



PentaView™

LCD DIGITAL MICROSCOPE

INSTRUCTION MANUAL
MODEL #44348

ENGLISH



INTRODUCTION

Thank you for purchasing the Celestron PentaView™ LCD Digital Microscope with a 4.3" touch screen monitor. Your 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 pleasure with a minimal amount of maintenance.

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

This microscope provides high powers from 40x up to 600x (up to 2400x with digital zoom). This microscope is mainly suited for examining specimen slides of yeasts and molds, cultures, plant and animal parts, fibers, bacteria, etc. You can also examine thin,

small objects such as coins, stamps, PC boards, insects, and other objects especially at the lower powers, but remember the lowest power is 40x.

The Celestron PentaView™ LCD Digital Microscope does not use eyepieces that are used in traditional microscopes. You will view specimens or objects on the LCD screen which are easy to see and you can also enjoy them with others. 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 for you to follow to ensure that your microscope provides you with years of quality performance, usage, and enjoyment.



FIGURE 1

Standard Accessories Included with your Microscope

- Digital Camera — built-in
- 4x Objective Lens
- 10x Objective Lens
- 20x Objective Lens
- 40x Objective Lens
- 60x Objective Lens
- LCD Touch Screen Monitor
- Top & Bottom Illuminators
- Filter Wheel/Diaphragm — 6 position
- USB Cable 2.0
- AV/TV Cable
- 10 Prepared Slides
- Touch Pen
- Hard Case
- Dust Cover
- SD Card Slot
- AC Adapter
- 4GB SD Card

SPECIFICATIONS

Stage	Mechanical Stage 3.5" x 3.5" (88 mm x 88 mm)
Digital Camera	5 MP 1/2.5" CMOS; 10x Magnification in lieu of an Eyepiece
LCD Monitor	4.3" (109 mm) with 4x Digital Zoom — High definition touch digital TFT display Resolution — 480 x 272 pixels
Focuser	Dual — Coarse/Fine
Objectives	Achromatic, glass type — 4x, 10x 20x, 40x and 60x You can use optional objective lenses up to 60x but not lower than 4x — DIN35 RMS thread size WJ 4/5" x 1/36"
Memory	4GB SD Card (approximately 1,100+ snapshots @ 5mp Snapshots in JPEG format and 3GP files for Video)
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
Illuminators	Built-in electric — both are LED 6 Volt and 6 Watt
Condenser	N.A. 0.65
AC Adapter	Input Universal 100 to 240 Volt 50/60HZ
Batteries	User supplied 4AA — approx. 3 hour usage
Weight/Dimensions	67 oz/1.9 Kg 7.0" (178 mm) x 5.5" (140 mm) x 13.0" (330 mm)

MAGNIFICATION (POWER) TABLE

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	60x
Digital Image — normal	40x	100x	200x	400x	600x
Maximum with 4x digital zoom feature	160x	400x	800x	1600x	2400x

WORKING DISTANCE

Objective Lens	4x	10x	20x	40x	60x
Working Distance (mm) - est.	35.3	7.8	1.9	0.7	0.2

TOUCH PEN

You can keep the touch pen handy by keeping it in the receptacle behind the Power ON/OFF button.



SETTING UP YOUR MICROSCOPE

- Carefully remove the microscope and other parts from the carton and set them on a table, desk, or other flat surface.
- Remove the plastic cover from the microscope.
- Plug the small cable from the AC adapter into the socket on the back of the base (see Figure 2).
- Insert the plug you need (see note below) into the AC adapter and then plug the adapter into the proper power source.

FIGURE 2



Note: The AC Adapter supplied with this microscope has an interchangeable plug system that can work in the USA, UK, Europe, Australia, and many other parts of the world. You can easily change plugs for your particular requirement by doing the following:

A. You may have one of two different types of adapters. One is shown in Figure 3A and another one is somewhat similar

shown in Figure 3B and each has a different means of changing plugs.

B. For the Figure 3A type, push down on the small button labeled "PUSH" and hold it down while at the same time hold the prongs of the plug and rotate it slightly counterclockwise and pull up to remove it. Then remove your finger from holding the "PUSH" button down.

Take the plug style that you want to use and center it over the AC Adapter and rotate it until it falls down into the opening. Then rotate it clockwise until you hear a click

FIGURE 3A



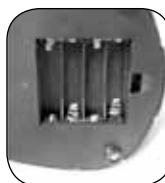
FIGURE 3B



sound which lets you know the plug is now installed correctly.

- C. For the Figure 3B type, pull the plug up and away while holding the base of the AC Adapter and the plug will come off. Take the plug style that you want to use and

FIGURE 4



align the two holes in the bottom of the plug with the two pins in the AC Adapter. Then, push the plug into the AC Adapter all the way and you are finished.

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. The battery operation requires 4AA 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 4). After the batteries are installed close the battery door. Battery life will typically be three hours.

USING AN SD CARD

The PentaView is supplied with a 4GB SD Card and you can use it to capture images (snapshot or video). SD Cards are inserted into the SD Card Slot in the LCD Monitor (Figure 1).

MICROSCOPE OPERATION

Before looking at specimens you must turn the LCD on, turn on the proper illumination, and understand how to use the mechanical stage and then you are ready to begin viewing. Remove the protective film from the LCD screen.

LCD Module — This digital microscope is different than traditional microscopes — instead of using eyepieces to look at a specimen in a traditional microscope, the LCD monitor replaces the eyepieces so you can look at the specimen on the screen by yourself or share the views with others. To begin to view specimens with your microscope, you will have to turn the LCD monitor on by pushing the Power Button (see Figure 1) and you see “Celestron Digital Microscope” on the screen. That is basically all you need to do to use the LCD screen for viewing specimens. The touch screen functions on the LCD Module are mainly used for taking images (snapshots and video) and

FIGURE 5



performing other functions and will be discussed later in this manual.

Illumination — To get the sharpest and best views, the proper illumination (lighting) must be chosen:

1. To turn the illuminator(s) on, see Figures 5 & 6 and turn the switches as shown for each.
2. The top illuminator (Figure 1) was designed to be used at low power (4x objective) as higher power objective lenses (10x, 20x & 40x) will block some of the light. If you need to use high power to observe solid objects, use a bright secondary light (desk lamp, etc.) for directed illumination.
3. The bottom illuminator (Figure 1) is used mainly for specimen slides where the light shines up through the hole in the stage through the slide.
4. Having both illuminators on at the same time can provide enough light for thick and irregular specimens.

Adjusting the Lighting — Specimens of different size, thickness, and color variations will require different levels of illumination. Normally you adjust the brightness by turning the switches shown in Figure 5 & 6. Another way to adjust brightness is by

FIGURE 6



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 specimen that is not transparent or dark in color, you may need to increase the amount of light to resolve certain features or details. This is best done by simply increasing the brightness of the illuminator by rotating the brightness control dial all the way to its highest setting.

Optimum lighting will be found by experimenting with adjustments as each specimen may require slightly different illumination as well as the same specimens viewed under different powers.

Viewing a Specimen — Your instrument is provided with a

FIGURE 7



mechanical stage with a stage holder clamp and directional knobs — see Figure 7.

1. Use the clamp lever to open the clamping arm of the stage holder clamp.
2. Place a specimen slide (1" x 3"/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) whereas 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 and shortly 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 that the user may want to come back to.

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.
5. Look at the LCD screen while turning the focus knob (Figures 1 & 7) until the specimen comes into view. You may need to adjust the stage movement knobs (Figure 7) 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 versus a lower power objective lens and digital zoom for the same magnification.
8. Your microscope includes a 60x objective lens packed separately. The 60x objective allows you the maximum power available. When specimen detail requires extreme power, you can install the 60x objective lens by replacing any existing objective lens. Turn the knurled ring at the top of the objective lens you want to replace counterclockwise until it comes out. Then, install the 60x objective lens by turning it clockwise until tight.
9. To use the **digital zoom**, you 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 will not hit anything during the rotation. Also, 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.

FIGURE 8



Using Filters & the Diaphragm — Normally most viewing or imaging will be done without colored filters and before using the microscope check to make sure no filters are in the optical path. However, 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 8) 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 the results.

Diaphragm — within the wheel are holes with three different diameters, (1) 1 mm, (3) 3 mm, (6) 6 mm which limit the amount

FIGURE 9



of light passing through to the specimen. These holes are part of the diaphragm which allows you to change the hole opening size to maximize the contrast, brightness, etc.

The default setting is the (6) for the 6 mm hole which should be used for most viewing. You can look under the stage (see Figure 9) to make sure the proper setting you wish 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 and then 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 and if any problems check the trouble shooting section.**

AV/TV Cable — To view specimens or images on a larger format screen, connect the AV/TV cable in the receptacle (see Figure 1) on one end and the other end into the socket on the monitor (if your monitor has a socket for this purpose).

DIGITAL IMAGING

You can take snapshots or a short video with your microscope with 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 of images to your PC for saving and or printing them 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 at all 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 and intuitive in nature. Below will be discussed 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. The touch screen has various functions and choices among those functions. From the image to the left you will find the following twelve icons/ when in the viewing/ snapshot mode!

FIGURE 10 VIEWING/SNAPSHOT MODE 12



- | | |
|-------------------------|--------------------------------|
| 1. Increase EV Function | 7. Settings |
| 2. Decrease EV Function | 8. Touch to take snapshot |
| 3. Selection Mode | 9-10. Digital Zoom Indicator ± |
| 4. Pixel Setting | 11. SD Card Storage |
| 5. Snapshot selection | 12. Snapshots remaining |
| 6. Color special effect | |

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

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 or you can turn it off
- Default Factory Settings — change all back to factory settings

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)

Normal is single shot but you can set for timed shots.

Video mode

You can take videos in this mode.

To take videos, you need to make the settings first. The icons on this image (Figure 11) do the same as in the snapshot mode except the following:

3. Touch to go to the viewing mode
4. Set the pixel size to 640x360 (the higher 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. 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. Just touch the arrows and touch/scroll the screen to navigate and view your videos, snapshots and 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 and have an imaging program for snapshots and/or video.

FIGURE 11 VIDEO MODE 12



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. If the connections are proper you will see on your microscope screen "MSDC" or similar data. Your PC will automatically recognize the new hardware. Then you will choose which program on your PC you want to transfer the images to.

2. You can take the SD card out and use the SD card slot on your PC (if available) to transfer the images. In 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 – Settings / Memory / Format and choose SD card or Flash memory.

TROUBLE SHOOTING

If you do not get an image to view on your LCD screen, here are a few things to double 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 fit 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. Touch Screen Icons not working properly. Power OFF and ON.

CARE, MAINTENANCE, AND WARRANTY

Your Celestron accessory 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 or when being stored to help keep it clean.
- Store the microscope in a dry and clean place.
- Be very careful if using your microscope in direct sun light 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 plastics) 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.
- Blow off dust with a camel's hair brush or an air blower from optical surfaces.
- To clean fingerprints off of optical surfaces, use a lens cleaning agent and lens tissue available at most photo outlets and 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.
PLEASE SEE THE CELESTRON WEBSITE FOR DETAILED INFORMATION AT
WWW.CELESTRON.COM.



EEC: This product complies with EEC guidelines in EN61558-2-6:1997 and EN61558-1:1997+A1



FCC Statement

This device complies with Part 15 of 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.

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Product design and specifications are subject to change without prior notification.

Designed and intended for those 13 years of age and older.