

**POPULAR
SCIENCE™**
BY  **CELESTRON®**

CELESTRON LABS

CM400 MICROSCOPE

WITH SMARTPHONE ADAPTER AND BLUETOOTH REMOTE



INSTRUCTION MANUAL

MODEL #44136

CELESTRON LABS

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WITH SMARTPHONE ADAPTER AND BLUETOOTH REMOTE

Congratulations on your Popular Science™ by Celestron® Labs microscope purchase. Your new Celestron Labs microscope is a precision optical instrument, made of the highest quality materials to ensure durability and long life. It is designed to give you a lifetime of enjoyment with minimal maintenance. This microscope provides magnification levels from 40x up to 400x. This range is well suited to examining subjects ranging from the fine details of coins and stamps (at 40x), to slide-mounted specimens of bacteria, blood cells and protozoans (at 400x).

Before attempting to use your Celestron Labs microscope, please read these instructions to familiarize yourself with the parts and functions of the microscope. Refer to the microscope diagrams to locate the parts discussed in the manual. The final section of the manual provides simple care and maintenance tips.

IN THE BOX

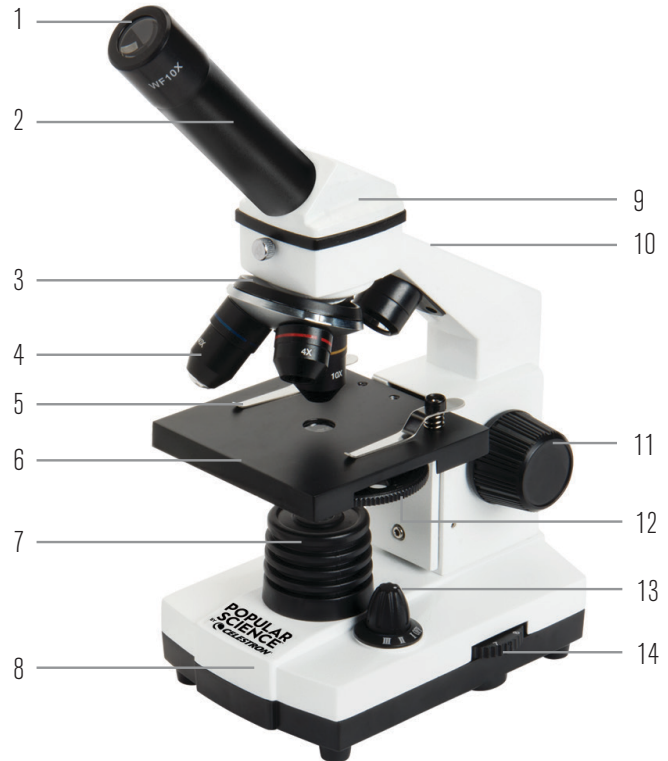
- CM400 Microscope
- Wide field eyepiece: 10x
- Universal AC Adapter with 4 International Plugs
- 10 prepared slides
- 3 AA batteries
- Smartphone Adapter and Bluetooth Remote

PARTS OF THE MICROSCOPE

1. Eyepiece
2. Eyepiece Tube
3. Nosepiece
4. Objective Lens
5. Stage Clip
6. Stage
7. Illuminator
8. Base
9. Head
10. Arm
11. Focus Knob
12. Disc Diaphragm
13. Power Switch
14. Illuminator Adjustment

SPECIFICATIONS

STAGE: Plain Stage with clips – 3.5 in x 3.5 in (88mm x 88mm)
HEAD: Monocular with 45° incline
MAGNIFICATION RANGE: 40x to 400x
FOCUSER: Coarse focus
OBJECTIVES: 4x, 10x, 40x
EYEPIECE: WF 10x



NOSEPIECE: Triple with click stop

ILLUMINATOR: LED, adjustable

CONDENSER: N.A. 0.65

DIAPHRAGM: Disc diaphragm with 6 aperture sizes

DIMENSIONS: 5.0 in x 6.0 in x 11.0 in (127mm x 152mm x 279mm)

WEIGHT: 2.7 lbs (1.108 kg)

MAGNIFICATION TABLE

Use the following table to determine magnification using your microscope's different eyepiece/objective lens combinations.

OBJECTIVE LENS:	4x	10x	40x
WF 10X EYEPIECE:	40x	100x	400x

SETTING UP YOUR MICROSCOPE

1. Remove the foam container from the carton.
2. Carefully remove the microscope and accessories from container and set them on a table, desk, or other flat surface.
3. Remove bag covering from microscope.
4. Remove cap from eyepiece tube (2).
5. Remove the eyepieces from plastic bags.
6. Insert the WF 10x eyepiece into the eyepiece tube (2).

SETTING UP YOUR MICROSCOPE (CONTINUED)

7. Plug the AC adapter into the socket on the back of the base (8).
8. Insert the plug end of the AC adapter into the proper power source.

Additionally the microscope can be powered with three AA batteries.

- Open the battery compartment on the base (8) of the microscope.
- Install the three AA batteries (supplied) and close the battery compartment.

MICROSCOPE OPERATION

Before viewing specimens, please read these sections thoroughly regarding focusing, changing power (magnification), using the stage and adjusting illumination.

VIEWING A SPECIMEN

Carefully place a specimen slide under the stage clips (5) and center the specimen. Images will be observed upside down and reversed right to left. Prepared slides are included with your microscope to help you get started.

You are now ready to focus and view a specimen. Be careful not to damage the specimen slide. When using higher powers while focusing, make sure the objective lens (4) does not hit the slide or object being viewed.

FOCUSING AND CHANGING POWER (MAGNIFICATION)

1. Always start with lowest power (4x objective lens and WF 10x eyepiece). This combination yields the lowest power.
2. Place a specimen slide (or object) on the stage (6) directly under the objective lens (4). Gradually turn the focus knob (11) until the specimen is in focus.
3. For higher powers, rotate the nosepiece (3) to change the objective lens (4) to 10x or 40x. This will yield a greater magnification. Gradually turn the focus knob (11) to refocus on the specimen.

NOTE: You should first turn the focus knob to lower the stage, before turning the objective carriage.

ADJUSTING THE ILLUMINATION

Specimens of different sizes, thickness and color variations will require different levels of illumination. In order to adjust illumination, turn the illuminator adjustment wheel (14) to either increase or decrease the illumination. The illuminator adjustment wheel (14) has three illumination settings (I being the lowest and III the highest). Optimal lighting is found by making adjustments and experimenting.

DIAPHRAGM

The disc diaphragm (12) has six diameter openings. These openings allow you to adjust the amount of light passing through the specimen. Adjusting the light can help you maximize brightness,

contrast, etc.

CARE, MAINTENANCE AND WARRANTY

Your Celestron Labs microscope is a precision optical instrument and should be treated with care at all times. Follow these care and maintenance suggestions and your microscope will need very little maintenance throughout its lifetime.

- When you are done using your microscope, remove any specimens left on the stage.
- Turn off the power and unplug the power cord (if applicable).
- Always place the plastic bag or dust cover over the microscope when not in use to help keep it clean.
- Store the microscope in a dry, clean place.
- Be very careful if using your microscope in direct sunlight to prevent damage to the microscope or your eyes.
- To carry your microscope, place one hand on the “arm”(10) of the microscope and the other hand under the base for support. Do not grasp your microscope by the focuser knob or head.
- Clean the outside surfaces (metal and plastic) with a moist cloth.
- Always unplug any cords before cleaning.
- Never clean optical surfaces with cloth or paper towels as they can scratch optical surfaces easily. Instead, use an air blower or camel hair brush.
- To clean fingerprints off of optical surfaces, use a lens cleaning agent and lens tissue available at most photo supply stores. When cleaning, do not rub in circles as this may cause streaks or scratches.
- Never disassemble your microscope or clean internal optical surfaces. Only qualified technicians at the factory or an authorized repair facility should attempt these repairs.
- When handling glass specimen slides, use care, as the edges can be sharp.

USING THE SMARTPHONE ADAPTER

Note: large smartphone cases should be removed from the smartphone before being fitted into the smartphone adapter. Some very large “ultra” or “plus” smartphones may be too large for use.

1. Pull outward on the spring clamp arms and place the smartphone into the space between the clamp arms so that it is securely grasped by the tension of the arms.
2. Loosen the smartphone clamp position knob (if not already loose) and position the eyecup of the adapter so that its aperture aligns with the camera lens of the smartphone.
3. Tighten the smartphone clamp position knob and check that the position of the adapter's eyecup aperture stays centered over the smartphone camera lens.
4. Slide the eyecup cuff over the eyepiece of the microscope.
5. Activate the smartphone camera and check that the image seen through the microscope is centered in the smartphone's viewing screen. If it is not, use the adapter's clamp position knob to make adjustments until it is. **NOTE:** the image will be vignetted (shows as a circle inside a black border area) - this is normal. Simply use the smartphone camera's zoom to expand the image until the vignetting disappears.

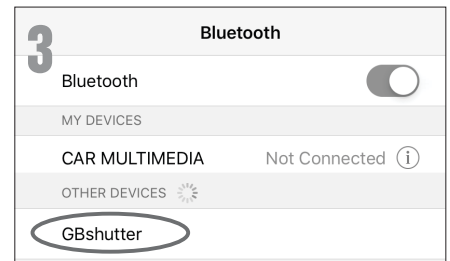
USING THE BLUETOOTH REMOTE



To insert or replace the battery, place your thumb in the center of the back cover, pressing inward and sliding downward to remove the battery door. The CR2032 battery should be inserted with the positive (+) side facing upward. Replace the cover.



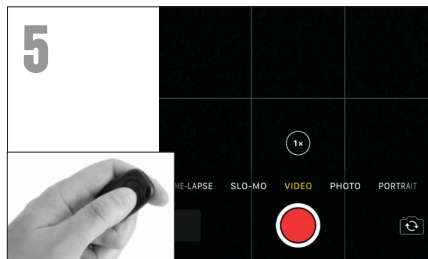
Press and hold the button on the remote for 5 seconds. A blue light will turn on and, after a few seconds, start to blink. The remote is now in pairing mode.



Using the Bluetooth settings on your phone, pair the device called "GBshutter".



Open your camera app. Press the button on the remote to trigger the shutter on your phone.



If your camera is in video mode, you can press the button once to start recording and again to stop the recording.

SAFETY INSTRUCTIONS

- Risk of explosion if battery is replaced by an incorrect type.
- The included battery is not rechargeable.
- Please use the battery in its original purpose to avoid causing the battery to short circuit. When the conductive material is connected directly to the battery positive and negative will cause a short circuit.
- Do not use a damaged battery.
- Keeping the battery in an extremely cold or very hot location can result in shortened battery life.
- When replacing the battery, please refer to the instruction manual and pay attention to the positive and negative direction of battery.
- Do not put the battery in the fire. Dispose of the battery according to local regulations.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC IDENTIFIER: 2A2FG-X9

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Product design and specifications are subject to change without prior notification. This product is designed and intended for use by those 14 years of age and older.



YOUR MICROSCOPE HAS A TWO YEAR LIMITED WARRANTY.
FOR MORE DETAILED INFORMATION, PLEASE VISIT CelestronLabs.com

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