF10X eyepiece for 40X total magnification).
- Look through the eyepiece and slowly turn the **coarse focus knob** to bring the specimen into approximate focus.
- Once roughly focused, use the **fine focus knob** for sharp, detailed focusing.
- To increase magnification, rotate the revolving nosepiece to a higher objective lens (10X or 40X). Re-adjust focus using the fine focus knob.
- Total magnifications available: 40X, 80X, 100X, 200X, 250X, 400X, 500X, 800X, 1000X, 2000X.

6.4 Using the Diaphragm



Image: Disk diaphragm with color filters.

- Rotate the disk diaphragm located under the stage to adjust the aperture size and select different color filters.
- Adjusting the diaphragm helps control contrast and resolution, improving the clarity of your specimen.

6.5 Using the Phone Adapter



Image: Phone adapter attached to the eyepiece.

- Attach the phone adapter to the microscope eyepiece.
- Secure your smartphone into the adapter.
- Align your phone's camera lens with the eyepiece to view and capture images or videos of your observations.

7. MAINTENANCE

7.1 Cleaning

- Use the provided lens cleaning cloth to gently wipe optical surfaces (eyepieces, objective lenses).
- For stubborn smudges, use a small amount of lens cleaning solution specifically designed for optical instruments.
- Clean the microscope body with a soft, damp cloth. Avoid harsh chemicals or abrasive materials.

7.2 Storage

- When not in use, cover the microscope with a dust cover (not included) or return it to its original packaging.

- Store the microscope in a cool, dry place, away from direct sunlight and extreme temperatures.

8. TROUBLESHOOTING

Problem	Possible Cause	Solution
No illumination	Power adapter not connected; power switch off; batteries depleted (if applicable).	Check power connection; turn on power switch; replace batteries.
Image is blurry or out of focus	Incorrect focus adjustment; objective lens not properly rotated; eyepiece not fully inserted.	Adjust coarse and fine focus knobs; ensure objective lens clicks into place; fully insert eyepiece.
Image is too dark or too bright	Illumination brightness incorrect; diaphragm setting incorrect.	Adjust brightness control; rotate disk diaphragm to optimize light.
Dust or spots visible in the field of view	Dust on eyepiece, objective lens, or specimen slide.	Clean eyepiece and objective lenses with a lens cleaning cloth; clean specimen slide.
Phone adapter does not align camera	Phone not securely mounted; camera lens not centered over eyepiece.	Re-secure phone in adapter; carefully adjust phone position until camera lens is centered.

9. SPECIFICATIONS

Brand	USCAMEL
Model Number	BW004
Microscope Type	Monocular Biological Compound Microscope
Eyepieces	WF10X, WF25X (Wide-field optical glass)
Objective Lenses	4X, 10X, 40X
Extender Lens	2X
Total Magnification	40X - 2000X (40X/80X/100X/200X/250X/400X/500X/800X/1000X/2000X)
Illumination	Dual LED (Upper and Lower Transmissive/Incident)
Diaphragm	Disk Diaphragm with 6 Color Filters
Focusing System	Coarse and Fine Focus Knobs
Eyepiece Tube Angle	45 Degrees
Material	Metal Body with Enamel Finish
Power Supply	AC Adapter (240V) or Batteries (not included)
Dimensions (Package)	36 x 20.1 x 13.9 cm
Weight (Package)	1.77 kg

10. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the contact information provided with your purchase or visit the official USCAMEL website. Keep your purchase receipt as proof of purchase.