



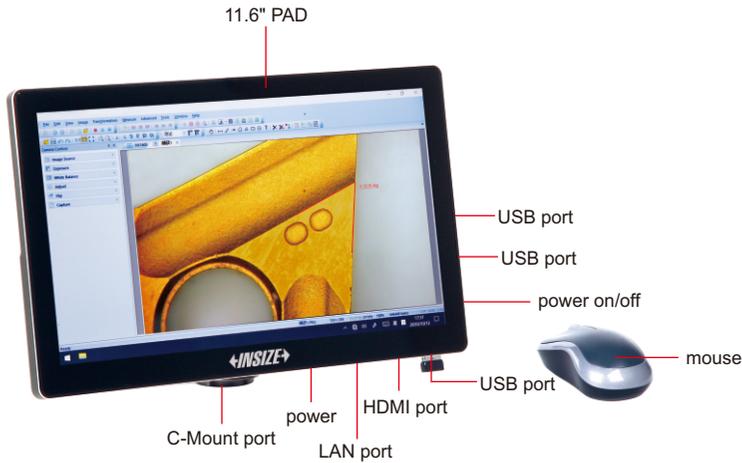
www.insize.com



**ISM-ZS70
DIGITAL CAMERA(WITH PAD)
OPERATION MANUAL**



Structure



- 1 First connect the product to TYPE-C DC-12V power supply.
- 2 After connecting the power, press the power button, the blue light of the product is always on after power on.
- 3 Double-click the ScopelImage 9.0 test software on the product desktop.
- 4 According to actual needs (whether to connect the display).
- 5 Enter the required measurement and adjustment.

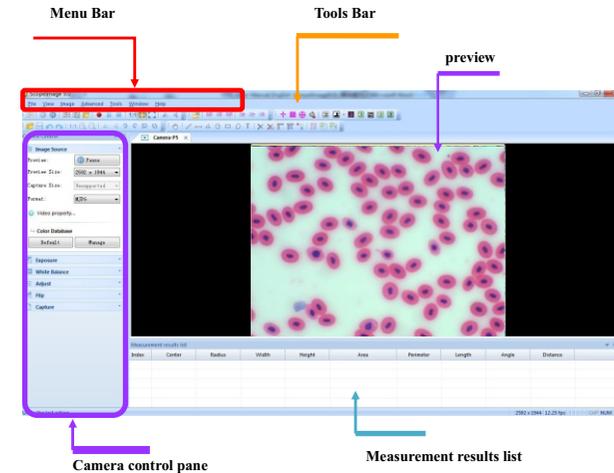
Software Description

ScopelImage 9.0 is a powerful software that is provided with image analysis and processing. Its application has spread all over optical microscope fields, which are involved in scientific research, manufacture, education and so on. Its friendly operation interface and stable performance has provided convenience for users.

- ◆ supported language: Chinese, English, Arabic, French, German, Japanese, Polish

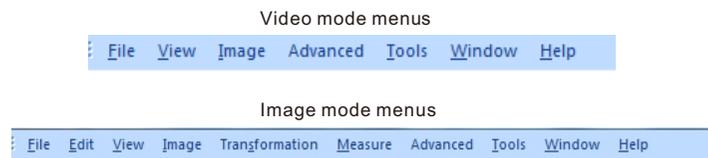
Software Instructions

1 Function GUI



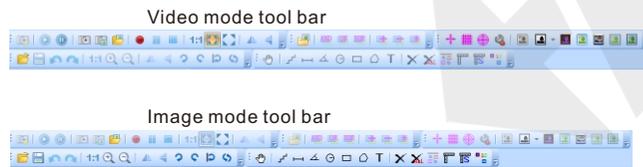
◆ Menu Bar

The menu can be either docked or floating. Double-click its grip or caption bar to toggle between the two states. When the menu is docked, it can be docked to any of the four sides of the main window. Drag the grip caption of the menu to adjust its position or to dock it to a particular side of the main window. The grip of the menu is the dot matrix at the left or top of the menu is docked state (⦿).



◆ Tools Bar

ScopelImage 9.0 has five toolbars. Each toolbar can be either shown or hidden. When a toolbar is shown, it can be either docked or floating. Double-click its grip or caption to toggle between the two states. When a toolbar is docked, it can be docked to any of the four sides of the main window. Drag the grip or caption of a toolbar to adjust its position or to dock it to a particular side of the main window. The grip of a toolbar is the dot matrix at the left or top of the toolbar in docked state (⦿).



At the same time, users can custom set the tool bar on the workspace. Clicking the sign  on the right of toolbar, users can add or remove some buttons.

Video button function:

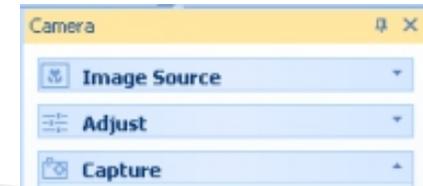
Button	Description	Button	Description
	New preview		Flip vertical
	Preview video		Load mask image
	Pass video		Add ruler to video
	Capture		Add square to video
	Capture one frame to view		Add circle marker to video
	Open image folder		Marker setting
	Start recording		Gray
	Pass recording		Binary
	Stop recording		Negative
	Actual video size		Sharpness
	Fit to window		Emboss
	Fullscreen		Clear noise
	Flip horizontal		Equalize

Image button function:

Button	Description	Button	Description
	Image full screen		Image flip
	Open image folder		Image mirror
	Save captured image		Rotate 90
	Undo		Rotate 270
	Redo		Rotate 180
	Actual image size		Rotate any angle
	Zoom in		Zoom out
	Broken line measure		Line measure
	Angle measure		Move
	Circle measure		Rect measure
	Delete one		Polygon
	Delete all		Text annotation
	Calibration		Show/hide calibration ruler
	Measure setting		Generate measure data
	Export data to Excel		Export data to CSVfile
	Toggle measurement table		Arrow annotation

◆ Control Panel

Control panel is where camera control commands are issued. Control panel can be either docked or floating. Double-click its grip or caption bar to toggle between two states. Camera pane can be divided into three subpanel, which are used to control the process of image formation.

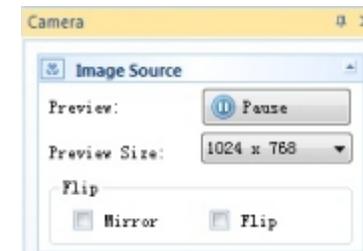


Subpanel can be shrinked. To shrink a subpanel, click the arrows at its top right corner. To expand a shrunk subpanel, click again the arrows at this. The arrows at the top left corner of a subpanel point upward in expanded state and downward in shrunk state.

If all the three subpanels have been opened, the panel will be too long to display all the contents, so there will be two arrows at the top and the bottom of panel, put the mouse on it, the panel will expand upward or downward to display the other part contents.



Using the idler wheel of the mouse to extend the contents of the camera panel. click to select the camera panel, when it displays as yellow, roll the idler wheel to upward or downward display the contents of the camera panel.



Double click the title bar of the camera panel (the yellow part of the image above), which can turn to floating state, drag the grip or caption of the menu to adjust its position. Double click to return back.

	Lock out	
	Auto hide	

Camera panel can close, hide and display. When it is in hiding or hanging state, click the camera panel or just put your mouse on it, the camera panel will display.

2 Image Process Modules

a Video mode

◆ Video Preview

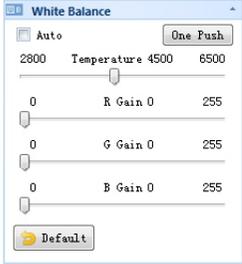
Control Pane Illustration	
Function State	<ul style="list-style-type: none"> ◆ Preview: Changing-over animation and tableaux. ◆ Preview Size : To change-over the preview resolution. ◆Format: There are two video formats, MJPG and YUY2. ◆Video property: Adjust the color data of video. ◆Color Database: Click “Default”, the color data of video recover to default. Click “Manage”, popup the box of color database, user can apply the saved color data, or save color data in the database.

Initialization	<ul style="list-style-type: none"> ◆ When preview shows , Video picture is animation. At this moment, you can observe some samples and sections. If you want to make a detail observation for a video picture part, click , then it will show . ◆ Configure Preview Size Combobox: In order to make a full use of display's resolution, you can choose a resolution matched with displays' to preview. Furthermore, choosing an lower resolution will get a fast Video refresh rate.
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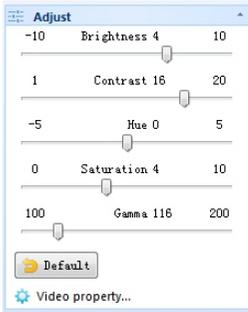
◆ Exposure

Control Pane Illustration	
Function State	<ul style="list-style-type: none"> ◆Auto Exposure: Click 'Auto Exposure', the system will do auto exposure. Click again to manual exposure. ◆ Default: Recovery to the default setting.
Initialization	<ul style="list-style-type: none"> ◆ The primary user can choose Automatic Exposure mode. ◆ When using polarizing microscope, user can cancel the mode of auto exposure, choose manual exposure and achieve a good effect.

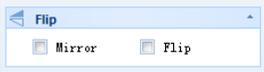
◆ White Balance

<p>Control Pane Illustration</p>	
<p>Function State</p>	<ul style="list-style-type: none"> ◆ Auto: Click “Auto”, the system will do autowhite balance. ◆ One push: make the background of video is full of white, click “one push” mode. ◆ Default: Recovery to the default setting.
<p>Initialization</p>	<ul style="list-style-type: none"> ◆ HDCE-X1,HDCE-X2,HDCE-X3,HDCE-X5 camera supports auto white balance function. ◆ HDCE-P5 camera support one push white balance function.

◆ Video adjustment

<p>Control Panel Illustration</p>	
<p>Function State</p>	<ul style="list-style-type: none"> ◆ Brightness: Adjust the brightness value of the video. ◆ Contrast: Adjust the contrast value of the video. ◆ Hue: Adjust the hue value of the video. ◆ Saturation: Adjust the saturation value of the video. ◆ Gamma: Adjust the gamma value of the video. ◆ Default: Recovery to the default setting.
<p>Initialization</p>	<ul style="list-style-type: none"> ◆ Brightness: Increase or decrease the brightness of the current video . ◆ Saturation: Adjust the saturation of the camera. Saturation is a measurement of a color's pureness and brilliance. ◆ Gamma: Adjust the gamma of the camera. Gamma is an image quality enhancement function that offers a richer image by brightening the darker portions of the image without altering the brightness of the brighter portions.

◆ Flip

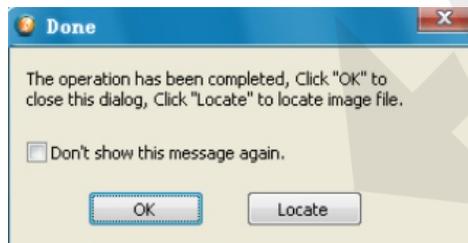
Control Pane	
Illustration	
Function Stat	◆ Flip: Video picture flip consists of Mirror and flip
Initialization	◆ Configure flip: Select "Mirror", video picture will flip horizontal. Select "Flip", video picture will flip vertical.

◆ Video capture

① Capture

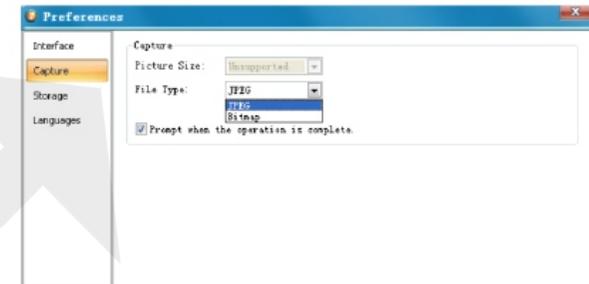


Capture: "Click Capture", you can capture a picture, which size is same to default resolution. Then pop up a box:



Click "OK", software will save this picture to a default folder. Click "Image Locating", software will open the default folder.

Changing picture's type: Click  Video property... , pop up a box:



You can choose file types: bmp and jpg.

Changing path: click "Browse", choose the path that you want to save picture, then click "OK".

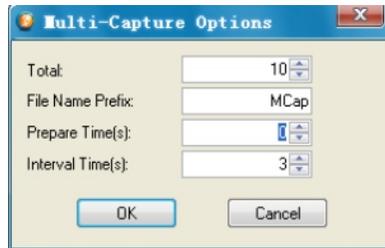


② Multi-Capture



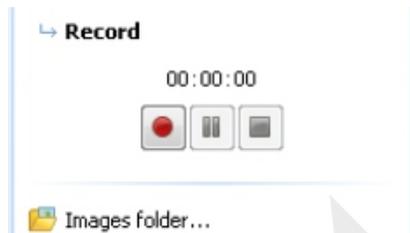
Click , software will start to capture some pictures.
 Click , software will finish it.

Configure Multi-Capture: Click , pop up a box:



You can finish the configuration of Multi-Capture.

③ Record Video



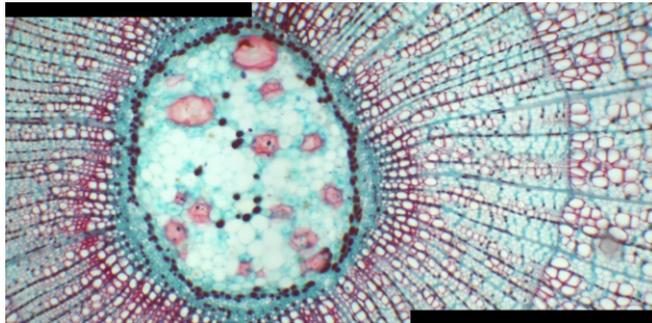
Record: Click button , it will start to record. Click button , it will pause. Click button , it will stop recording.

Save record: Click button , you can open the image folder. There are many pictures and records in this folder.

◆ Image Stitching Tool

<p>Control Pane Illustration</p>	
<p>Function State</p>	<ul style="list-style-type: none"> ◆ Make the image clear. ◆ Make sure that the image brightness will not change signification. ◆ Click capture button and then move the sample forward along a direction, save these images to specified path. ◆ choose "Advanced"->"Stitching" on the menu bar and pop up a box. Then click " Load files" and choose the images you have captured, click "Stitching". After a while, a stitched image will be generated in a new window.
<p>Initialization</p>	<ul style="list-style-type: none"> ◆ Each moving distance should not exceed 75% of window content, which means that there should have 25% overlap region between every 2 adjacent images.

A stitched picture:



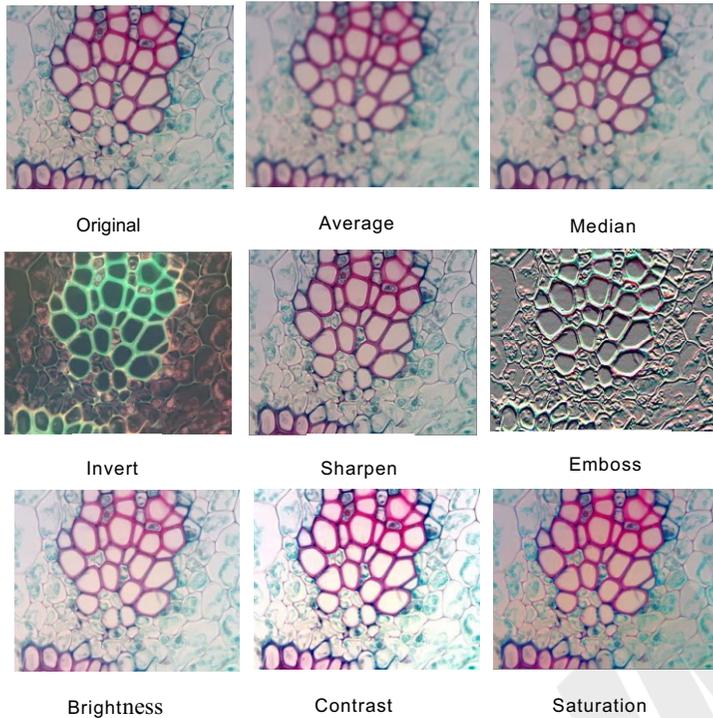
b Image mode

◆ Image Process

Notice: Only processing the pictures that have been captured.

Project	Description
Negative	Color reversal, can turn a positive image to a negative image, or turn a negative image back to a positive image. A negative image performing higher contrast and higher color saturation.
Average	Do average filter to the image, to clear the image noise.

Median	Do mediate filter to the image, the median filter is much better at preserving sharp edges than the average filter.
Sharpen	All digital photographs lose a certain amount of sharpness. That means that most photographs will look a bit blurred and their details won't be as prominent. Basically, sharpening makes the edges of a photographed object appear most distinct.
Emboss	The Emboss filter makes a selection appear raised or stamped by suppressing the color within the selection and tracing its edges with black.
Brightness	Change the brightness of the image.
Contrast	Change the contrast of the image.
Saturation	Change the saturation of the image.



◆ Image Flip

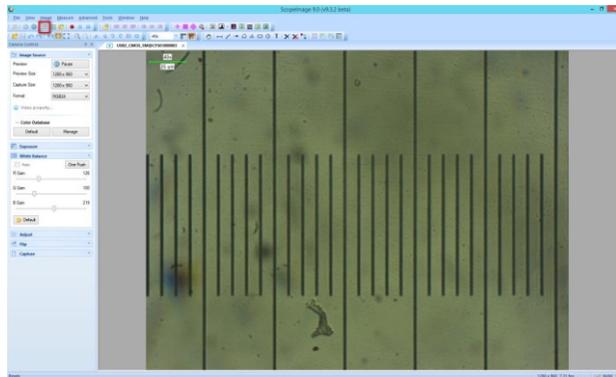
Icon	Project	Description
	Image mirror	Image flip horizontal
	Image flip	Image flip vertical
	Retort 90 degree	Retort 90 degree of the image
	Retort 180 degree	Retort 180 degree of the image
	Retort 270 degree	Retort 270 degree of the image
	Retort any degree	Retort any angle of degree of the image
	Zoom in	Magnify display the image
	Zoom out	Reduce display the image
	1 : 1	Actual image size

◆ Image Calibration

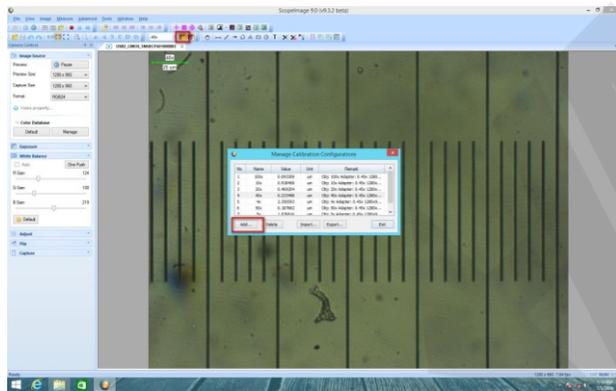
Image calibration has supported the dynamic calibration. In order to ensure accurate and precise, we select the static image as image calibration object. The calibration data can only be used in the current resolution.

Here shows the calibration under 40x object lens for an example.

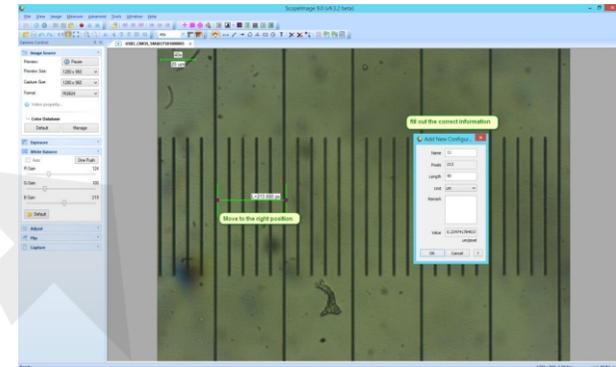
- ① We should take a picture first. Put the 0.01mm micro-ruler in the video window, adjust to display clear, then turn around the camera, make the active images parallel to the horizontal line, and click the button on the tools bar to capture a frame to the field, as the picture shows below.



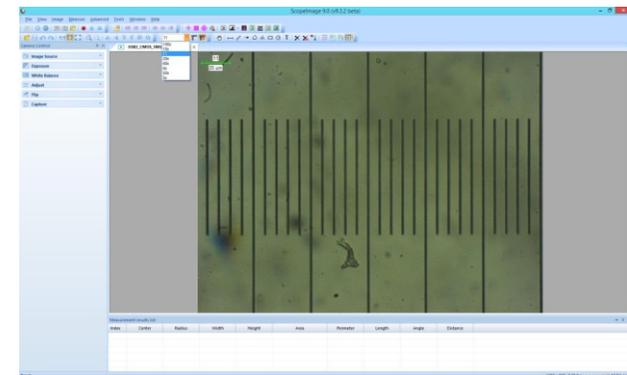
② In the captured image, click the button  to show the management calibration configuration page, then click “Add” to add the scale. You can also click the  or  button to magnify or reduce the current image in order to convenient the calibration.



③ Move the measurement scale to the appropriate position, and determine the starting point and end point, then fill out the correct information including name, length, unit in the configuration page.



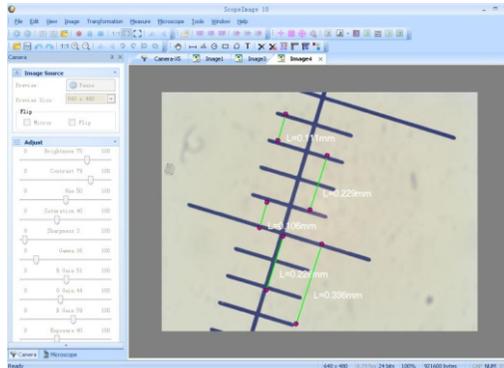
④ Click “OK” and the new calibration named 11 was added in the software.



ScopelImage 9.0 has configured the 4x, 5X, 10X, 20X, 40X, 50X, 100X scale data initially in the interior of the software, with a resolution of 1280*960. Under these magnification, we can choose an appropriate scale date to measure directly.

Check the calibration result:

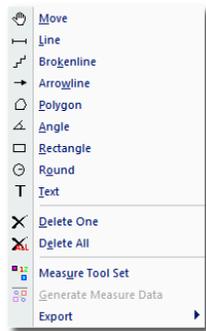
The calibration has been finished, now we check it. Use the micro ruler, and capture a frame to the field. Select the calibration we have just done to make a straight line measurement, as the picture below:



We can find the measurement is close to the actual length. Excluding error factor, the measurement result is right.

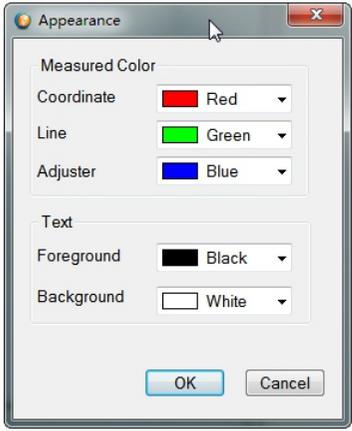
◆ Image Measurement

The system support several measure tools, as the line, circle, rectangle, angle and so on. The measure result can real time display on the image and can be merged and save for further using. The function is equivalent to the commands under the measure menu.



Icon	Function	Function Introduction
	Calibration	The system micrometer consists of the sampling intervals in horizontal and vertical directions. In the calibration process both of the two sampling intervals should be calculated. IMPORTANT!!! Calibration should be done on an image before measuring.
	Show/hide calibration ruler	Click this button to show the calibration ruler, click again to hide it.
	Move	Move or adjust the objects, containing line, angle circle, and rectangle.
	Line	Add line objects. Each line object is defined by two endpoints. Press left mouse button to specify one of the endpoints. Move the mouse to the other endpoint, while keeping the left mouse button pressed, to draw the line. Release the left mouse button to complete the line drawing. The above procedure may be repeated to create more lines. A line object has two resizing handles, located at the two endpoints. The length of the line will appear over the image at the same time.
	Broken line	Add broken line, click on image to create broken line double click to finish.
	Arrow Annotation	Add arrow annotation
	Polygon	Add polygon to measure area, double click to finish.

	<p>Angle</p>	<p>Use the Angle command to measure angles. Click to specify three controlling points. The angle made by the line passing through the 1st and the 2nd point, and the line passing the 2nd and 3rd point, will be measured. The degree of the angle will appear over the image at the same time.</p>
	<p>Rectangle</p>	<p>Each rectangle is specified by two diagonal vertices. Press down left mouse button to specify one vertex. Move the mouse to the other vertex while keeping left mouse button pressed to draw the rectangle. Release left mouse button to complete the creation of this rectangle. Repeat the procedure above to add more rectangle objects. A rectangle object has four resizing handles. Drag the handles at the four corners to adjust width and height of the rectangle simultaneously. Drag anywhere else within the rectangle to move the rectangle object. The area of the rectangle will appear over the image at the same time.</p>
	<p>Circle</p>	<p>Click to specify two controlling points. The 1st point as the center of the circle, move the mouse to the 2nd point while keeping left mouse button pressed to draw the circle. Release left mouse button to complete the creation of this circle. The line between the 1st and the 2nd point as the radius. Repeat the procedure above to add more circle objects. Drag the handles at the corners to adjust the size of the circle simultaneously. Drag anywhere else within the circle to move the circle object.</p>

		<p>The area and radius of the circle will appear over the image at the same time.</p>
	<p>Text Annotation</p>	<p>Draw text on image.</p>
	<p>Delete one</p>	<p>Use the Delete one command to remove the selected object on the image.</p>
	<p>Delete All</p>	<p>Use the Delete All command to clear all the objects on the image.</p>
	<p>Generate measurement data</p>	<p>This command will clear background image, and generate an image that just will the measurement marker.</p>
	<p>Measure setting</p>	<p>Set the color of the coordinate, line, adjuster and text.</p> 

◆ The measurement date processing

The date of measuring can be enrolled in the table.

Index	Center	Radius	Width	Height	Area	Perimeter	Length
1	(169, 84)						10.385 um
2	(360, 163)						1.720 um
3	(217, 196)						16.201 um

	Click it, you can export the data to Microsoft Excel or CSV file.
	Click it, you can hidden the measurement result list.
	Click it, you can close the measurement result list.

