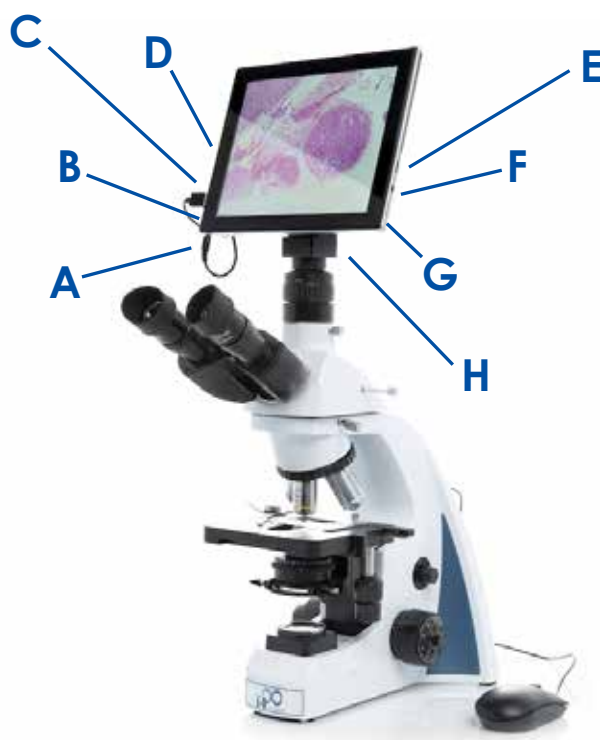


Model pictured:
BioTouch Microscope Camera



- A DC Power Jack
- B Headphone Jack
- C USB 2.0 Mouse Slot
- D Microphone
- E TF Card Slot
- F Mini HDMI Port
- G Power Button
- H Camera

The BioTouch Microscope Camera is the most essential tool for live presentations and image capturing. Developed specifically with microscopy in mind, the BioTouch Microscope Camera's built-in software allows you to easily take photos, capture video, preview and playback recent images and gather measurements.

Simply mount the camera onto any trinocular C-mount for amazing resolution. Whether you are in a small clinic environment, a large lecture hall, or in a lab on the east coast and need an immediate image consult with experts on the west, the BioTouch Microscope Camera can help.

Included with your camera:

- USB Mouse
- TF Card
- DC Power Adapter
- Mini HDMI to HDMI Connecting Cable
- USB to USB Cable

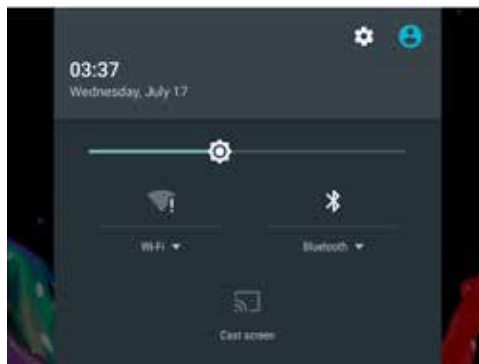
Please read and complete the warranty form online at LWScientific.com/warranty_form. The warranty form documents your purchase. Failure to fill out the warranty form may void any warranty claims on the unit.

Camera Set-Up

- 1 Open the package and remove the camera, USB mouse, HDMI connecting cable, and DC power adapter.
- 2 Confirm that the TF card is in the slot on the camera.
- 3 Remove the cap from the camera lens, and screw the camera onto the C-mount of your microscope/stereoscope trinocular head. ***NOTE:** You may need to "parfocal" your camera - most microscopes have an up/down adjustment on the trinocular pipe to allow you to raise/lower the camera so that the image on the screen is in focus at the same time as the image seen through the eyepieces. Some microscopes also have a pull knob on the side of the head to slide the beam-splitter prism into place to allow light to the camera.
- 4 Connect the power adapter to the camera DC port on the underside of the unit.
- 5 Press and hold the power button until the camera screen turns on.
- 6 The camera application should open automatically. If it does not, follow the "Menu" instructions below to access the camera.
- 7 Turn on the microscope and place a specimen under the microscope. Next, adjust the focus until the object image can be seen on tablet screen.
- 8 If desired, use the HDMI cable to connect the tablet to any large HDTV or HD projector.

Menu Navigation

Main Menu: To open the main navigation menu (this will allow you to move backwards, open the main page, or close any applications) swipe or drag up from the bottom of the tablet. Open the notifications menu by swiping or dragging down from the top of the tablet. Swipe or drag again to access WI-FI and Bluetooth accessibility.

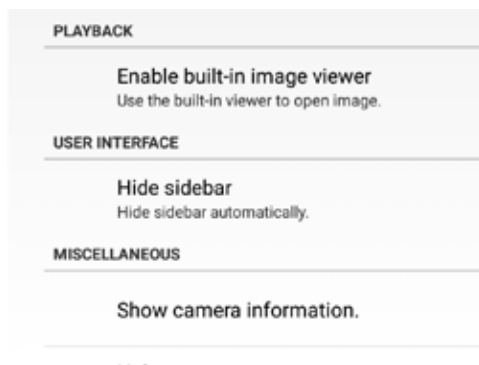


Home Page: The home page contains applications to access the camera, the photo gallery, the internet, and the tablet's settings.

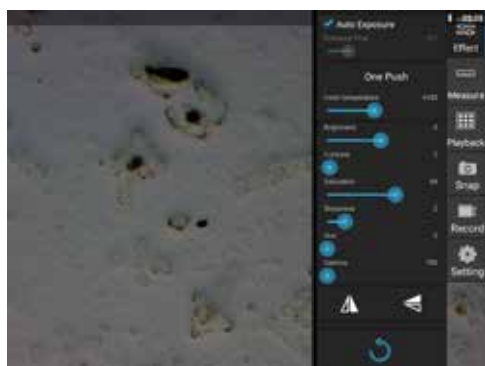


Image Viewing and Analysis

Access the Camera Toolbar: The camera toolbar will appear on the right side of the camera application once it is opened. If it disappears, simply click anywhere on the screen. To change how long it will stay on screen, click the "Setting" button and click the "Hide Sidebar" button underneath the "User Interface" tab. Next, choose how long the toolbar will appear.



Editing the Live View: To edit the camera parameters while viewing live, click the "Effect" button on the toolbar.



A. Exposure: Auto Exposure automatically adjusts image brightness. Turn this off to manually adjust exposure levels.

B. Color Temperature: The "One Push" button automatically adjusts the white balance. Turn this off to adjust the color temperature manually.

C. Color Adjustments: Using the sliders, adjust Brightness, Contrast, Saturation, Sharpness, Hue and Gamma.

D. Flip Image: Flip the image horizontally or vertically using the "Flip" buttons.



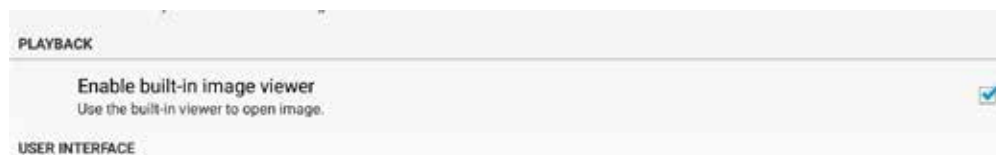
E. Save and Reset: Click the "Reset" button to save a new camera setting or restore an old one. Save up to four camera profiles or reset it to factory status.



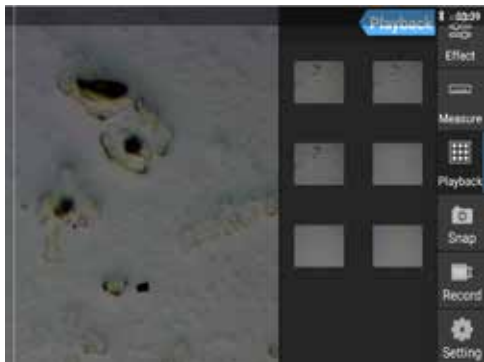
Capture an Image: On the toolbar, click the "Snap" button to capture an image. Image size can be changed by clicking the "Setting" button. Click the "Record" button to start a video. Click it again to stop the video. Click the "Playback" button to review all images and videos taken. ***NOTE:** The camera will automatically record audio for playback with each video.



Image Analysis: To analyze images, first click the "Setting" button on the toolbar. Under the "Playback" tab, check the box that says "enable built-in image viewer".



A. Analyze an Image: Click the "Playback" button on the toolbar and double-click the image to be analyzed.



B. Using the Analysis Tools: Select Grayscale, Contrast, Threshold, or Particles to analyze the image. Click "Apply" to save the new image once it has been analyzed. To switch to a new image, click the camera button in the upper right corner and click "Choose Photo".



Sending Images

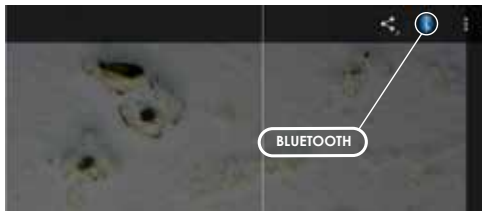
Sending an Image via Bluetooth: On the home page, open the tablet's settings and click on "Bluetooth" under the "Wireless & Networks" tab. Turn Bluetooth on.

***NOTE:** Bluetooth will only work when connecting to other Android devices. Do not attempt to connect to an Apple product.

A. Select the Image: Staying on the tablet's home page, access the gallery and select the image.



B. Sending the Image: Click on the “Bluetooth” button and wait for a compatible device to appear on the list. Next, click on the device's name to send the image.



Sending an Image via WiFi: Sending an image via WiFi requires an active email account. Simply access the internet using the BioTouch tablet and select the option to add an attachment to the email. Next, click on “Documents.” From there, select the desired image to attach.

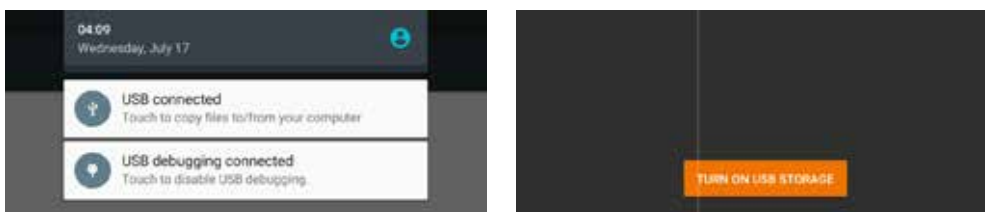


Sending an Image via USB: Plug the USB cable into the USB 2.0 slot with the mouse symbol. Plug the other end into a computer. ***Warning:** The cable will not fully insert into the slot due to the tablet's size. DO NOT attempt to force the cable all the way in.

A. Enabling USB Transfer: On the tablet's home page, go to device settings. Under the “Device” tab, select “USB”. Check the box that says “Connect to PC”.



B. Connecting to the Computer: Swipe down on the top of the tablet to access the notifications menu. Select the notification that says “USB connected.” On the screen that appears, select “Turn On USB Storage” and select “OK” on the menu that appears.



C. Transferring to the Computer: On the computer, select the new drive that appears (it will be named after the camera's build number, example: YW1111). Select the “DCIM” folder, and then the “.thumbnails” folder for saved images. Select the “Screenshots” folder for any screenshots.

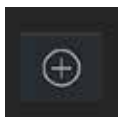
D. End the Transfer: On the tablet, select the button to turn off USB storage when finished. Eject the drive from the computer. Go back into the main device settings, select the “USB” tab again, and uncheck the box that says “Connect to PC” (This step will allow the mouse to work again).

Measuring Specimens

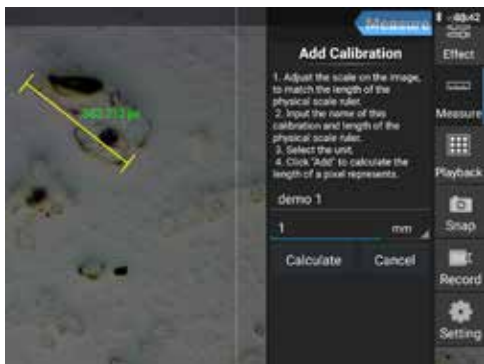
Calibrating the Camera: Place a reticle underneath the microscope, making sure it is in focus. Click on the “Measure” button on the toolbar, and go to the “Calibrations” section.



A. Add a Calibration: Click on the “Add” button, and a measurement line will appear on the image.



B. Scale the Line: Drag the edges of the measurement line until each end lines up with a corresponding point of the reticle. (Example: a 1mm marker).

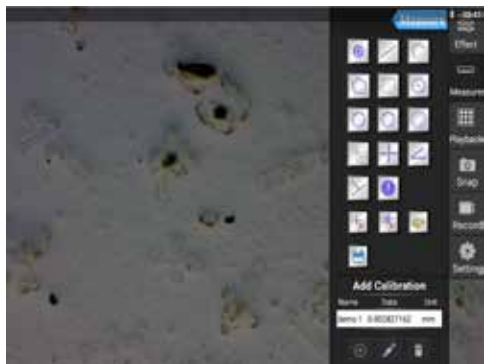


C. Name the Calibration: Add a name to the calibration. Next, input the actual length of the object being measured (Example: 1mm).

D. Calibrate: Click the “Calculate” button to calibrate the camera. Click “OK” on the screen that appears. This will add a calibration to the list. Repeat these steps as need for different zoom levels.



Using the Measurement Tools: Click the “Measure” button on the toolbar, if it is not already opened. Next, select a calibration to use.



A. Select a Measurement Tool: Click any tool in the measurement tab to select it. Once done, deselect the tool to stop using it. (See below for a list of button functions).

Measurement Tools

ICON	Function	Description
	Point Counting	Add a point counting marker on the image
	Line	Measure distance between two points
	Rectangle	Measure width, length, and area of rectangle
	Circle	Measure area of circle
	Cross	Crosshair grid lines
	Angle	Angle measurement
	Two Circles	Measure distance between two circles
	Perpendicular	Measure length of perpendicular
	Concentric	Measure radius of two circles
	Text Annotation	Draw text annotation on the image
	Option	Change stroke, width, and color of rulers and the size and color of the text
	Export	Export the image with measurement rulers
	Delete	Delete the selected ruler
	Delete	Delete all

Care and Maintenance

Treat your BioTouch as you would any high-quality electronic device. Handle it with care, and do not expose it to moisture or extreme temperatures.

Always replace the lens cap when the camera is not in use. Take care not to touch the lens when handling.

To clean the sensor, only use a clean and dry cotton swab to “sweep” the debris away. Avoid liquid cleaners.

Please do not attempt to open the unit's housing. There are no user serviceable parts inside.

Image viewing problems: If you see only a black screen, ensure that the trinocular port is opened on the microscope. Point the camera towards a window to confirm that the camera is functioning – light should appear on the screen (though it will not focus when not installed on a microscope).

Bluetooth connectivity issues: Make sure you are connected to an Android device - not an Apple device. The BioTouch may try to connect with Apple products, but it will not be able to transfer information.

Warranty

The BioTouch comes with a one (1) year limited warranty. This warranty is not valid on normal wear and tear, cosmetic damages caused by chemicals, solvents, and/or cleaning solutions, as well as acts of God.

Service and repair instructions: In the event that a problem arises with your instrument, please notify LW Scientific at <https://www.lwscientific.com/pages/technical-support-request>.

Specifications

SKU: BTC-T5MP-AND3

Monitor:

Resolution:	2048 x 1536
Built-in Features:	5 MP color cameras, WiFi and Bluetooth connectivity
Interface:	Mini HDMI, USB 2.0 (supports USB mouse)
Operating System:	Android 5.1
Power:	DC 12V power input

Built-In Camera:

Sensor size:	1-2.5-inch (4:3)
Effective resolution:	2592H x 1944V
Pixel size:	2.2um x 2.2um
Dynamic range:	66.5dB
SNR (maximum):	40.5dB
A/D conversion resolution:	12-bit, on-chip
Sensitivity:	0.53V/lux-sec (550nm)
Frame rate:	2048 x 1536@15fps, 1024 x 768@30fps

Exposure range and manner: Electronic shutter (ERS), automatic

White balance: Manual/automatic

Image Capture Capabilities: Capture live video and high-res images for bluetooth or USB transfer to any PC or Android device.

Mounting Requirements: Standard trinocular c-mount (threaded)

MKT-7.5.3-L-266 | Rev 0