



Guangzhou Micro-shot Technology Co., Ltd

MicroCam V5

Mshot Imaging Analysis System

User Manual

1 Open the M-shot imaging door

1.1 Introduction

1.1.1 Writing purpose

It is applicable to all users of the software and provides detailed operation instructions.

1.1.2 Background

With the development of face recognition intelligent technology, the development of image acquisition and processing software has become the focus of all parties. In the field of micro imaging, image processing software involving intelligent and information technology is more and more urgently needed, especially the great progress of micro scientific research, such as depth of field, splicing, fluorescence processing, which is difficult to observe accurately under the eyepiece vision, M-shot image analysis system adapts to the current development trend, optimizes the camera effect and adds functions based on the original software.

1.1.3 Reference terms



The MShot Image Analysis System (msany) is the latest camera control and image optimization software of Mshot Optical Technology Co., Ltd. It mainly uses the computer to control the camera to collect the image and video source, and presents the effect of synthesizing, measuring and transforming the collected image through the software, which makes it easy to collect and optimize the image. It is mainly used in medical micro imaging, industrial detection, fluorescence imaging and other fields. It is fully compatible with the camera model developed by MSHOT company and the DirectShow device of windows system. It can be used across multiple platforms and has powerful functions, providing convenience for the development of fluorescence imaging field.

Run Surrounding

Software:

Microsoft .NET Framework platform



Hardware:

CPU: Intel core 2 duo E2140 above

Memory: 4GB above

Hard disk: 160GB above



🌀 Available OS

Microsoft Windows:

32 bit Windows 7, Windows 8, Windows 10;

64 bit Windows 7, Windows 8, Windows 10;

🌀 Available language

Standard language package: 1. Simplified Chinese 2. English

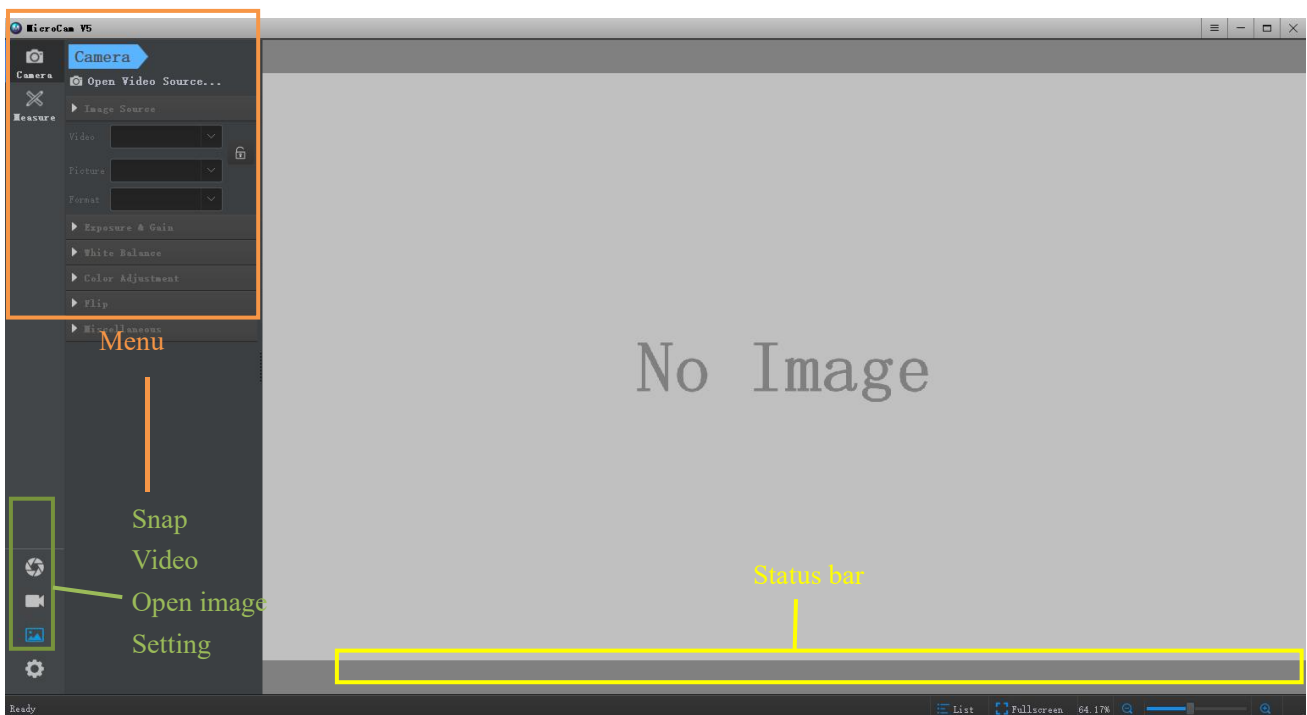
Acceptable customize other languages 1. Complex Chinese 2. German 3. Japanese 4. Russia 5. France

6. Italian

2 Enter microscope imaging world

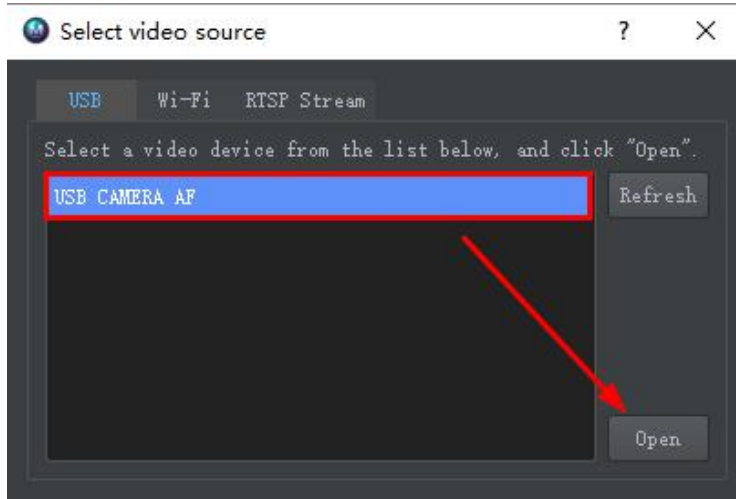
2.1 Start the software

After successful installing the software, left double click the software icon '🌀' in PC desktop, software will be run and show UI.



2.2 Open camera

Click 'Open video source' to pop up 'Select video source' window, and choose the camera needed to open, single click 'Open' to run the camera.

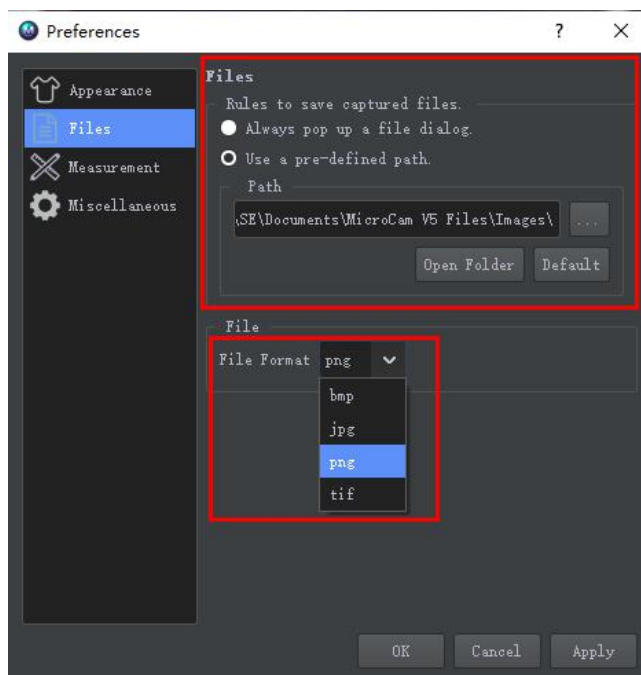


2.3 Capture image

2.3.1 Single frame photographing

Click icon '📷' on the left corner in Windows to process single frame photographing. The photo format and saving path of the photo can be accessed through '⚙️', the picture format and save path can be set through the "file" option in the preferences window under settings. After setting, click to 'OK', save the settings.

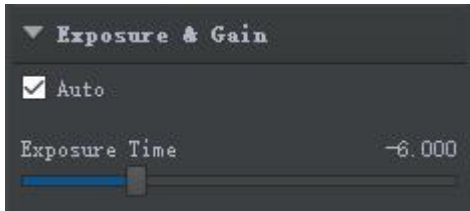
There are four image formats supported by the software: TIF, BMP, JPG and PNG.



3 Understanding functional modules

3.1 Exposure control

Click "exposure & gain" in the left toolbar to expand the exposure control settings, which can be used for automatic / manual exposure setting, exposure time and gain adjustment.



3.2 Image setting

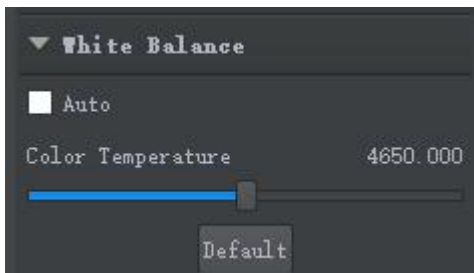
Click "image source" under the left toolbar to expand the image settings.

Function description	Console Icon	Suggestions for initialization settings
Video: set the resolution of dynamic window in real time		Preview: select a resolution similar to and smaller than the display window resolution to preview, which can get a faster frame rate.
Photo: sets the resolution for taking pictures		Select the maximum resolution to better observe the details of the dynamic image.
Formatting: formatting images		Photo resolution: select the maximum resolution to achieve the best effect of the camera.

Note: the icon ‘’ is the resolution of the locked photo image.

3.3 White balance

Click "white balance" in the left toolbar to expand the white balance setting



Automatic: check to confirm, apply matrix to affect the overall color of the screen, and automatically adjust the overall white balance. If not checked, the white balance can be adjusted manually.

Default: restores the initial white balance setting

3.4 Color control

Click "color adjustment" under the left toolbar to expand the color adjustment settings.



Color mode: available in color, black and white, reverse color

Brightness: adjust the adjusting lever to the right to make the image bright; adjust the adjusting lever to the left to darken the image.

Contrast: improve the light and dark contrast of the whole image. Pull the adjusting lever to the left to decrease the contrast, and to the right to increase the contrast.

Saturation: check the saturation box. After checking, you can adjust the image saturation by pulling the adjustment lever. The greater the saturation, the more bright it will be. The saturation is small and the image is not obvious.

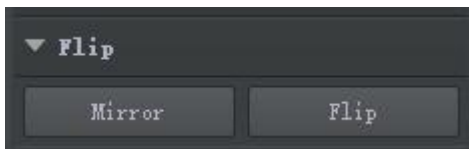
Tone: adjust the pull rod, adjust the hue and change the color;

Gamma: change the brightness of the whole image, pull the adjustment lever to the left to decrease the gamma value, and to the right to increase the gamma value.

Sharpness: improve the sharpness of the whole image change, pull the adjustment rod to the left to reduce the sharpness, and pull the adjustment rod to the right to increase the sharpness.

3.5 Flip

Click "color adjustment" under the left toolbar to expand the color adjustment settings



Mirror: check this box if the horizontal direction of the image in the dynamic preview window is opposite to what is expected

Flip: check this box if the vertical direction of the dynamic preview window is opposite to what you expect.

4.6 Miscellaneous

Click 'miscellaneous' in the left toolbar to expand the power frequency setting



The frequency of alternating current in different areas is different, so it needs to be set according to the local actual situation

At 50 Hz, the exposure time can only be increased or decreased by an integral multiple of 10. If the power supply is 60Hz, the exposure time can only be increased or decreased by an integral multiple of 8.33

5 Measurement



Click on the left 'Measure' expand the measurement tool interface

5.1 Calibration

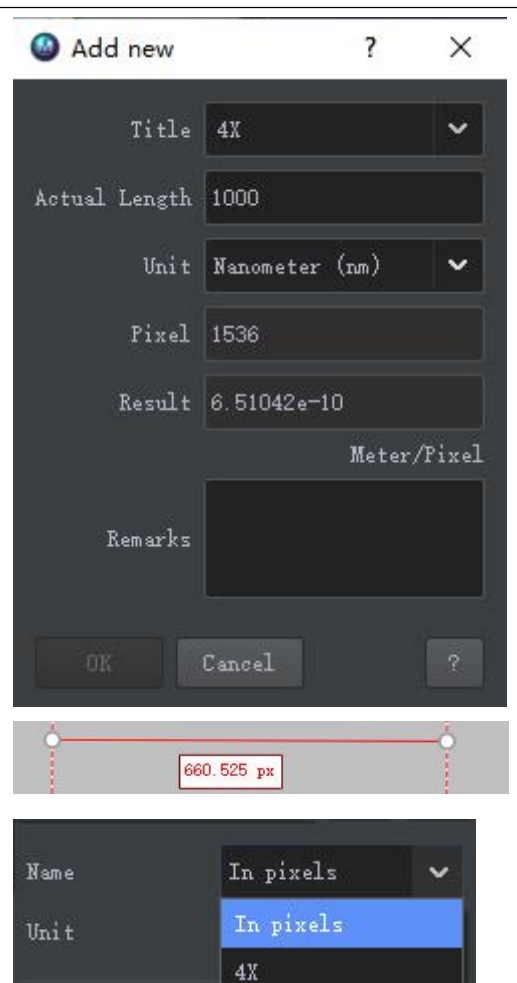
1. Switch the micrometer scale imaging to the software (real-time



imaging), and select the '+' icon in the measurement module.

2. In the magnification of the pop-up calibration dialog box, enter the objective lens multiple of the current picture (for example, if the micrometer scale picture is taken under the 10x objective lens, the magnification can be named 10x), and the actual distance is the length of the standard you want to select (here each small grid represents 10 μ m, different scale precision is different, data should be clear before calibration), and select as many as possible that can be observed Length to reduce error. The parameters of pixel distance and resolution will be automatically generated after calibration, and the scale length can be input as required.

3. At this time, a red line segment will appear in the software. Move the mouse cross to the first end of the line segment, and the mouse will change to a four-way arrow icon to pull the first end of the line to the actual length input (if the input actual length is 100 μ m, the drawn length is 10 cells). Click "OK" to save, switch to the next objective lens, and calibrate the corresponding multiple in the same way. After all multiples are calibrated, the measuring tool can be used. For measurement, you can select the objective lens magnification of the camera from the drop-down list of "name".



5.2 Measurement

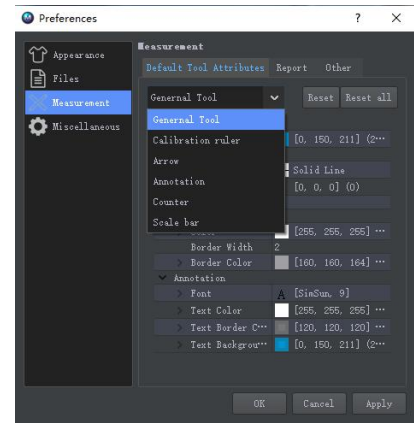
Note: to save the measurement picture, it is necessary to ensure that the preview resolution and the photographing resolution are consistent in the image settings

Function description

Console Icon

Measurement setup tool

1. Drag
2. Select
3. Delete
4. Straight line
5. Broken line
6. Rectangle
7. Polygon
8. Parallel line
9. Vertical line
10. Angle
11. Arc
12. Circle at center + radius
13. Circle at two points
14. Counter
15. Text
16. Arrow
17. Arrow



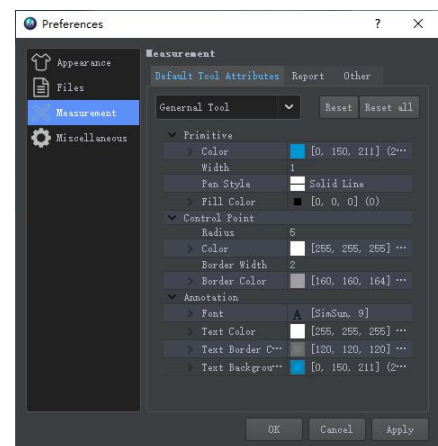
Measurement tools include commonly used 2D plane drawing line segments. During the measurement, click the mouse to draw the drawing or select the graph to select the measurement area.

Measurement tools

The survey graphics to be deleted can be selected and deleted by

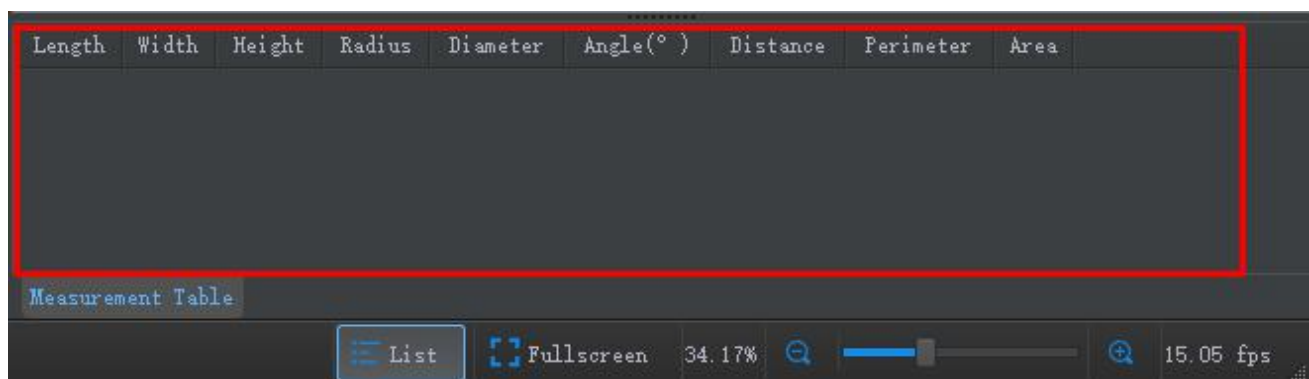


clicking the ' ' icon.



Measurement settings

The information displayed by the measurement tool when drawing can be set through the menu bar Settings > measurement.



Note: if you need to save the measurement data, you need to click the 'list' icon at the bottom of the main interface, right-click the pop-up window and select "export to excel" to save it to excel.