HD1080 Series User's Manual

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Before Use

Introduction

Congratulations on the purchase of your new AmScope microscope camera!

This manual is designed for the HD1080 series microscope cameras (HD1080 and HD1080A).

Please be sure to take a few minutes to familiarize yourself with the features and functions of your new AmScope microscope camera.

If you'd like more information on microscopes, parts, or accessories, please visit our website at:

www.amscope.com

We highly recommend reading this manual thoroughly before operating the microscope, and that it be kept on hand for future reference. If lost or forgotten, a new copy can be downloaded from our website using the included passcode from your packing list.

Please keep all packing materials, as they are required for any warranty service to guarantee safe shipment to and from our location, and the packing list includes your password to access this manual at any time.

If you have additional questions or need assistance, please do not hesitate to email us at:

info@amscope.com

Or give us a call during business hours (6AM-5PM Pacific Standard Time, GMT-8) at:

888-950-2000

Before Use

Safety Precautions

1. As the microscope camera is a precision instrument, always handle it with care, avoiding impact or abrupt movement during transporation. Do not shake the package.

2. Do not place the microscope camera in direct sunlight or in high heat. Keap it indoors in a dry and clean place with temperateures between 32-100 degrees F (0-40 degrees C), and in maximum relative humidity of 85%.

3. Avoid touching the lenses on the camera to avoid oil and dirt from fingers or fingerprints getting onto your camera lens, which may obstruct your view.

4. Before turning the power on, make sure that the power supply voltage is consistent with the voltage of your microscope camera.

Additional details regarding maintenance and safety can be found on page 37.

Parts

HD1080/HD1080A

USB Port

Camera Body

SD Card Slot
(SD Card Not Included)

HDMI Output

Female C-Mount Port

Power Receptacle

On/Off Switch

Sensor

Glass Protective Lens

Parts

Definition of Parts

Camera Body

White metal container protecting the camera's circuit board, sensor, and lens.

Camera Body

Female C-Mount Port

Type of mounting that the HD1080 series uses. C-mount is defined as a 25.4mm, female, inner diameter threaded port.

Female C-mount Port
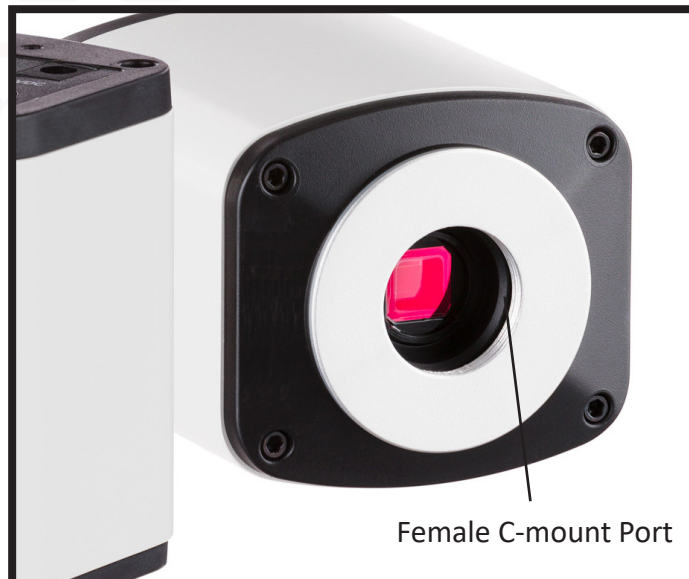
Parts

Definition of Parts

Glass Protective Lens
   Lens underneath the camera that protects the circuit board and sensor from dust and moisture.

Glass Protective Lens

HDMI Output
   Standardized HDMI (High Definition Media Interface) port used to connect the camera directly to an HDMI input compliant monitor for direct viewing and recording to an on board SD Card.

HDMI Output

Parts

Definition of Parts

On/Off Switch

Button used to begin or end operation of the camera once it is configured and assembled for use.
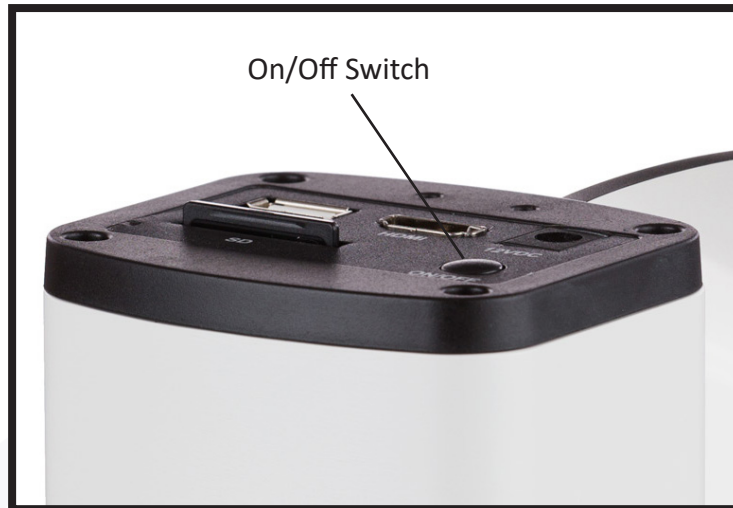
Power Receptacle

12v socket where the power supply for the camera is to be connected to.

Parts

Definition of Parts

SD Card Slot

Spring loaded slot used to install an on board storage media (SD card) for capture when using the camera via HDMI. SD card sold separately.

SD Card Slot
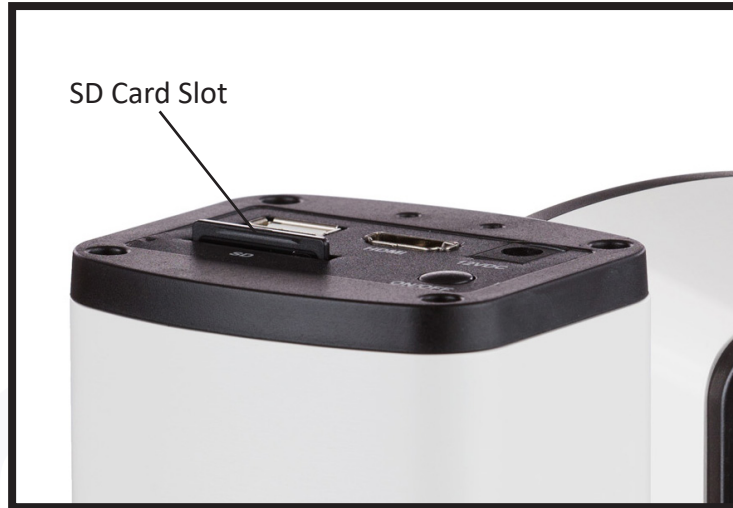
Sensor

Circuitry component which captures light and begins the process to digitize the image captured from the light hitting it. Must be unobstructed and at the proper distance from the nearest lens in the microscope in order to have a clear and focused image.

Sensor
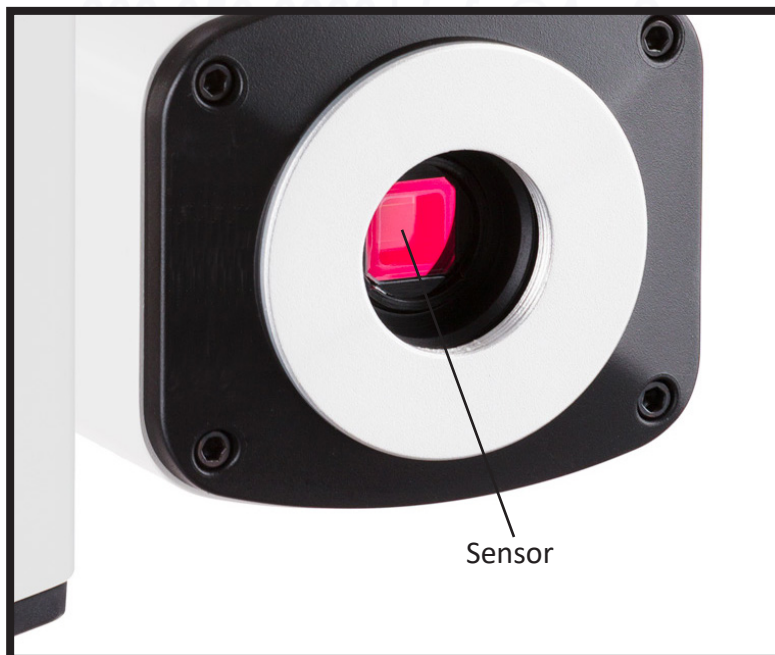
Parts

Definition of Parts

USB Port

Universal Serial Bus (USB) port intended to either allow a mouse to be used to control the software (included) or a USB-to-USB cable to connect the camera directly to a Mac OS X or Windows based PC for use.
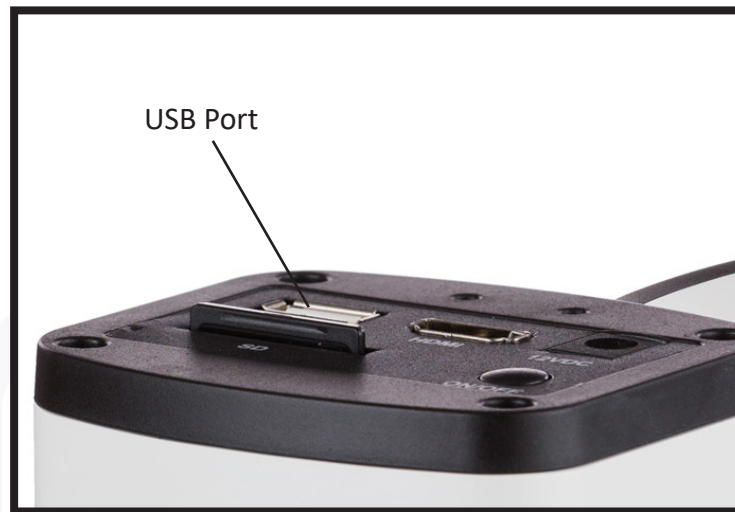
Getting Started

Assembly

1. First, take the styrofoam container out of the cardboard carton and lay it on its side, paying attention to which side is labeled up. Remove the tape and open the container carefully so as to avoid dropping and damaging the optical items. Check carefully to ensure that all parts and accessories are intact.

2. Check the packing list to ensure that you're received all items:
- 1x HD1080(A) Camera Body
- 1x USB Mouse
- 1x HDMI Cable
- 1x Power Supply
- 1x USB-to-USB Ca

*Note: The HD1080 series models do not include an adapter in the package. The camera is designed to fit on a male C-mount port (externally threaded, 25.4mm external diameter). If you intend to use this with an AmScope microscope, you will either need a C-mount adapter that fits on your 23.2mm inner diameter non-threaded port, such as the SKU: CPC, or the SKU: RU050 0.5x reduction lens C-mount to 23.2mm adapter (sold separately).*

The RU050 is the recommended camera adapter for the HD1080 series models and AmScope trinocular microscopes.

3. Remove the camera body from the box and remove the plastic protective covering the lens and sensor.

4. Mount your camera to your microscope. This may be different depending on what kind of mounting port your microscope has:

C-mount: Thread the camera body directly onto C-mount threads.

23.2mm Inner Diameter: SKU: RU050 recommended (sold separately) or CPC/equivalent C-mount adapter

5a. **HDMI/SD Card Use:** If you intend to use the camera directly with an HDMI compliant monitor, attach the USB mouse to the USB port on the rear of the camera, the HDMI cable to the camera and your HDMI compatible monitor (or other HDMI input port, such as a capture card), and the power supply to the rear of the camera and to the power source (wall). If not, please skip to step 5b.

5b. **USB-to-USB/PC Use:** If you intend to use the camera with a Windows based PC, please connect the power supply to the rear of the camera and to the power source (wall) only. Install the software and driver from the website at http://www.amscope.com/software-download (ISCapture), then connect the camera directly to the PC via a USB to USB cable.

Operation

HDMI/SD Card Usage

1. Once properly configured (see step 5a on page 11), turn on the microscope, open the trinocular port of your microscope, monitor, and camera using the appropriate on/off or I/O switches (the camera uses an on/off switch on the rear of the unit).

2. On screen, once all items are activated, an image as seen from the camera will appear on the monitor. It will likely be out of focus, and require refocusing on the microscope even if focused through the eyepieces prior to attaching the camera. This can be accomplished by refocusing the trinocular port if you have an adjustable port, or by adjusting the focus of the microscope manually.

Note: Because the camera has a different focal length than the eyepieces, unless you have an adjustable trinocular port, you will likely not have eyepieces and the camera in focus at the same time. Focusing the camera is done while viewing the image on the screen, not by using the eyepieces.

3. Once focused through the microscope or trinocular port, you can then manipulate the software of the camera to optimize the image's appearance and quality by using the mouse. Dragging the mouse to the upper left corner of the screen will open up the HD1080 series model's on board software, giving you a variety of options.

4. If ready to capture an image or record a video, please ensure that an SD card with sufficient storage space is installed into the SD card slot, and you may click the capture button to capture a still image, or the record button to begin recording a video. To stop recording, simply click the button again, and the process will stop.

5. If unsatisfied with the image as is, you may need to make various adjustments to the image as found in the on-board software. Please see the following section for an explanation of all software functions.

Operation

On-Board Software Features

Capture Button

Captures a still image or begins/ends recording a video, depending on what setting is currently active.
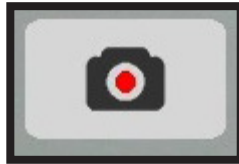
Settings Menu Button

Opens/closes the Settings menu. Contents below:

Auto Exposure

Allows the camera to determine the exposure time per frame to optimize image brightness.
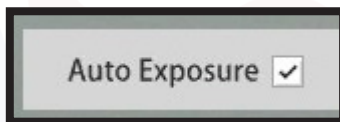
Lock White Balance

Enabling prevents white balance changes from occurring automatically. Disabling allows the camera to determine optimal white balance.
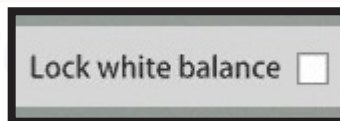
Exposure

Manual settings for adjusting exposure time in seconds, 100 milliseconds, and milliseconds.

Gain

Manual setting for gain, which is used to adjust how bright light/white colors are.
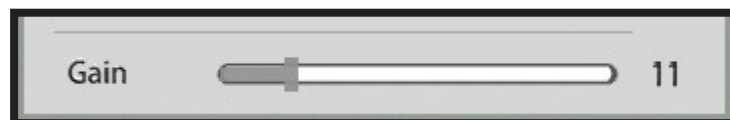
Operation
On-Board Software Features

Gamma

    Manual setting to adjust how bright the dark/black is in your image.

Contrast

    Manual setting to adjust how dramatic color changes are presented from pixel to pixel.

Saturation

    Manual setting to control how intense colors are presented in each pixel.

Red

    Manual setting to adjust the level of red colors present in the image.

Green

    Manual setting to adjust the level of green colors present in the image.

Blue

    Manual setting to adjust the level of blue colors present in the image.
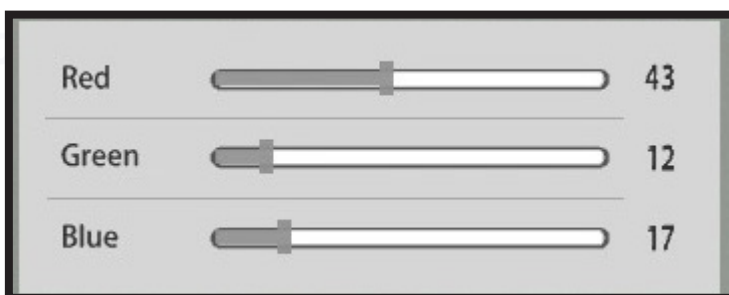
Brightness

    Manual setting for overall image brightness (how light every color is).
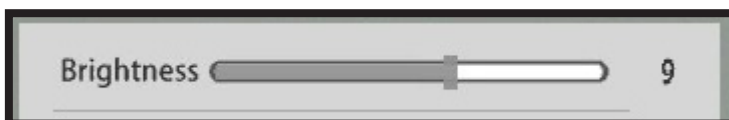
Operation

On-Board Software Features

Sharpness

Setting for how clear and crisp cut the edges in an image are presented. Focusing still required!

Denoise

Manual setting to remove noise. Too much may eliminate details, too little and image may be grainy.
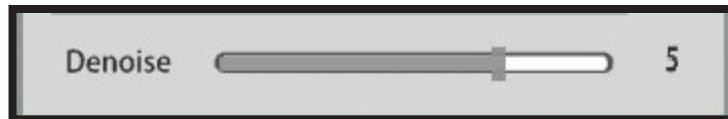
Still Image Button

Sets the camera's "Capture Button" on top to capture still images.

Video Record

Sets the camera's "Capture Button" on top to record video.

Default

Returns all settings to default factory settings.
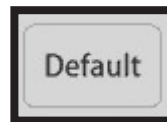
Refresh Rate

Allows you to select the refresh rate frequency of the camera to match the monitor in use.
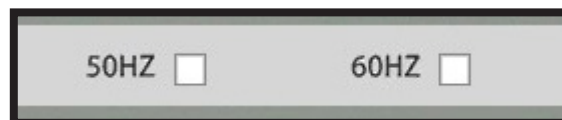
Operation

Windows PC Usage

1. Once properly configured (see step 5b on page 11), turn on the microscope, open the trinocular port of your microscope, and camera using the appropriate on/off or I/O switches (the camera uses an on/off switch on the rear of the unit), and start the ISCapture software on your PC.

2. The ISCapture software will recognize the camera, and upon clicking the "Play" button, will show what your camera is seeing on screen. It may not be focused quite yet, as the camera and eyepieces have a different focal length than each other, however, if all steps have been followed and all installation was performed properly for software and drivers, you should see an image at this point.

3. Using the trinocular port (if your model is adjustable) or the microscope's focusing mechanisms, focus the image while looking at the screen.

> *Note: Because the camera has a different focal length than the eyepieces, unless you have an adjustable trinocular port, you will likely not have eyepieces and the camera in focus at the same time. Focusing the camera is done while viewing the image on the screen, not by using the eyepieces.*

4. If ready to capture an image once focused, you may simply click the "Capture" button, and the software will capture a still image and store it to a pre-determined location on your computer's hard drive. Recording video operates in the same way--simply click the "Video" button (under the "File Save" menu) to begin a recording of what your HD1080 series model is seeing from your microscope, and click it again to stop recording. The video file will be saved to a pre-determined location on your computer's hard drive.

5. If not yet satisfied with the image quality, you may need to make adjustments to the various software options to optimize the image you are seeing in preparation for capture or recording. Please see the below section regarding the various software options available for your device when using it via ISCapture. In short, menus under the "Capture" tab relate to the live image being seen and images/videos captured, while the "Image" tab relates to adjustments done after the image is captured (post-processing).

Operation

ISCapture Windows Software (Capture Tab)

Capture Menu

Menu holding a variety of features in regards to capturing and saving an image or video.
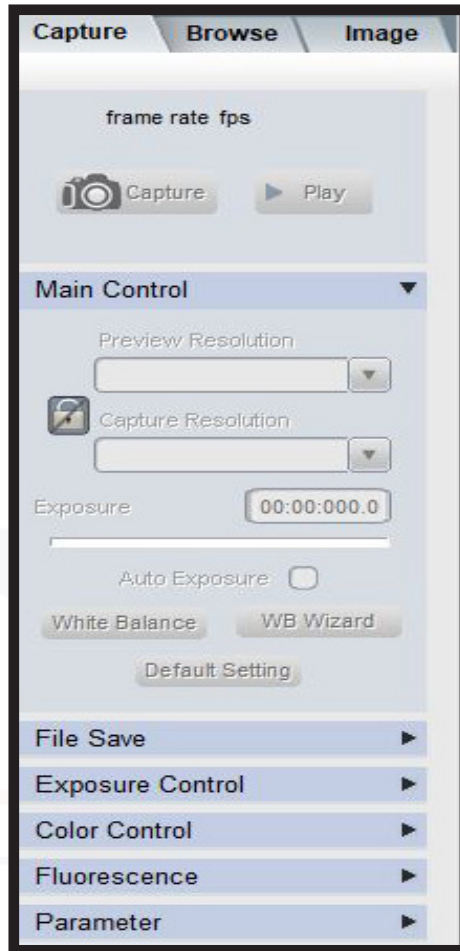
Capture

Captures a still image taken from the camera.

Play

Begins playback of the live feed from the camera.

Main Control

Section containing resolution drop down menus for live (viewing) and capture (snapping/recording), exposure settings, and white balance settings. Covered in detail in following section.

File Save

Contains options to change where your captured images or recorded videos are stored.

Operation

ISCapture Windows Software (Capture Tab)

Exposure Control

Menu containing various settings to adjust how much light the sensor collects and displays per frame.

Color Control

Menu containing various settings for adjusting or correcting the colors present in the image.

Fluorescence

Menu containing settings key for users of fluorescent microscopes and fluorescent detecting cameras.

Parameter

Drop down menu containing other settings related to file type and annotations attached to the file.

Operation

ISCapture Capture Tab (Main Control)
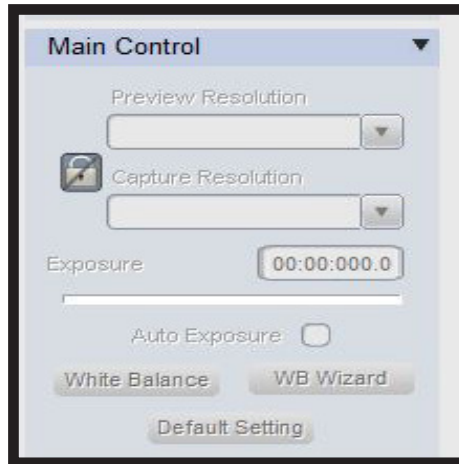
Preview Resolution

> *The resolution at which the image from the camera will be displayed on screen. Lowering this may improve frame rates, while raising this will increase the number of pixels your image is displayed at.*

Capture Resolution

> *The resolution at which the image from the camera will be captured or recorded at. Lowering this may improve frame rates when recording and will decrease file sizes of recorded media.*

Auto Exposure

> *Tick box that allows the camera software to determine how much light it should capture per frame when ticked, or holds it at the settings denoted in the "Exposure Control" section of the Capture tab menu.*

White Balance

> *Opens up the White Balance tool. White balancing is necessary when first using the camera with a particular microscope or light source to ensure that white items appear as white, helping other colors fall in line appropriately.*

WB Wizard

> *When clicked opens up the White Balance Wizard, making white balancing images user friendly.*

Default Setting

> *When clicked, will return all Main Control settings back to factory. Only click this if you intend to start over!*

Operation

ISCapture Capture Tab (File Save)
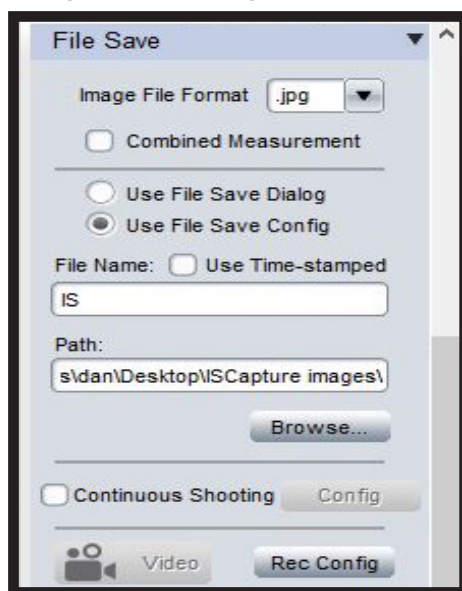
Image File Format

This drop down menu allows selection of multiple still image formats to save a captured image to.

Combined Measurement

This feature combines measurements taken in the software with the image when saved.

Use File Save Dialog

When selected, will open the "Save File" dialog box whenever an image is to be saved.

Use File Save Config

When selected, will automatically save the captured image using the settings below.

File Name

Allows you to pre-set a file name for saved files to use.

Use Time-Stamped

Appends the file name with the time stamp of the captured image.

Path

Designates where saved files are to be placed on your hard drive.

Browse

Opens the "Browse" dialog box to allow selection of a folder to store images & video to.

Operation

ISCapture Capture Tab (File Save)

Continuous Shooting

> *Allows the camera to take multiple sequential images with a single click of the "Capture" button.*

Config

> *Opens the settings menu for the "Continuous Shooting" feature.*

Video

> *Begins capturing a video recording.*

Rec Config

> *Opens the settings menu for the Video feature.*

Operation

ISCapture Capture Tab (Exposure Control)

Auto Exposure
> *Clicking here sets the camera to automatically adjust exposure time to hit the target designated in the scale next to it. Locking it keeps it at a current setting.*

Manual Exposure
> *Clicking this radial button sets the camera to accept exposure settings as determined by the user, enabling the below options to be used to manually set exposure time, gain, and frame rate.*
> *M = minutes, S = seconds, mS = milliseconds, uS = nanoseconds.*

Exposure
> *Slider used to manually adjust exposure time without using the exact time frame options above.*

Gain
> *A measure of how sensitive your sensor is when capturing light, adjustable via this slider.*

Frame Speed
> *Allows the user to set the desired frame rate to normal or high speed.*

Data Width
> *Determines how wide the color spectrum used to capture an image is.*

Operation
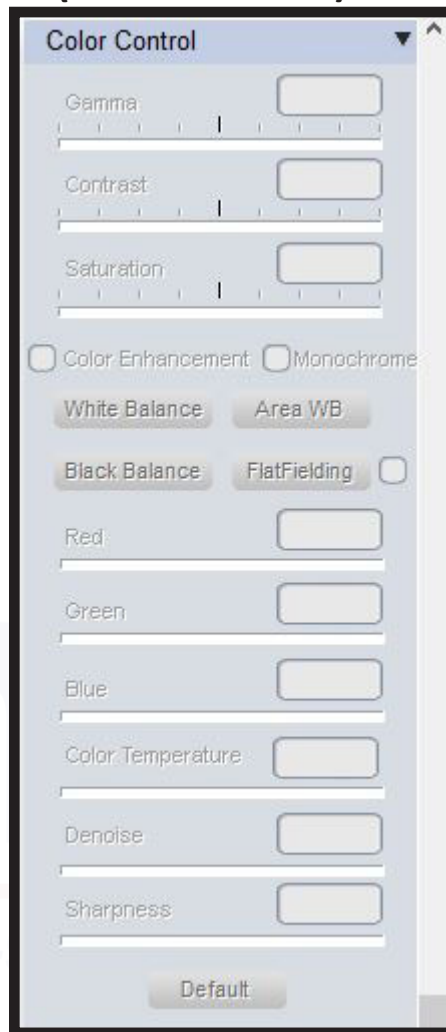
ISCapture Capture Tab (Color Control)

Gamma

    Clicking here sets the camera to automatically adjust exposure time to hit the target designated in the scale next to it. Locking it keeps it at a current setting.

Contrast

    This slider adjusts the difference in value between the darkest and lightest parts of the image.

Saturation

    Adjusts how much color is present in each pixel, making colors appear more vibrant.

Color Enhancement

Monochrome

    Ticking this box changes the image from color to grayscale/monochromatic.

Operation
ISCapture Capture Tab (Color Control)

White Balance

Opens up the White Balance tool. White balancing is necessary when first using the camera with a particular microscope or light source to ensure that white items appear as white, helping other colors fall in line appropriately.

Area WB

Allows white balancing by targetting an area within the image that is naturally white to compare to.

Black Balance

Opens up the Black Balance tool. White balancing is necessary when first using the camera with a particular microscope or light source to ensure that black items appear as black, helping other colors fall in line appropriately.

Flat Fielding

This button takes the median intensity for illumination in an image and uniformly applies it across the image. Useful for reducing dust that may settle in the optical path over time.

Red

The amount of red displayed in the image is controlled with this slider.

Green

The amount of green displayed in the image is controlled with this slider.

Blue

The amount of blue displayed in the image is controlled with this slider.

Color Temperature

This slider adjusts the temperature (in degrees Kelvin) of the colors present in the image, and compensate for differences in color from the light source being used.

Denoise

Manual setting to remove noise. Too much may eliminate details, too little and image may be grainy.

Sharpness

Setting for how clear and crisp cut the edges in an image are presented. Focusing still required!

Operation
ISCapture Capture Tab (Fluorescence)

Black Level

Slider allowing manual selection of what grey value (intensity value assigned to each pixel) is black and what should appear as not black.

Channel

Controls which color channel is currently being adjusted.

Apply

Applies the current color mapping to the image.

Default

Returns the image to its default state.

Black Balance

Opens up the Black Balance tool. White balancing is necessary when first using the camera with a particular microscope or light source to ensure that black items appear as black, helping other colors fall in line appropriately.

Capture Mode

Determines what mode one wishes to capture an image in--manully set, set for fine details, or set for vibrancy (excellent).

Operation

ISCapture Capture Tab (Parameter)

Drop-down Menu

Allows you to select a configured set of all above options as previously saved.

Save

Saves the current settings as a group that can be recalled later.

Load

Opens the currently selected group of parameters in the drop-down menu and sets them.

Delete

Allows removal of old parameter groups that no longer need to be stored.

Operation
ISCapture Browse Tab
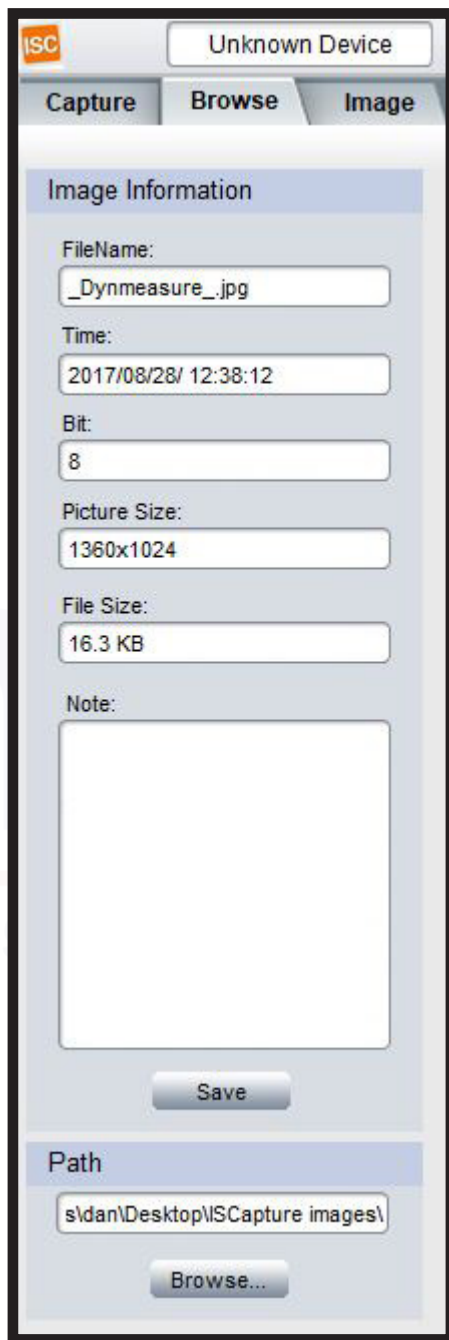
This section displays information regarding the currently opened image, if one was saved or opened. The parameters themselves are as titled, however, the "Note" section can be used to store necessary information desired when the image is later recalled about what the image is.

Operation

ISCapture Image Tab (Image Processing)
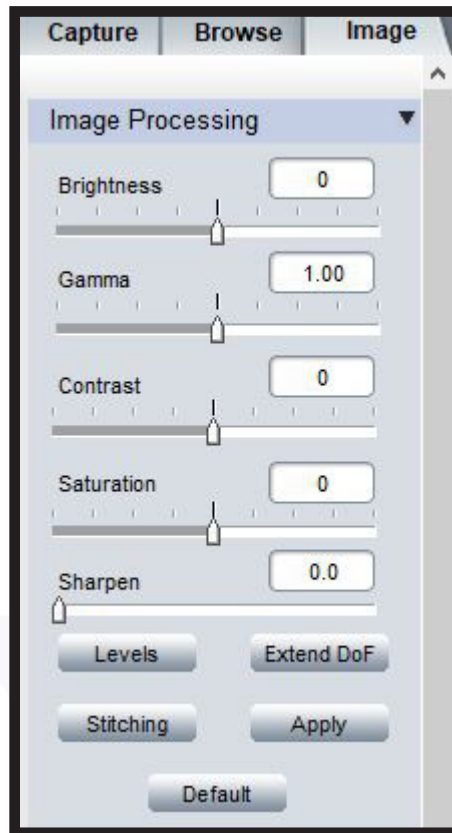
Many options in the Image tab are similar to the Capture tab, however, the Image tab affects already captured images, while the Capture tab affects the live view and captured images taken through the software.

Brightness
> *This slider adjusts how illuminated an image appears overall.*

Gamma
> *Clicking here sets the camera to automatically adjust exposure time to hit the target designated in the scale next to it. Locking it keeps it at a current setting.*

Contrast
> *This slider adjusts the difference in value between the darkest and lightest parts of the image.*

Saturation
> *Adjusts how much color is present in each pixel, making colors appear more vibrant.*

Sharpen
> *Adjusts how crisp edges between pixels are, adding definition to your image overall.*

Operation

ISCapture Image Tab

Levels

Opens the "Levels" dialog, allowing the user to change how intense or dull pixels are represented through a histogram.

Extended DoF

A function that allows users to take multiple images taken at different focal lengths and merge them into a single, deeply focused image.

Stitching

A function that allows users to take multiple images taken at different horizontal or vertical positions along a sample and merge them at the edges to create a single, larger image with a bigger field of view.

Apply

Applies the selection options to the currently opened image.

Default

Returns all settings to default.
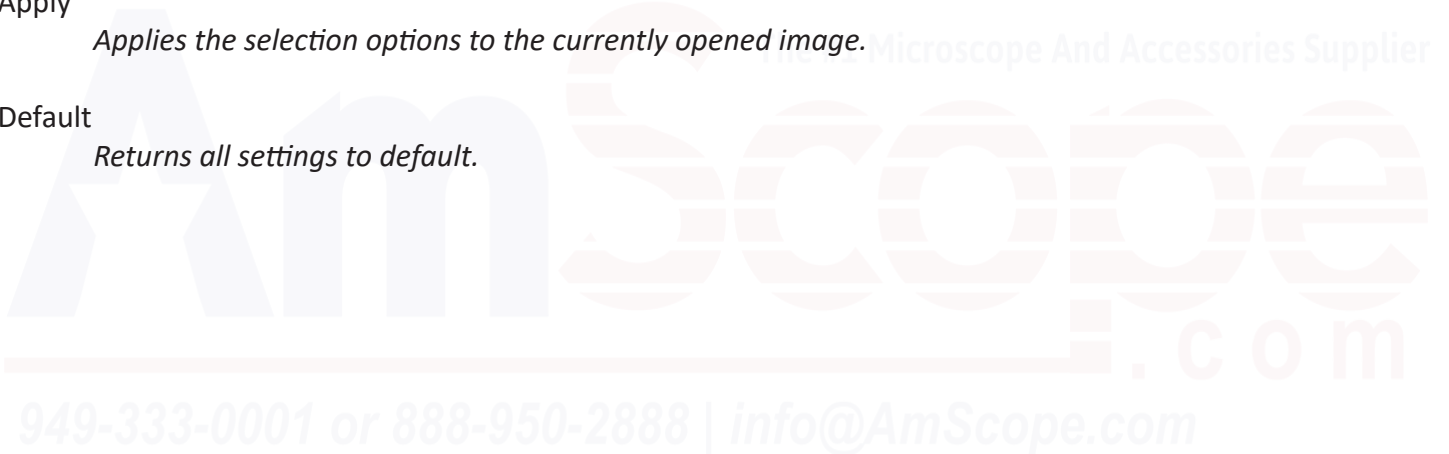
Operation

ISCapture Image Tab (Fluorescence)
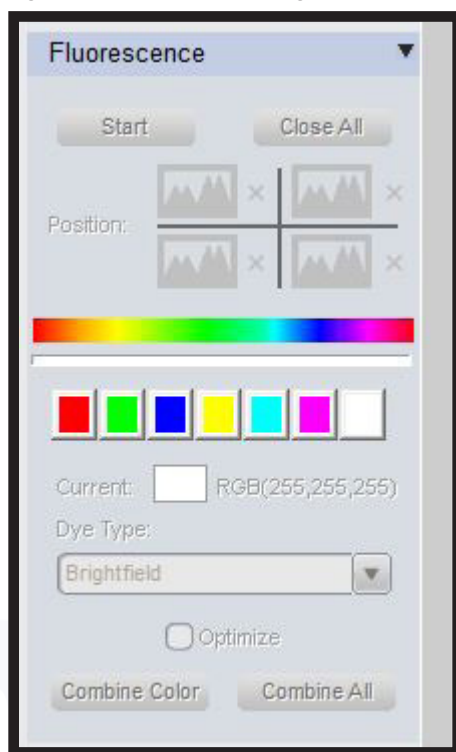
Start

> Begin by opening the image to be colorized, then press start. This will open the image in quadrants that can be used to color before reassembling them.

Position

> Allows the user to select which image copy the settings are to be applied to.

Close All

> Closes all open modifications.

Color Slider/Palette

> Allows application of a color to a previously greyscale fluorescent image. Presets can be used, or the slider used to create the custom color desired.

Dye Type

> Setting this allows the software to automatically profile the image based on the stain or dye used.

Apply Color/Combine All

> Applies selected color to an image, or, combines colors from all quadrants to the base image, combining different color channels.

Operation

ISCapture Image Tab (High Dynamic Range Image)

High Dynamic Range requires an image to be taken with multiple levels of exposure, and then can post process the images into a single HDR image.

Exposure Low
> *Sets the image for the bottom of the HDR range.*

Exposure High
> *Sets the image for top of the HDR range.*

Exposure Suitable
> *Sets the desired image within the range.*

Operation

ISCapture Image Tab (Label)
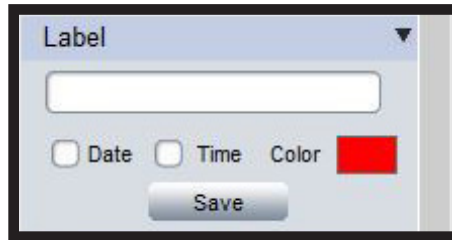
Text Box

   Text input to this box names the label to be applied.

Date

   Includes the date of the image in the label.

Time

   Includes the time of the image in the label.

Color

   Sets the color of the tab.

Operation

ISCapture Measurements & Calibration

Show Scale Line

Turns on/off the scale line, used to show how large an area is for reference. Double click to open the settings tool and change its parameters.

Calibrate

Opens the calibration wizard, allowing the user to advise how many pixels are in a unit of real distance for software measurements in real distance units.

Calibrate Table

Opens the calibration table, allowing addition, removal, and editing of stored calibrations.

Measurement List

Lists all available measurement data from measurements taken on the current image.

Layer

Allows creation of multiple layers to store measurements and annotations.

Delete All

Permanently removes all current captured measurements on the current image.

Operation

ISCapture Measurements & Calibration

Unlock/Lock

Allows the user to lock or unlock measurement features. Locked by default.

Select

A pointer tool to allow selection of measurements or measurement data directly on the image.

Line

Measures the linear length of the drawn line.

Parallel

Measures the linear length of the drawn line and distance between parallels. Double click to end.

Perpendicular

Measures the perpendicular length. Double click to end.

Rectangle

Auto-measurement tool providing height, width, area, and perimeter of the drawn area.

2-points Circle

Allows measurement of a circle based on a center point and a single point on the circle. Provides radius, area, and perimeter of the circle.

3-points Circle

Allows measurement of a circle based on three points on the circle's circumference. Provides radius, area, and perimeter of the circle.

Diameter Circle

Allows measurement of a circle based on a drawn diameter. Provides radius, area, and perimeter of the circle.

Concentric Circle

Measures like the 2-points tool, however, allows multiple circles to be drawn. Provides radius, area, and perimeter of the circles. Double click to end.

Open Polygon

Allows measurement of a polygonal area, providing area and perimeter.

Arc

Measures a curve's angle, radius, and length.

Operation

ISCapture Measurements & Calibration

Point

Counting tool. Allows counting of the points to get a quantity of areas of interest.

Annotate

Allows addition of notes or other remarks onto the image to highlight areas of interest.

Delete

Deletes a prior recorded measurement.

Cross Ruler

Enables or disables crosshairs on the image, with a unit of measurement scale across depending on which calibration is currently in use.

Closed Polygon

Allows measurement of a polygonal area, providing area and perimeter.

Angle

Allows measurement of an angle. Provides angle size and linear length.

Operation
ISCapture Calibration Process

1. Begin by placing a micrometer slide or ruler under the microscope. Focus the on the scale on the micrometer or ruler while looking at the camera feed. Capture an image at the exact magnification you intend to measure at.

Note: If you need multiple magnifications calibrated, the best accuracy is achieved by calibrating each time one intends to do measurements, however, if comparing measurements from like samples, using the same calibration file and exact same magnification is recommended to minimize variance from sample to sample.

2. Click the Calibrate button to begin creation of a calibration file.

3. Click "Load Image" and select the image taken of the micrometer slide or ruler in step 1.

4. Click the "Distance Scaling" button and draw a line from 0 to the first tick mark of the desired measurement on the scale (for our SKU: MR095, sold separately). This will be the reference length for the unit of measurement. For example, if a user wishes to measure in millimeters, the user would draw the line from 0mm to 1mm.

Note: It is beneficial at times to calibrate to a smaller unit than the unit you wish to measure in, as, the smaller the calibration, the more accurate the measurements will be overall. We'd recommend users of the MR095, for example, to calibrate to 0.01mm, which is the first tick mark. The number can be easily converted, and often times, more accuracy is beneficial for almost all applications.

5. Name the calibration file and the unit of measurement used, as well as how many units of said measurement were drawn in the line.

We recommend putting the magnification, microscope type, and capture resolution in the title as those will help ensure the same settings are used again with that calibration file. Using the wrong settings with a calibration file will cause major errors in measurement, as the software simply counts pixels and relates that to the calibration file to determine how much "real distance" that is.

6. Click "OK" to confirm the calibration file's addition to the Calibration Table. Then, select the Calibration Table, and the new calibration that you wish to use, then click "OK."

Operation

Maintenance/Precautions

- All glass surfaces must be kept clean. Fine dust on the optical surface should be blown off using a can of compressed air or gently wiped off with a soft lens paper tissue (kimwipe)/optical cleaning cloth and optical cleaner (such as Sparkle brand optical cleaner).

- Carefully wipe off oil or fingerprints on the lens surfaces using tissue moistened with a small amount of lens cleaner (we recommend Sparkle brand optical cleaner).

- Do not use Sparkle to clean other elements of the camera (such as the body or the stage). Use a neutral detergent on any plastic or painted surfaces.

- Do not assemble or disassemble the microscope camera's electrical components yourself without advisement from one of our technicians. Doing so will void your warranty, unless under advisement in writing (email) by one of our technicians to do so.

- After use, cover the microscope camera with a dust cover or bag to prevent dust from settling on the optical elements, or store in a storage container.

- Keep your AmScope camera in a dry, clean location in order to prevent rust or other damage.

Troubleshooting

Common Issues

Symptom	Cause	Remedy
ISSUES		
The color of the image is not accurate.	The image is too bright/dark.	Locate the related software adjustment for your image, and adjust as needed. In this case, start with exposure settings, then move to brightness, contrast, and gamma sliders. These will adjust how much light your sensor is collecting first (exposure time/gain), then, if still needed, you can use the software processing options (brightness, contrast, gamma) to correct.
	The colors in the image are inaccurate.	Locate the related software adjustment for your image, and adjust as needed. In this case, first, start with white balance to ensure that your white levels are set correctly. If still in accurate, adjust the saturation slider. If neither are working, the colors may need adjusting in post-processing, under the "Image" tab, "Image Processing" and then finally the "Levels" button to open the RGB histogram, allowing color adjustment.
The image is not in focus through the camera while focused through the eye-pieces.	The microscope is not properly focused.	The camera and eyepieces typically have different focal lengths, so, to get both in focus, an adjustable trinocular port is necessary. If no adjustable trinocular port is present, adjust the microscope's focus while looking at the screen.
	The adjustable trinocular port is not properly focused.	The camera and eyepieces typically have different focal lengths, so, to get both in focus, an adjustable trinocular port is necessary. If present, adjust the trinocular port until the camera is in focus while the eyepieces are focused, or as close as possible.
The image is different through the camera than the eyepieces.	The image is more zoomed in through the camera than the eyepieces.	This is a normal phenomenon with the camera. The image received by the sensor is larger than the sensor, so only part of the image is seen. Using a reduction lens such as the SKU: RU050 (sold separately) helps shrink the image to better fit on the sensor, however, some "cropping" of the edges still takes place.
	The image is not as clear through the camera as it is through the eyepieces.	This is a normal phenomenon. The human eye and brain are far superior optical devices than a micro camera sensor as used with a microscope. Great quality can be achieved with careful focusing and use of post-processing tools, such as extended depth of field (EDF), however, an image will rarely be clearer through the camera than the eyepieces.

Troubleshooting

Common Issues (Continued)

Symptom	Cause	Remedy
ISSUES		
One side of the field of view is darker.	The nosepiece is misaligned (compound microscopes.	Turn the nosepiece until the objective turrent clicks into place and a full image can be seen.
	Stains or dust have accumulated on the objective, eyepiece, base lens, or reduction lens.	Clean all lenses with lens cleaner and/or a lint free, non-abrasive lens cleaning cloth.
	The trinocular port is not fully open.	If your microscope has a shutter or prism switch/pin to open the trinocular port for light from the microscope, please remove the camera, and adjust the switch/pin while looking down the port. Light should be visible, showing any obstructions. If not cleared by adjusting the switch/pin or cleaning, please file a warranty claim at www.amscope.com/warranty.
Obstructions are observed in the field of view	Stains, dust, or dirt has accumulated on the specimen or lens.	Clean both ends of the reduction lens/adapter and the sensor lens on the camera. Spray compressed air down any open ports to ensure that any obstructions are dislodged, and clean all lenses.
The camera doesn't fit on my microscope	The microscope does not have a compatible port, or an adapter is missing.	The HD1080 series cameras come with a female C-mount port, which is a 25.4mm inner diameter threaded port. It is compatible with male C-mount ports on a microscope. Alternatively, an adapter that has a male C-mount port on it can be used to adapt it down to another size. Our microscopes use 23.2mm, 30mm, and 30.5mm port sizes, and we recommend the SKU: RU050 to adapt the C-mount port to a 23.2mm port size. Adapter sleeves can be then used to adapt to 30mm or 30.5mm as needed.
The camera isn't detected/activating.	ISCapture (Windows) - Driver is not installed.	If the software cannot detect the camera and it is properly plugged in to a USB2.0/USB3.0 port, please be sure that the driver is installed. Without the driver, the PC cannot communicate with the camera, and the software cannot locate it. Install the driver, restart the computer, and open the software while plugged in.
	On-Board Software (HDMI) - Camera is not correctly plugged in.	Ensure that the correct, included power supply is used with the camera. The device will not cycle on with a third-party or incorrectly spec'd power supply. Ensure the HDMI cable is firmly inserted in both the monitor and the camera, and that te monitor is on the correct input setting.

Troubleshooting

Common Issues (Continued)

Symptom	Cause	Remedy
ISSUES		
Camera is slow / Live image does not update quickly.	ISCapture (Windows) - Exposure time is set too high or live resolution is set too low for the PC hardware to process at an acceptable speed.	The higher the live resolution, the more data is processed per frame, slowing the camera down significantly. If faster frame rates are needed, start with lowering the exposure time and increasing the amount of light that the microscope is passing to the camera. This will maintain image quality but offer a small frame rate increase. If still not fast enough, try lowering live resolution for a bigger impact on frame rate. If still not fast enough, a faster camera may be needed, unless the PC hardware in use is old and outdated--in which case an upgrade may help, but only as a last resort.
	On-Board Software (HDMI) - Exposure time is set too high.	Increase the amount of light the microscope is outputting to the camera, and decrease the exposure time. This will provide a small boost to frame rate, as the sensor is taking in light for a shorter time per frame, speeding up the capture process.
The image is inverted	**Compound microscopes invert the image, while stereomicroscopes do not. The camera may also be rotated in the trinocular port.**	Both on-board and ISCapture softwares offer horizontal and vertical flip options, as well as rotation for ISCapture. Use these options and/or rotating the camera in the port itself to set the image upright or inverted, as desired.
Cannot pick a unit of measurement other than pixels (px)	**The camera software has not yet been calibrated for the desired measurement unit yet.**	Please perform the calibration procedure. The camera sensor only sees pixels, so, it requires calibration to understand how many pixels are in how many units of real distance (inches, mm, um, etc). Once calibrated at a given magnification, any magnification changes will require a new calibration procedure to be done.
Cannot open a recorded video file	**The correct codec for the video file format saved in is not present on the computer or compatible with the player trying to view the video file.**	We recommend (but have no affiliation with) a free software called Video Lan Controller (VLC). A download link can be found by searching on your favorite search engine for "VLC." This will install the needed codecs for any file formats that ISCapture or the on-board software may save in, and will open them without issues.