

# D-Moticam BTW

## Microscope Tablet / Camera

Use and Care Manual

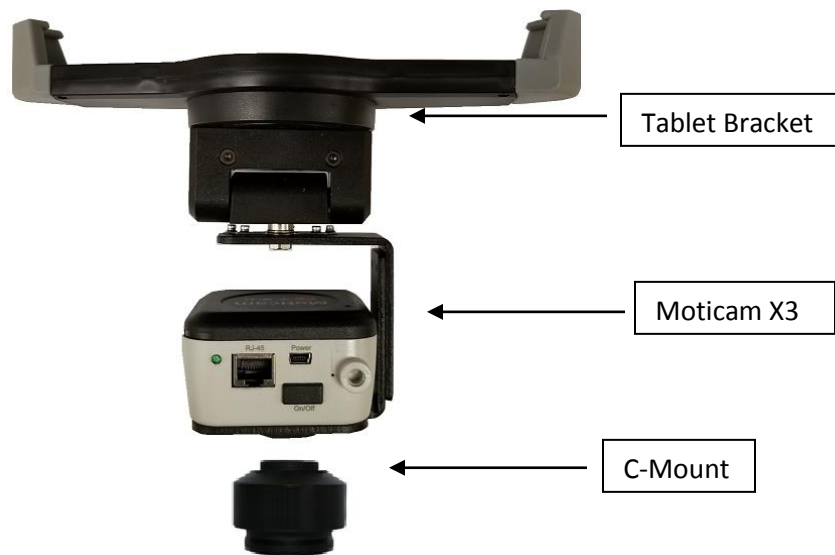


## Introduction

Thank you for purchasing the D-Moticam BTW8 / BTW10 Tablet/Camera system. The **BTW** provides an effective method of attaching a camera system to any c-mount trinocular microscope using a 0.5x c-mount adapter. The image from the microscope can be viewed on the provided tablet or via WiFi to any WiFi enabled device.

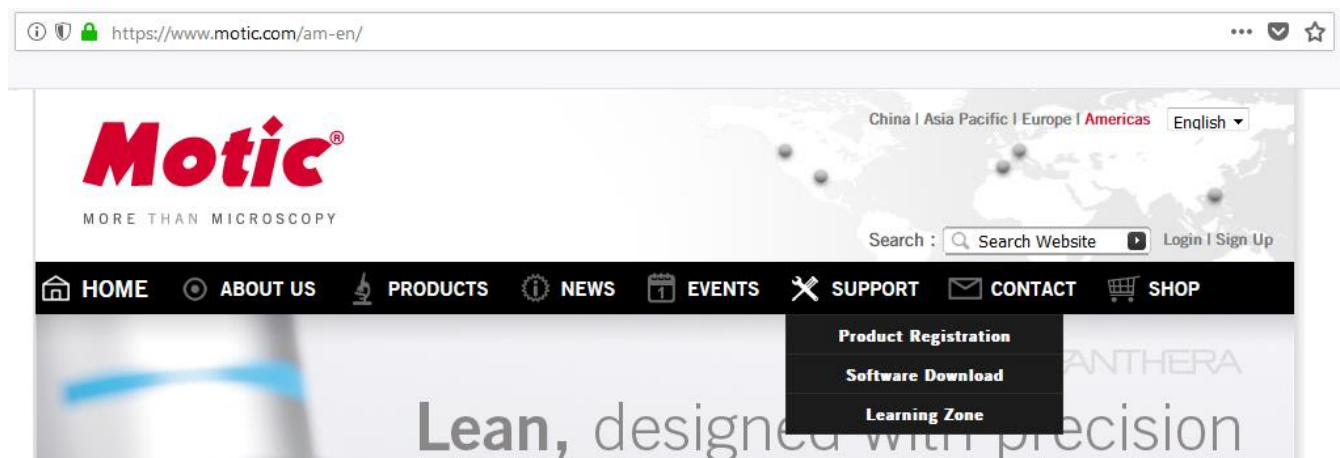
The camera portion of the BTW houses a WiFi transmission antenna. WiFi allows any WiFi enabled device to view, measure and annotate the microscope image through the available MotiConnect application. The MotiConnect app can be downloaded through Google's PlayStore or Apple's AppStore.

### Tablet Bracket Quick Assembly



## Camera Registration

It is important to make sure you have registered your device on the Motic Images website:



## Connect to the Moticom X<sup>3</sup> WiFi signal – Quick Start

1. First plug the power supply (wall adapter and USB A to Micro USB cable) into the back of the Moticom X3 camera.
2. Press in the camera button to turn the camera on.
3. You will notice a Blue LED start to blink. During this time, the Moticom X3 will establish a WiFi network.
4. The Moticom X3 camera can support up to 5 devices at one time.
5. Once the camera establishes its network, you will see the camera on WiFi list of available devices.
6. By default the Moticom X3 operates at 2.4 GHz. Instructions for switching it to 5 GHz can be found further below.
7. The Moticom X's SSID signal is printed on a label on the camera. To log onto your camera, simply connect your included tablet to that signal. The password for the network by default is 12345678.



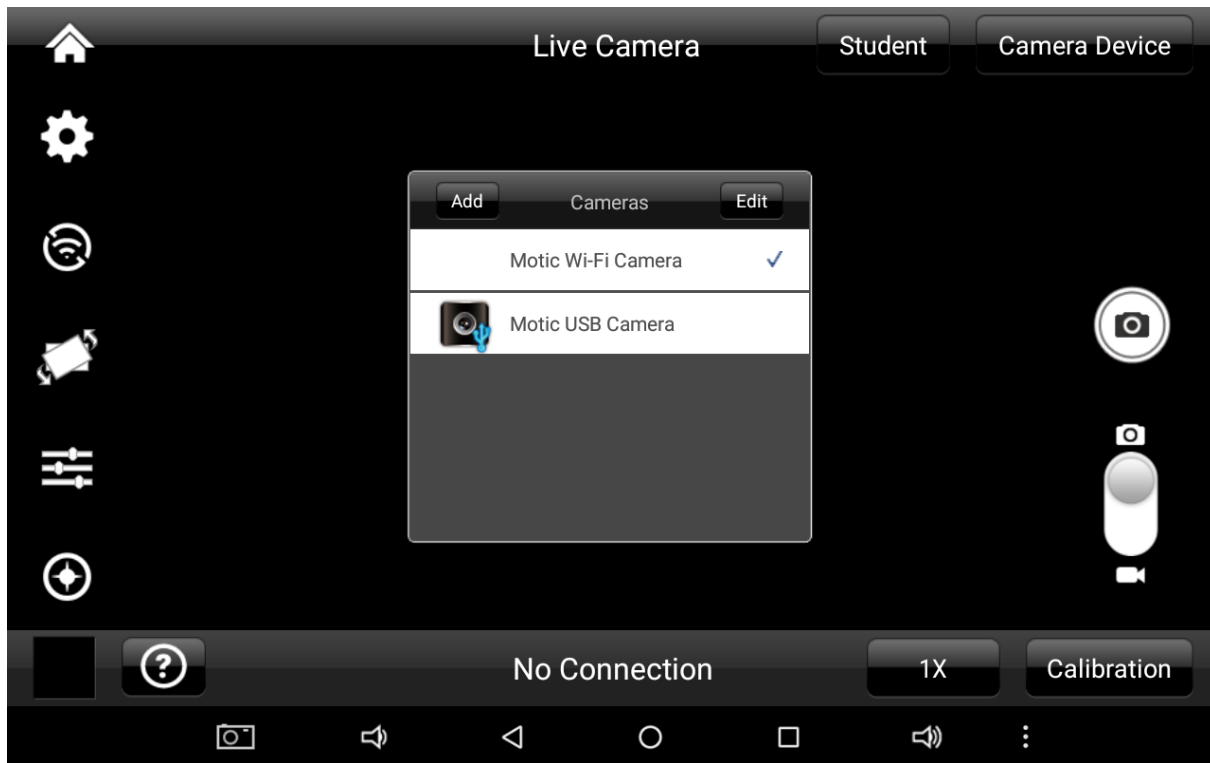
## MotiConnect Quick Start

1. From the main tablet screen, click on MotiConnect App Icon



2. Secondly, from the MotiConnect app, click on Camera Device. From here click on Motiic WiFi Camera.

This will open the WiFi camera live image. You can begin viewing.



## Using a WiFi device that operates with Android or IOS

1. For best performance, we recommend to use WiFi devices, such as tablets, with a screen not smaller than 7 inches. For iOS devices we suggest using iOS 5 or higher while for Android Devices we suggest using Version 4.0 or Higher.
2. To operate and use the camera on your tablet, please download our free App called MotiConnect. For iPad you can find this on the AppStore, for Android devices you can find this on Google Play.

## Use the Moticam X<sup>3</sup> on your WiFi or Network enabled computer

The Moticam X<sup>3</sup> can also be used with Motic Images Plus software. See links below for software download:

### Motic Images 3.0 for Windows

(64-bit): <https://www.dropbox.com/s/h85ubvwwktbabd3/Plus3.0ForPC%28x64%29.zip?dl=0>

(32-bit): <https://www.dropbox.com/s/jxy447co307ro19/Plus3.0ForPC%28x86%29.zip?dl=0>

### Motic Images 3.0 for Mac

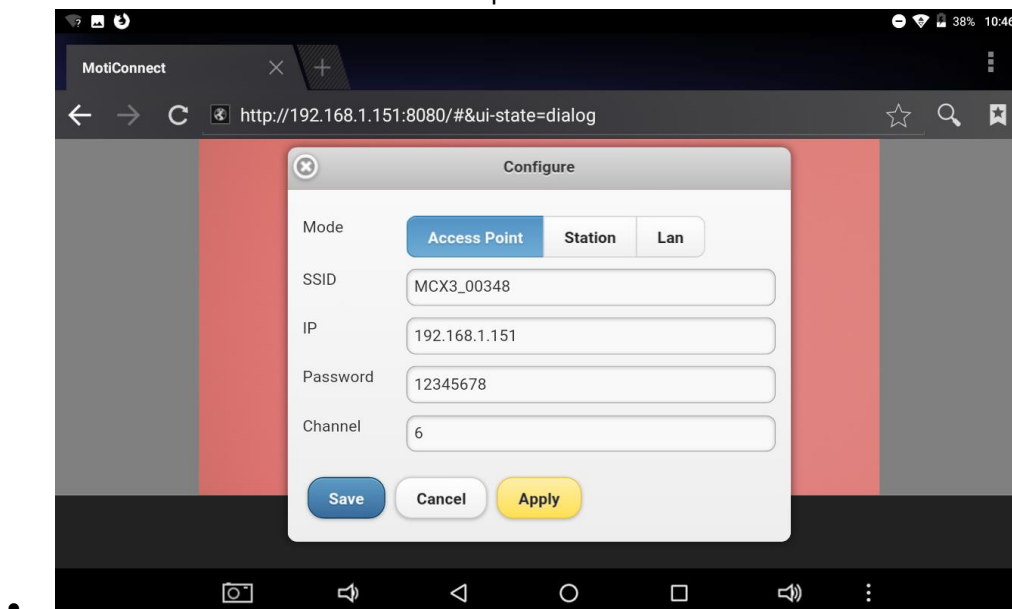
<https://www.dropbox.com/s/9ek73kynwcwy1c/Motic%20Images%20Plus%203.0.dmg?dl=0>

To view the camera in our product's MI Devices interface, simply log your computer onto the Moticam X<sup>3</sup> WiFi signal, by selecting this WiFi connection and entering the password. Then open the MI Devices interface by clicking on the camera icon within Motic Images Plus and select Moticam X<sup>3</sup> from the drop down menu. Then click on Open.

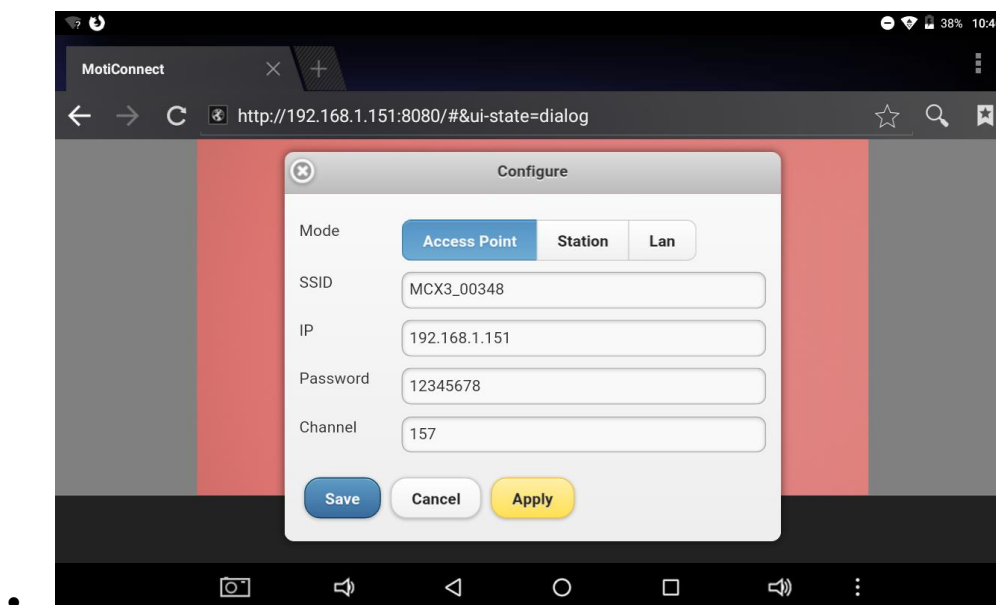
## Switching the Moticam X<sup>3</sup> between 2.4 GHz and 5 GHz

First, always make sure you have installed the latest version of the MotiConnect App or Motic Images software. Secondly before switching from 2.4 GHz to 5 GHz make sure you are using a device with confirmed 5 GHz capability. Failure to use a 5 GHz device will render the camera unusable until a 5 GHz device is connected. The Moticam X<sup>3</sup> SSID will not be visible to any 2.4 GHz devices in 5 GHz mode. Please heed this warning. 5 GHz mode will allow for faster frame rates for improved video and screen resolution.

1. With your 5 GHz ready device open the IP app using any an HTML5 browser.
2. When the browser opens, type in the following in the address bar: <http://192.168.1.151:8080>
3. When the MotiConnect webpage opens, select the configure tab.
4. Under Access Point, locate Channel.
5. By default the Channel will be either 1 or 6: See picture below



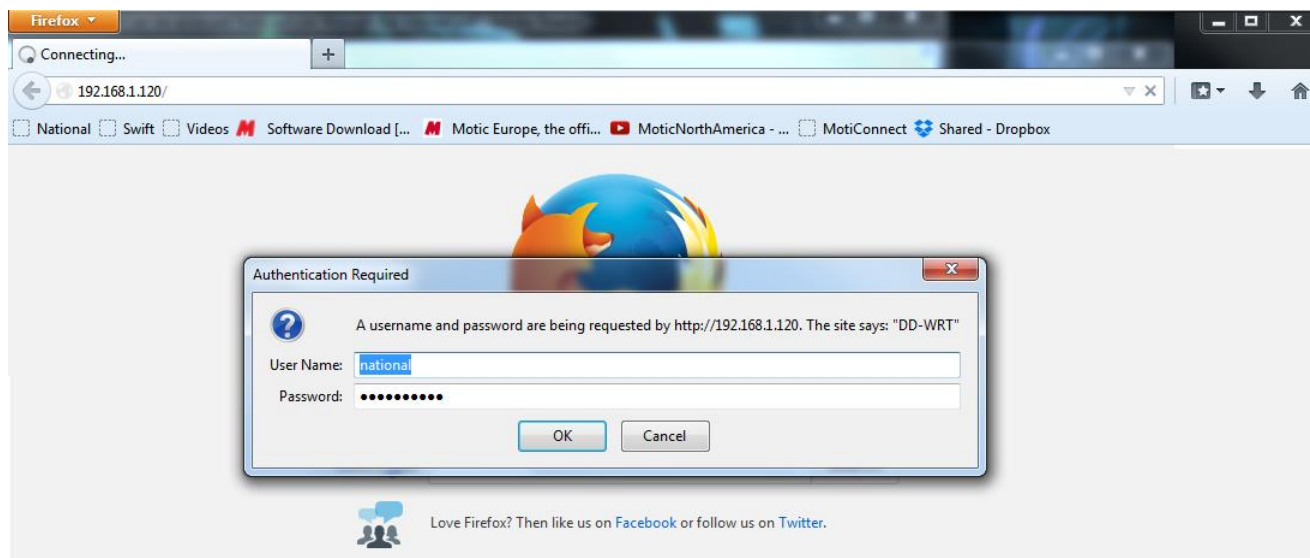
6. When using either Channel 1 or 6, the camera can be used in 2.4Ghz mode.
7. If you wish to change the camera mode to 5Ghz, change the Channel to 149 or 157



8. Once changed, you will need to click on Save first, then Apply. Make sure to write down any and all changes you make on this tab. Any changes made here will affect how you connect to the camera later.
9. **The camera will disconnect and no longer be available for detection on any 2.4Ghz devices.**
10. With your 5Ghz device, locate the camera on your available WiFi devices. The SSID and Password will remain the same unless you changed it on the Configure Tab.
11. Open the MotiConnect app, select image adjustment icon, select H264, close and re-open the app.
12. There should be a noticeable increase in frames per second. (FPS rate will vary by device)

### Linking the Moticam X<sup>3</sup> to a network (Wired using RJ-45)

- 1) Connect an Ethernet cable from the RJ-45 port on the Moticam X3 to the back of your router in one of the LAN ports and turn on the Moticam X3.
- 2) Go to your router's configuration page (usually 192.168.0.1) and log into the router.





- 3) My router uses DD-WRT, and the following steps will be different for different brands of routers. You will need to find where your router lists the IP addresses of devices that are connected to it. You will then find what IP address was assigned to your Moticom X3, so that you may access the Moticom X3 from any device connected to that network.

**BUFFALO**  
POWERED BY DD-WRT

Firmware: DD-WRT v24SP2-MULTI (07/05/12) std  
Time: 15:23:30 up 21:48, load average: 0.09, 0.14, 0.20  
WAN IP: 192.168.12.129

Setup Wireless Services Security Access Restrictions NAT / QoS Administration **Status**

Router WAN **LAN** Wireless Bandwidth Sys-Info

### Local Network

#### LAN Status

MAC Address	B0:C7:45:68:82:81
IP Address	192.168.1.120
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
Local DNS	0.0.0.0

#### Active Clients

Hostname	IP Address	MAC Address	Conn. Count	Ratio [4096]
Techsup-PC	192.168.1.169	00:1b:2f:30:ef:2f	109	3%
*	<u>192.168.1.160</u>	ec:17:2f:6c:9f:7a	0	0%

#### Help

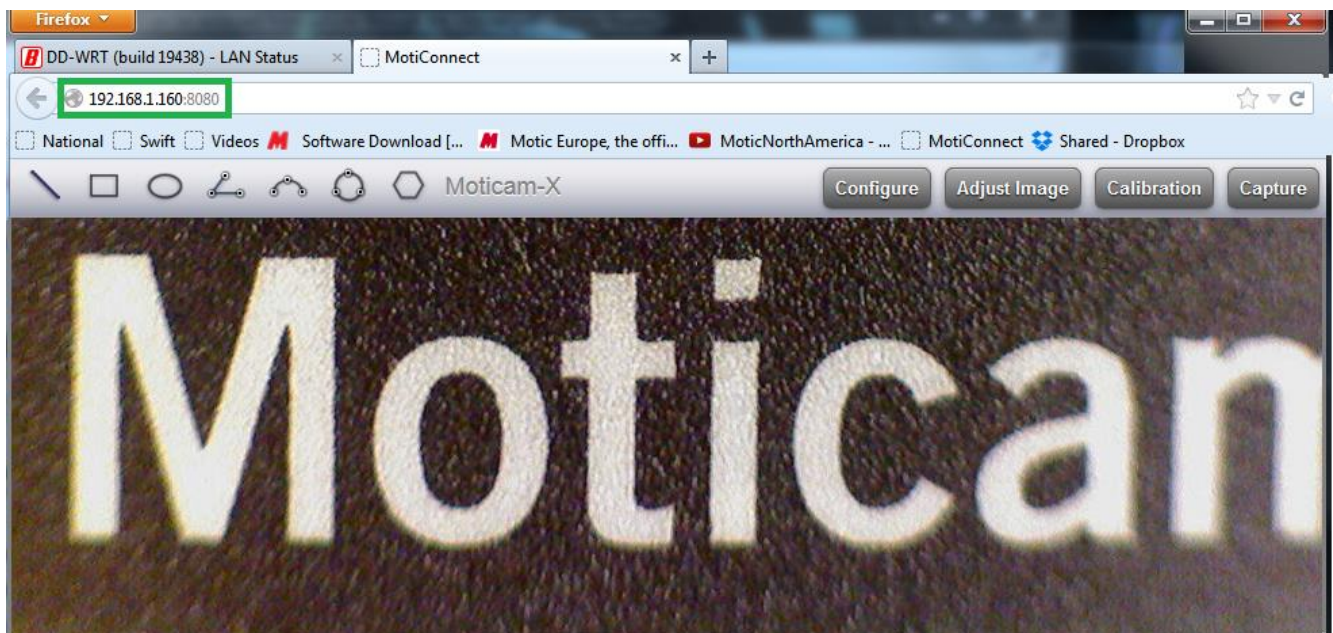
**MAC Address:**  
This is the router's MAC address, as seen on your local Ethernet network.

**IP Address:**  
This shows the router's IP address as it appears on your local Ethernet network.

**Subnet Mask:**  
When the router is using a subnet mask, it is shown here.

**DHCP Server:**  
If you are using the router as a DHCP server, that will be displayed

- 4) On my router, you click "Status" then you click the "LAN" tab in order to find the connected devices to the LAN. The Moticom X3 shows up on my network as having a Hostname of \* and an IP address of 192.168.1.160. The new Moticom X3 will usually show up as "MoticomX" in the list of connections. Write down the IP address assigned to your Moticom X3.
- 5) You may now enter the IP address into any browser of any device connected to the network, or you can use Moticom Images Plus 3.0 (PC or Mac) or MotiConnect (Android/iOS/Chromebook). In my case, I am using <http://192.168.1.160:8080>

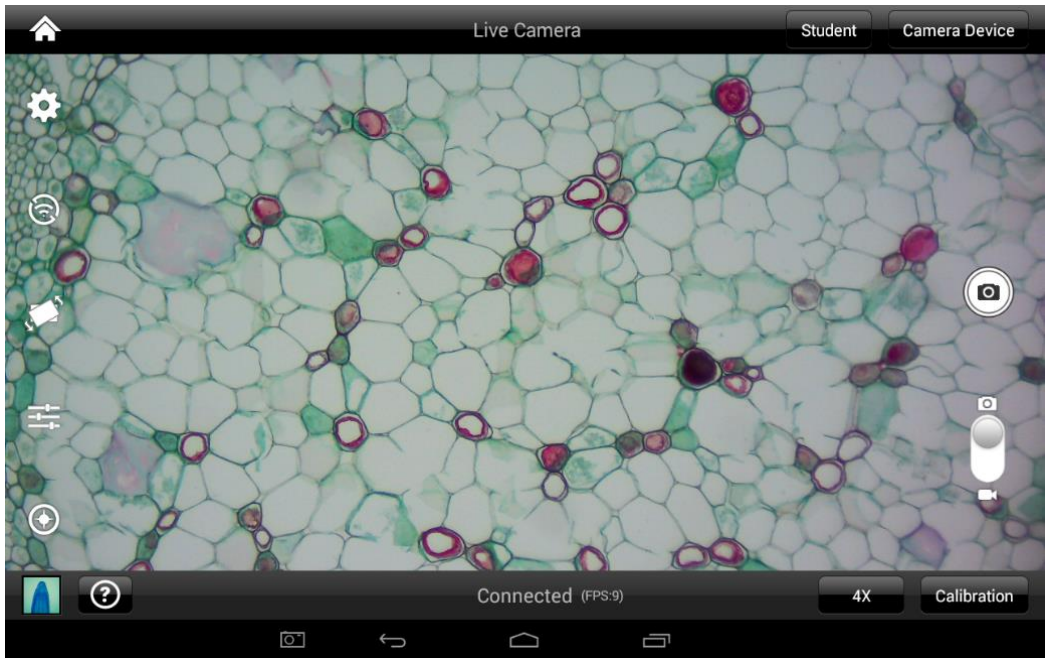


**TABLET SOFTWARE**


This android tablet comes equipped will all the necessary software needed to start using your equipment out of the box. Since it is an android tablet, you will be able to connect to your office/school Wi-Fi network to access the internet and download additional applications. The primary application for accessing your camera is MotiConnect.

**MOTICONNECT OVERVIEW – HELP MENU**

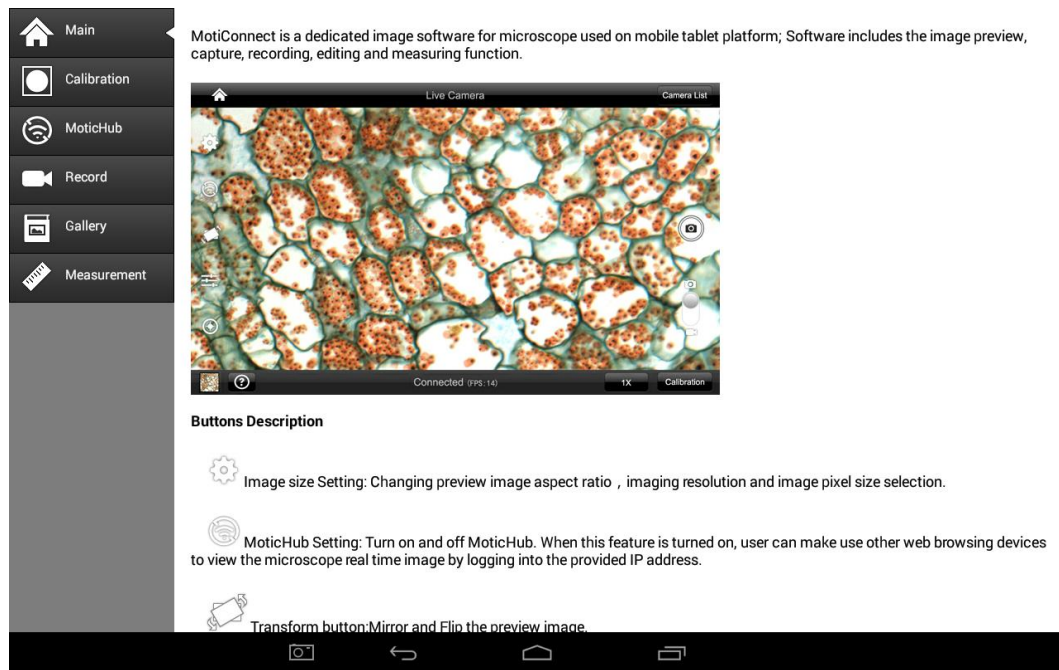
MotiConnect is a dedicated image processing Android app for Motic cameras, which includes image preview, capture, recording, editing and measuring functions. Please refer to the Application Help guide for a complete description of the MotiConnect Application.



**HELP BUTTON**

	Help Menu - Opens a new window which provides a complete description of all the features available with the MotiConnect Application
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## **CALIBRATION – (\*Optional – not necessary to use your microscope\*)**

To prepare for the calibration process, please make sure you have the calibration slide. The calibration slide has four individual dark round circles. Each dark round circle corresponds with each objective on your microscope.

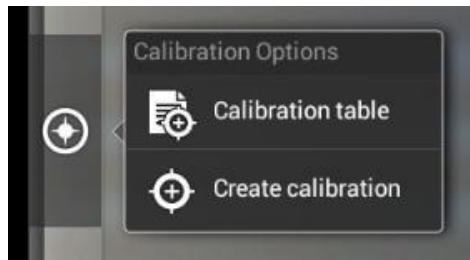
- The 1.5mm dot (150um – microns) with the 4X objective.
- The 0.6mm (600um – microns) with the 10X objective.
- The 0.15mm (150um – microns) with the 40x objective.
- The 0.07mm (70um – microns) with the 100X objective.

To begin the calibration process, place the calibration on the stage.

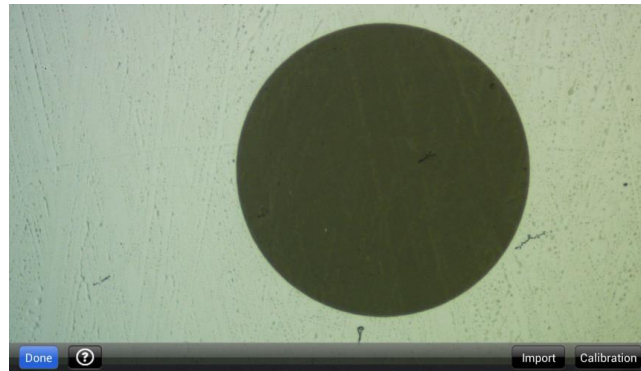
1. First place your calibration slide on the stage, switch to the 4X objective, and move the slide over to the 1.5mm dot.
2. With the dot centered on the tablet screen, select the calibration button, located on the bottom right hand side of the screen.
3. You should have a bright green circle on the screen.
4. Click the calibration button a second time.
5. This time the calibration settings window will open.
6. In the objective magnification window select the objective you captured the dot with. In this case the 4X objective.
7. In the diameter window select the diameter of the dot you captured. In this case the 150um. Then click OK.
8. The last window that will open is the Save Sign window. Since you capture this image with the 4X objective, it is best to enter this on this line.
9. The objective line should default to the objective you are calibrating. In this case it should say 4X.
10. The X and Y numbers on the next two lines should be near identical. Look at the first three numbers. As long as they are the same within one or two digits, you have a good calibration.
11. Click Ok and you are done.

## **Calibration**

To begin click on Create Calibration. Get out your Calibration Slide.



The software will capture the image from the preview mode and input the image into calibration mode.



Now put the Calibration slide on the stage of the microscope and focus the dot in the center of the screen. For 4x Objective, use the 1.5mm dot. For 10x Objective, use the 0.6mm dot. For the 40x Objective, use the 0.15mm dot. For the 100x Objective, use the 0.07mm dot.

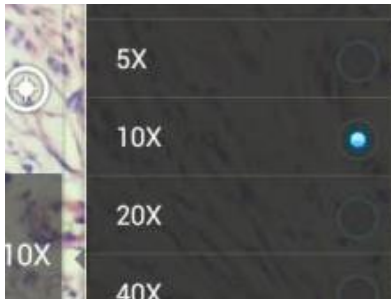
After your dot is in focus, select “Create Calibration” then “Calibration” to add a new set of calibration parameters into the calibration table. You should have a bright green circle (shown below). If you don’t have a bright green circle, the calibration failed. Make sure the slide is clean and the image has sufficient lighting. If the calibration is successful, choose what objective you’re using on the microscope under “Objective Magnification” then select the length of the diameter of the dot, then tap OK. A calibration is needed for each objective that will be used in measuring, so repeat the process if necessary.



Software will provide the  $\mu\text{m}/\text{Pixel X}$  and  $\mu\text{m}/\text{Pixel Y}$  based on the previous users provided information.

Users can save those parameters with user assigned own Sign Name. This new Sign Name will be saved in the calibration table for the future use.

Objective Magnification: If users change the objective magnification number, please ensure same magnification number is selected on the software. There is no need to re-calibrate the system.



### **TRANSFERRING IMAGES TO YOUR COMPUTER**

By default all your images are saved to the Micro SD card included with your M29TZ-SM99CL-BTW1 series microscope. This card is provided as a courtesy. If it is missing or lost, you will need to purchase a replacement. It is highly recommend that you purchase a Micro SD to Standard SD card adapter.



This is simplest and easiest way to transfer images to your computer. Images are automatically captured as Jpeg images. If your computer/laptop does not come with an SD card slot, a SD card reader will need to be purchased as well. \*Please note: 32GB Max\*

### **MOTICAM X3 Information:**

- The Moticam X3 by default operates in 2.4 GHz mode.
  1. Allows for connection to devices without 5 GHz compatibility.
- In 2.4GHz mode, frame rates will be much slower, comparable to the Moticam X and X2.
- When the X3 is switched on (first time) it resets to JPG mode.
- JPG mode is the default mode at 2.4 GHz.
- In order switch the camera into 5 GHz mode, end user tablets / phones must have H264 hardware decoding.
  1. End user is responsible for finding this information from device manufacture.
  2. White BTX tablet has H264 hardware and is 5 GHz compatible.
- Whenever the X3 is used with an HTML browser, the X3 will automatically switch to jpg mode. The JPG mode will remain for both browser and app, until the X3 is reset again (off and on).
- Normally the app should provide much faster (up to 30 fps) frame rates when it is in H264 mode, but is still subject to the device's H264 chip.

- H264 mode must be selected, in 5 GHz mode and found under the image settings tab of MotiConnect app, to achieve faster frame rates. Once selected the app must be reopened.
- In the event of a reset, the X3, will keep the original default SSID, password, 2.4GHz settings
- In browser mode, the X3 will not be able to provide 30 fps, in either 2.4 GHz or 5 GHz mode.
- In browser mode, the best the X3 can only achieve is 15 fps at 1280X720 or lower resolution. However, this can vary from device to device.

#### **HTML BROWSER:**

- Browsers will only support the camera in JPG mode
- Will average 2-7fps in full HD mode.
- Most devices, such as Chromebooks, older laptops, older PCs (with WiFi), and older tablets will require the Moticam X3 to operate in 2.4GHz mode
- Operation and frames rates comparable to the Moticam X and X2.

#### **MOTICONNECT:**

- The app supports both jpg mode and H264 mode.
- Can be used at both 2.4 GHz and 5 GHz.
- Fast frame rate can only be achieved if:
  1. The tablet/device is 5Ghz compatible
  2. The table/device is using the MotiConnect app