

Um Viewer

Microscope AP Operation Manual

2020/2/10 Update Ver.1.0

Contents

1. Application Program Interface Introduction	3
1.1 Main Toolbar	3
1.2 Main Function Button	3
1.3 File List/Folder	4
1.4 Sub Program	4
1.5 Status	5
2. Main Toolbar	6
2.1 File	6
2.2 Device	6
2.3 Window	6
2.4 Language	6
2.5 About	6
3. Main Function Button	8
3.1 Connect/Disconnect	8
3.1.1 Connect	8
3.1.2 Disconnect	8
3.2 Device Control Mode / Disconnect Control Mode	8
3.2.1 Device Control Mode	8
3.2.2 Disconnect Control Mode	8
3.2.3 Device Control Mode	8
3.3 Capture	11
3.4 Record	11
3.5 Freeze/Unfreeze	11
3.6 Image Tool	12
3.7 Time Lapse Capture	12
3.8 Auxiliary Tool	13
3.9 Calibration Tool	14
3.10 Capture Setting	19
4. File List/Folder	20
4.1 The File List Tab	20
4.1.1 Number of pages	20
4.2 Select File type and pages	20
4.2.1 Change Page	20
4.2.2 File Path	20
4.3 Quick Click	21
5. Sub Program	22
5.1 Measuring mode	22
5.1.1 Measurement Tools	23
5.2 Image Tool	38

5.2.1	Image Tool Toolbar	38
5.2.2	Time Lapse Capture.....	43
5.2.3	Auxiliary Tool.....	44

1. Application Program Interface Introduction

Double-click the UM Viewer Application Program (AP), the below window Fig 1-1 will show up. The interface is divided into center preview window and four groups, Main Toolbar, Main Function Button, the File List/Folder and Sub Program. The button will show the status if microscope is connected to AP. If connection fails, the button is greyed out, see Fig 1-2.

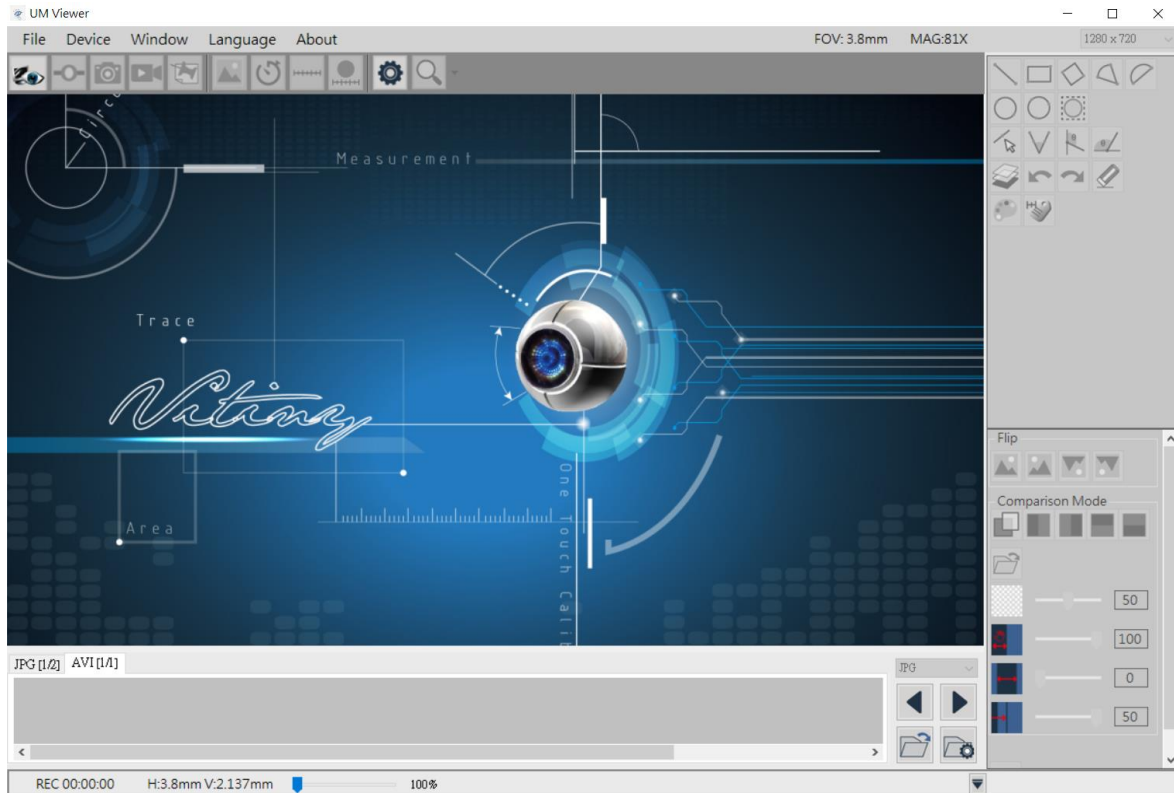


Fig 1-1 AP Interface



Fig 1-2 Connection Button Greyed out

The AP Interface divides into 5 sections, section 1.4 Sub Program will show up when microscope is connected, see Fig 1.6. 5 sections are as following:

1.1 Main Toolbar

Main Toolbar includes Files, Device, Window, Language, and About. See Fig 1-3.

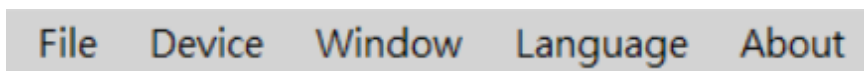


Fig 1-3 Main Toolbar

1.2 Main Function Button

Main Function buttons includes Connect, Device Control Mode, Capture, Record...etc total 9 commonly used functions, see Fig 1-4.



Fig 1-4 Main Function Button

1.3 File List/Folder

There are two tabs for Pictures and Video

File List/Folder shows the current saved files in the picture (JPG) and video (AVI) folder. Choose different Tabs to enter folder, see Fig 1-5.



Fig 1-5 File List/Folder

1.4 Sub Program

The Sub Program will show up when microscope connected to AP. Each area has its own function buttons. See Fig 1-6.

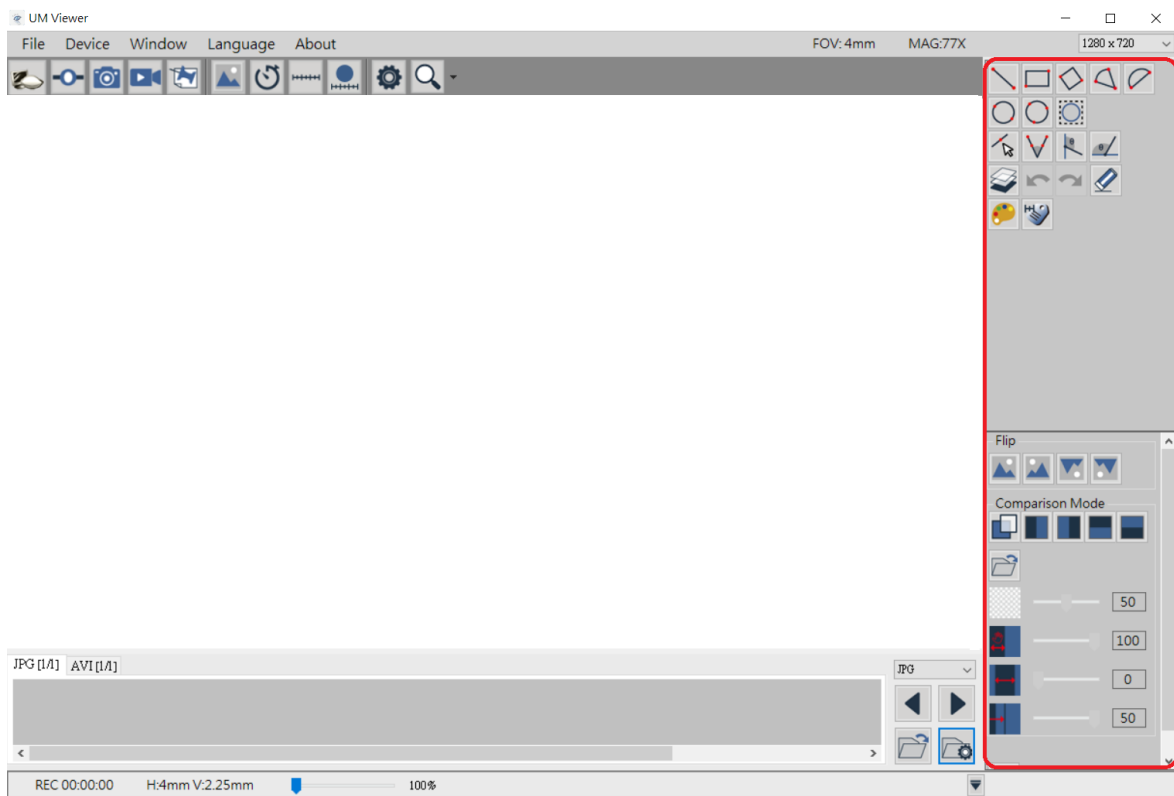



Fig 1-6 Sub Program

1.5 Status

The upper Right Corner shows the current microscope status, such as: Field of View (FOV), Magnification (MAG) and the preview resolution. This status will change whenever microscope change different focus or scale calibrated. The drop-down menu is to switch the preview resolution. See Fig 1-7.

The bottom Red area shows the video record status, the information changes according to the microscope operation. H means Horizontal, V means Vertical of FOV. Additionally, there is pull bar to enlarge Image, up to max. 600%. Also, hide below data list by  icons.

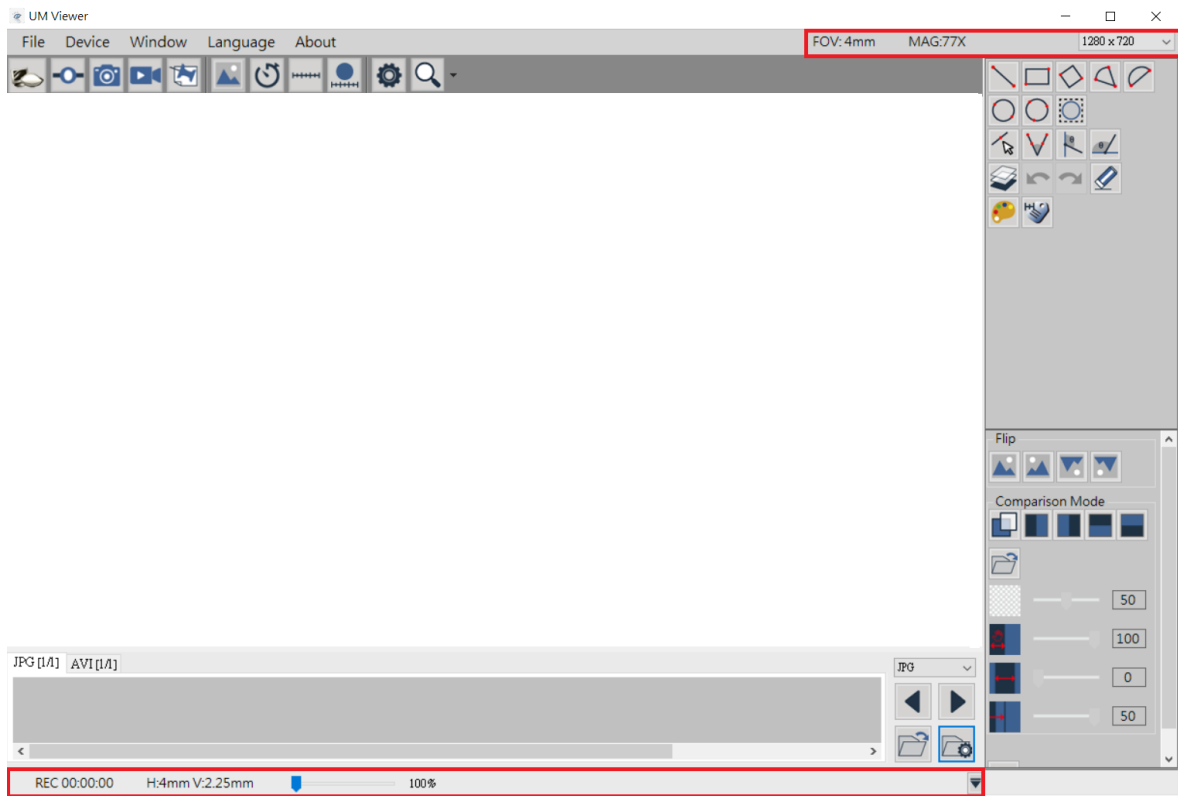


Fig 1-7 Status Information

2. Main Toolbar

Main Toolbar includes File, Device, Window, Language and About.

2.1 File

To choose the Image and Video saving path and the path can also change here. See Fig 2-1.

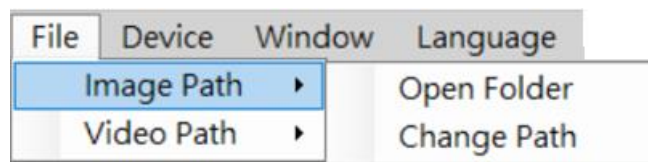


Fig 2-1 File Option

2.2 Device

To choose the microscope model, see Fig 2-2.

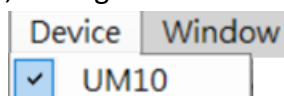


Fig 2-2 Device Option

2.3 Window

To Choose the preview window size, the resolution is decided by user's monitor preference setting. If the resolution is 1280x720, the adjustable options is only under 1280x720. (640x360) See Fig 2-3.

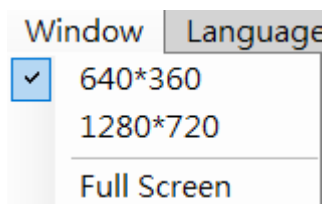


Fig 2-3 Window size

2.4 Language

This AP includes multi-languages: English, Chinese, Japanese, Korean...etc. The default language is English, users only need to setup preferable language when first time using this AP. See Fig 2-4.

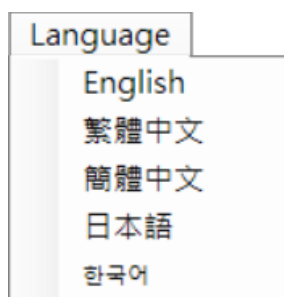


Fig 2-4 Language setup

2.5 About

To show the AP information.

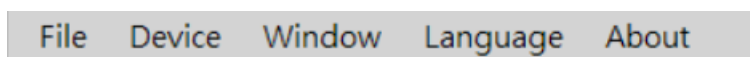


Fig 2-5 About

Show this AP's version and copy right.

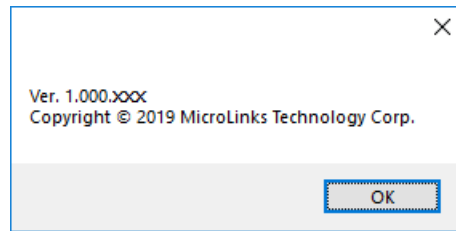


Fig 2-6 Copy Right

3. Main Function Button

Main Function Button are commonly used function, which includes Connect, Device Control Mode, Capture, Record....etc, total 9 functions. Refer to Fig 1-4.

3.1 Connect/Disconnect

3.1.1 Connect

Click button to start preview. If the connection is failed, please re-plug microscope or change another USB port. See Fig 3-1.



Fig 3-1 Connect



Fig 3-2 Disconnect

3.1.2 Disconnect

Click button to stop preview. See Fig 3-2.—

3.2 Device Control Mode / Disconnect Control Mode

3.2.1 Device Control Mode

Click the Device Control Mode button (Fig 3-3) to enable control from PC. If connection is failed, please re-plug the microscope or change another USB port.

3.2.2 Disconnect Control Mode

Click to disconnect Device Control Mode. See Fig 3-4



Fig 3-3 Device Control Mode




Fig 3-4 Disconnect Device Control

3.2.3 Device Control Mode

After click this button, the control toolbar will show up. See Fig 3-5.



Fig 3-5 Device Control Toolbar

- (1) Focus Menu : There are 3 focus modes. See Fig 3-6. Manual focus, Single AF, and Continuous AF. Single AF only focus one time, Continuous AF will re-focus when the image is blurry, stop until image is clear.

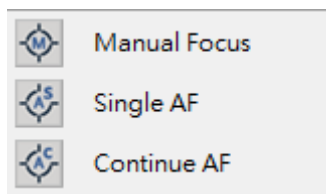





Fig 3-6 Focus Menu

(2) Field of View (FOV) menu : Below Fig 3-7 and Fig 3-8 are FOV menu for Object lens 4X and 10X. it shows FOV and WD(working distance). Users can select needed FOV or WD to focus. Example 1: In Manual focus mode, select one from needed FOV or WD menu, it will move focus to the chose area but might not clear focus. In this mode, Single AF and Continuous AF focus are both not available. Example 2: In AF mode, In focus mode, select one from needed FOV or WD menu, it will move focus to the chose area and autofocus until image is clear.












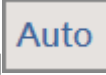


- Current Section [AF] : Search the section based on current position. The focus time is shorter.
- While Area [AF] : Search focus in whole area. The focus time is longer.

	FOV:3.8mm/ WD:22.0mm
	FOV:4.0mm/ WD:23.0mm
	FOV:4.5mm/ WD:26.0mm
	FOV:5.0mm/ WD:28.5mm
	FOV:5.5mm/ WD:31.0mm
	FOV:6.0mm/ WD:33.5mm
	FOV:6.5mm/ WD:36.5mm
	FOV:7.0mm/ WD:39.0mm
	FOV:7.5mm/ WD:41.5mm
	FOV:8.0mm/ WD:44.0mm
	FOV:8.5mm/ WD:47.0mm
	FOV:9.0mm/ WD:49.5mm
	FOV:9.5mm/ WD:52.0mm
	FOV:10mm/ WD:55.0mm
	FOV:11mm/ WD:60.0mm
	FOV:12mm/ WD:65.5mm
	FOV:13mm/ WD:70.5mm
	FOV:14mm/ WD:76.0mm
	FOV:15mm/ WD:81.5mm
	FOV:16mm/ WD:86.5mm
	FOV:18mm/ WD:97.0mm
	FOV:20mm/ WD:108mm
	FOV:25mm/ WD:134mm
	FOV:30mm/ WD:161mm
	FOV:35mm/ WD:187mm
	FOV:40mm/ WD:214mm
	Whole Area [AF]
	Current Section [AF]

Fig 3-7 4X Lens FOV menu

	FOV:1.07mm/ WD:6.30mm
	FOV:1.10mm/ WD:6.40mm
	FOV:1.20mm/ WD:6.70mm
	FOV:1.30mm/ WD:7.00mm
	FOV:1.40mm/ WD:7.30mm
	FOV:1.50mm/ WD:7.60mm
	FOV:1.60mm/ WD:7.90mm
	FOV:1.70mm/ WD:8.20mm
	FOV:1.80mm/ WD:8.50mm
	FOV:1.90mm/ WD:8.80mm
	FOV:2.00mm/ WD:9.10mm
	FOV:2.10mm/ WD:9.40mm
	FOV:2.20mm/ WD:9.70mm
	FOV:2.30mm/ WD:10.00mm
	Whole focus [AF]
	Local focus [AF]

Fig 3-8 10X Object Lens FOV menu

- (3) Current Position  : To show the lens position when moving, Fig 3-5 shows the current position in 915.
- (4) Zoom out  : Ascending speed when press zoom out longer, magnification becomes smaller.
- (5) Zoom in  : Ascending speed when press zoom in longer, magnification becomes higher.
- (6) Step zoom out  : Step zoom out, magnification becomes smaller.
- (7) Step zoom in  : Step zoom in, magnification becomes higher.
- (8) LED On  /Off  : When “off”, all LEDs turn off. When “on”, the LED will turn on and the brightness is the same as last time before turn off.
- (9) LED Decrease  : Decrease the brightness.
- (10) LED Level  : Show the current brightness level., Fig 3-5 shows current brightness is in level 2.
- (11) LED Increase  : Increase the brightness.
- (12) EV Decrease  : Decrease the brightness.
- (13) EV Level  : Show the current exposure level., Fig 3-5 shows current exposure is AUTO.
- (14) EV Increase  : Increase the brightness.
- (15) Remote Control  : Click this button to enter Remote Control menu. See Fig 3-9, if the icon is greyed out, means this function does not support this model.

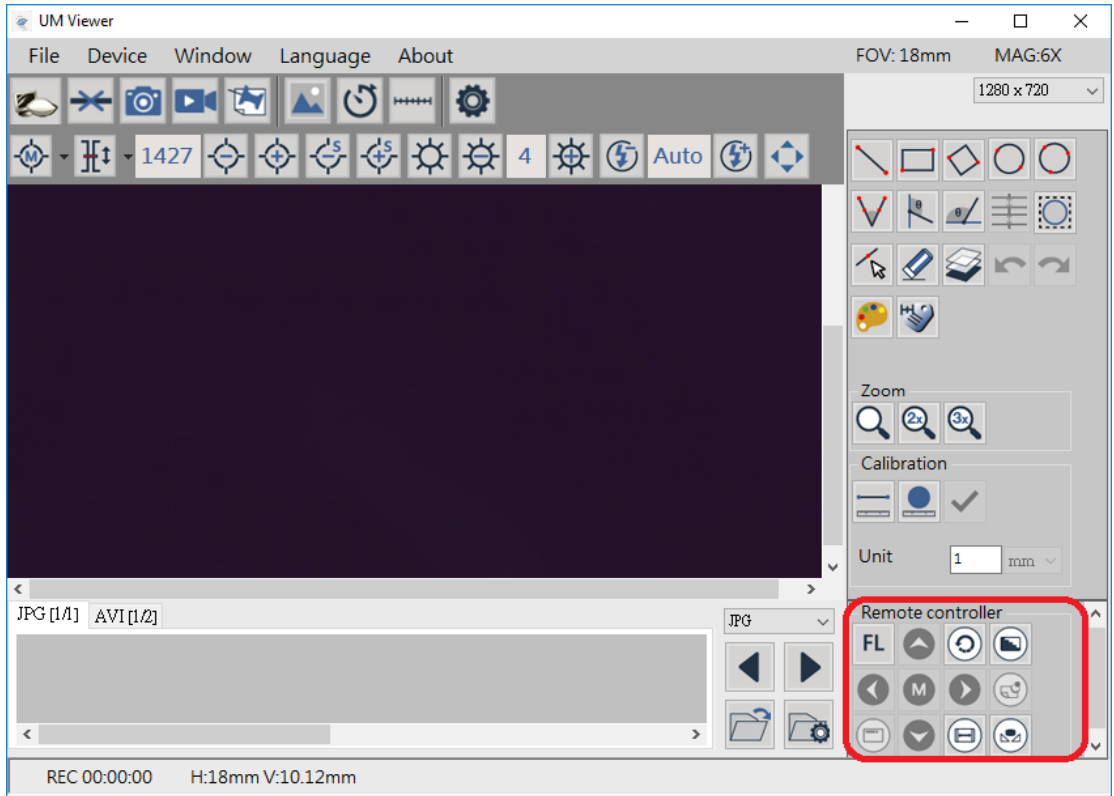


Fig 3-9 Remote Control

3.3 Capture

Snapshot icon is as Fig 3-10, image size depends on Video Format source. Captured image will save to default image folder. Users can choose “Auto-Saved” from Capture Setting. Refer to Section 3-9 instruction.



Fig 3-10 Capture

3.4 Record

Video Record icon is as Fig 3-11. Video resolution depends on Video Format Source. Recorded Video will save to default video folder.



Fig 3-11 Start and Stop Record

3.5 Freeze/Unfreeze

Freeze/Unfreeze icon is as Fig 3-12. Click to freeze the current image, users can do Sub Program or edit image, click again to unfreeze.



Fig 3-12 Freeze/Unfreeze icon

3.6 Image Tool

Image Tool toolbar is as Fig 3-13. The toolbar will showed after clicked this button. See Fig 3-14.



Fig 3-13 Image Tool Button

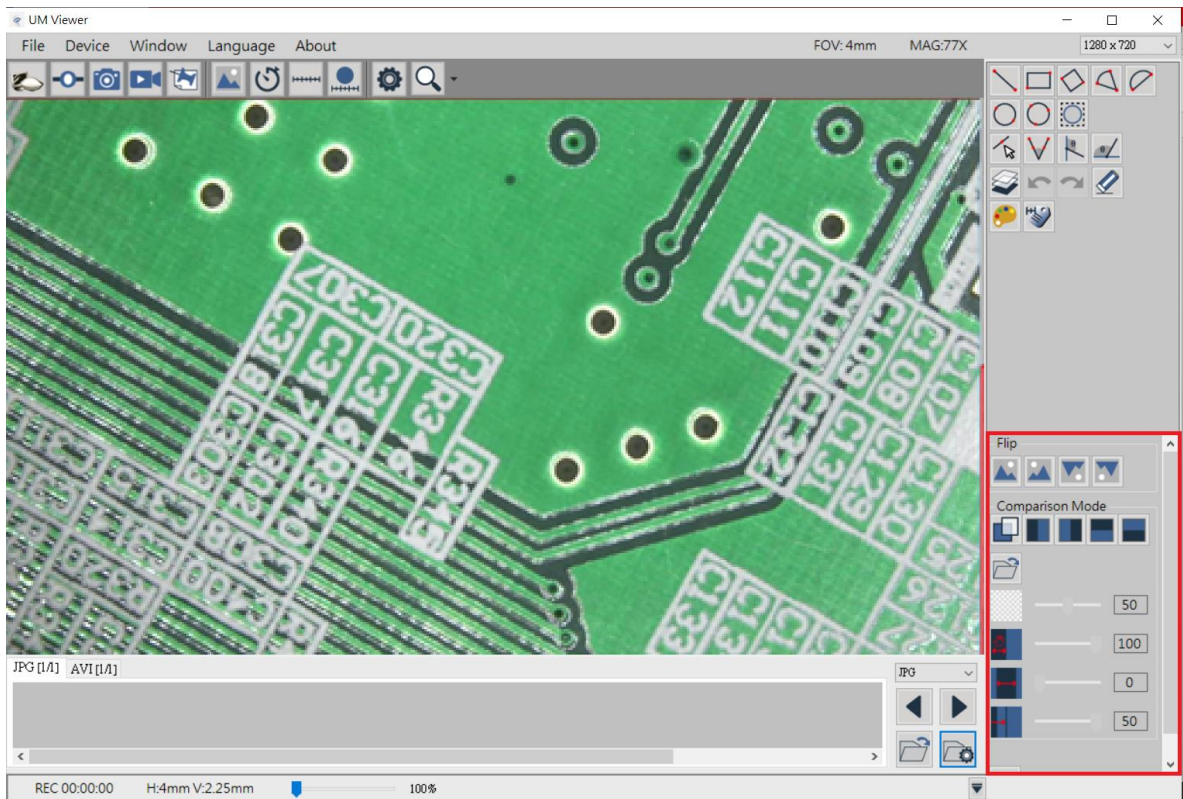


Fig 3-14 Image Tool Function Area

3.7 Time Lapse Capture

Time Lapse Capture button is as Fig 3-15. The Time Lapse Function toolbar will show after clicked this button. See Fig 3-16.



Fig 3-15 Time Lapse Capture Button

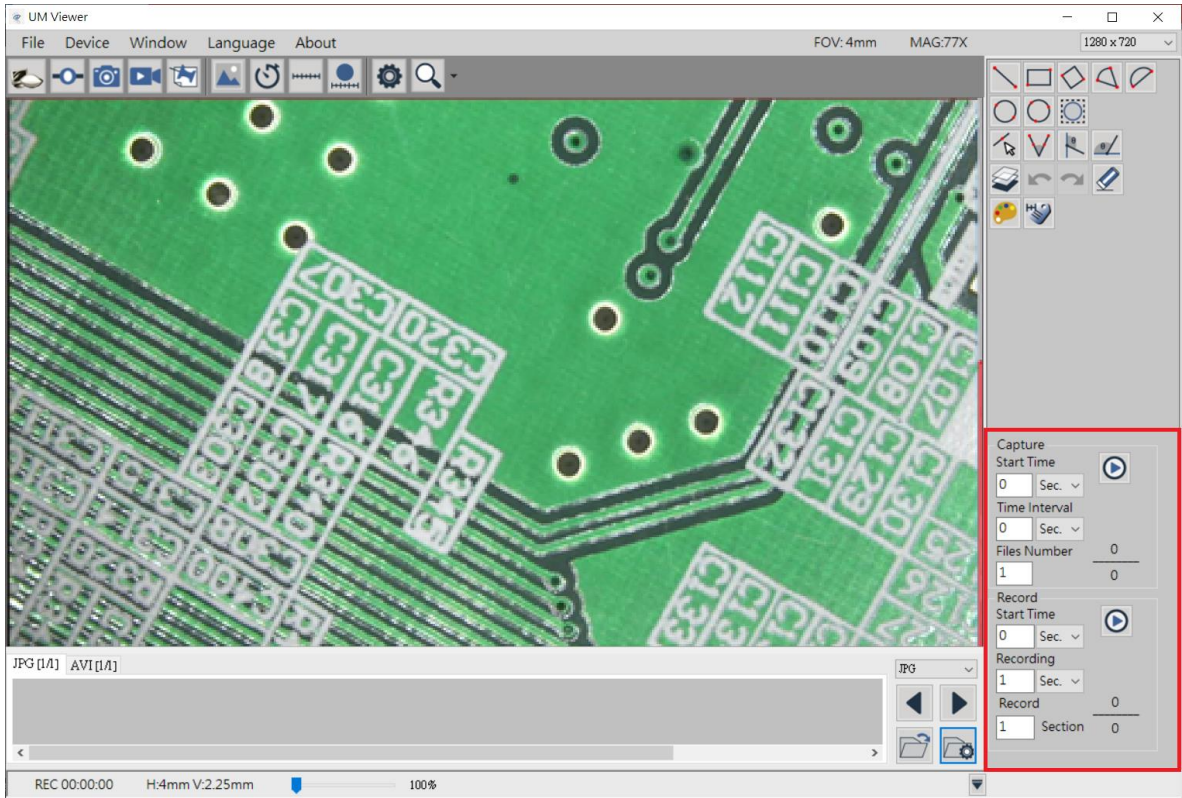


Fig 3-16 Time Lapse Capture Function Area

3.8 Auxiliary Tool

Auxiliary Tool button is as Fig 3-17. The toolbar will show after clicked this button. See Fig 3-18.



Fig 3-17 Auxiliary Tool Button

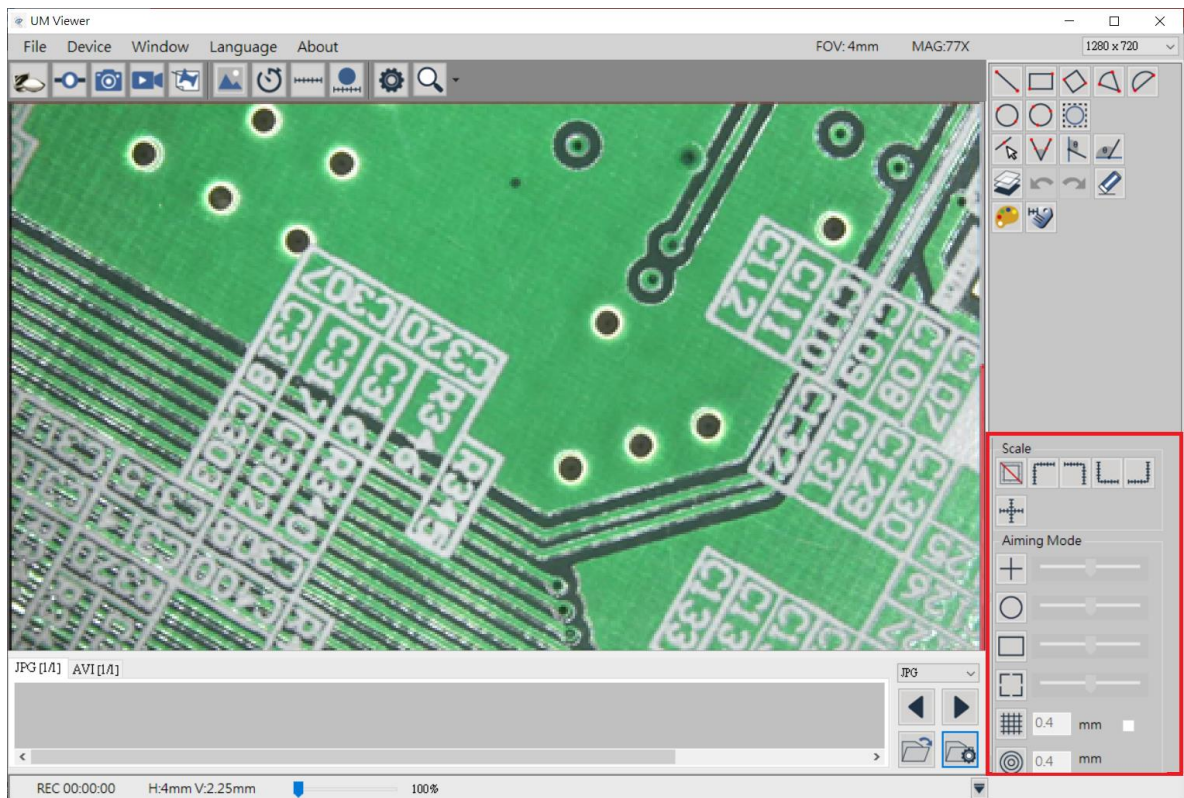


Fig 3-18 Auxiliary Toolbar Function Area

3.9 Calibration Tool

Calibration Tool icons as Fig 3-19, click then show calibration icons at right side as Fig. 3-20, 3-21.



Fig. 3-19 Calibration Tool

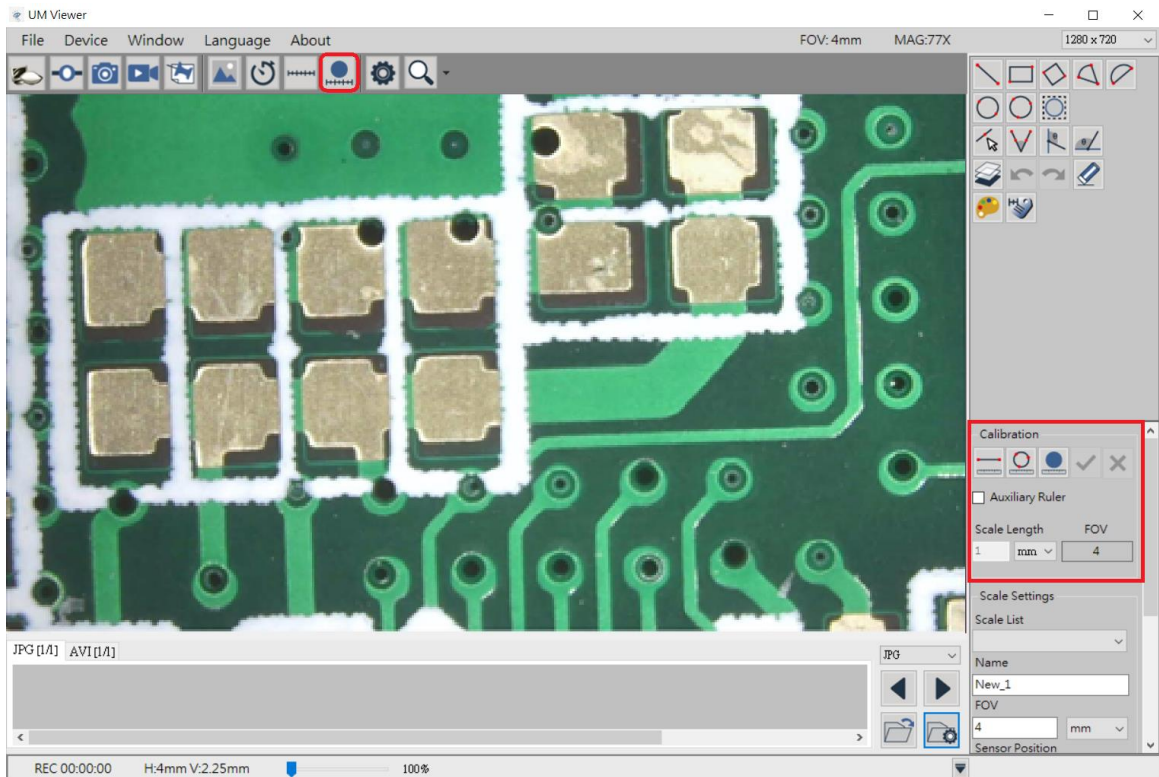


Fig 3-20 Calibration in Calibration Tool

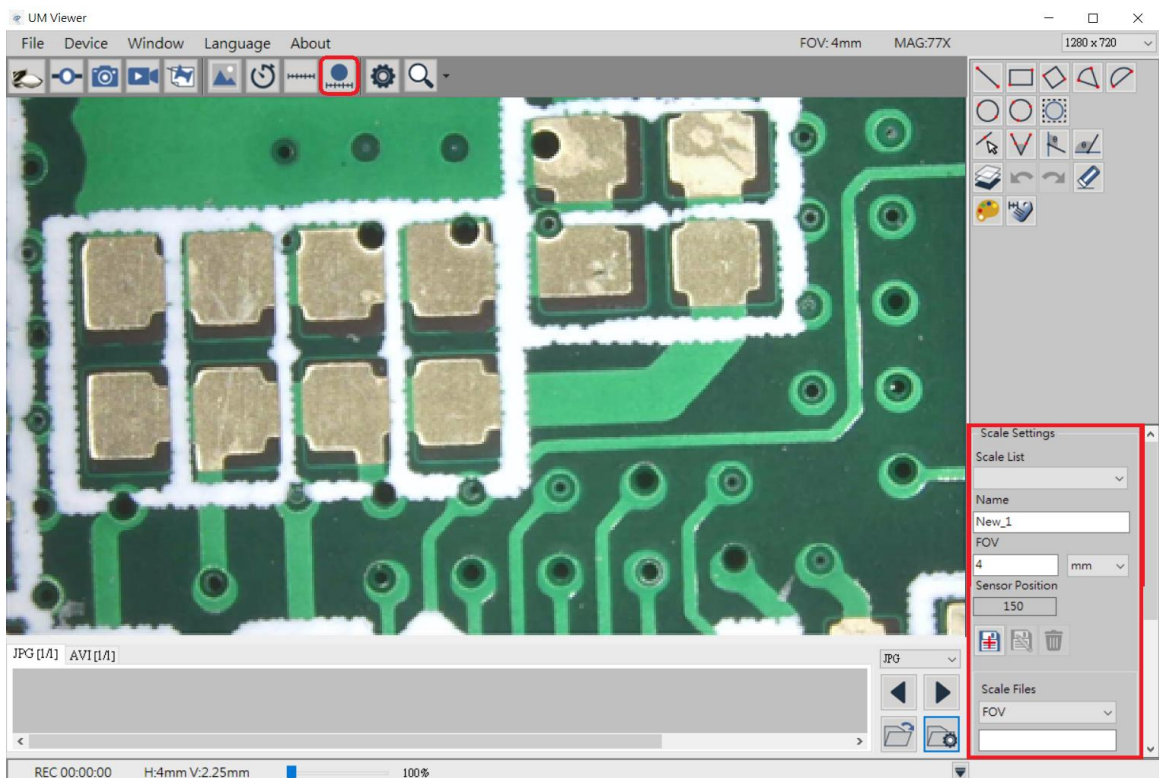




Fig 3-21 Scale Setting in Calibration Tool

(1) Self-Calibration tool : For precise measurement, it is necessary to do calibration. Apply



tool to do calibration, first to click  , put the calibration ruler underneath and make sure the actual size for calibration.

Then, fill the size in the Scale Length column . For example: actual size is 5mm, key in 5 only. Continuously, draw

the actual size as per the calibration ruler, finally click  for confirmation and accomplishment.


Now, the horizontal and vertical FOV, also MAG will be adjusted accordingly. At the same time, FOV value will be implemented in the "Scale settings" column.

Similarly, first to directly draw the same line segment as the actual size, then key the

figure in the Scale Length column , finally click  to confirm and finish.

See Fig. 5-22

The longer line segment is drawn full of the horizontal screen, the more accuracy to the

calibration. In case of cancellation of calibration, click cancel  to exit from Scale Length mode.

While calibration, if it requires Auxiliary Ruler, click Fig.3-20 「Auxiliary Ruler」 icons, then show up Auxiliary Ruler. In the calibration process, the FOV of Fig. 3-20 will preview the correct FOV according to after calibration.

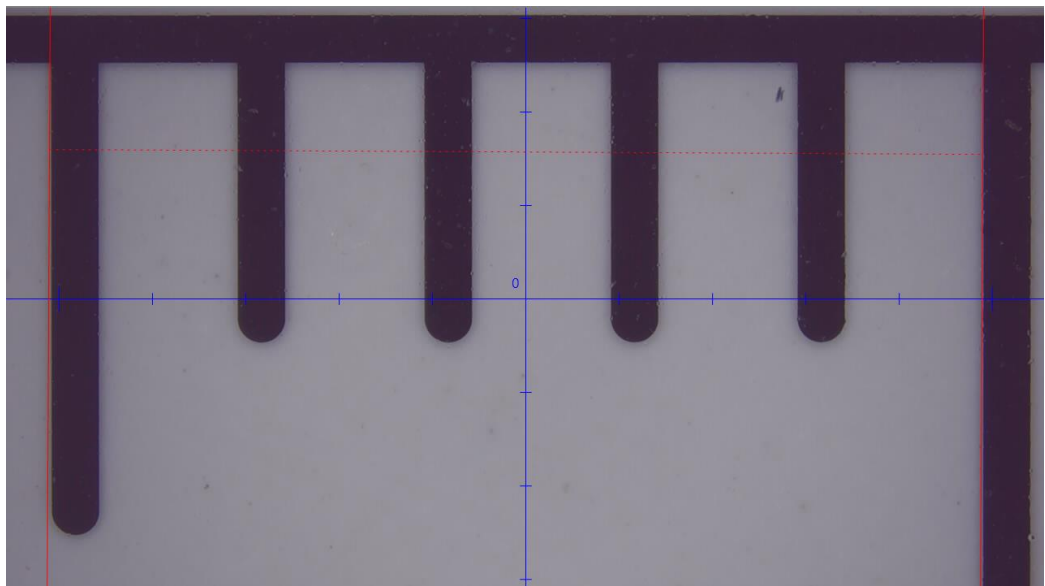


Fig 3-22 Manual Calibration example

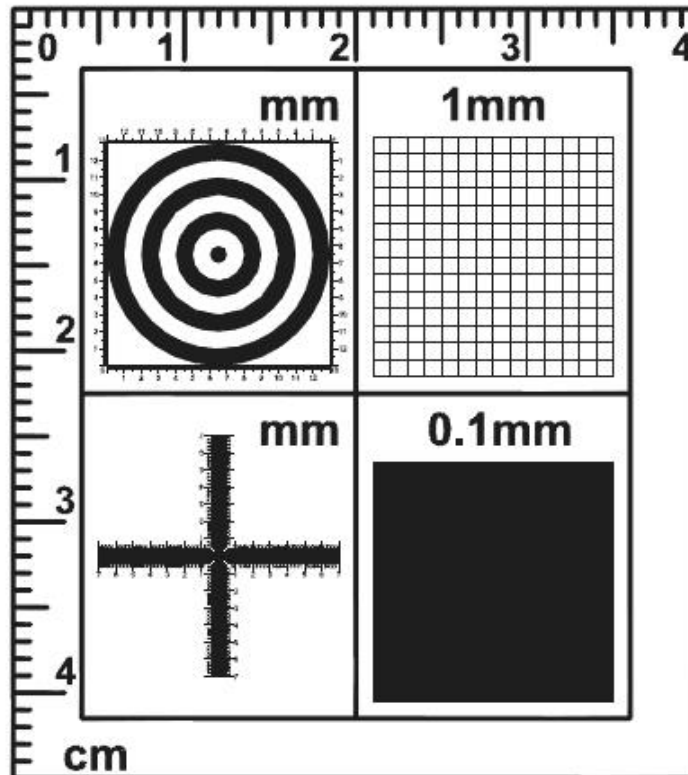



Fig 3-23 Standard Calibrator

The Standard Calibrator Instruction:

- Left Upper Corner: Concentric Circles: Concentric Circles is to see if the ratio is correct. If Concentric Circles does not form as circle (became like Oval,,etc) means the screen ratio needs to be corrected. First circle (black dot) diameter is 1mm, second circle (white space) is 3mm, third circle(black line) is 5mm, the forth circle is 7mm...etc.
- Right Upper Corner: 1mm Low Magnification Grid: Low mag Grid is used for calibrate the low magnification, wider field. It can also used to check the ratio, if the square does not form as square means the screen ratio needs to be corrected. The length for each square is 1mm.
- Left bottom corner: Cross: The main purpose for the Cross is to calibrate the default setting in AP and also to measure. The Cross includes Low & High magnification; it has 3 kinds of units as 0.05mm, 0.1mm and 1mm scale. It will measure 0.05mm, 0.1mm at high magnification and 0.1mm, 1mm at low magnification. The Cross can measure the Length and Width accurately,
- Right bottom corner: 0.1mm High Magnification Grid: High Magnification grid is used for observing tiny object. The Length of in a square is 0.1mm.

(2) Auto-Calibration Tool: When accuracy is high required, use auto-calibration tool to calibrate again. First of all, place the solid circle ruler under the lens and the circle must be inside the preview window. The full size the better. Key in the diameter of the solid

circle, such as "5" for 5mm. mm Second, click  Auto-calibration icon, it

will detect the circle edge and mark in dotted line. If the dotted line fits the solid circle edge, click Confirm to finish calibration. The Horizontal & vertical FOV size and magnification will adjusted automatically. The FOV data will brought into the “Ruler Setting”. See Fig 3-24 & 3-25. To cancel the dotted line, click Cancel  button to exit from calibration mode.

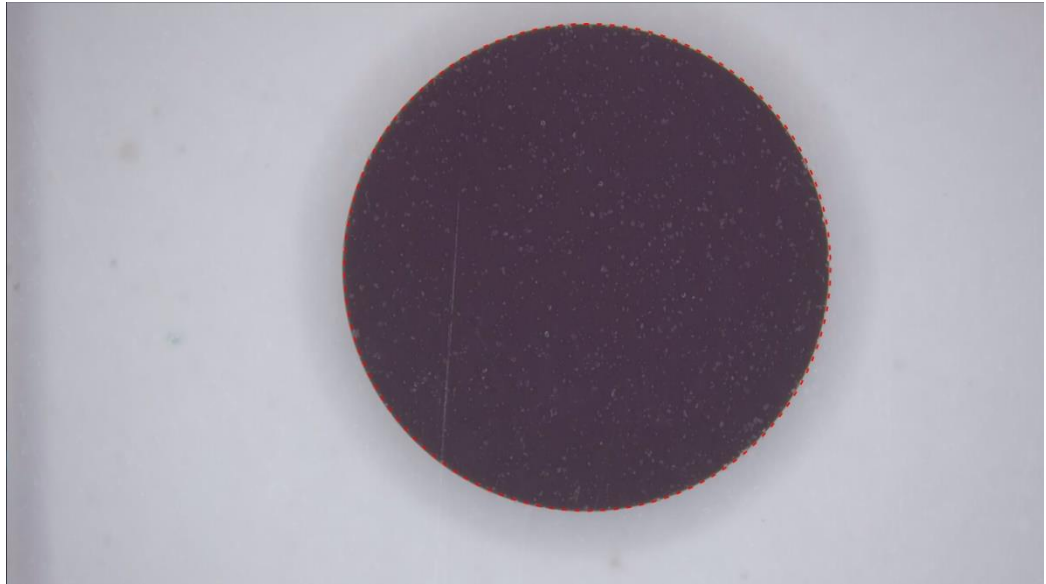


Fig 3-24 Dotted line fits the Solid Circle Edge Example

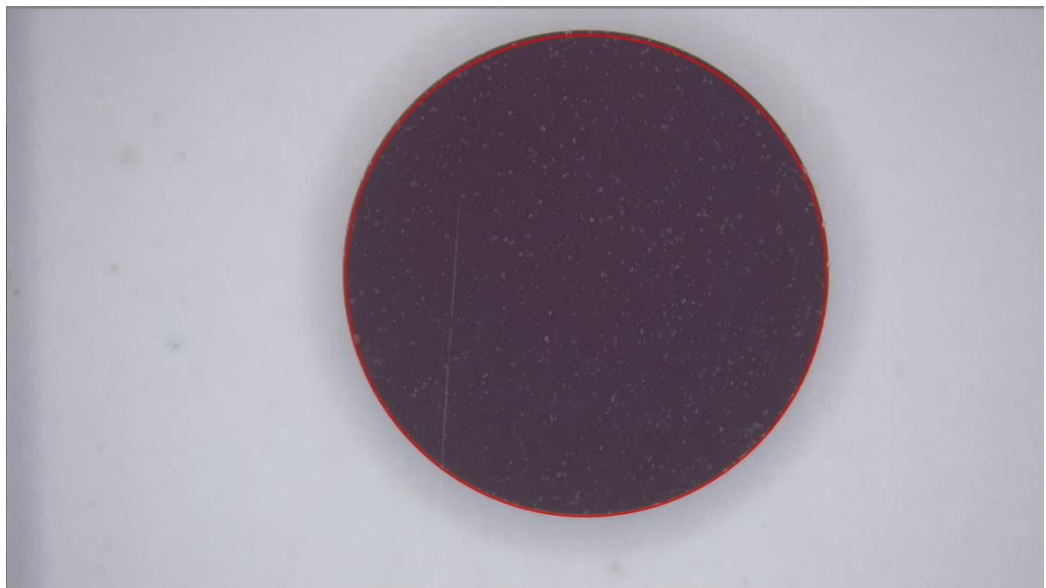


Fig 3-25 Auto- Calibration Done Example

Fig 3-26 is the Solid Circle Calibrator. The unit is in mm. The upper Scale can be used for length measurement or manual-calibration. The other size of solid circle is used for auto-calibration. The more full size of solid circle can see on preview window, the higher accuracy it can be.

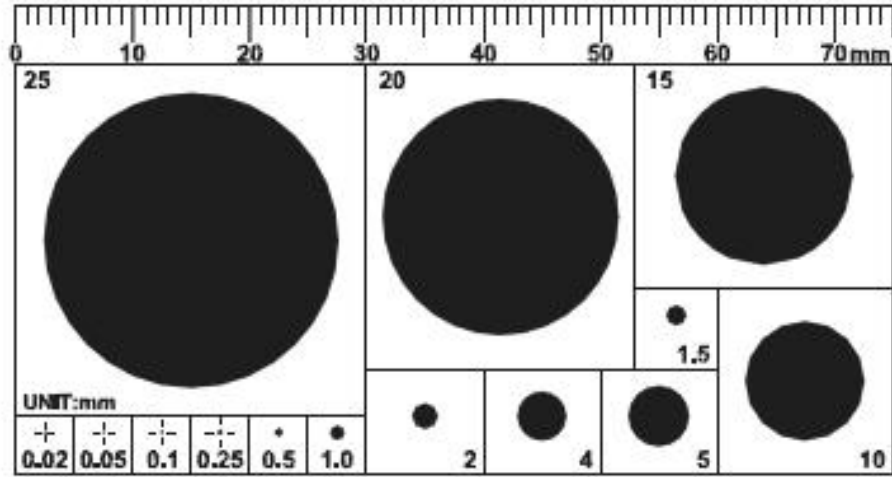



Fig 3-26 Solid Circle Calibrator

(3) Scale Setting: See Fig 3-21. The setting and function as following:


3.1 Sales List: Choose from “Scale Files”, the drop down menu will list all files which


saved in this PC. If Device Control Mode  is enabled, choose any from the saved file, the device will move the sensor to saved position. Manually adjust stand height until clear image is seen. The measure function can begin.


3.2 Name: Show the current File name. Or the new create file & modification needed file.

3.3 FOV: the FOV data after auto-calibrated or manual-calibrated.

3.4 Sensor Position: Show the current Sensor position.


3.5 Create New Scale : Create new scale file after scale calibrated.

3.6 Edit : Click Edit to change file name of FOV data.

3.7 Delete : Click Delete to delete the chosen FOV File.

(4) Scale Setting: UmViewer can also connect to different models, or change different lens. In this condition, the default Scale file is not suitable for above situation. User needs to export the original FOV Data Files and import new (correct) FOV Data. Below Fig 3-21 is the function introduction.

3.1 Scale List: Select the Scale file. When file is selected, the FOV data will renew automatically.

3.2 Create New Scale : After click, please key in name and confirm to save file.

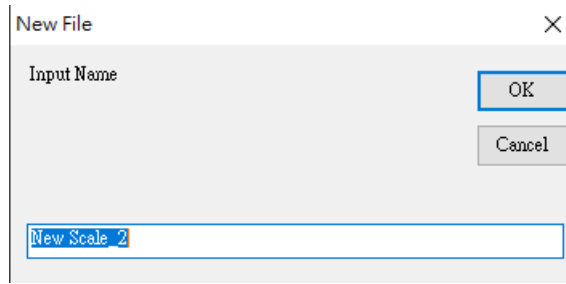



Fig 3-27 Create New Scale

3.3 Import File  : Import Scale Files. List will refresh after imported.

3.4 Export File  : Export Scale Files.

3.5 Open FOV Folder  : Open the Scale File Folder.

3.10 Capture Setting

Capture Setting button is as Fig 3-19. Clicked to see Fig 3-20. Users can setup Auto-Saved to save every captured Image. If the Auto-Saved is not checked, AP will require users to choose saving path every time. Users can setup Save Info to save measurement information on the image or video. The image needs compressed to save to Jpg file, Jpg Quality is to setup the saved image quality. BMP format is the original image.



Fig 3-28 Capture Setting Button

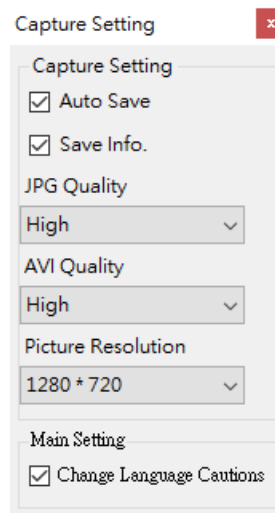


Fig 3-29 Capture Setting

4. File List/Folder

The File List/Folder Tabs is as Fig 1-5. It shows the current files, select the Folder to show the saved files into folder list.

4.1 The File List Tab

Fig 4-1 is the tab for the image and video type. The image file includes JPG or BMP file. 為檔 The video file is AVI. Select file type to show up in the list.

JPG [1/1] AVI [1/1]

Fig 4-1 JPG and AVI file list Tab

BMP [1/1] AVI [1/1]

Fig 4-2 BMP and AVI file list Tab

4.1.1 Number of pages

Fig 4-1 [1/1] =X/Y, X is sequence and Y is total number of pages Each page can show 10 files.

4.2 Select File type and pages

Fig 4-3 is to select image file type from the drop-down menu. The file type and function are as Fig 4-

3. If the file type is AVI, the drop-down menu does not show the BMP/JPG file.





Fig 4-3 Select File Type

4.2.1 Change Page

Fig 4-3, the Left Key  and Right Key  to change page numbers. Left key is last page, Right key is next page.

4.2.2 File Path

Fig 4-3, Open File , is to open the current saving folder. If user want to change the saving path, click Change Path  to change to desired folder. Select desired folder from Fig 4-4.

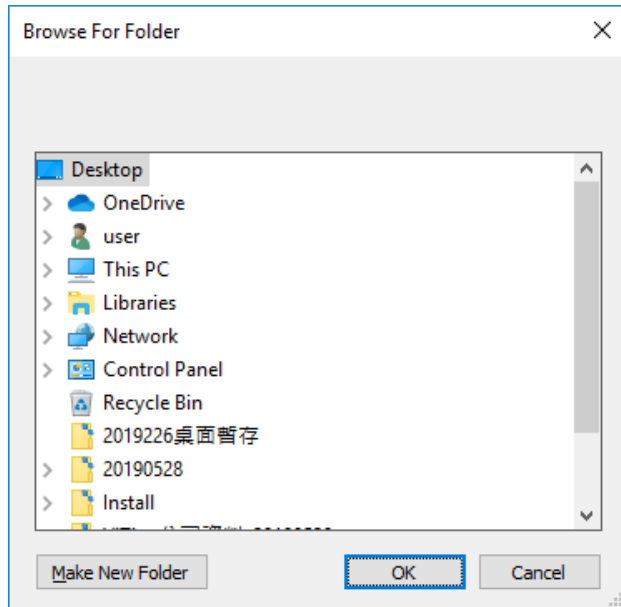


Fig 4-4 Change to other Folder

4.3 Quick Click

Double-click the image on the image/video list to open file. Right-click the mouse to show 在檔 the Fig 4-5 to delete file directly or load image into compare more. Note: only Image file can load into compare mode.

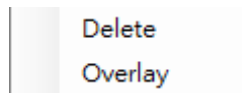



Fig 4-5 Quick Click

5. Sub Program

After enable UM Viewer AP , there is Sub Program area shown at right side of Fig. 1-6. i.e. Sub Program category. Measuring tools are fixed at upper as Fig.5-1. The other Sub Programs are variable at underneath area as Fig.5-2, able to switch Image Tool, Time Lapse Capture, Auxiliary Tool.

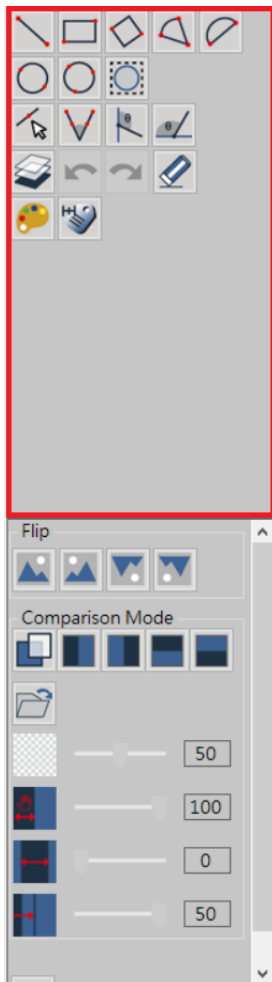


Fig. 5-1 Fixed tool category

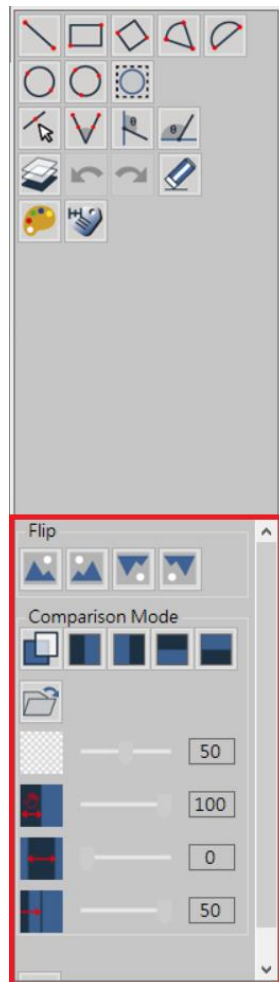



Fig.5-2 Changeable tool category

5.1 Measuring mode

After enable UM Viewer AP , it can use each measuring function and do scale calibration as Fig. 5-3 shown.

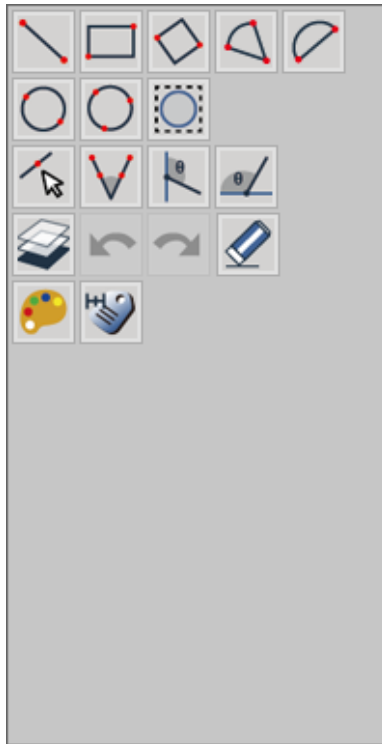




Fig. 5-3 measurement tools

5.1.1 Measurement Tools

Measurement tools include Line, Rectangle, Square, 2 Point Circle, 3 Point Circle, 4 Point Circle, Angle, Horizontal Angle, Vertical Angle, Auto Circle Detect, Edge Detect etc., as Fig. 5-4 show



Fig. 5-4 Various Measurement Tools

- (5) Line : To simply measure a line who can apply  tool. ◦ User wants to measure circuit width of PCB who can choose  tool and measure length as L=1.00mm (L : Length) , see Fig. 5-5 shown.

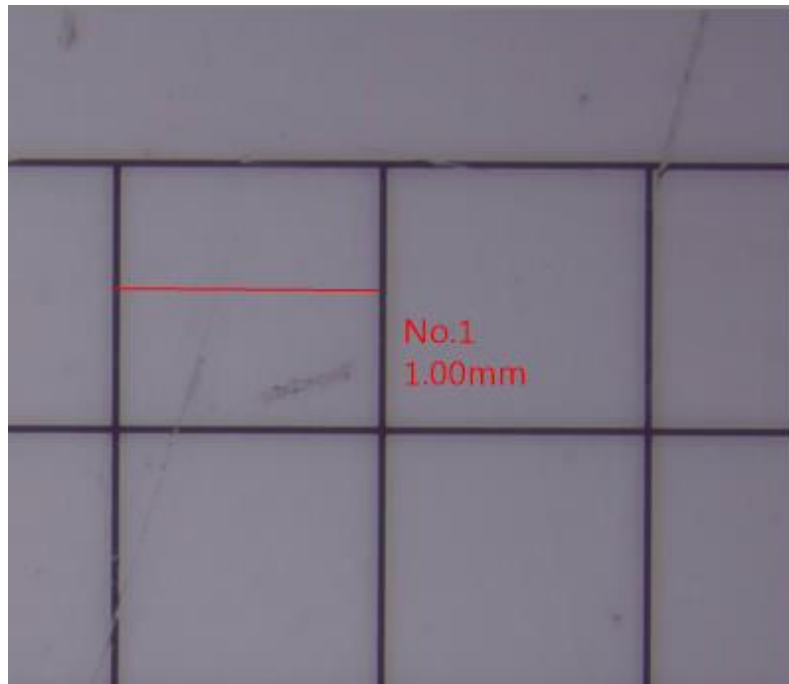




Fig. 5-5 Line Measurement

- (6) Rectangle : The object is quadrilateral that can apply  tool as Fig. 5-6. The  tool measure and show Rectangular circumference ($P=4.00\text{mm}$), Horizontal length ($L=2.00\text{mm}$) 、 Vertical length ($W=1.00\text{mm}$) 、 Rectangular area ($A=2.00\text{mm}^2$).

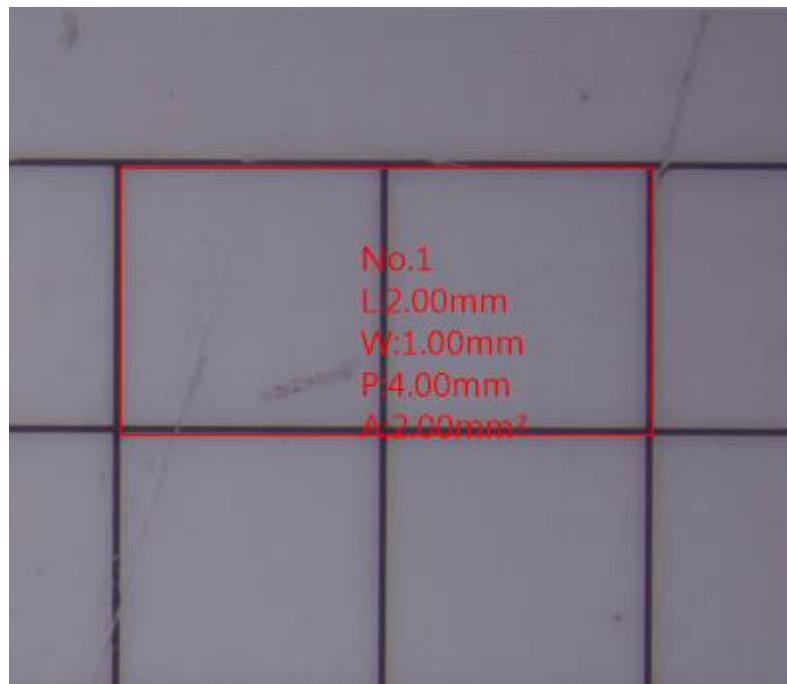



Fig.5-6 Rectangle measurement

- (7) Square : The object is regular quadrilateral that can apply  tool. Draw from any corner toward Diagonal direction as a square. In the Fig. 5-7, square circumference is $P=4.01\text{mm}$, one side is $L=1.00\text{mm}$ and area is $A=1.00\text{mm}^2$.

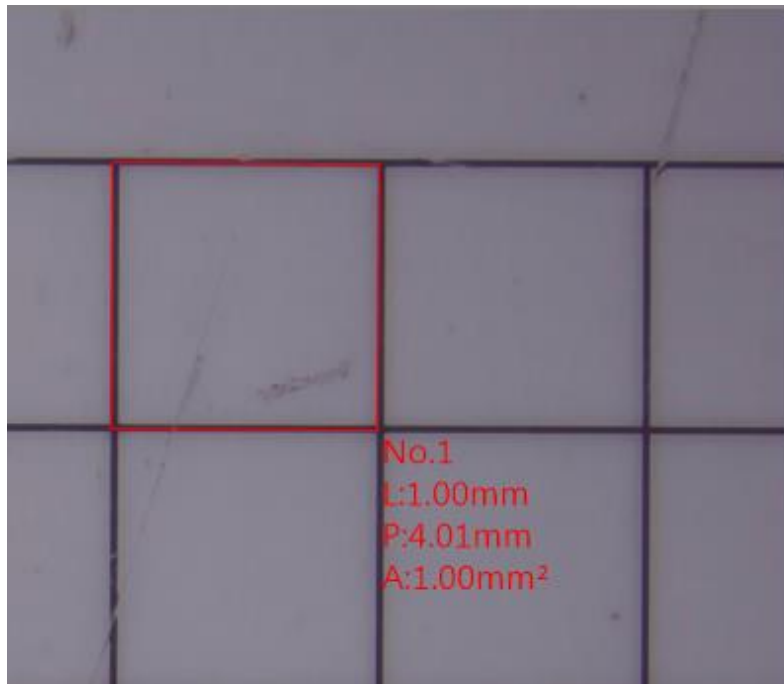



Fig. 5-7 Square measurement

- (8) 2 Point Circle : The object is circle that can apply  tool. Point 1st point on the edge of object, press and drag the left key of mouse toward 2nd point on the edge of object, that automatically draw a circle. In the Fig. 5-8, Radius is $R=0.5\text{mm}$, Diameter is $D=1.00\text{ mm}$, Perimeter is $P=3.14\text{mm}$ and Area is $A=0.79\text{mm}^2$.

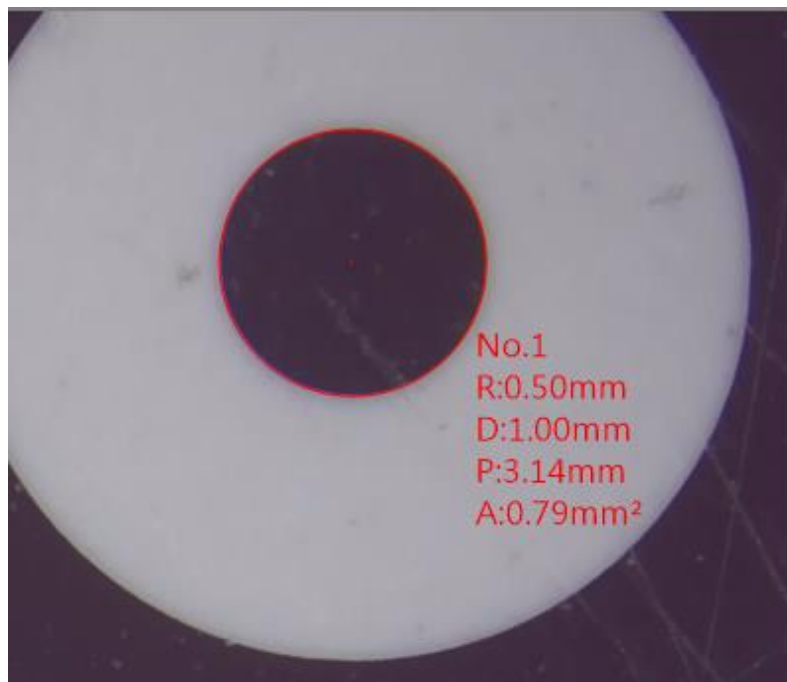



Fig 5-8 2 Point Circle

- (9) 3 Point Circle : When the object is Circle or just a Arc that can apply  tool. Point 1st point on the edge of object, then point 2nd point , again drag toward 3rd point, that automatically draw a circle. In the Fig. 5-7, Radius is $R=0.50\text{mm}$, Diameter is $D=1.00\text{mm}$, Perimeter is $P=3.14\text{mm}$ and Area is $A=0.79\text{mm}^2$.

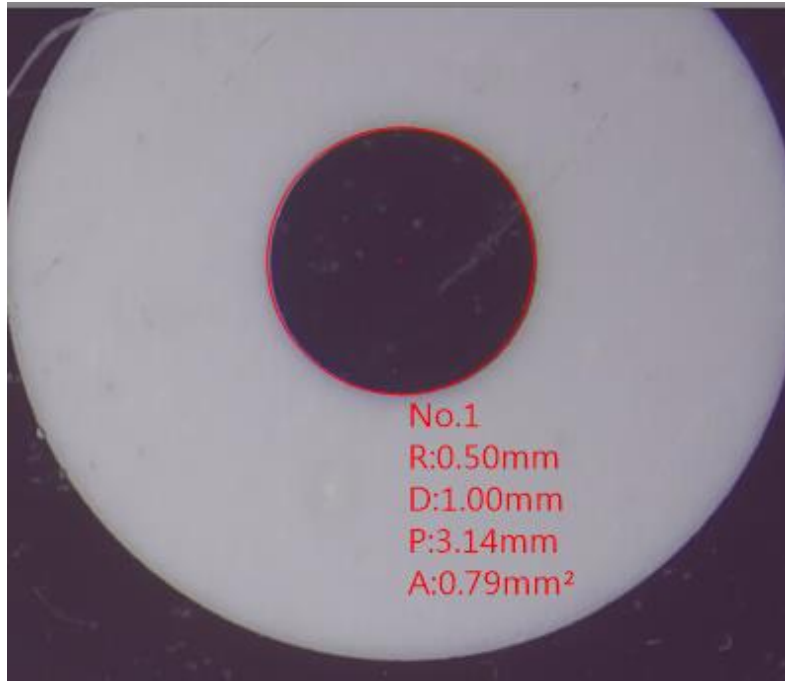


Fig. 5-9 3 Point Circle measurement

(10) Center Distance: This function is only enabled after using Two Point Circle or Three Point Circle. There are three measure functions for Center Distance. See Fig 5-10.

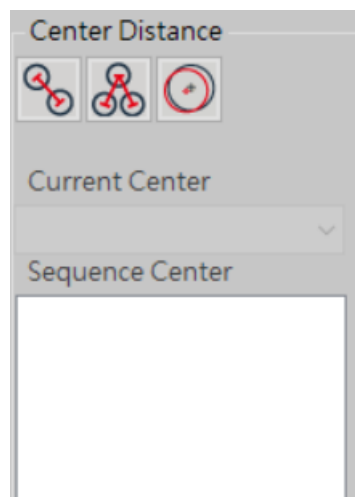



Fig 5-10 Center Distance

- Two Center Distance : This function will auto-calculate the distance from two circle's center. Two Circles is required to draw on same page. See Fig 5-11.

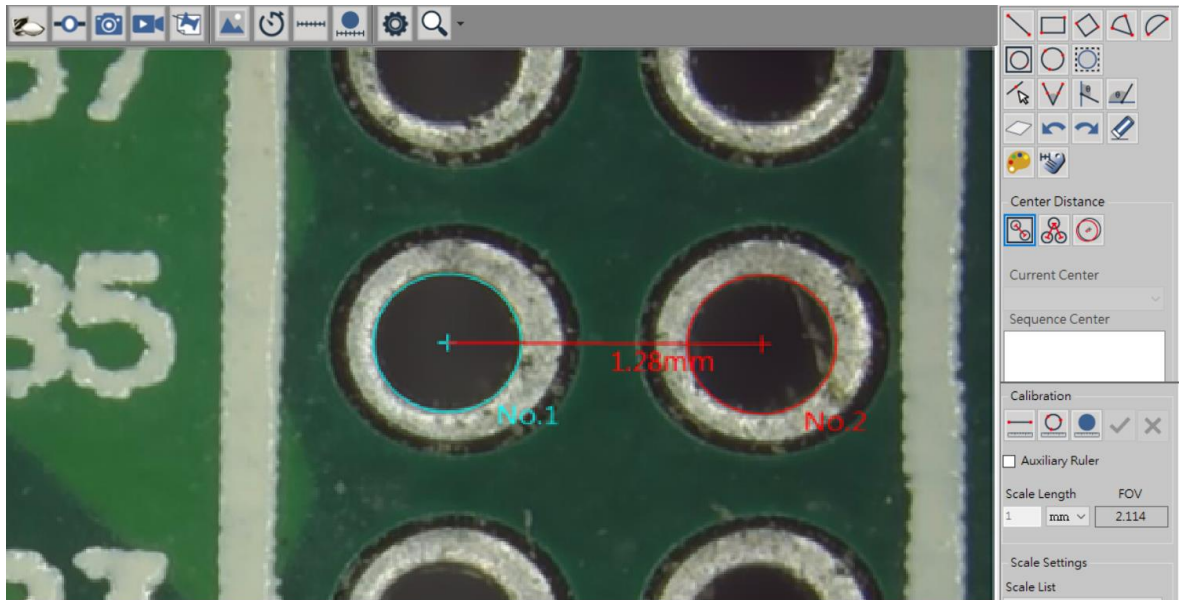



Fig 5-11 Two Center Distance

- 
 ● Optional Two Center Distance : This function is auto-calculate the chosen two circles. Refer to Fig 5-12, example, 4 circles are drawn, choose “Current Center” as golden sample, then choose “Sequence Center” to measure the distance between Current Center to Number (No) of Circles. The measurement result will show on left upper corner.

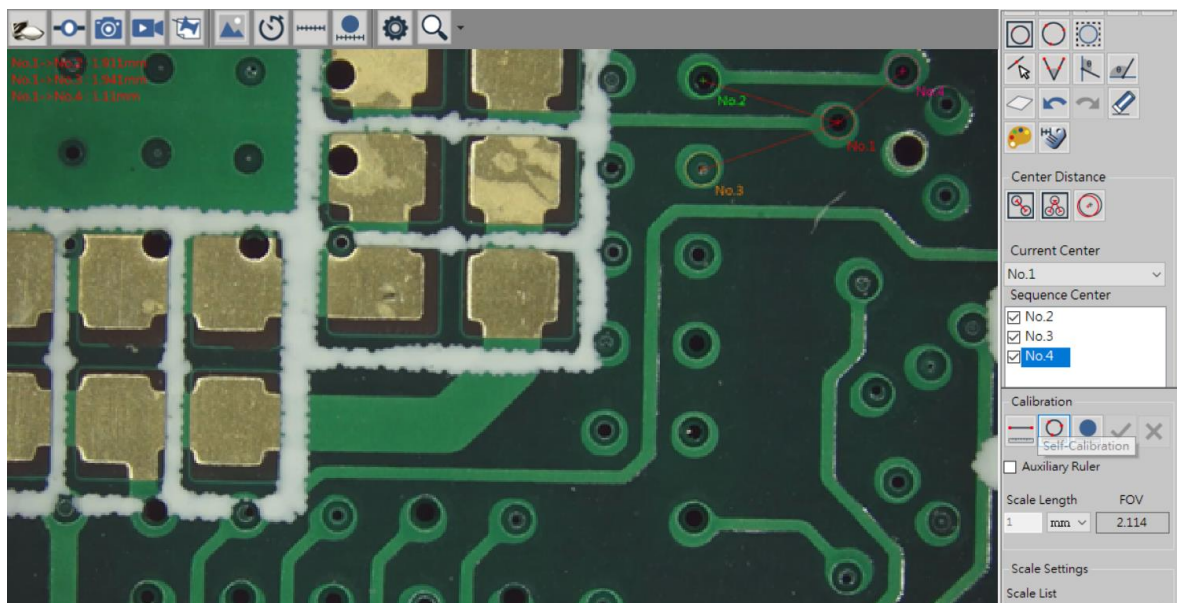



Fig 5-12 Optional Two Center Distance

- 
 ● Offset Center : This drawing method is same as Two Center Distance. This function is to calculate the Offset distance between two circle center. See Fig 5-13.

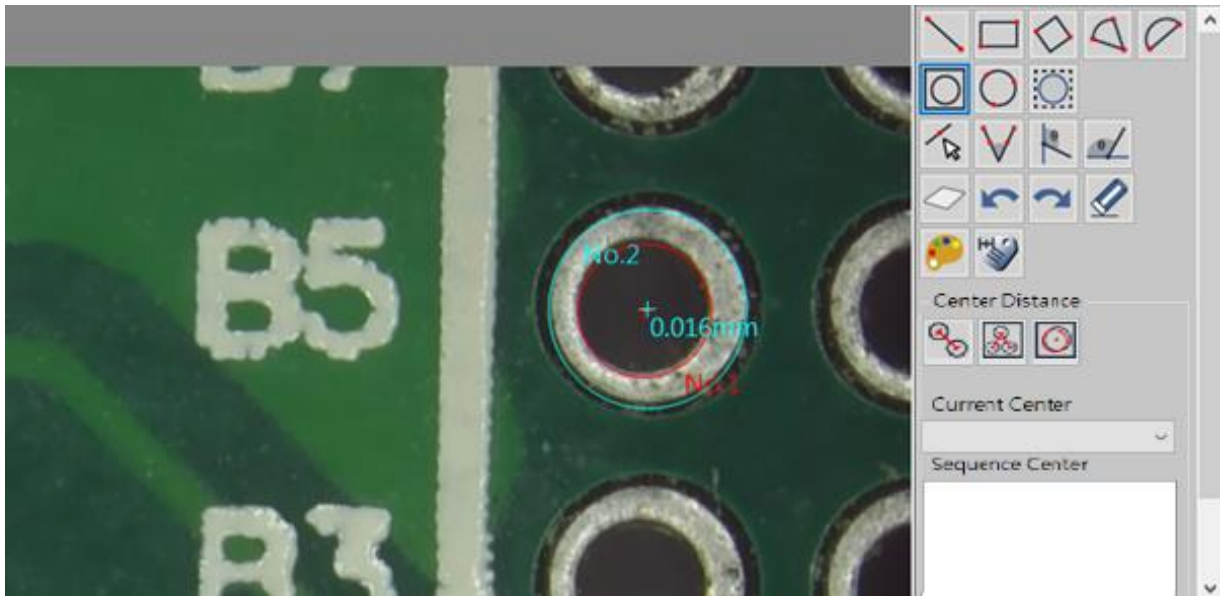



Fig 5-13 Offset Center

(11) 4 Point Angle : When measuring the Angle that can apply  tool. As Fig. 5-10 shown, firstly draw a line segment on one side of Angle, then draw 2nd line segment on the other side of Angle, that can know the angle. In the Fig. 5-14, the inner angle is Int.135°, the external angle is Ext.45°, the dotted Arc is the measured angle.

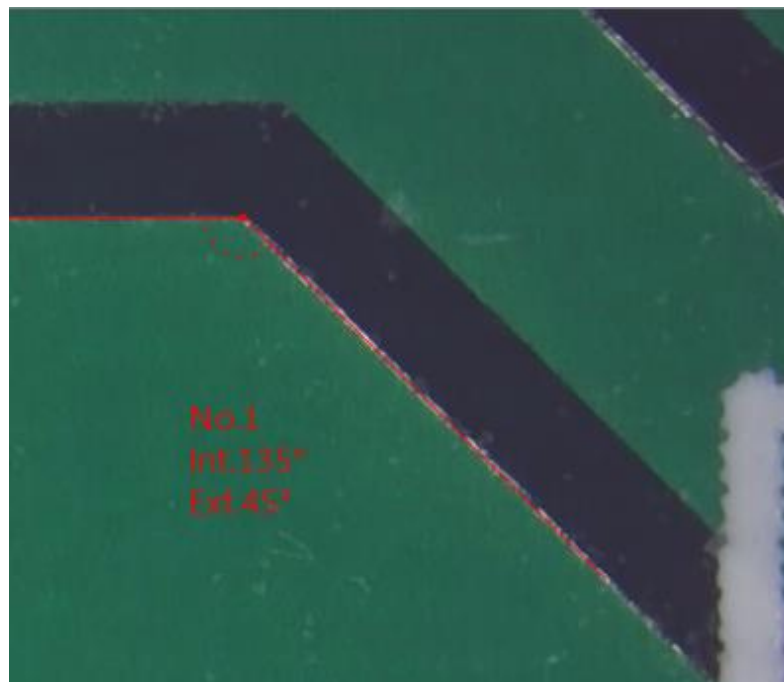



Fig 5-14 4 Point Angle

(12) Vertical Angle : Measure any Vertical Angle by a vertical line that can apply  tool. Draw a vertical line, auto pop up the other oblique line to the vertical line, then auto measure the inner Angle/ external Angle as Fig. 5-15 shown.

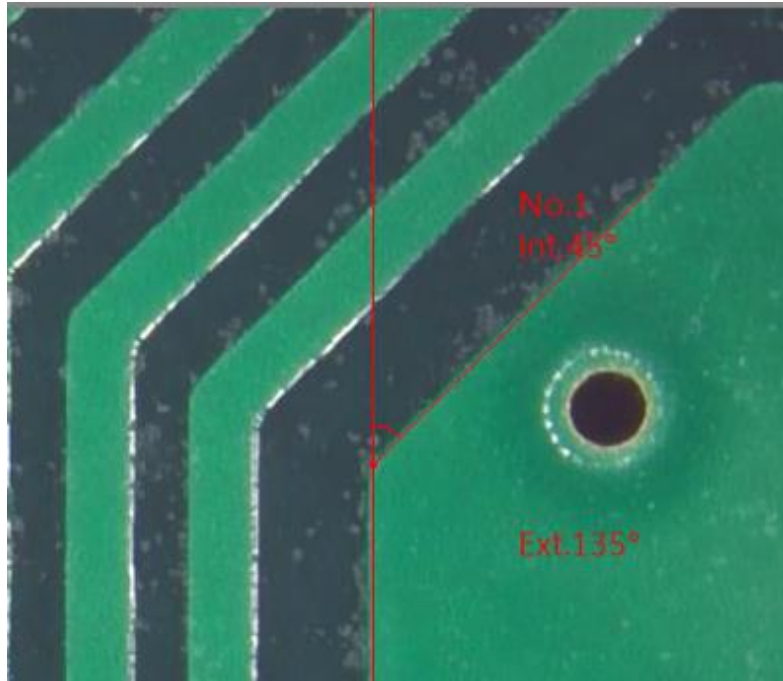



Fig. 5-15 Assisted measurement of Vertical Angle

- (13) Horizontal Angle : Measure any Horizontal Angle by a Horizontal line that can apply  tool. Draw a Horizontal line, auto pop up the other oblique line to the Horizontal line, then auto measure the inner Angle/ external Angle as Fig. 5-16 shown.

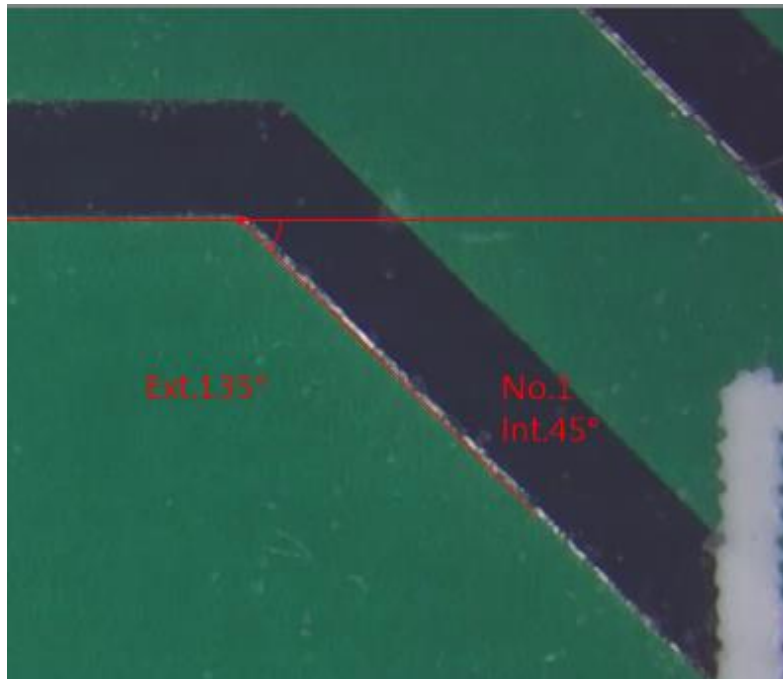



Fig 5-16 Horizontal Angle

- (14) Auto Circle Detect : Automatically lock and measure Circle that can apply  tool. On the target Circle, draw an area to fully cover it, it will automatically measure the circle as Fig. 5-17, 5-18 shown.

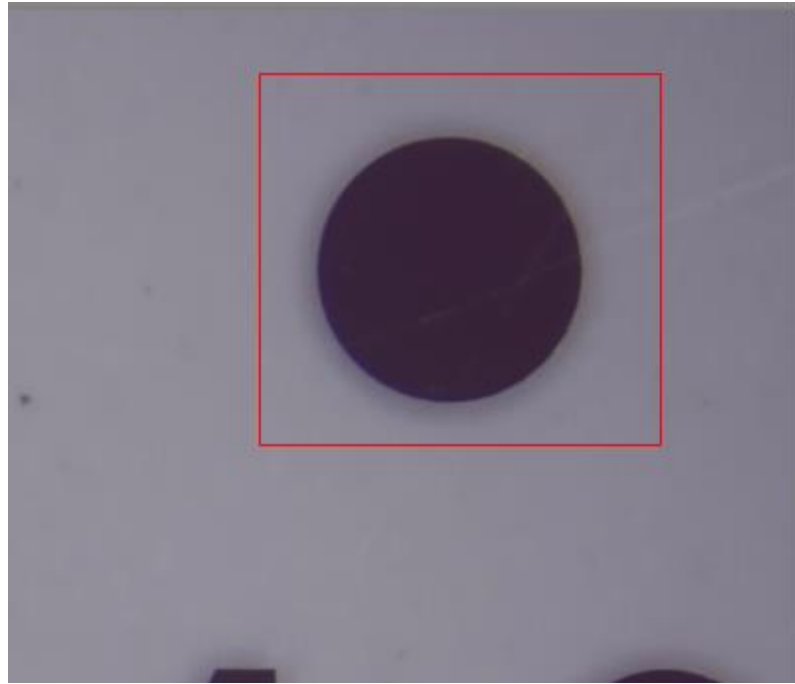


Fig. 5-17 Lock Circle

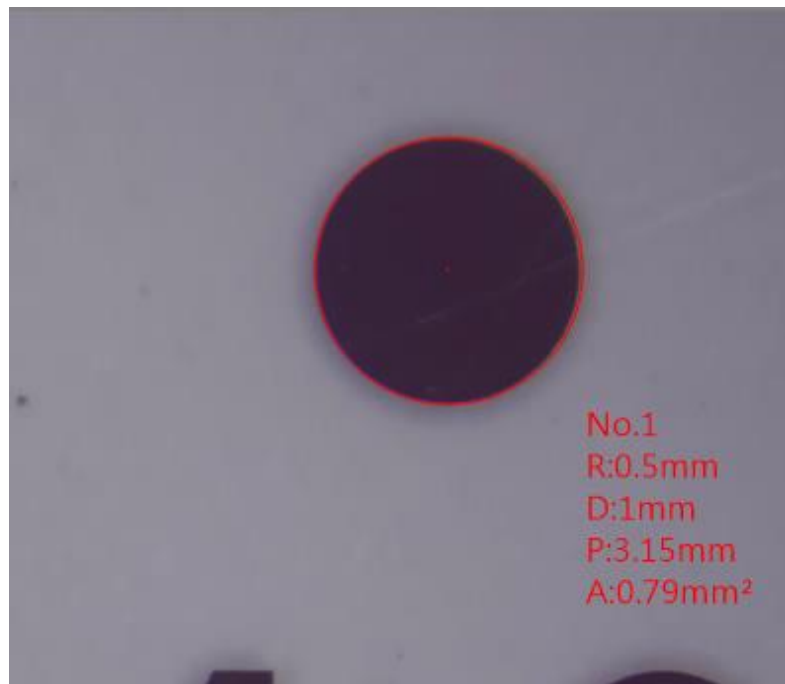


Fig.5-18 Auto measuring Circle




(15) Edge Detect: Whenever do measurement that can apply  tool to easily locate the edge, it is used to subsidiary help the other measuring tools. Click a dot close to the edge of object for quick and accurate measurement. See Fig. 5-19 shown.



Fig 5-19 Edge Detect

(16) Erase All : Whenever to delete all of measuring data at one time, that can apply  tool.

(17) Multi-Line : Whenever to multiple measuring that can apply  tool, i.e. measure several items on one picture. See Fig. 5-20 shown

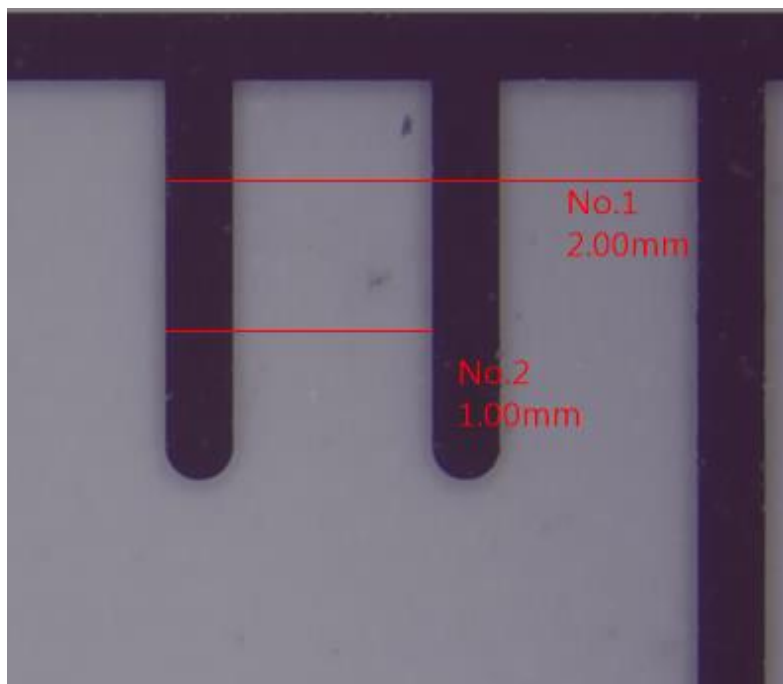





Fig. 5-20 Multi-Line measurement

(18) Undo/Redo : When multi-Line measurement, if the measurement error need return to previous action or to next action, that can apply   tool for Undo/Redo action.

(19) Change Measurement Color : When object is similar color to measuring line that can apply  tool for changing color of tool line as Fig. 5-21 shown.

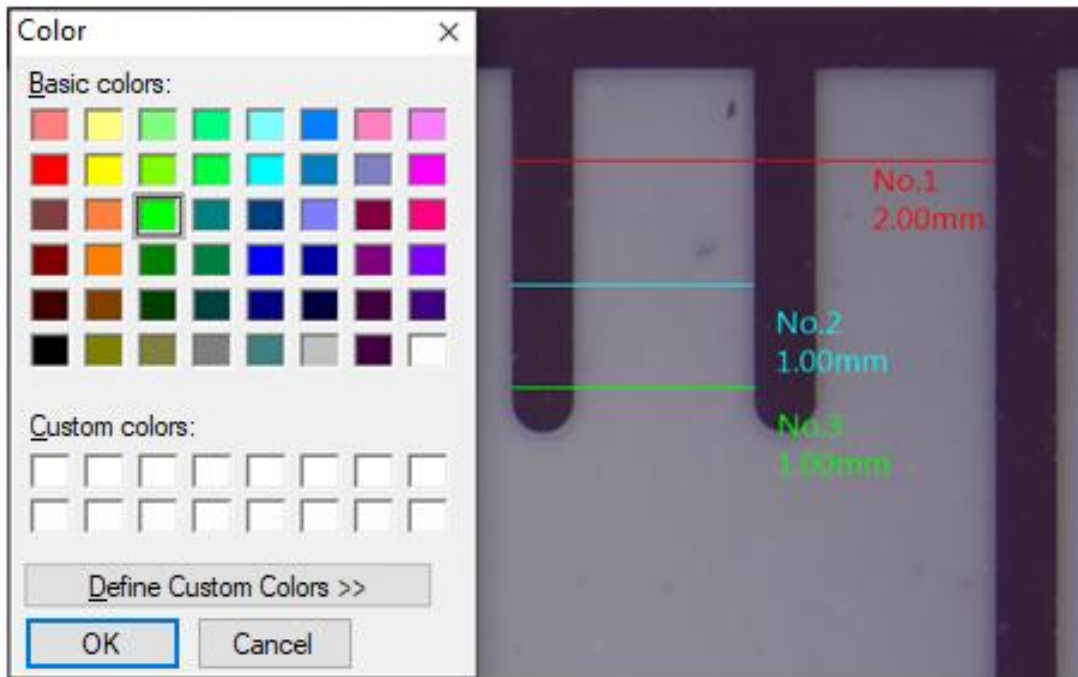


Fig.5-21 Changing measuring line

(20) Measurement Setting : When object doesn't require to show all measuring data that can apply



tool to select the necessary data as Fig. 5-22 (before setting),

Fig. 5-23 (after setting).



Fig. 5-22 Before setting

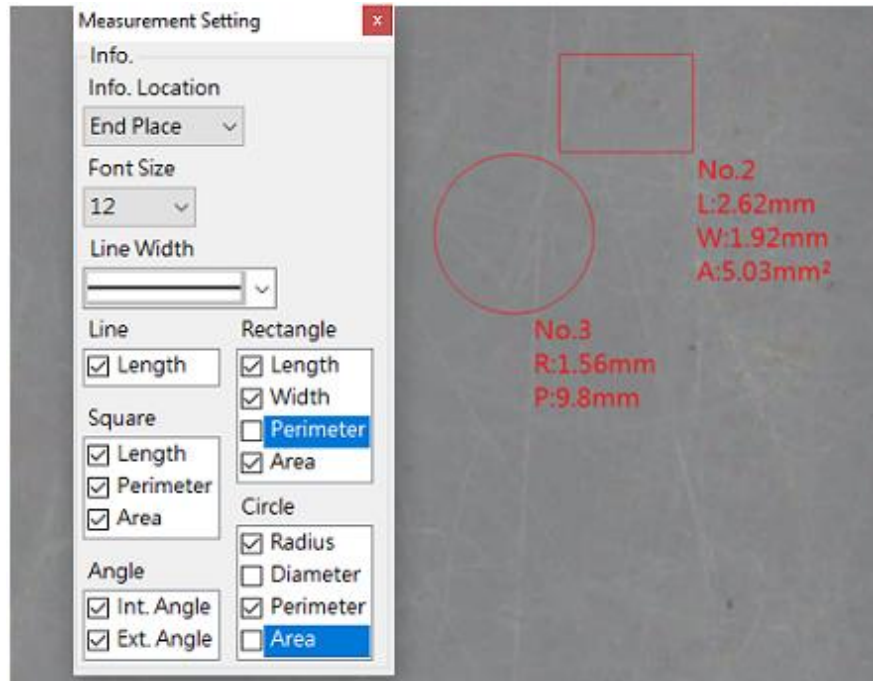
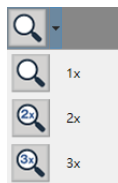


Fig. 5-23 After setting



(21) Magnify :

When hard to judge the edge of selected object that can apply different



tool for subsidiary magnify as Fig. 5-24, 5-25 shown.

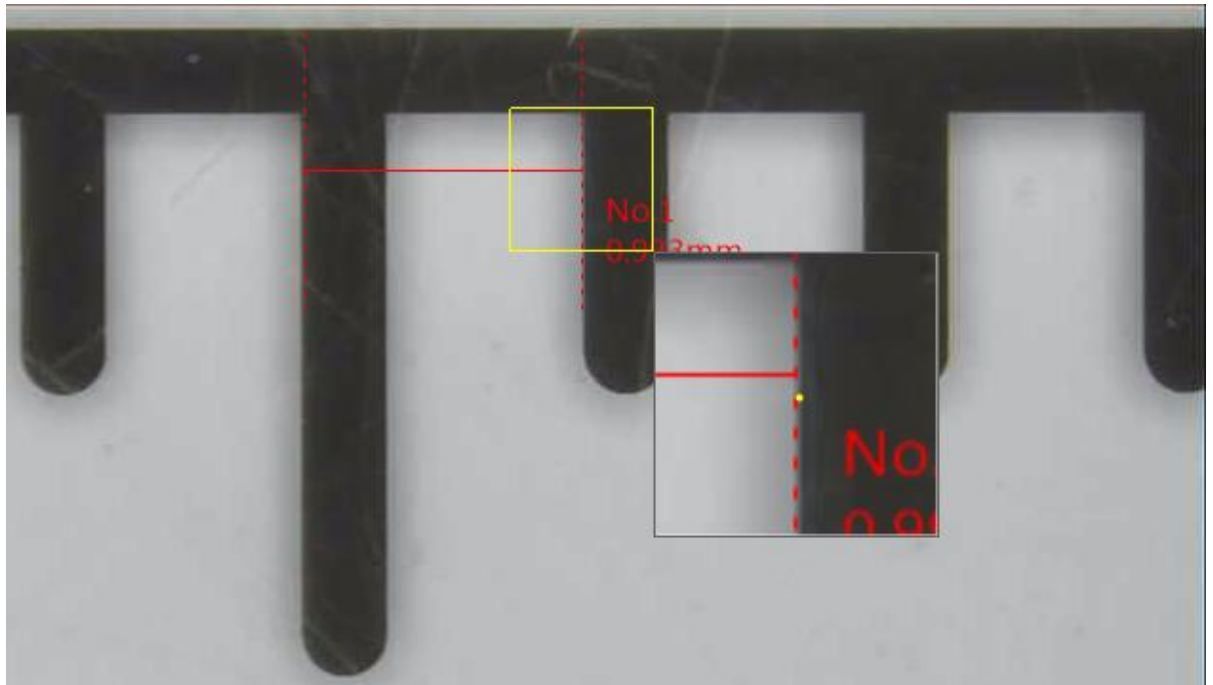


Fig. 5-24 Before applying 3x subsidiary magnify

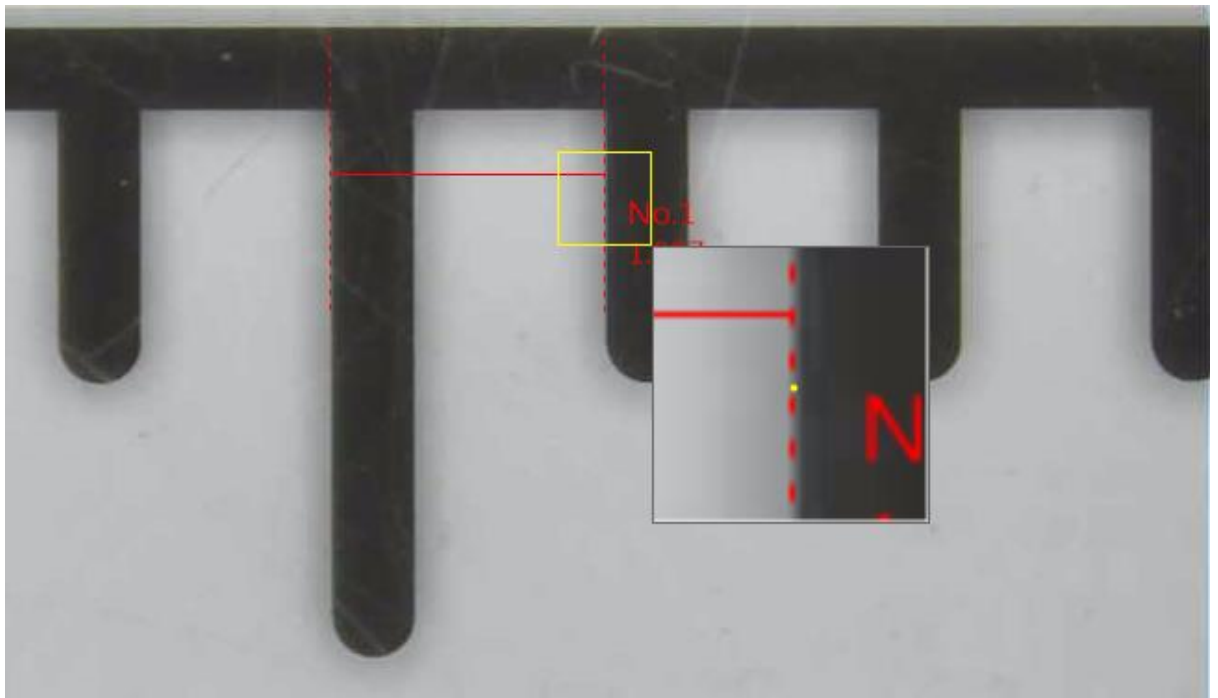





Fig.5-25 After applying 3x subsidiary magnify

(22) Self-calibrate : When require precise measurement, it is necessary to calibration in advance

that can apply  tool for calibration. First to click , put scale under preview and get the actual size on screen, then key in the actual size in the appointed column

Unit mm ▾

. For example: actual size is 5mm, then key in 5 only. Then,

draw a same 5mm line by the scale on the screen, press  for final confirmation. At this time, the horizontal FOV, vertical FOV and MAG is adjusted accordingly. Similarly, first to draw same size line as the actual size, key in actual size number in the column

Unit mm ▾

, then press  for final confirmation. See Fig. 5-22 shown.

The longer line you draw, the more precise scale you have. It's best the length is full of screen.

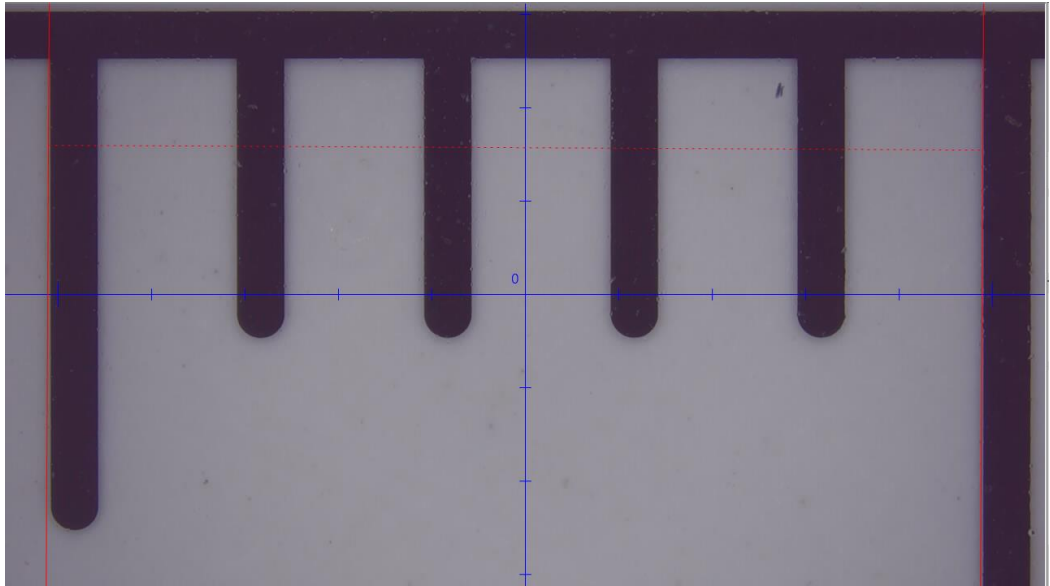


Fig. 5-26 Self-calibrate

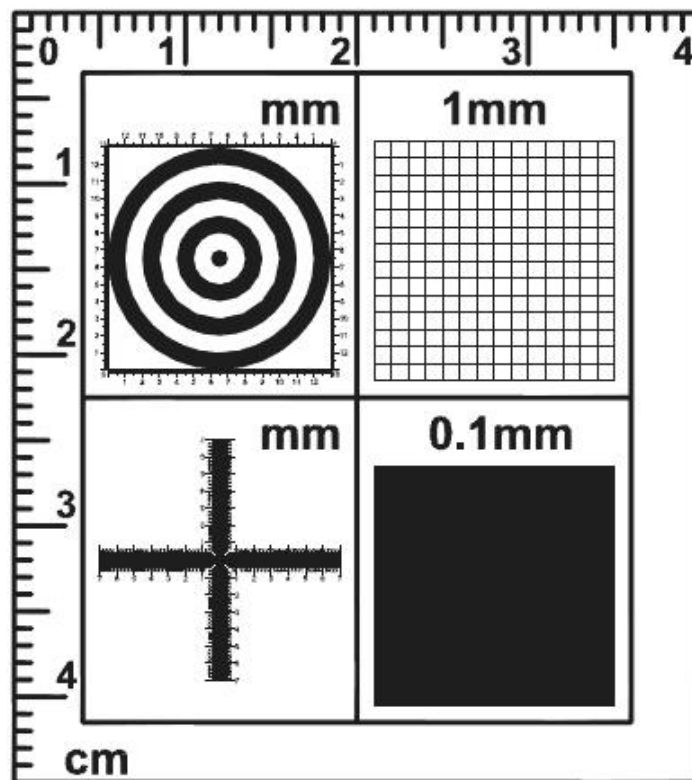


Fig. 5-27 standard scale

Fig. 5-28 is standard scale whose upper left corner is concentric circle, that is used to judge preview ratio whether correct or not. In case, the concentric circle is deformed that means the preview ratio is wrong, it need adjust. The width in between black circle and white circle (transparent circle) is 1mm. 1st black dot is 1mm, 2nd white circle is 3mm, 3rd black circle is 5mm, 4th white circle is 7mm ... and so on.


The upper right corner is grid rule that is used for low magnification preview. It observes larger FOV as well as judge preview ratio whether correct or not. In case, the square is deformed that means the preview ration is necessary to adjustment. Each square

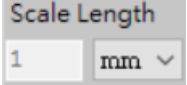
is 1mm.


The below left corner is cross rule that is used for calibration, also directly measure. The cross rule include scale of high and low magnification It has spacing of 0.05mm, 0.1mm and 1mm. If check high magnification which will see 0.05mm and 0.1mm spacing. If check low magnification which will see 0.1mm and 1mm spacing. The cross rule can correctly measure length and width.


The below right corner is tiny grid rule that is used for much higher magnification. It's spacing is 0.1mm.

(23) Auto-calibrate : When require precise measurement, it is necessary to calibration, that can

apply  tool. First to put the solid circle scale under preview, make sure to preview

full of solid circle, key the actual diameter of the scale in the column . For

example: the actual size is 5mm, then key in 5 only. Then, press  for confirmation. It shows dotted circle on the solid circle, If the dotted circle is consistence with the solid circle,

press  for final confirmation. At this time, the red dotted circle become red sold circle. It means complete calibration. The horizontal, vertical FOV and MAG is adjusted accordingly. See Fig.5-28, 5-29 shown. The solid circle is larger, the calibration is more precise. The best is the solid circle is full of preview.

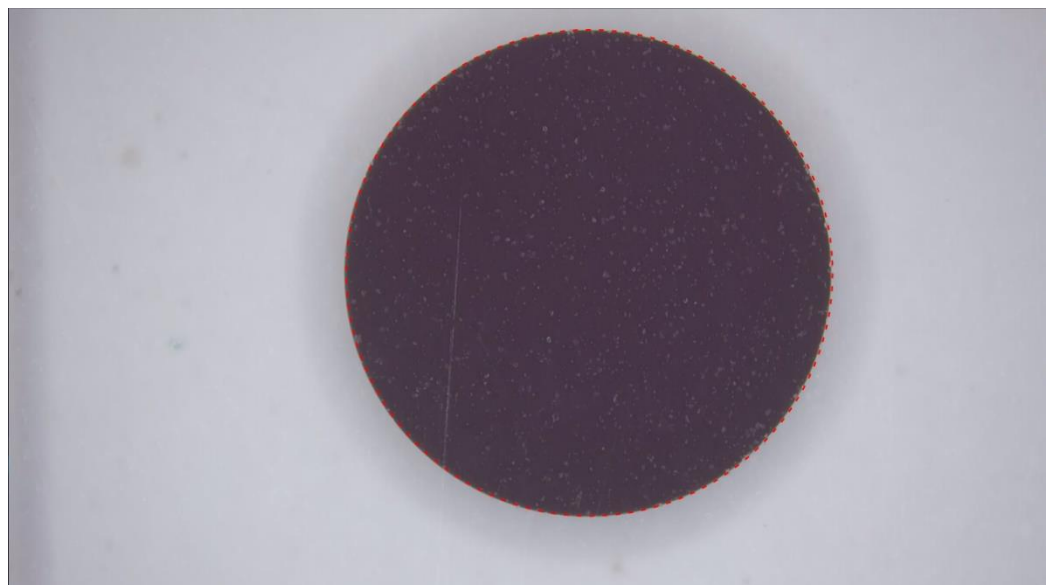


Fig. 5-28 Auto-calibrate in process

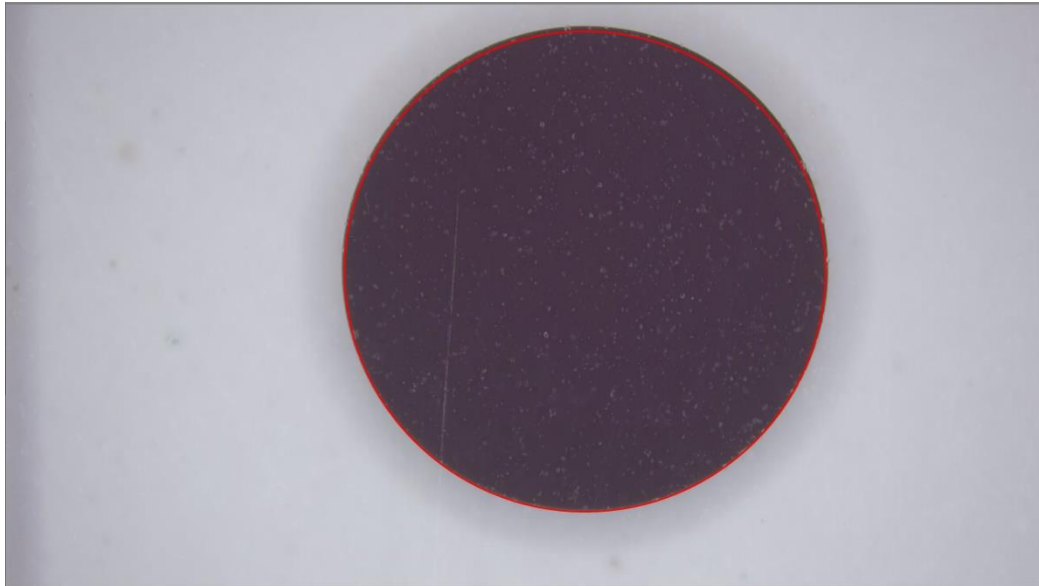


Fig 5-29 Completed auto calibration

Fig. 5-30 is solid circle scale whose unit is mm that is used for auto-calibration. The standard scale is used for length measurement or self-calibration.

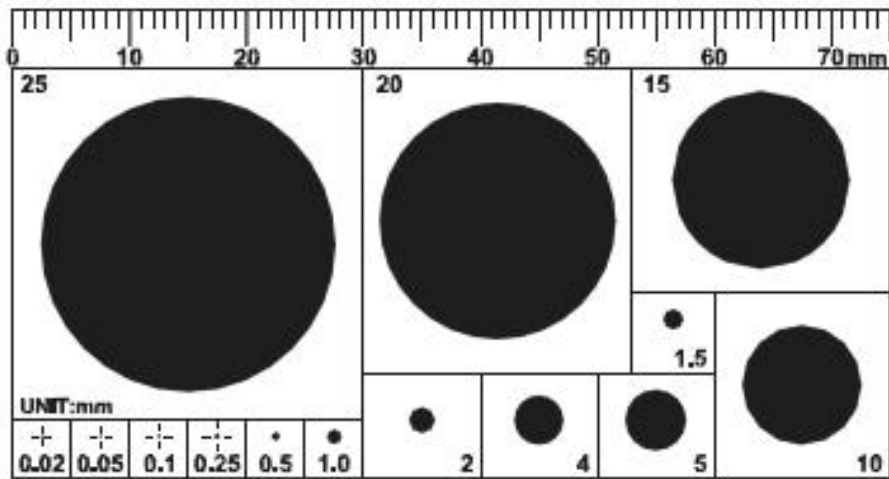


Fig. 5-30 Solid circle scale

5.2 Image Tool



Click the Image Tool button in the Sub Program to call out the Image toolbar. See Fig 3-11.

5.2.1 Image Tool Toolbar

The toolbar for Image Tool after clicked. See Fig 5-31.

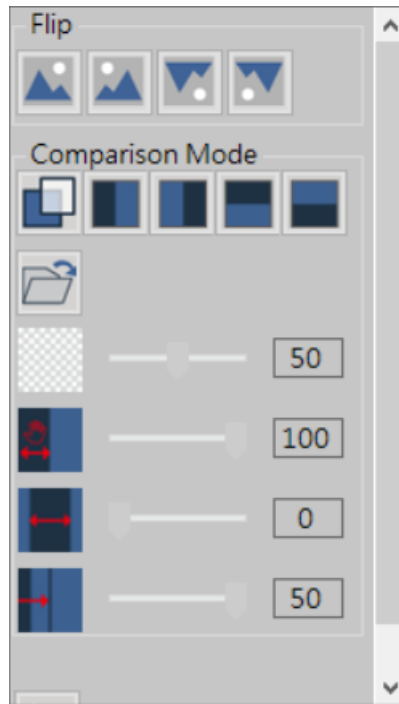


Fig 5-31 Image Tool Toolbar

(1) Flip Image: 4 types of image flip function.

- No Flip  :

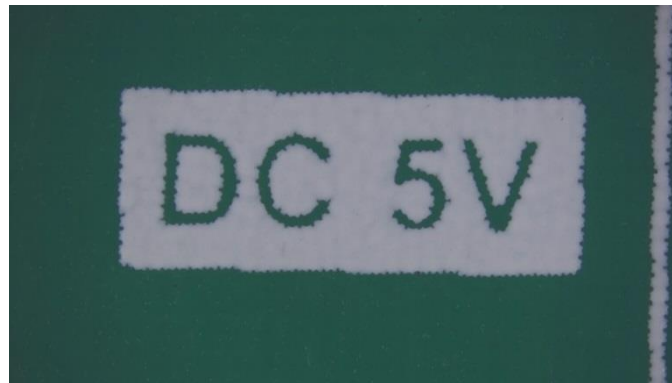



Fig 5-32 No Flip

- Horizontal Flip  :

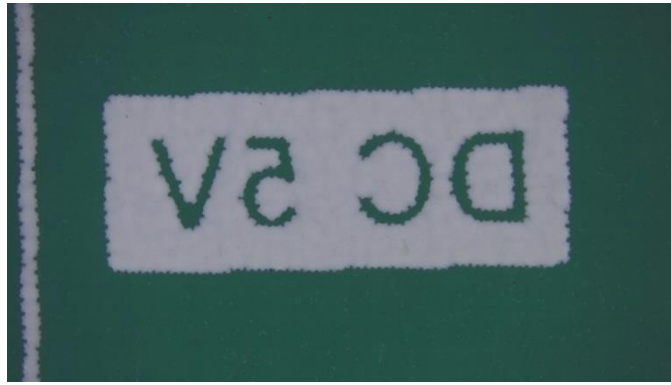



Fig 5-33 Horizontal Flip

- Vertical Flip  :

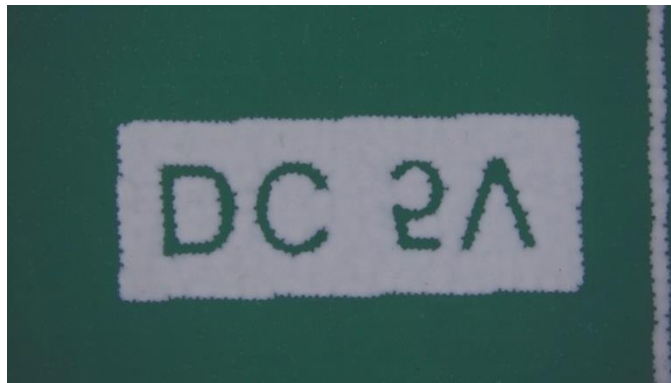
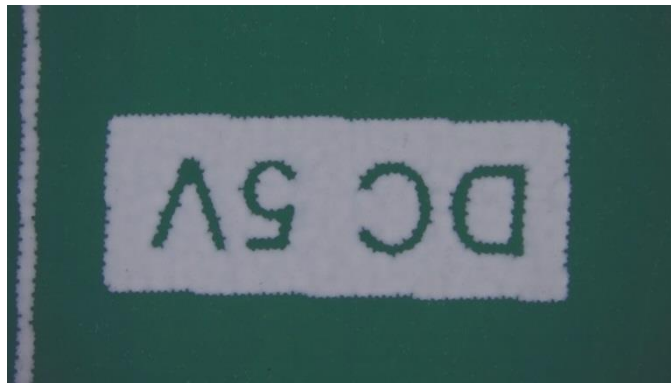



Fig 5-34 Vertical Flip

- Horizontal & Vertical Flip  :



F 5-35 Horizontal & Vertical Flip

(2) Comparison Mode :

- Overlay  : Click on time to turn ON or OFF the Overlay Compare function, when overlay function is on, the default loading image is the last saved image.

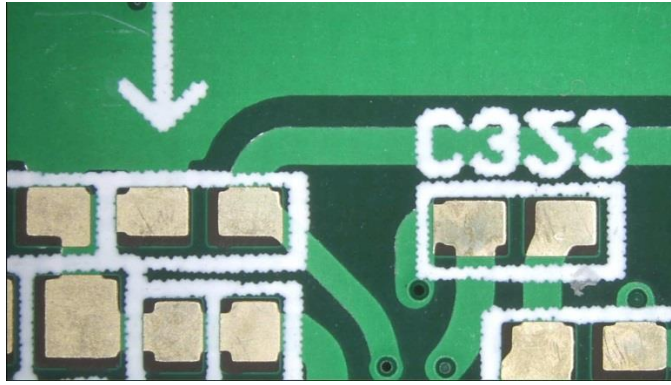


Fig 5-36 Overlay function OFF

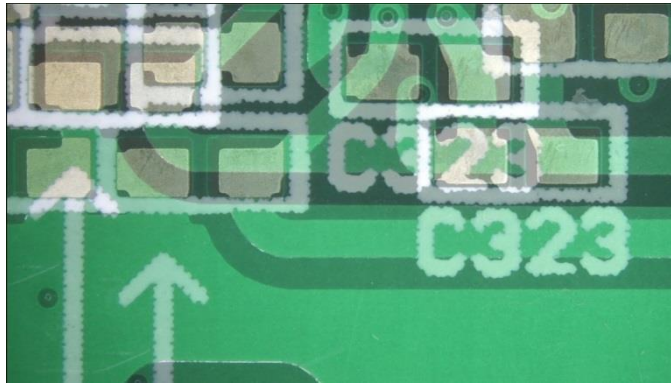


Fig 5-37 Overlay function ON

- Left Side Comparison : Enable/Disable the Left Side Compare mode. The loaded image is on left side. Right side image is live preview image.

Belo Fig 5-33: Transparency: 100%, Image Location: 100%, Offset Ratio: 0%, Image Ratio: 50%.

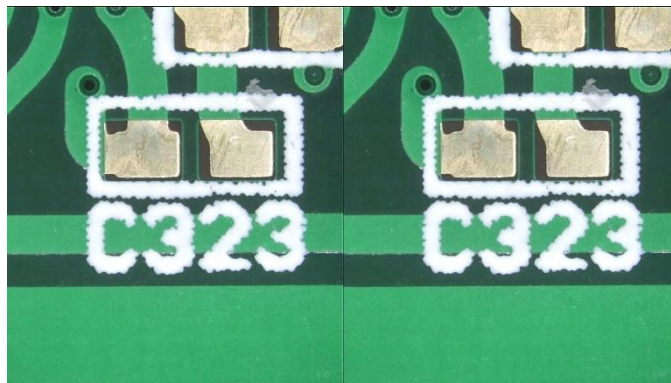


Fig 5-38 Left Side Comparison mode

- Right Side Comparison : Enable/Disable the Right Side Compare mode. The loaded image is on Right side. Left side image is live preview image.

Belo Fig 5-39 Transparency: 100%, Image Location: 100%, Offset Ratio: 0%, Image Ratio: 50%.

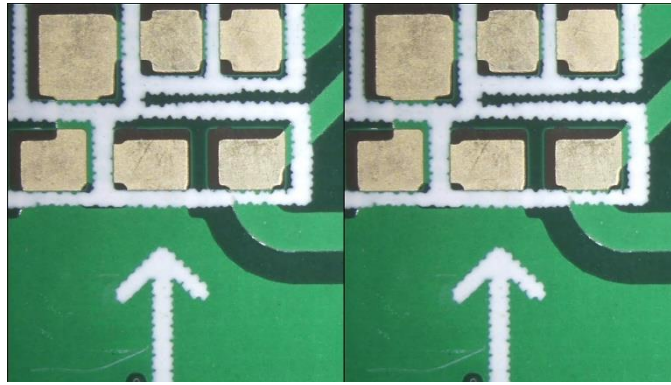


Fig 5-39 Right Side Compare mode


- Top Side Comparison : Enable/Disable the Top Side Compare mode. The loaded image is on Top side. Bottom side image is live preview image.

Fig 5-40 Transparency: 100%, Image Location: 100%, Offset Ratio: 0%, Image Ratio: 50%.

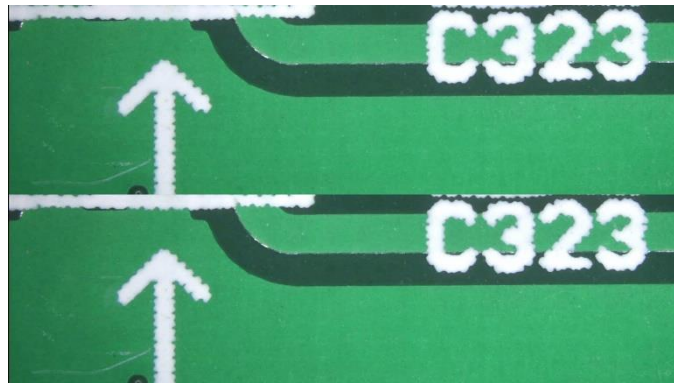


Fig 5-40 Top Side Compare mode


- Bottom Side Comparison : Enable/Disable the Bottom Side Compare mode. The loaded image is on Bottom side. Top side image is live preview image.

Fig 5-41 Transparency: 100%, Image Location: 100%, Offset Ratio: 0%, Image Ratio: 50%.

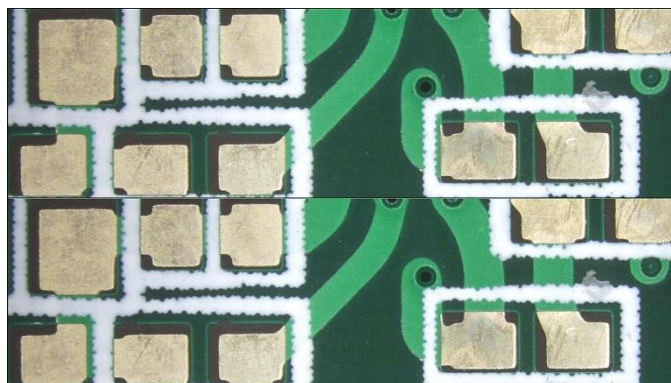




Fig 5-41 Bottom Side Compare mode

- Load Image : Load image from other location.

- Transparency : Adjust the transparent level when in comparison

mode. The Default level is 50%, drag the bar to adjust level. Fig 5-42 is the transparency in 15%, Fig 3-33 is in 75%.

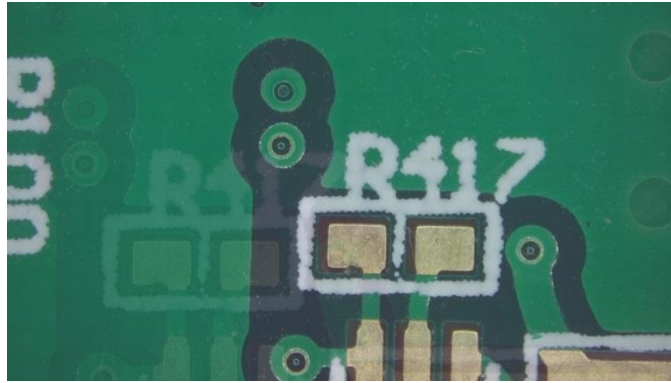



Fig 5-42 Transparency in 15%



Fig 5-43 Transparency in 75%

- (3) Setting :  Setup the video properties, users can adjust the parameter for the preview video. See Fig 5-44, the parameter for setup video properties. Fig 5-45 is the parameter to setup camera control.

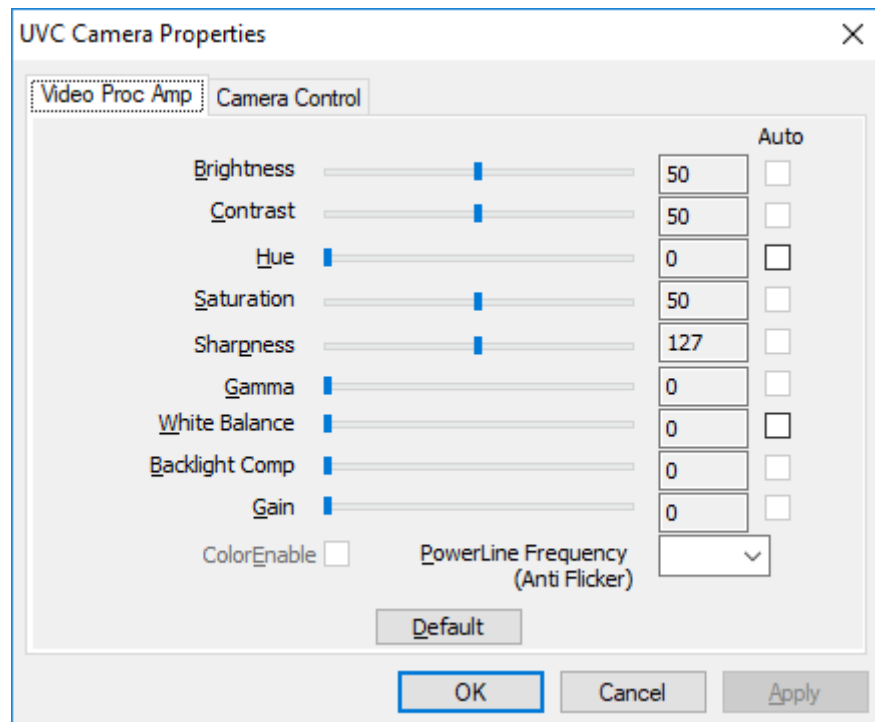


Fig 5-44 Video Properties Parameter Setting

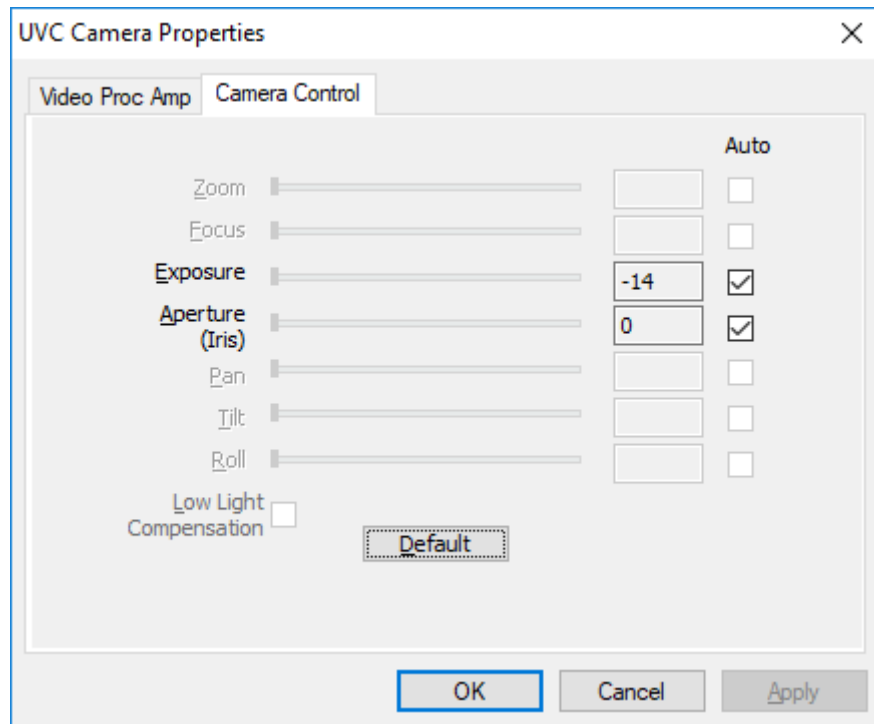


Fig 5-45 Camera Control in Properties

5.2.2 Time Lapse Capture



Click the Time Lapse Capture button from Main Function Button, the Time Lapse Capture function toolbar will show on the right side. See Fig 3-13.

(1) Capture: Setup Start time, Time Interval, and Files number to active Time lapse function, see Fig 5-46. The actual action refer to Fig 5-47.

- Start Time : To set the start time to enable the function. The unit can be second, minute and hour.
- Interval : To set time to capture image or video. The unit can be second, minute or hour.
- Files Number : To decide how many image/video needs to be captured.



- Start / Stop : Start / Stop Time Lapse Capture function. When function meet the setup files number, the capture will stop.

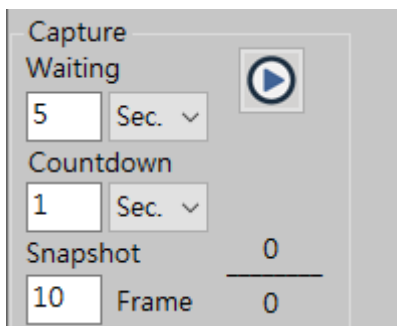


Fig 5-46 Time Lapse - Image

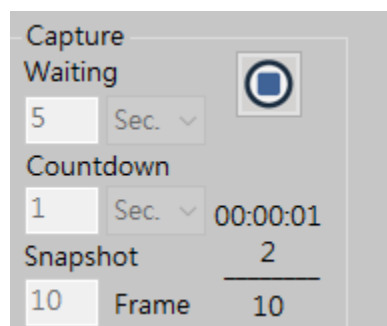




Fig5-47 Time Lapse – Image Capturing

(2) Record : Setup Start time, Time Interval, and Files number to active Time lapse function, see Fig 5-48. The actual action refer to Fig 5-49.

- Start Time : To set the start time to enable the function. The unit can be second, minute and hour.

- Interval : To set time to capture image or video. The unit can be second, minute or hour.
- Files Number : To decide how many image/video needs to be captured.
- Start  / Stop  : Start / Stop Time Lapse Capture function. When function meet the setup files number, the capture will stop.

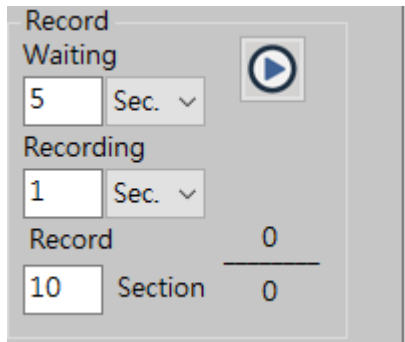


Fig 5-48 Time Lapse –Video Record

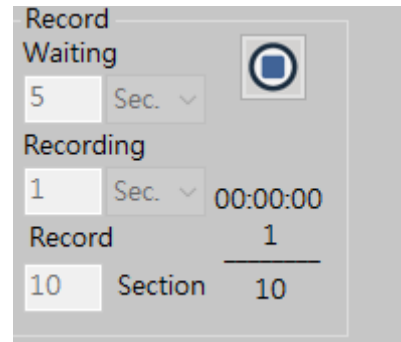



Fig 5-49 Time Lapse – Video Recording

5.2.3 Auxiliary Tool


Click Auxiliary Tool button  in Main Function Button, the Scale toolbar will show on the right side. See Fig 3-15.

(1) Scale : There are 6 scales type as following:

- No Scale  :



Fig 5-50 No Scale

● Left Upper Scale  :

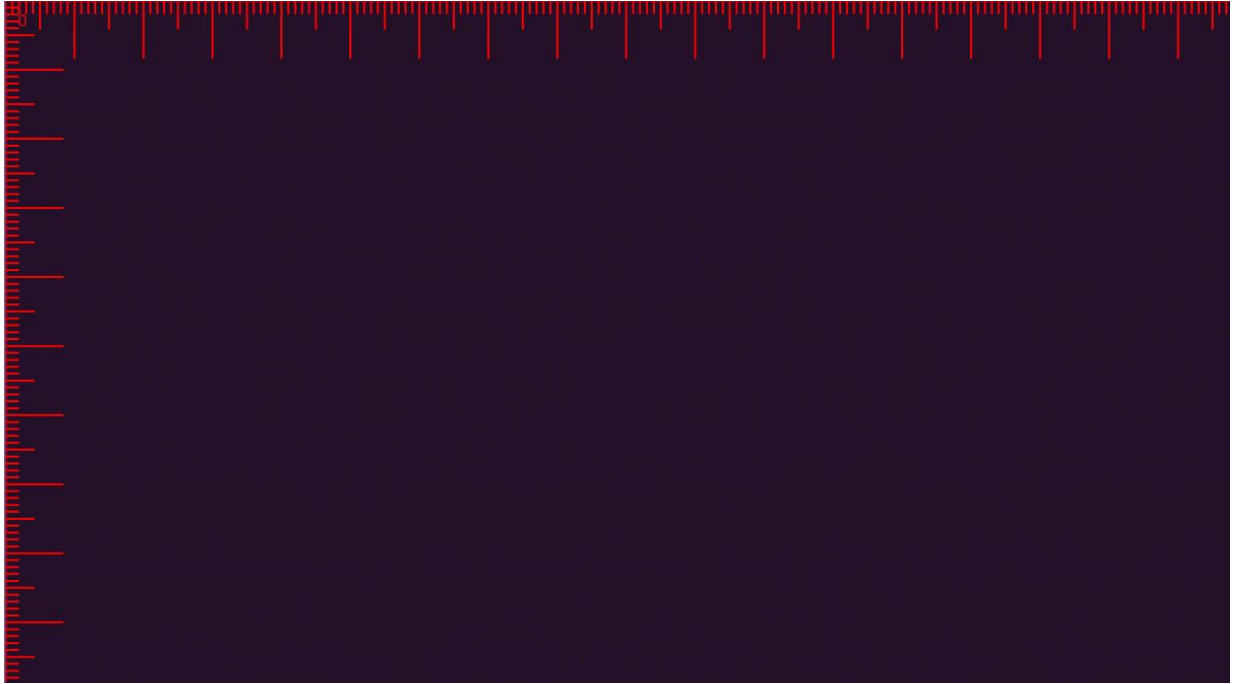



Fig 5-51 Left Upper Scale

● Right Upper Scale  :

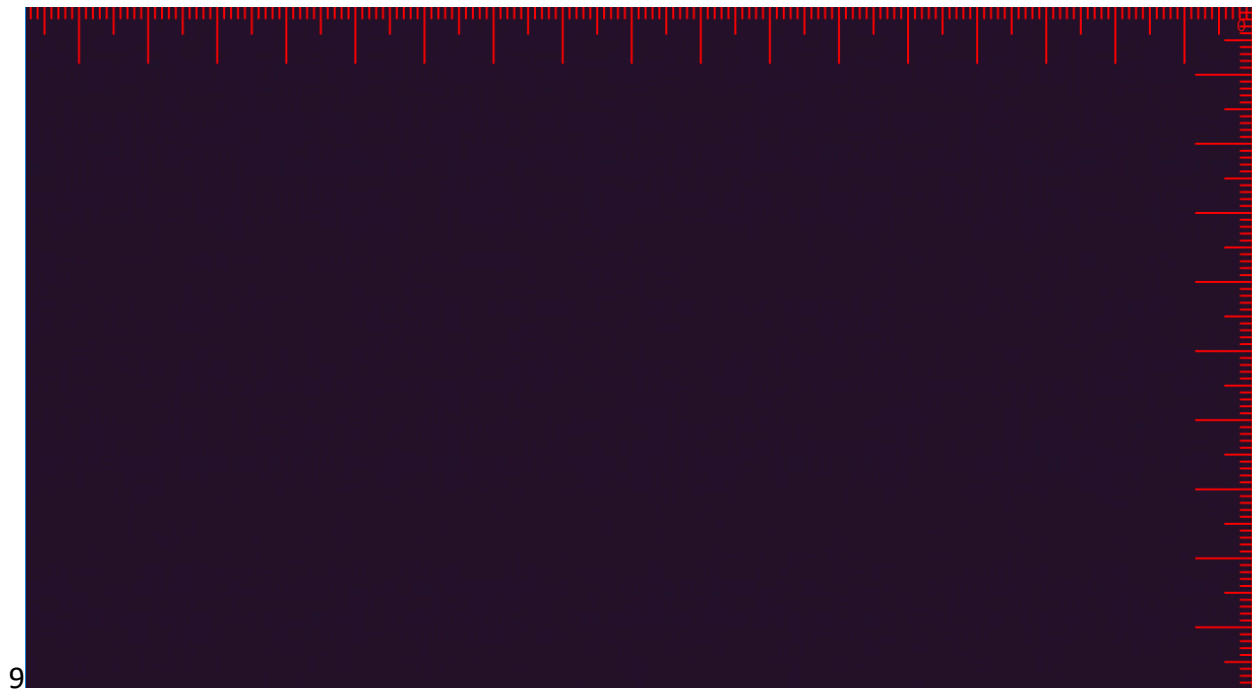


Fig 5-52 Right Upper Scale

● Left Bottom Scale  :

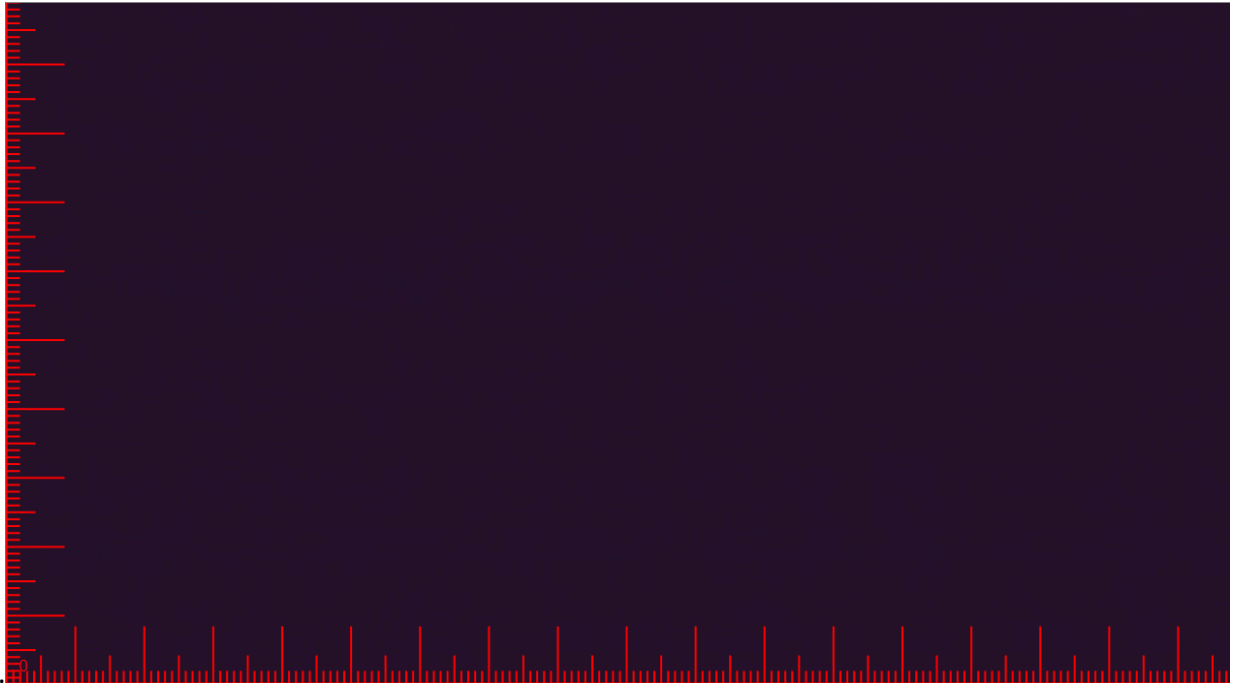


Fig 5-53 Left Bottom Scale

● Right Bottom Scale  :

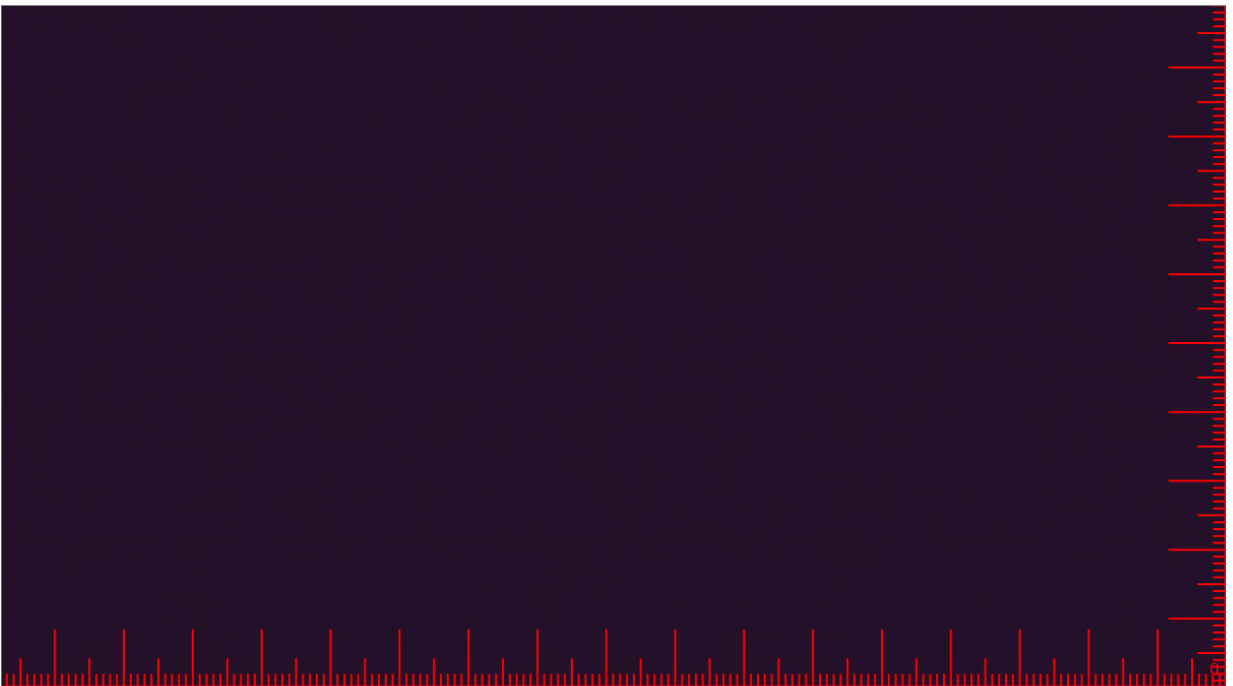



Fig 5-54 Right Bottom Scale

● Center Scale  :

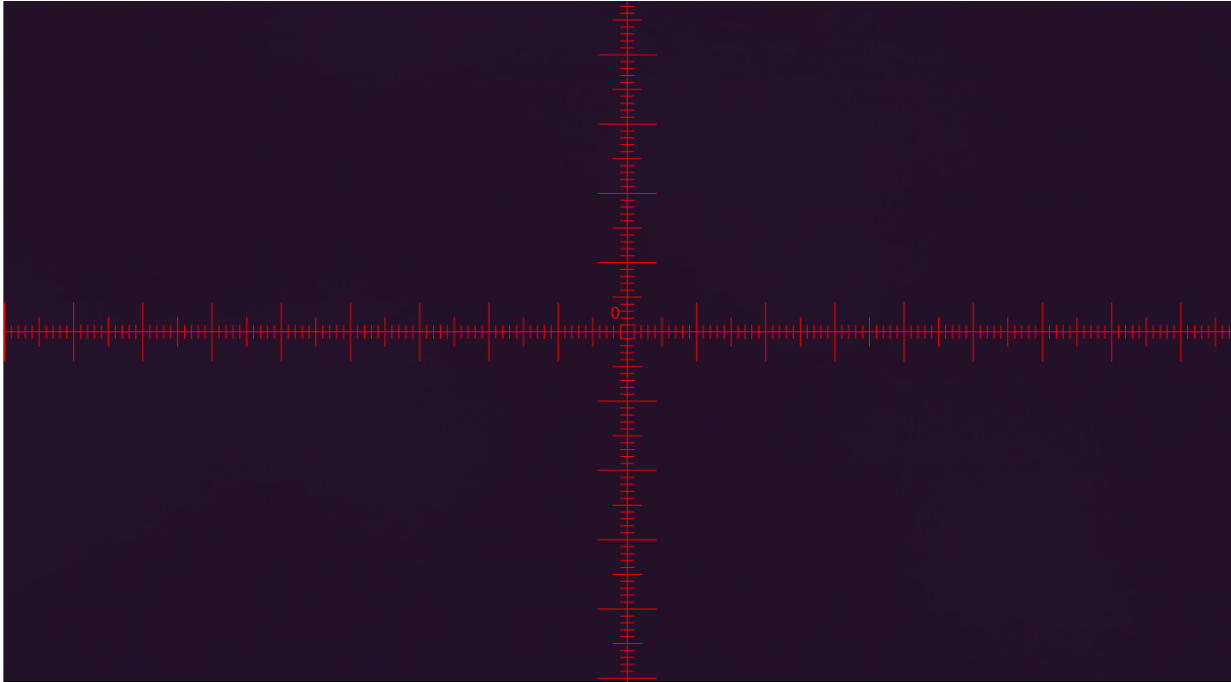


Fig 5-55 Center Scale

(2) Aiming Mode : There are 4 types of aiming mode. Each type begins drawing from center position.

● Center Crosshair   :

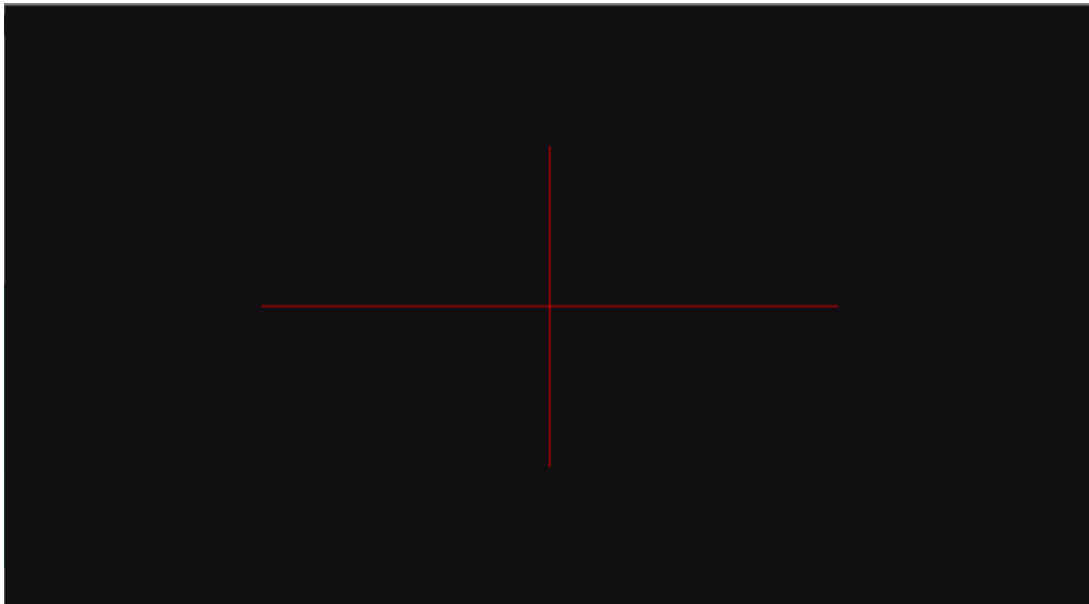


Fig 5-56 Center Crosshair Aiming Mode

● Center Circle 

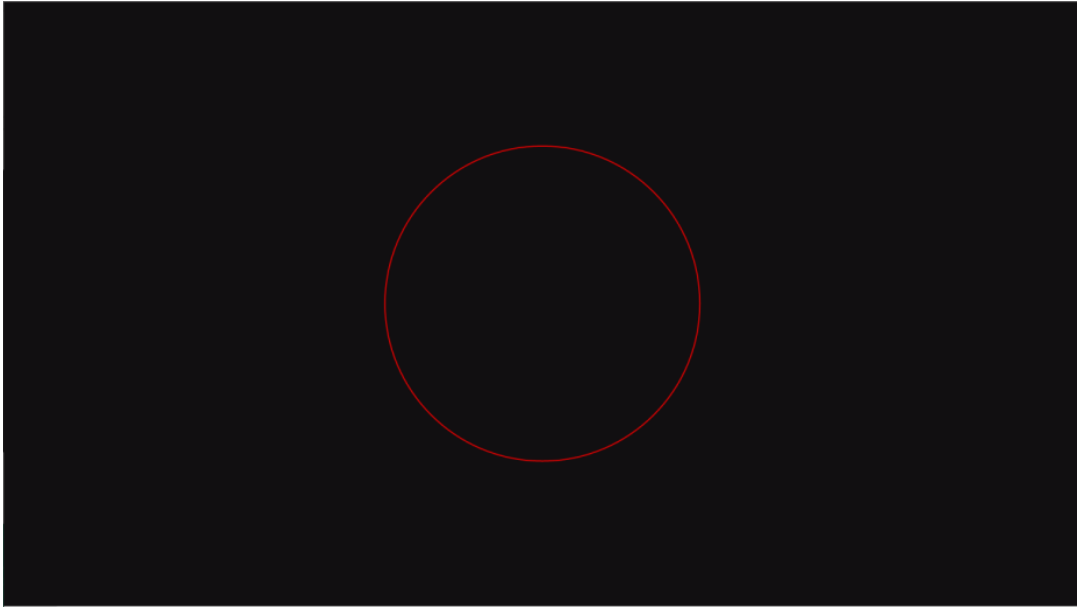
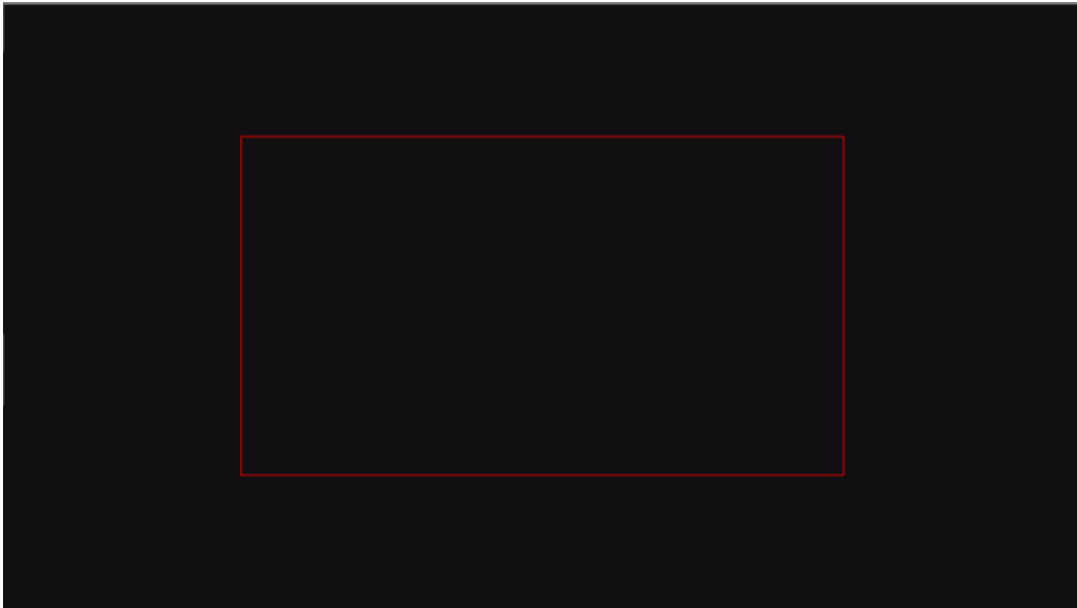


Fig 5-57 Center Circle Aiming Mode

● Center Rectangle 



Fug 5-58 Center Rectangle Aiming Mode

● Center Square  

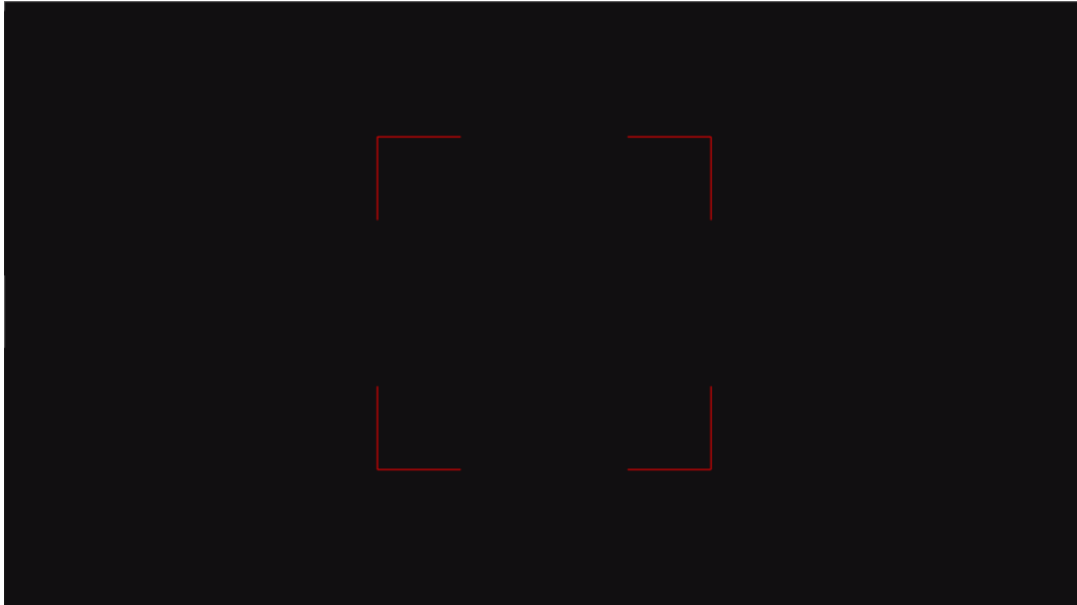



Fig 5-59 Center Square Aiming Mode

(3) Choose Color  : Choose the Auxiliary Line color. Fig 5-60 is to change the line color to White.

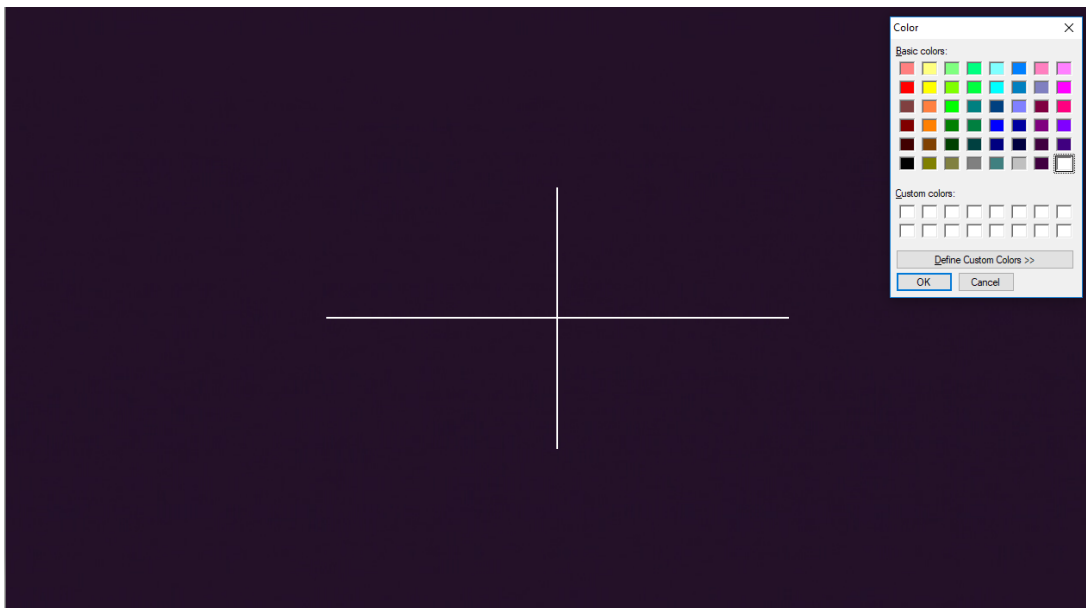


Fig 5-60 Change Line color to White


(4) Line Width  : Choose the Auxiliary Line width. Fig 5-61 is to change a wider Line width.



Fig 5-61 Line Width Options



Fig 5-62 Wider Line Width