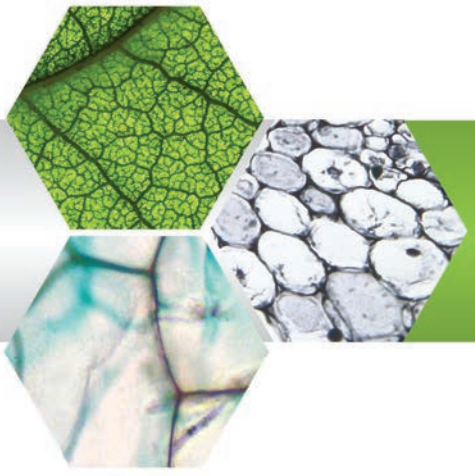
CELESTRON

TetraView™

LCD DIGITAL MICROSCOPE



INSTRUCTION MANUAL

MODEL #44349

INTRODUCTION

Thank you for purchasing the Celestron TetraView™ LCD Digital Microscope with a 4.3-inch touch screen monitor. Your microscope is a precision optical instrument, made of the highest quality materials. It is designed to give you a lifetime of enjoyment with minimal maintenance.

Before attempting to use your microscope, please read through the instructions to familiarize yourself with its functions and operations. See the microscope diagram to locate the parts discussed in this manual.

This microscope provides high powers from 40x up to 400x (up to 1600x with digital zoom). This microscope is mainly suited for examining specimen slides of yeasts and molds, cultures, plant and animal parts, fibers, bacteria, and more.

Unlike traditional microscopes, the Celestron TetraView™ LCD Digital Microscope does not use eyepieces. You will view specimens on the LCD screen. In addition, you can take snapshots or short videos with the built-in digital camera. Plus, you can view on most TV screens with the AV/TV cable.

The final sections of this manual provide simple care, maintenance and troubleshooting tips to ensure that your microscope provides you with years of quality performance and enjoyment.

Fig 1

ACCESSORIES INCLUDED WITH YOUR MICROSCOPE

- USB Cable 2.0
- AV / TV Cable
- 100 Slides
- Touch Pen
- Hard Case
- AC Adapter
- SD Card

SPECIFICATIONS

Stage	Mechanical Stage 3.5 in x 3.5 in (88 mm x 88 mm)
Digital Camera	5 MP ½.5" CMOS; 10x Magnification in lieu of an eyepiece
LCD Monitor	4.3 inch (109 mm) with 4x Digital Zoom – Touch digital TFT display Resolution – 480 x 272 pixels
Focuser	Dual – Coarse/Fine
Objectives	Glass – 4x, 10x 20x, 40x
Memory	8 GB SD Card (approximately 4, 500+ snapshots @ 5 MP)
LCD Rotation	180° – 90° left / 90° right
Filter Wheel	Red/Green/Blue/1 mm hole/3 mm hole/6 mm hole (default)
Nosepiece	Quad with click stop
Illuminator	Built-in electric – LED 6 Volt and 6 Watt
Condenser	N.A. 0.65
AC Adapter	Input Universal 100 to 240 Volt 50/60HZ
Batteries	User supplied 4 AA (optional - up to 3 hours usage)
Weight/Dimensions	67 oz/1.9 kg 7.0" (178 mm) x 5.5 in (140 mm) x 13.0 in (330 mm)

MAGNIFICATION (POWER)

Use the following table to determine the magnification of the different objective lenses in combination with your microscope using the normal mode of the digital image on the LCD screen and using the digital zoom feature.

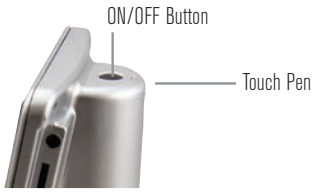
Objective Lens	4x	10x	20x	40x
Digital Image	40x	100x	200x	400x
Maximum with 4x digital zoom feature	160x	400x	800x	1600x

WORKING DISTANCE

Objective Lens	4x	10x	20x	40x
Working Distance (mm) - est.	35.3	7.8	1.9	0.7

TOUCH PEN

You can keep the touch pen handy in the receptable behind the Power ON/OFF button.



SETTING UP YOUR MICROSCOPE

1. Carefully remove the microscope and other parts from the carton and set them on a table, desk, or other flat surface.
2. Remove the plastic cover from the microscope.
3. Plug the small cable from the AC adapter into the socket on the back of the base (see Figure 2).
4. Plug the adapter into the proper power source.

Fig 2

Battery Operation – You can use your microscope without AC power if you choose. This gives you the freedom to operate the microscope outdoors or indoors, anywhere you please. You'll need 4 AA batteries (user supplied). Open the battery door on the bottom of the microscope and insert the batteries according to the battery polarity shown in the battery compartment (Figure 3). After the batteries are installed, close the battery door. Battery life will typically be three hours.

Fig 3

USING AN SD CARD

The TetraView™ comes with a 8 GB SD card, which you can use to capture images (snapshot or video). SD cards are inserted into the SD card slot in the LCD monitor (Figure 1).

MICROSCOPE OPERATION

Follow these instructions to turn on the LCD and adjust the microscope's stage and illumination before you begin observing. Remove the protective film from the LCD screen.

LCD MODULE

This digital microscope is different from traditional microscopes because it uses an LCD instead of eyepeices. With an LCD, you can view specimens on the screen by yourself or share them with others. To begin, turn on the LCD monitor by pushing the power button (see Figure 1). You will see "Celestron Digital Microscope" on the screen. The touch screen functions on the LCD module are mainly used for taking images (snapshots and video) and performing other functions that will be discussed later in this manual.

ILLUMINATION

To get the sharpest and best views, you'll need to choose the proper illumination (lighting):

1. To turn the illuminator on, see Figures 4 & 5 and turn one of the switches as shown.
2. The illuminator (Figure 1) is used mainly for specimen slides where the light shines up through the hole in the stage through the slide.

ADJUSTING THE LIGHTING

Specimens of different sizes, widths, and color variations will require different levels of illumination. Normally, you adjust the brightness by turning the switches shown in Figure 4 & 5. Another way to adjust brightness is by changing the EV function on the touch screen. The EV (exposure value) function increases or decreases the brightness level by using the (+) or (-) buttons on the screen.

When viewing a dark colored specimen, you may need to increase the amount of light to resolve certain features or details. This is best done by increasing the brightness of the illuminator by rotating the brightness control dial to its highest setting.
Experiment with adjustments to find optimum lighting settings. Each specimen and magnification may require slightly different illumination.

VIEWING A SPECIMEN

Your microscope fetures a mechanical stage with a stage holder clamp and directional knobs (see Figure 6).

1. Use the clamp lever to open the clamping arm of the stage holder clamp.
2. Place a specimen slide (1in x 3 in / 25.4 mm x 76.2 mm size) inside the holder and gently close the clamping arm against the slide.
3. Use the stage movement knobs to position the specimen over the opening in the stage. The rear stage movement knob moves the X-axis (forward and backward), while the front stage movement knob moves the Y-axis (side to side). For first time microscope users, it will take some time to get used to the movements, but soon you will be able to center objects easily.

   NOTE: A vernier scale on both axes allows the exact marking and replication of an object in the field of view.

4. Use the objective nosepiece (Figure 1) to rotate the objective lenses (Figure 1) until the 4x objective lens is directly over the specimen. Always start with the lowest power objective (4x with this microscope), which gives you 40 power, and work your way up to higher powers. At 40 power, you will have the widest field of view and the brightest image.

Fig 4

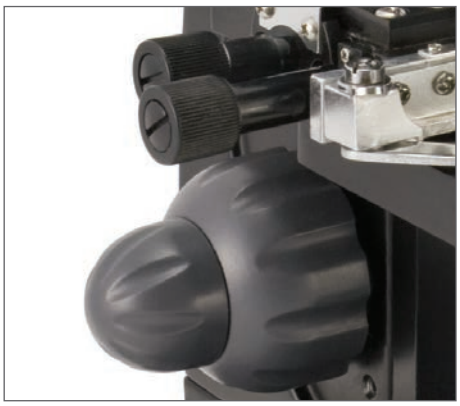


Fig 5

Fig 6

5. Look at the LCD screen while turning the focus knob (Figures 1 & 6) until the specimen comes into view. You may need to adjust the stage movement knobs (Figure 6) slightly to center the specimen in the field of view. The larger focus knob is the coarse focus and the smaller knob is for fine (exact) focusing.
6. With the 4x objective lens, you can also vary the power anywhere from 40x to 160x by using the digital zoom.
7. For higher powers, you will need to rotate the objective nosepiece to the 10x or 20x and to the 40x objective for the maximum power. You will have to refocus when changing the power of the objective lenses. While using any of these objective lenses, you also can increase power by using the digital zoom. Note that using a higher power objective lens will yield sharper images than a lower power objective lens and digital zoom for the same magnification.
8. To use the **digital zoom**, touch the screen icons on the right side of the screen to increase or decrease the power from 1x to 4x.

NOTE: When changing objective lenses, lower the stage to its lowest position so you do not hit anything during the rotation. At the higher powers, be careful when raising the stage close to the objective lens so that the objective does not hit the slide specimen (or other object) and cause damage.

USING FILTERS & THE DIAPHRAGM

Normally, most viewing or imaging can be done without colored filters. Before using the microscope, check to make sure no filters are in the optical path. To bring out different levels of detail, experiment with changing the color of the back lighting of the specimen especially for very bright transparent specimens. To change the lighting color, rotate the wheel (Figure 7) to the desired color – Red (R), Green (G), Blue (B). Each color is centered when you hear/feel the faint click stop. You may need to refocus by adjusting the focus knob (Figure 1) slightly for best viewing. You should experiment with each of the colors to see what works best.

Diaphragm – Within the wheel are holes with three different diameters, (1) 1 mm, (3) 3 mm, (6) 6 mm that limit the amount of light passing through to the specimen. These holes are part of the diaphragm. Changing the hole opening size helps you maximize the contrast, brightness, etc.

The default setting is (6) for the 6 mm hole, which should be used for most viewing. You can look under the stage (see Figure 8) to make sure the proper setting is actually being used.

ROTATING THE LCD SCREEN

You can rotate the viewing position of the LCD screen 180°: 90° to the right and 90° to the left. You can view any position you choose along the 180° rotation. This function allows you to share the view with others without actually moving the complete microscope. To move the LCD screen, hold the top of the arm (see Figure 1) with one hand, hold the LCD module with the other, and move it to the position you desire.

You can adjust the tension of the rotation of the monitor by tightening/loosening the adjustment screws as shown in Figure 1. It is best to have the tension somewhat tight so the monitor is rigid. **Turn the LCD screen on and you are now ready to use your microscope for viewing. If any problems arise, check the troubleshooting section.**

AV/TV CABLE

To view specimens or images on a larger format screen, connect the AV/TV cable in the receptable (see Figure1) on one end and the other end into the socket on the monitor (if your monitor has a socket for this purpose).

Fig 7

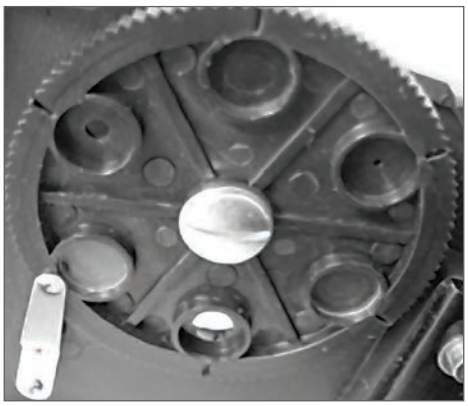


Fig 8

DIGITAL IMAGING

You can take snapshots or a short video with your microscope using the built-in digital camera. With the SD card memory, you do not need to use a PC or any other devices to do imaging. Transferring images to your PC for saving or printing is easy and will be discussed later in this manual.

NOTE: If you are going to take images, do not connect the USB cable to your PC or damage could occur to the equipment. The USB cable is not used for taking images.

SETTINGS AND INFORMATION FOR THE DIGITAL CAMERA AND THE TOUCH SCREEN

The touch screen icons and their functions are quite easy to use. Below we'll discuss the general use of the icons. Typically, you use your fingers with the touch screen, but you can use the included touch pen as well. You will find the following 12 icons when in viewing/snapshot mode:

NOTE: After turning the LCD Monitor off, most settings will revert to the default settings.

VIEWING/SNAPSHOT MODE

Fig 9

1. Increase EV function
2. Decrease EV function
3. Selection mode
4. Pixel setting
5. Snapshot selection
6. Color special effect
7. Settings
8. Shutter trigger/take snapshot
9-10. Digital zoom indicator ±
11. SD card storage
12. Snapshots remaining

Settings Icon (7)

Time & Date – Year, month, date, and time

Language – Choose from Chinese (simple or traditional), English, French, German, Italian, Japanese, Korean, Portuguese, Russian, and Spanish

Beep – Beeps with each touch of the screen (can be disabled)

Default Factory Settings – Revert to factory settings

Format- Format the SD card

TV OUT - Sends a signal to an external monitor

Pixel setting icon (4)

Lightly tap the icon to change the pixel setting from 640x360, 1920x1080, 2048x1152, 2560x1440, 3072x1728, and 3648x2048. 3072x1728 is the sensor resolution and 3648x2048 gives you higher resolution through interpolation.

Snapshot selection (5)

The default setting is single shot, but you can set for timed shots.

VIDEO MODE

To take videos, change the "video" setting first. The icons on this image (Figure 10) work the same way as in the snapshot mode with the following exceptions:

VIDEO MODE

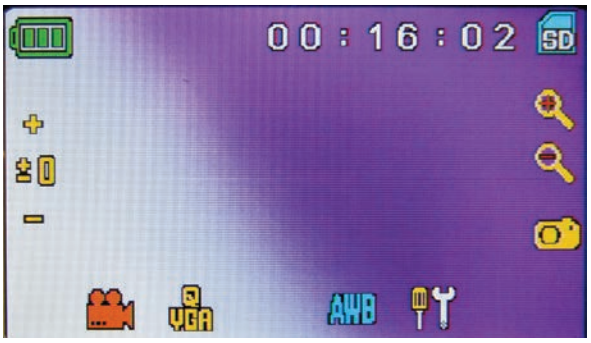


Fig 10

(3) Touch to go to viewing mode.

(4) Set the pixel size to 640x360 (the highest resolution for videos) by touching the screen. In both resolutions (high 640x360 or low - QVGA), the frame specifications is 20fps.

(8) Record Video – Touch to begin video and touch again to stop the video.

(12) Indicates recording time remaining.

SNAPSHOT OR VIDEO REVIEW

From the video mode, touch the video icon in the lower left of the screen to go to the review mode. In this mode, you can review the snapshots and videos you have taken. Touch the arrows and touch/scroll the screen to navigate and view your videos and snapshots. You can also delete them if you choose.

NOTE: Inserting or removing an SD card while the LCD is on may cause the LCD to shut down and/or could damage the SD card.

TRANSFERRING YOUR IMAGES

To transfer images to a PC or Mac, you need to have a free USB port on your PC and have an imaging program for snapshots and/or video.

NOTE: Do not disconnect the USB cable while transferring images or damage may occur.

1. You can transfer images from the SD card to your PC by using the supplied USB cable. The small plug end of the cable plugs into the LCD monitor (see Figure 1) and the large plug end of the cable plugs into your PC.When connected properly, you will see "MSDC" or similar on the screen. Your PC will automatically recognize the new hardware. Then you will choose a program on your PC to use for transferring images.
2. You can take the SD card out and use the SD card slot on your PC (if available) to transfer the images as well. Either way, your PC will ask you to choose which program you want to transfer the images to.

Deleting all Snapshots/Video Images – To delete all images use the memory format function, select Settings / Memory / Format and choose SD card or Flash memory.

TROUBLESHOOTING

If you do not see an image on your LCD screen, here are a few things to check:

1. Make sure the AC adapter is plugged in to an AC power source and attached to the microscope securely and correctly.
2. Make sure you have the illuminators turned on with maximum brightness adjustment.
3. Make sure the objective lens you have chosen is set correctly and it has clicked in the right position.
4. Make sure that the diaphragm (filter wheel) is set correctly at a click position so that the illuminated light comes up properly. The normal position is the 6 position (6 mm hole) for most applications.
5. Make sure the specimen slide is correctly inserted into the clamp on the mechanical stage and properly centered.
6. Make sure the SD card is inserted properly. If icon does not display, then remove and insert again.
7. If the touch screen icons are not working properly, turn the microscope OFF and ON.

CARE, MAINTENANCE, AND WARRANTY

Your Celestron 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 illuminator switches.
- Turn off the LCD monitor – push the on/off button until you see “Shutting Power Off.”
- Unplug the power cord.
- 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 and clean place.
- Be very careful if using your microscope in direct sunlight to prevent damage to the microscope or your eyes.
- When moving your microscope, carry it by the “arm” with one hand and not by the focuser knob, LCD monitor, etc. Then, put your other hand under the base for support.
- 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.
- To clean optical surfaces, 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 outlets. When cleaning, do not rub in circles as this may cause streaks or scratches to occur.
- Never disassemble or clean internal optical surfaces. This should be done by qualified technicians at the factory or other authorized repair facilities.
- When handling glass specimen slides, use care as the edges can be sharp.

YOUR MICROSCOPE HAS A TWO YEAR LIMITED WARRANTY. FOR ASSISTANCE WITH THIS PRODUCT, PLEASE VISIT CELESTRON’S ONLINE TECHNICAL SUPPORT CENTER AT HTTPS://WWW.CELESTRON.COM/PAGES/TECHNICAL-SUPPORT. HERE, YOU MAY SEARCH THROUGH A COMPREHENSIVE DATABASE OF FREQUENTLY ASKED QUESTIONS OR SUBMIT A REQUEST FOR ASSISTANCE.

celestron.com

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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.