

INSTRUCTION MANUAL

Orion® MicroXplore™ LCD Microscope 5 MegaPixel

#52167



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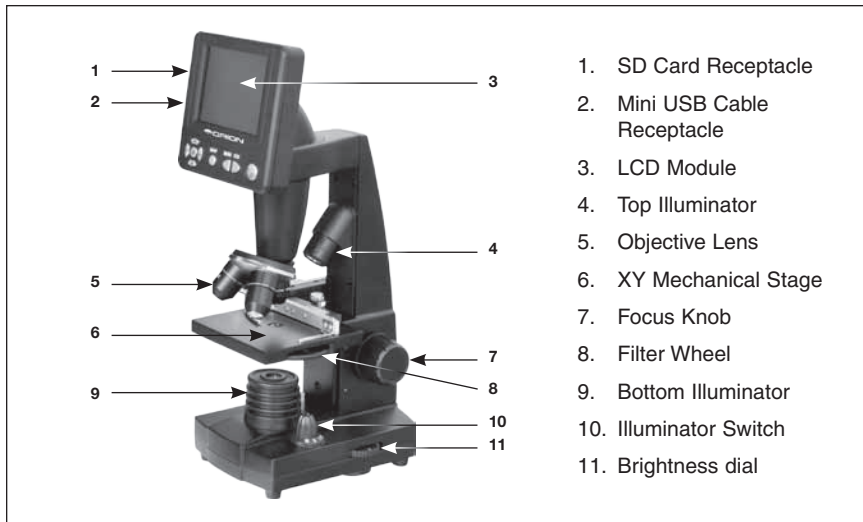


Figure 1. The Orion MicroXplore LCD Microscope.

Welcome to a new world of adventure. Your new Orion MicroXplore LCD microscope (MXLCD) is capable of capturing detailed, high resolution, full-color images and movies of microscopic worlds awaiting your discovery.

Examine specimen objects at high powers of 40X up to 400X (up to 1600x with digital zoom).

View subjects on screen using the 3.5" Color LCD High Definition TFT display.

Capture images and movies using the built in 5 MegaPixel CMOS camera.

Store images and movies to the SD card slot.

Transfer images and movies using the included USB cable or via SD card slot (SD Card included).

Also features a mechanical XY stage, 6 position filter wheel, top and bottom illuminators, carry case and accessories.

Please read this instruction manual before attempting to use the microscope.



Figure 2. Included items

Included Items

- 5 Prepared Slides
- 10 blank slides
- 10 cover glass (cover slip)
- Diffuse Collector Lens
- Scissors
- Dropper
- Tweezers
- Shrimp Eggs
- Salt
- Yeast
- Gum
- Hatchery
- 2x cutlery/dissection needles
- Microtome – *CAUTION*: this is a sharp instrument
- AC to DC Adapter
- USB Cable
- Dust Cover
- Carrying Case
- 1 Gb SD Card



Figure 3. LCD Screen.

Set Up

- Plug AC to DC adapter into mains and microscope
- Press and hold “ON” button until green power light turns on
- Check LCD screen on **(Figure 3)**
- Turn illumination rotary switch clockwise to position III **(Figure 5)**
- Check that both upper and lower lights turn on

The microscope is now ready for operation. Check power connections if LCD screen or lights do not turn on.

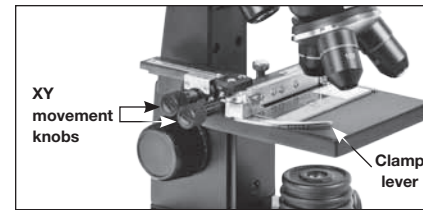


Figure 4. X-Y Mechanical stage.

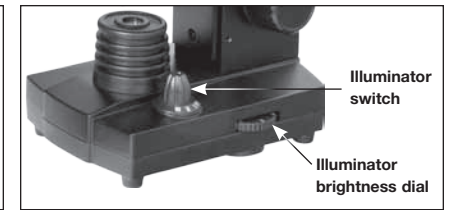


Figure 5. Illumination.

XY Mechanical Stage

The Orion MXLCD features a mechanical stage that is used to accurately position specimens on screen **(Figure 4)**.

- Place one of the included prepared slides onto XY stage by using the clamp lever to hold slide firmly in place **(Figure 4)**.
- Use X and Y movement knobs to position object into view on screen

Illumination

The Orion MXLCD features both an upper and a lower Illuminator for microscopy. The latter is normally used for viewing prepared slides (transmitted light).

The illuminators are selectable via the rotary illumination switch **(Figure 5)**.

Both illuminators can be ON at the same time.

Brightness can be adjusted via rotary brightness dial **(Figure 5)**.

The upper illuminator is designed for use with the lower power objective (4X). The higher power objectives will block light from the upper illuminator. Therefore generally solid objects at 4X will use the Top illuminator.

Transparent objects such as slides will use the bottom illuminator (transmitted light) at all powers of magnification.

The clear collector lens can be replaced by the diffuse collector lens to provide a more even diffuse light.

Filter Wheel

The Orion MXLCD features a manual six position color filter wheel (Figure 6).

Choose from five colored filters (Red, Yellow, Dark-Green, Light-Green, Blue) or clear.

The filters can aid to increase contrast and detail of various specimens.

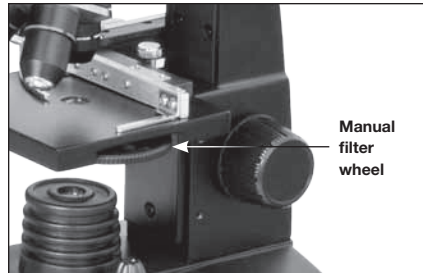


Figure 6. Filter wheel.

Objective Lenses

The Orion MXLCD features three manually selectable objective lenses of 4X, 10X and 40X (Figure 7).

Different magnifications can be accomplished by selecting between one of the three objective lenses.

Select desired objective lens by rotating objective head until lens directly above specimen and lens clicks into place.

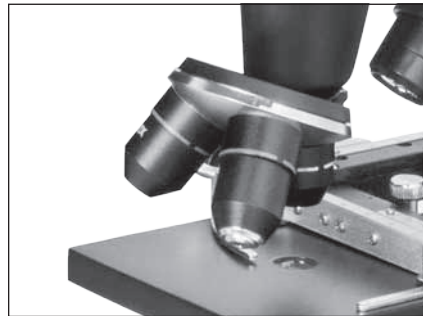


Figure 7. Objective lenses.

The camera is comparable to a 10x eyepiece therefore the following magnifications can be achieved:

Camera	Objective Lens	Digital Zoom (4X)	Magnification
10X	4X	NO	40X
10X	4X	YES	160X
10X	10X	NO	100X
10X	10X	YES	400X
10X	40X	NO	400X
10X	40X	YES	1600X

Initially select the lowest power eyepiece (4X labeled with a red ring).

This lowest magnification setting will produce the widest field of view and display the brightest image.

Viewing with the lowest magnification will aid in the positioning of the specimen prior to viewing at higher magnifications and also help to ensure that the objective lenses are not positioned too near the slide to prevent accidental breaking of

slide if the objectives come into contact with slide when focusing.

Care must be taken when both handling glass slides and the position of the objective lenses relative to the slide when focusing or changing objective lenses.

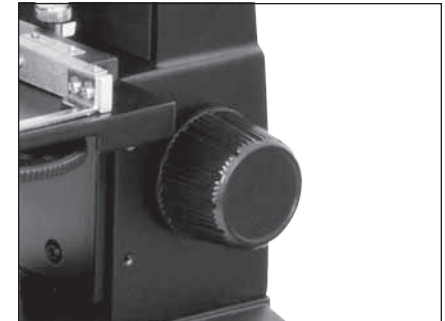


Figure 8. Focus Knob.

Focusing

Use the focus knob on the side of the MXLCD to bring the image to focus (Figure 8).

Care must be taken to avoid an objective lens from coming into contact with the slide when focusing.

If object unable to reach focus try raising the specimen using a blank slide placed underneath the specimen or by selecting a different objective lens.

Camera

The Orion MXLCD features a 5 MegaPixel camera that can be used to capture high resolution images and movies to the SD-Card.

The bottom right of screen will display the current Digital Magnification and also the current Camera Exposure value.

Press **UP** and **DOWN** to adjust Camera Exposure value.

The default value is 0.0.

Press **LEFT** and **RIGHT** to adjust Digital Magnification value.

The default value is 1.0.

Experiment with the top and bottom illuminators, brightness dial, color filter wheel and the camera exposure in order to fully control the illumination of specimen.

Viewing Images and Movies

Press **ESC** button to proceed to Picture View screen in order to view files stored on the SD-Card.

Use navigation buttons to select image files to view (Figure 3).

Press **OK** button to view in Full Screen.

Select **MENU** button to bring up drop down menu.

Select "File Protect" to Lock or Unlock files for editing

Select “Del File” to delete current file selected or all files.

Select “Video Player” in order to view movies in the Video Player screen.

Capturing Images and Movies

Note: When taking images and movies DO NOT connect the USB cable to the microscope.

The USB cable should only be used to transfer images and movies to computer after capture. Otherwise the Cable should be removed.

Please power down Microscope before placing USB cable in or out of Microscope.

Capturing Images

Press **MENU** button to display drop down menu and use navigation buttons and **OK** button to modify settings (**Figure 3**).

Select “Mode” to choose between **Single**, **Continuous** or **Set**

- **Single** – Press **SNAP** button to take a single image
- **Continuous** – Press **SNAP** button to start continuously taking images. Press **ESC** to stop continuously taking images
- **Set** – Sets the time between each frame when continuously taking images

Select “Size” to choose image sizes.

The selected resolution will be displayed on screen

Select “Effect” to choose between the following effects:

- Normal
- BlackWhite

Select “Date Label” to choose if a date label should be added to images.

Pressing “Set” will allow modification of date and time.

Select “Language” to choose between English or Chinese languages.

Capturing Video

Select “Video” from drop down menu in order to capture video.

Videos are set at lower resolution at 25 Frames per second.

When in Video capture mode, press **SNAP** button to start movie capture.

Time elapsed since start of capture will be shown on screen.

Press **SNAP** button again to stop movie capture.

A video camera icon will be displayed on screen when recording in video mode.

From this mode press **MENU** button to display drop down menu and choose “Camera” to return to the camera mode.

Memory

An SD-Card icon will be displayed on screen if an SD-Card is recognized in the SD-Slot.

When present, images and movies will be played back and recorded from the SD-Card.

Always power down your Microscope before inserting or removing an SD-Card

Transferring Images and Movies

Images and movies can be transferred and shared via the included USB cable or via SD-Card.

Place USB cable into spare USB port on computer and into mini USB port, located on side of LCD screen near SD-Card slot.

Device will be recognized as external memory.

Images and movies can then be easily transferred and shared to other devices.

Trouble Shooting

If you do not get an image (or a good 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 illuminator turned on with maximum brightness adjustment (this is the normal position).
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 filter wheel is set correctly at a click position so that the illuminated light comes up properly – the normal position for most usage is with the clear hole.
5. Make sure the specimen slide is correctly fitted into the clamp on the mechanical stage and properly centered.
6. If the stage is wobbly or is erratic in movement, make sure all screws on the top and side of the stage are tight.

Create Your Own Slides

Use the dropper to place a drop of pond water onto a blank slide and use microscope to view any organisms existing in the water.

Adding a Cover slip on top of liquid will allow for much thinner viewing surface.

Thinly sliced specimens (such as plant stems) can be accomplished by first heating wax to melting point and adding specimen to wax solution and allow wax to harden. Then using the included microtome place specimen through hole and turn dial in order to cut thin slices to be placed onto glass slide.

Be careful of the razor-sharp edges of cutting blade of Microtome.

Use the Gum solution to make a permanent slide.

The Gum will stick the Cover slips to the slide.

Dyes can be used on specimens to bring out more detail much like the included prepared slides. This subject matter goes beyond this manual and further study would be required.

Salt Water Prawns (Brine Shrimp)

Hatching

First, pour one pint of rain or fresh water into a container and let stand for approx 30 hours. Pour half of the Sea Salt into the container and stir until all salt has dissolved. This will create the saline solution that will be used to grow the brine shrimps.

Pour an additional pint of rain or fresh water into a second container and let stand for approx 30 hours. This will create spare water for adding to the hatchery when the salt water evaporates.

Next place some of the salt solution into the hatchery using the dropper.

Then carefully place some of the eggs into hatchery water.

Place in lit area away from direct sunlight at preferred temperature of 25 degrees C.

The shrimps will begin to hatch in 2-3 days. If any water evaporates during this time please replace with water from the second container.

Feeding

Feed your shrimps every other day using small pinch of dry powdered yeast (included). Overfeeding will darken water and stagnate. If stagnation occurs remove shrimps and place into fresh salt water solution.

Viewing

Use dropper to place shrimps from hatchery onto blank slide or place hatchery directly under microscope with lid removed. Take images and movies of the prawns to create a record of the lifecycle of the brine shrimp.

Note: Shrimp eggs and shrimps are not suitable for consumption!

Specifications

SNR:	36db
Dynamic Range:	65db
Spectral Range:	Visible light
USB Port:	USB 2.0
Operating System:	XP, Vista, Windows7, Mac OS X

One-Year Limited Warranty

This Orion MicroXplore LCD Microscope is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted product that proves to be defective, provided it is returned postage paid to: Orion Warranty Repair, 89 Hangar Way, Watsonville, CA 95076. If the product is not registered, proof of purchase (such as a copy of the original invoice) is required.

This warranty does not apply if, in Orion's judgment, the product has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes & Binoculars, 89 Hangar Way, Watsonville, CA 95076; (800) 676-1343.



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