AmScope™

DM650AM-HDM11

0.6X-5X Motorized Auto Zoom Video Inspection Microscope w/11.6" HD monitor


User Manual

Contents

1. Setup Guide

- Remove all components from the packaging. Most of the microscope has already been assembled, including the camera and table stand.

- Connect the camera and monitor with the HDMI cable.

- Connect the camera DC12V 1A power supply.

- Insert the mouse dongle to one of the USB ports.

- After the camera is connected, turn on the power.

2. System Introduction

2.1 Boot Screen

After connecting all the microscope interfaces, power on to start the camera and display the boot screen. After a brief loading screen, the main interface will be displayed.
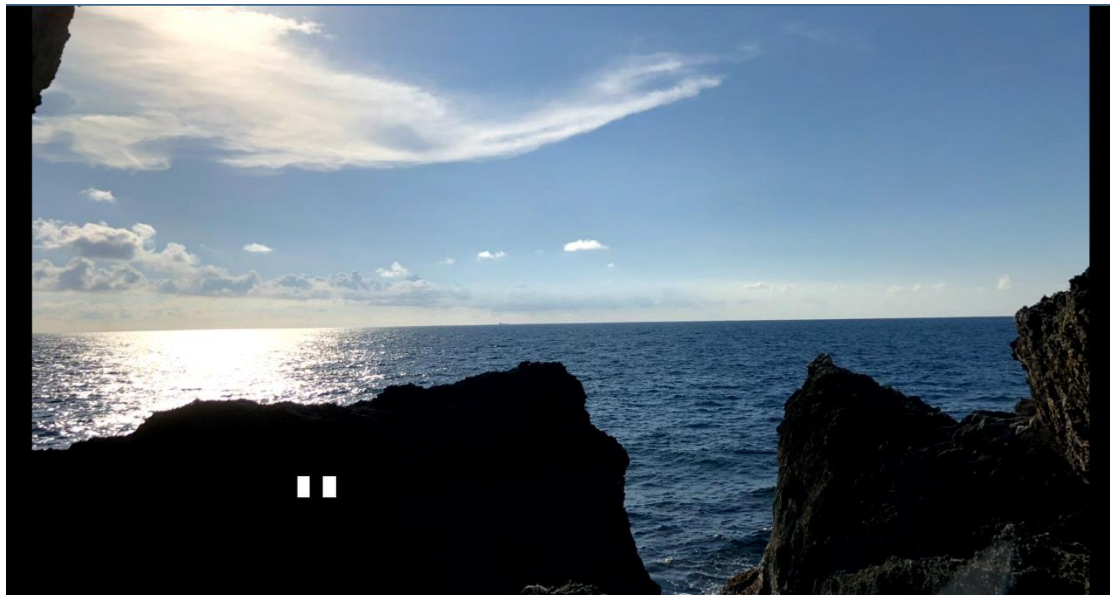
2.2 Main Interface

Users can edit the main interface layout according to preferences. See "2.3.6

settings - edit" (auxiliary tools cannot be edited).

2.2.1 Lens focus

- Adjust the on-screen zoom magnification to 5X. Move the coarse to adjust the head up and down, adjusting the working distance. Continue to adjust the working distance until the on-screen image is in focus. The working distance should be about 86mm. Please pay attention to auxiliary ring light source illumination level for optimal viewing.
- Adjust the on-screen zoom magnification to 0.6X. Fine turning the CCD tube will bring the image into focus.
- Repeat the first 2 steps 2-3 times to fully par-focal the zoom lens. When the image is the clearest at any magnification, the par-focal adjustment is complete.

2.3 Auxiliary Tools
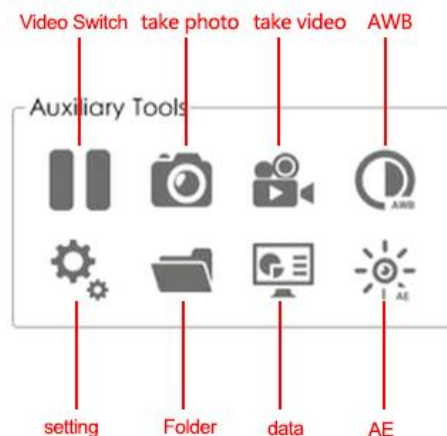
2.3.1 Video switch

▶ Start preview ❚❚ Stop preview

2.3.2 Take Photos

Click ⬤ , The image will be saved to your external storage device in JPG format. Users can change the image name, storage path, and whether to save graphics or not.

For storage and naming settings, refer to 2.3.6 settings – shooting settings.

2.3.3 Record Video

Click" 🎥 ", to start recording, click" 🎥 " again to stop recording. The video will be saved to external storage device in MP4 format. For storage and naming settings, refer to 2.3.6 setting – video settings.

2.3.4 Auto White Balance (AWB)

Click ⬤ AWB will appear in the upper right corner, and the camera will automatically adjust the white balance. When it reaches the appropriate value (the icon in the upper right corner disappears), it will automatically stop. In the process of white balancing, make sure the illuminator remains stable and does not shake.

2.3.5 Auto Exposure

Click ☀ to enter the real-time auto exposure mode. The camera will

automatically adjust the exposure value in real time according to the ambient brightness change to make it conform to the optimal brightness setting. The best brightness value can be adjusted in "2.3.6 settings - Video Settings". Click again to turn off the auto exposure.

2.3.6 Settings

2.3.6.1 Shooting Settings

1. The default auto photo naming is **Img_**. The photo will be saved in **/img/** folder of the USB drive. It is recommend users use a USB 3.0 USB drive formatted to FAT32. After the icon " " appears at the bottom, set it in "settings".
2. If users select **"Manual"**, the picture will be taken first and then named. After the picture is taken, the naming dialog box will pop up for users to revise naming.
3. Photo Path: You can manually select the path. The default is **/ img /.**
4. Save Graphics: **"Yes"** save photo with graphics or **"No"** don't save photo with graphics.

2.3.6.2 Video Settings

1. The auto video naming is **Video_**. It is recommend users use a USB 3.0 USB drive formatted to FAT32. After the icon " " appears at the bottom, set it in" settings".

2. If users select "Manual", the picture will be taken first and then named. After the picture is taken, the naming dialog box will pop up for users to revise naming.
3. Video Path: You can manually select the path. The default is **/ video /.**

2.3.6.3 Zoom Rate Settings

Users can control the speed of auto-zoom magnification.
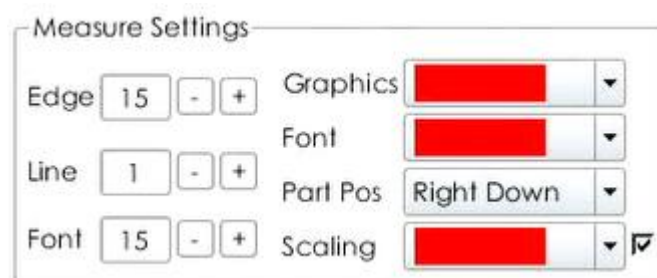
2.3.6.4 Measure Settings

Edge: Associated with 2.4.5 measurement tool "automatic edge finding".

Turn on the automatic edge finding, the range value of the measurement point moving to the edge of the object.

Line：Adjust the width and thickness of the measuring line.

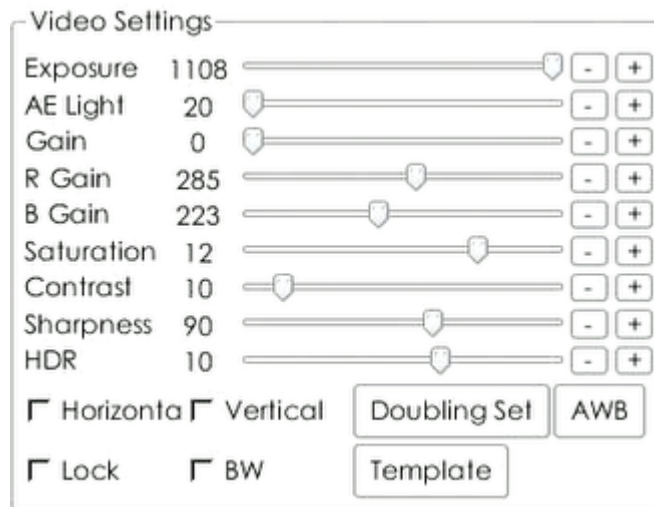**Font:** Adjust the font size of measurement data.

Graphics: Select graphic color.

**Font:** Select font color.

Parts position: Right down, right up, left down, left up.

Scaling: Select scaling color.

2.3.6.5 Video Settings

1. Manual Settings for the camera parameters such as light, RGB, saturation, contrast etc.

2. Image orientation can be flipped horizontally and vertically.

3. BW: for color image or black and white image.

4. Lock: Click lock then enter the password to lock the parameter setting. (Default password is blank), users can modify the password.

5. Save Template: Click "Template" to enter the Parameter Template window. Click "new" enter a new name, click "Save" to save the template.

6. Load Template: Click template, click "Load" to load parameter template, and click delete to delete the selected parameter template.
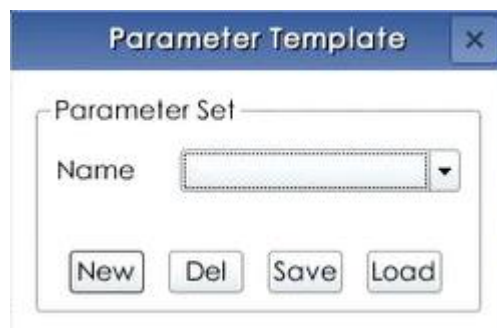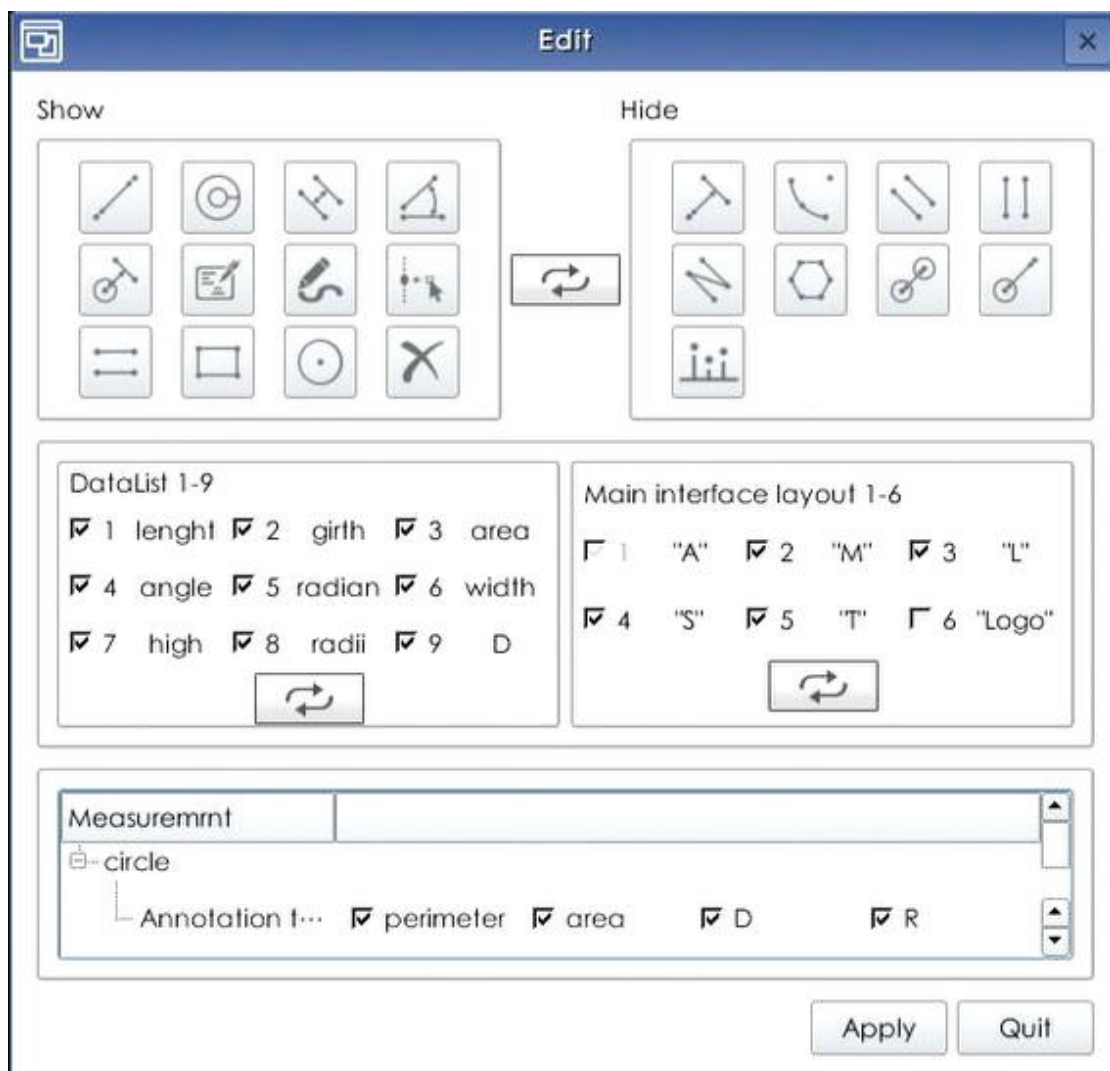
## 2.3.6.6 Restore

Restore factory settings.

2.3.6.7 Language

Users can choose between 中（简）、English、and 中（繁）.

## 2.3.6.9 Edit (Measurement Tools & Graphics)

The edit function allows users to change the main menu layout according to the user's needs.

1. Measurement Tools: The left side Shows tools and the right side Hides tool. To move one to either side, select a tool and then click the center button to move it between Show and Hide. Click "apply" when finished.
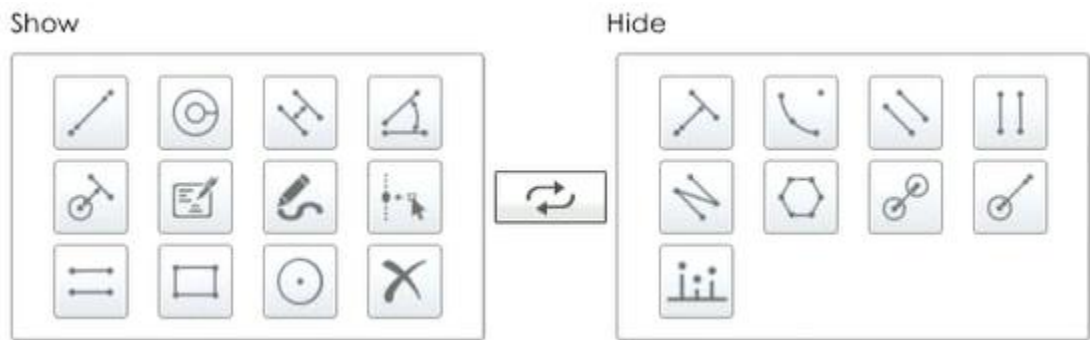
2. Data list: ☑ Show this data ☐ hide this data. Select any two data, and then click ↻ change the position. When finished, click "apply".
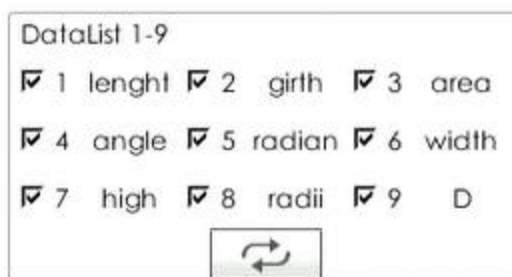
3. Main interface layout: ☑ Show this data, ☐ hide this data. Select any two data, and then click ↻ change the position. When finished, click "apply".
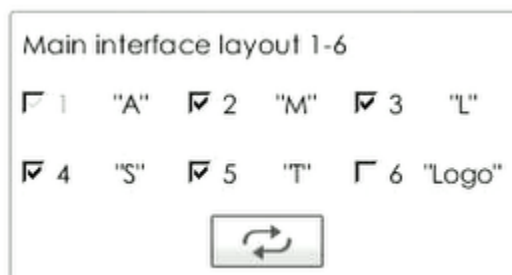
4. Measurement: ☑ Show this data, ☐ hide this data. When finished,

click "apply".

2.3.7 File Management
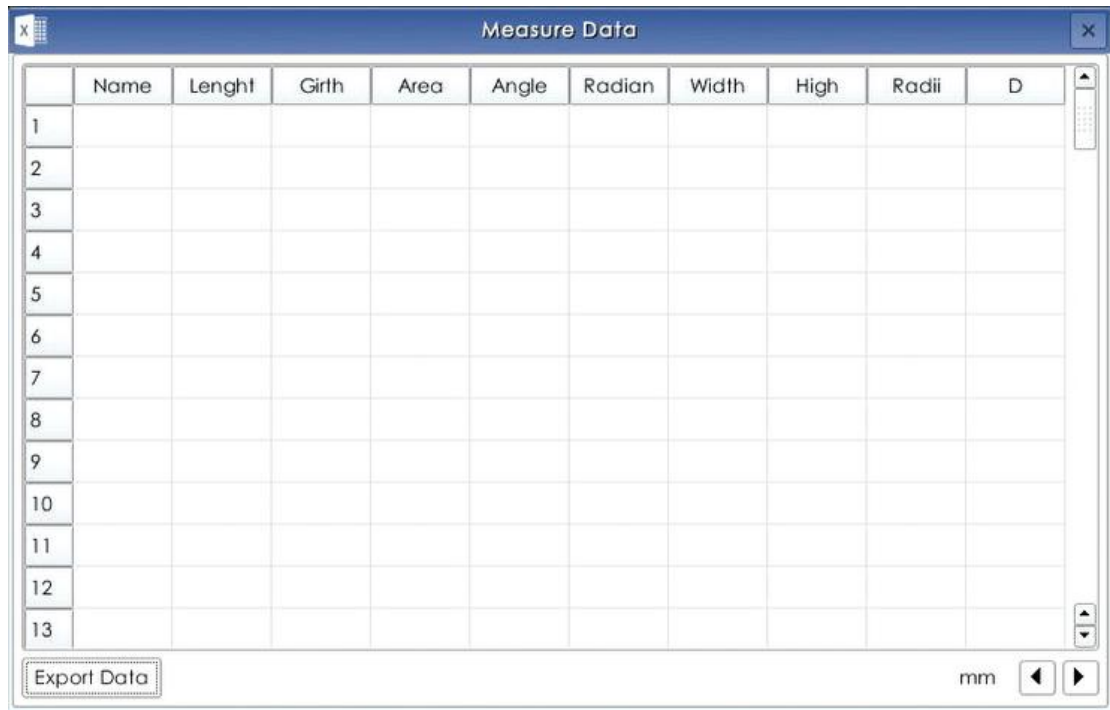
Click to open file management to browse the saved images, videos, DXF, templates, and other files.

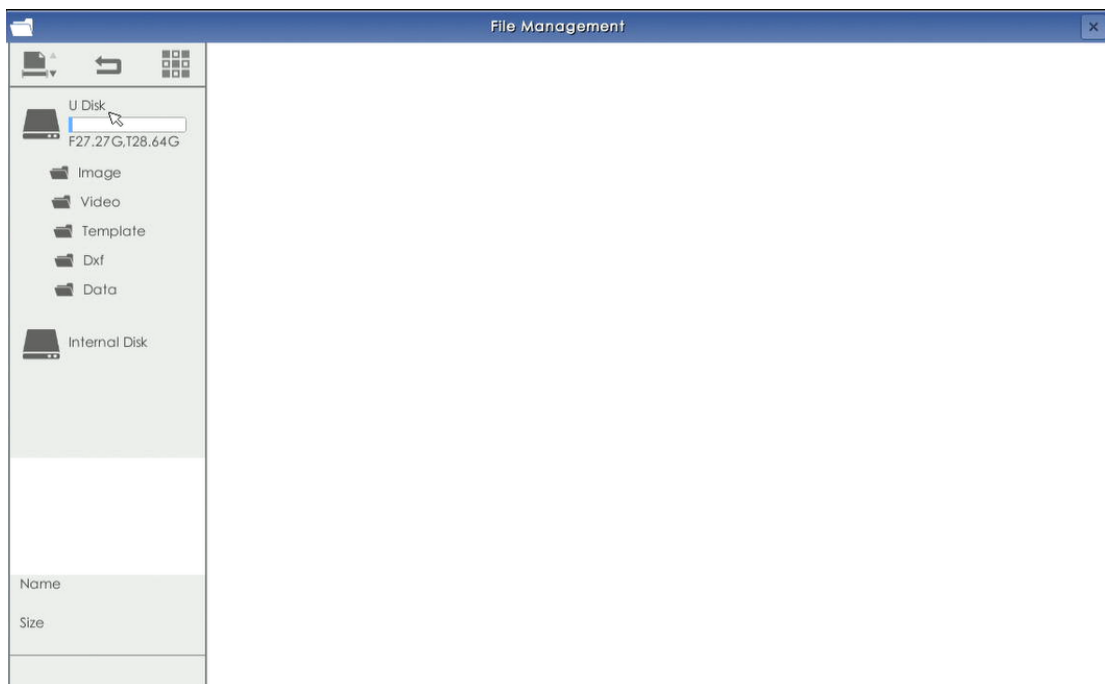Right click any file: Users can delete, compare, copy, cut and rename any files. Right click the blank space to create a new folder.

2.3.8 Measure Data

This table shows the details of all recorded measurement data. By clicking on any data row, the corresponding elements in the video area will be highlighted in yellow. Data can be modified by double clicking the mouse. Right click on a measurement element, and that element information will move to the information bar below. Click the "Export Data" button to export the measurement data to a USB flash memory drive in Microsoft Excel format.

Note: Angle, broken line and polygon measurement types cannot be modified.

2.4 Measure Tools
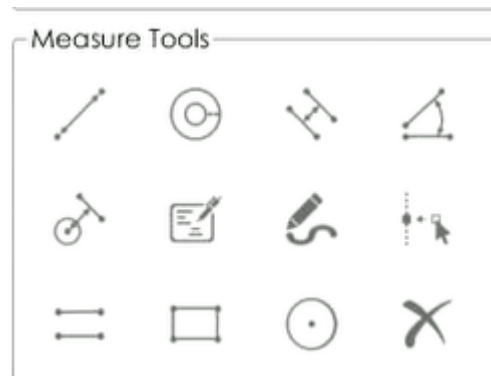
2.4.1 Measurement Operation Instructions

1. After selecting measure tool, the mouse changes to crosshairs and enters the drawing state. Use the left mouse button to draw

2. Right click to exit draw mode.

3. In the process of drawing, right-click to cancel the current drawing.

4. In the non-drawing mode, right-click the mouse to select an element (except for the key points) and change to ![hand icon]. Drag the mouse, and the element will turn yellow and move with it. Right click to select the key point of an element and change it into ![pointing hand icon]. Drag the mouse and the element will turn yellow and change its position.

5. Double clicking the element quickly will popup the "delete element" dialog. Click "delete" to delete it, and click the "Cancel" to cancel the operation.

2.4.2 Brush Tool

Click the ![pencil icon] in the measure tool to begin drawing by clicking and dragging with the left mouse button. The element cannot be dragged or modified, but it

can be quickly double-clicked and right-clicked to delete.

2.4.3 **Text**

Click ⊟ icon, left click and drag the mouse at the position to be annotated on the screen. An arrow will appear, click the second time to confirm the position of the arrow and pop-up the annotation window (the color of the arrow and annotation text changes with the "settings > measure settings > font "). Users can input text in the annotation window by using the digital keyboard or a physical keyboard (plug keyboard into a USB port), and then clicking "OK".

2.4.4 Absorption function

Click on the desired measurement tool, enter the measurement state, then press the middle button on the mouse to open the absorption function. This function automatically absorbs all key points of the measured element, or absorbs the horizontal and vertical direction of the current key points to improve the accuracy of the measurement.

At the end of drawing each measured element, the auto absorption function will be automatically turned off. To continue drawing, click the middle button again.

2.4.5 Auto edge

Click ⋮⁺🔍 . According to the range of points, the line, circle, arc and other boundaries can be automatically identified. Select the nearest boundary as the measurement point. We can adjust auto edge searching range (5-25) in "settings > measure settings > Edge" This function can greatly improve

measurement accuracy.

2.4.6 Delete

Click " ✗ " to pop-up the delete element dialog box, indicating whether to delete all element information. After clicking the "delete", all measure elements will be deleted (without any modification to the template).
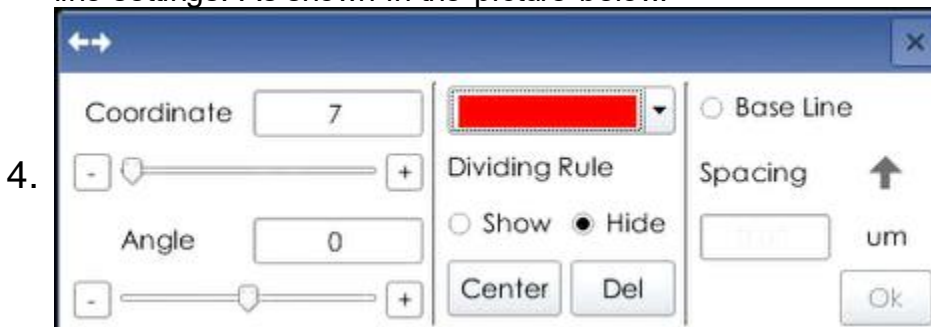
2.5 Lines
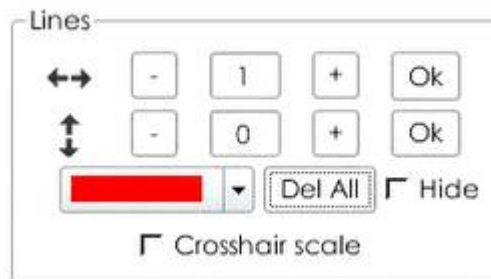
Users can add 100 horizontal and 100 vertical scale marks.

Line adjustment method:

1. Add a horizontal and vertical scale by clicking "+" and - ", and click" OK ".
2. If the current number of scale lines is fixed, only "+" can be clicked, and pressing "-" will not reduce scale in the current cross line state. However, users can edit and delete by right clicking the cross line to enter the edit box or by using the "delete all" function.
3. Right double-clicking the lines will pop up the edit box. Users can delete the scale or move position, angle, color, scale hidden and datum line settings. As shown in the picture below.
4.
5. Click "X" to close the edit box after adjusting settings.
6. Right click to select any scale line, the scale line will turn yellow, and

the mouse will turn to 🖐 then users can move the scale line position.

7. When we have added the number of scale line, if you want to add scale line again, just click the "+" to increase the number, and click "OK".

    Then the added scale line will be displayed in the video box.

8. The color displayed in the current color display box is the new scale line color

9. Click "Del" delete all scale lines

10. Add crosshairs line, right-click to move position, and "center" to move crosshair line to center position

11. Click "Hide" can hide the scale line, "show" can show the scale line

2.6 Cruise Setting

Users can set **10** preset positions for automatic zooming. Users can select magnification from 0.6X to 5.0X. (According to section 2.8).

Steps: Select a magnification > click "set" for 1 preset position > select another   magnification > click set for 2 preset position and so on for any other presets up to 10. Enter the "Residence time" to set how much time in seconds a zoom will hold its postion > click "Scanning" to begin auto-zoom.

User can "delete" and "call" each preset position.

2.7 Zoom Magnification
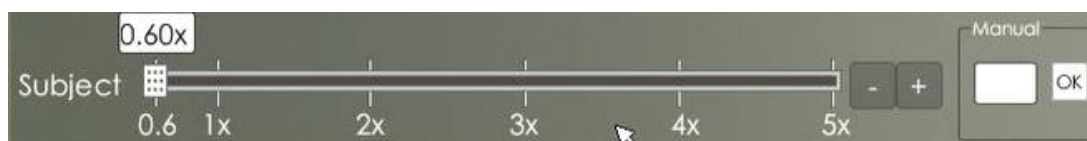
Drag the mouse to a magnification from 0.6-5.0X or "manual" enter the desired magnification on the right box, and click OK.

2.8 Magnification Visual

   Real time display of the optical magnification and total magnification. (Associated with 2.8 zoom magnification and 2.3.6.5 video setting > Lens settings)

2.9 Logo

The logo icon can be displayed or hidden through "Settings > Edit" refer to 2.3.6.