IHARA
Color Control Made Simple

Users Manual

UM-02 Application Program Manual

Ver.040210

UM-CAM Application Program Operates Manual

contents

After the user use UM-CAM application program, it will show illustration picture in Fig.1-1.A tool is arranged and divided into the window. The main button and file tabulate is in 3 groups, which the left and right windows are the two sub windows. On the left window, it will show UM-CAM whether USB digital video device is connected. If it's not connected the button will be a white result as Fig.1-2 shows.

Fig. 1-1 main window picture

Fig. 1-2 connected button white

To prove Fig. 1-1 into three major model's groups, it provides the including:

1. The arranging tool

The picture is based on Fig.1-3 the tool of the application program arranges the group, which includes File, Setting, Window, Tool, Language and About altogether.

Fig. 1-3 arranging tools model group

2. Major Keys

Fig.1-4 is a main button group which is very useful function or basic function, which includes connecting, taking pictures, saving, editing…etc. there are 10 functions button.

Fig. 1-4 main button group

3. The file tabulates the group

Fig.1-5 is the tabulate of the saved images in the application program. The main list will list the files in the existing folder, which includes BMP folder, JPG folder and AVI folder.

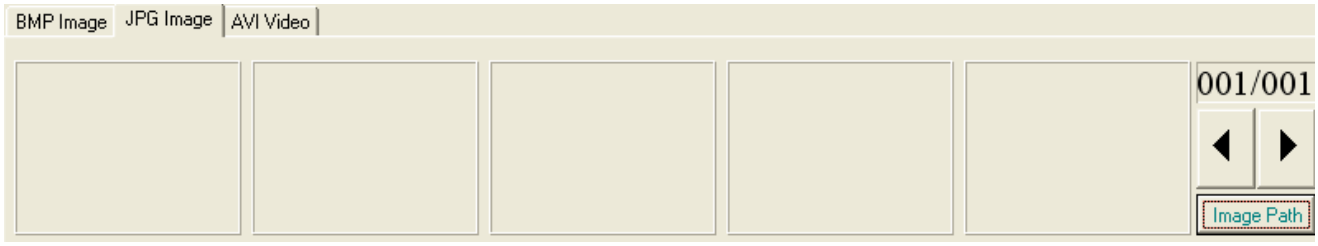

Fig. 1-5 file list group

4. Four mode functions

After opening UM-CAM program, also click connect button shown in Fig.1. under the left side window will show「four mode functions」toolbar.

Fig 1-6 After conntection window

1. Tool arrange group

The tool arranges the group and pursues to show, which include file, setup, window, tool, Language and select greatly about 5 of the choices altogether.

1.1 File

In the beginning, file introducing tools and arranging file choice. The file can open file and store the file again while selecting, and wait...etc shown as Fig.2-1.

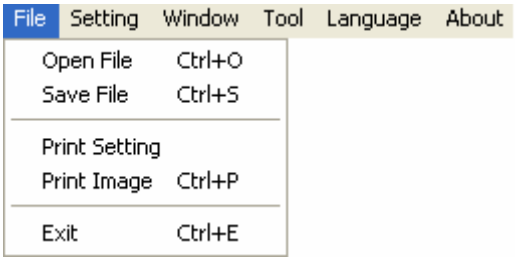

Fig.2-1 Choose file

1.1.1 Opening File

Opening file has three kinds Bmp, Jpg and Avi, which open preserving the route and taking the file tabulates pages to sign at present as a basis of the file, sign portion 3.1 to more narrate in page. If the file tabulates pages and signs for Bmp picture, open the materials and insert Bmp picture route in order to preserve in the route, as Fig. 2-2 shows. If the file selected tabulates pages to sign for Jpg picture, open the materials and insert Jpg picture route in order to preserve in the route. If the file selected tabulates pages to sign for the Avi film, open the materials and insert Avi film route in order to preserve in the route. Ctrl +O are a fast key.

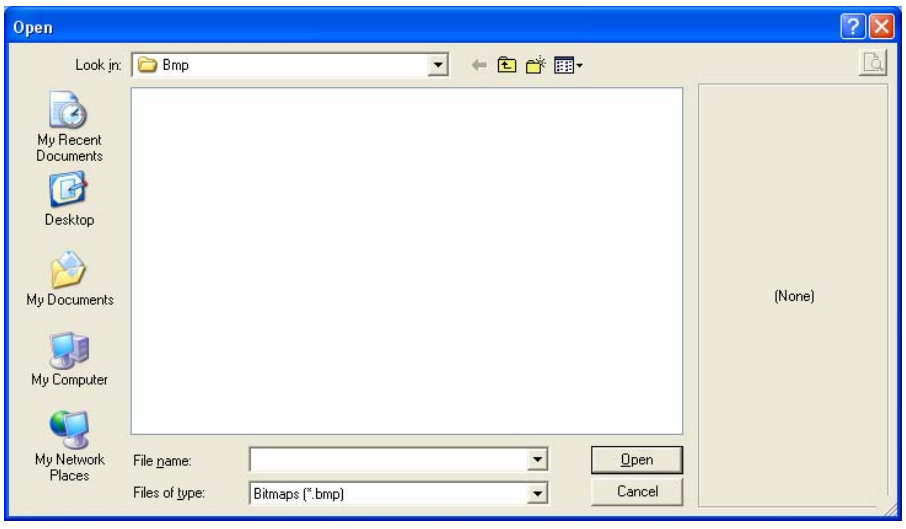

Fig.2-2 Opening bmp file

1.1.2 Save File

Saving file's file, there are only Bmp and Jpg 2 types; saving the same as Fig1-1 of the left window will show the picture. Storing the file name is the program will produced automatically by the procedure; the user can change the name by themselves. File name is annual in year (yyyy), month(mm), day(dd), hour(hh), minute(nn), second(ss) setting, which Bmp_20080829180445.bmp as 2008(yyyy) 08(mm) 29(dd) 18(hh) 04(nn) 45(ss), which this way is the name of file won't be repeated and it can also be realized the date and time by stored file name.

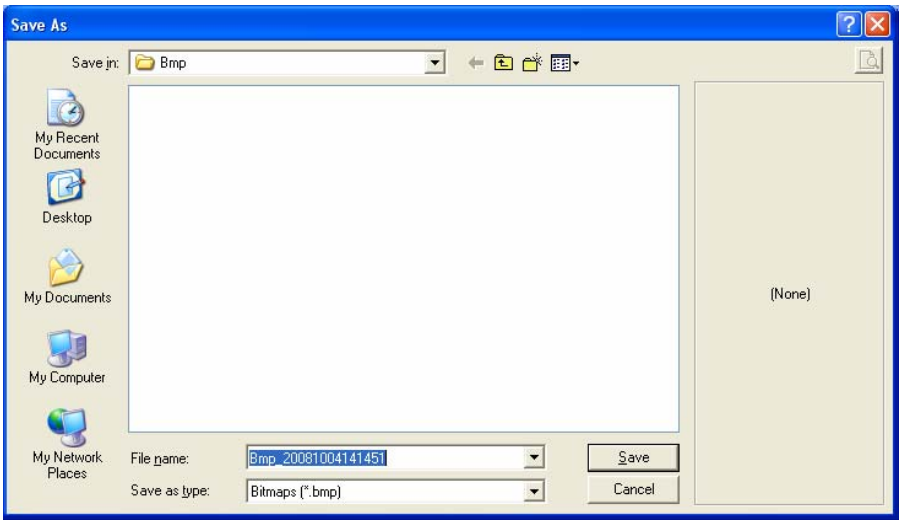

Fig.2-3 save file

1.1.3 Printer Setup

Set up printer can adjust paper between size, source or printer type.

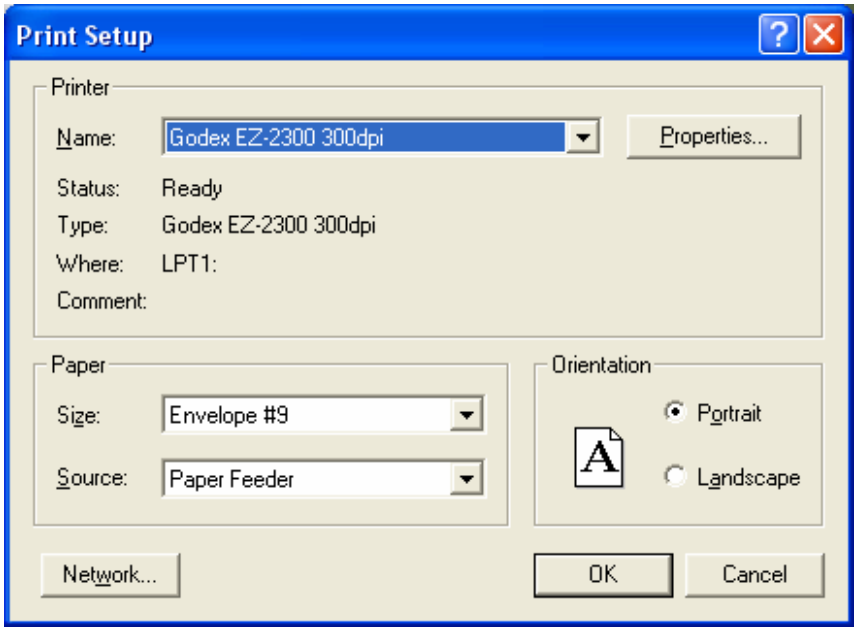

Fig.2-4 setup printer

1.1.4 Print Picture

Ctrl+P are a fast key

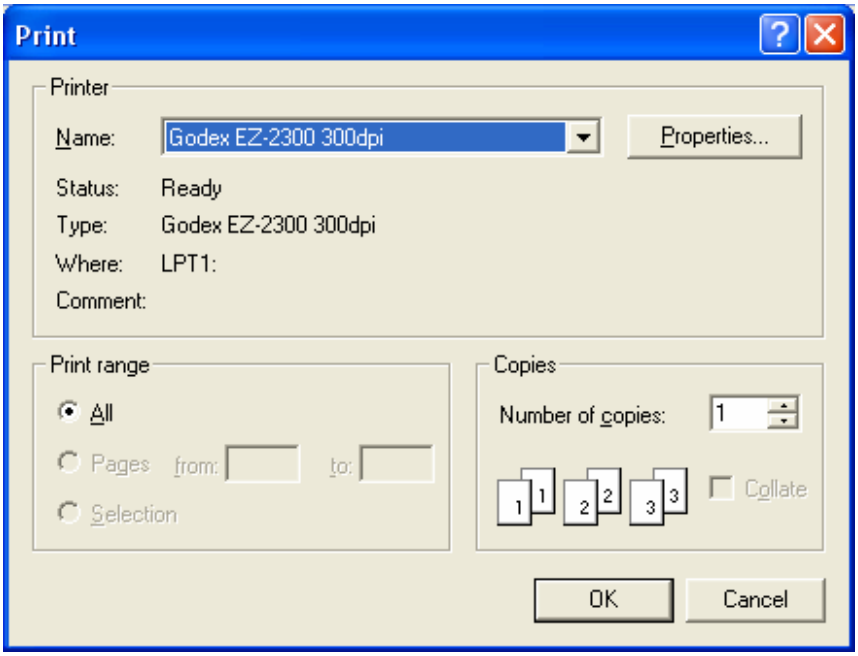

Fig.2-5 print

1.1.5 Exit

Once to choose to exit, the program would close. Ctrl+E are a fast key.

1.2 Setting

The Setting function is mainly to set up Video Format and JPG compression quality as Fig. 2-6 shows. If UM-CAM device isn't at the line, video format and video signal source unable to set up (setting in white bar); it can set up on the contrary.

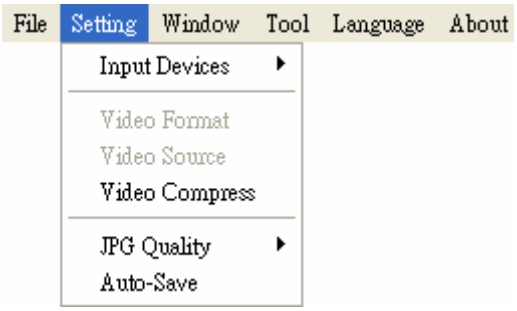

Fig. 2-6 Select Setting

1.2.1 Optional Input Devices

Fig 2-7 when there are 2 Input Devices connecting to PC at the same time, it allows you to choose.

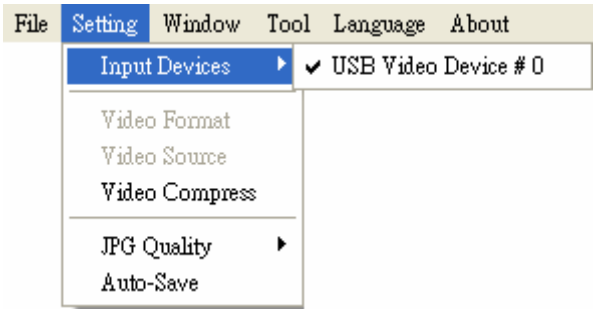

圖 2-7 Optional Input Devices

1.2.2 Video Format

Video Format is mainly to set up the frame rate, color space and output size etc. Frame rate is frame numbers per second for playing.

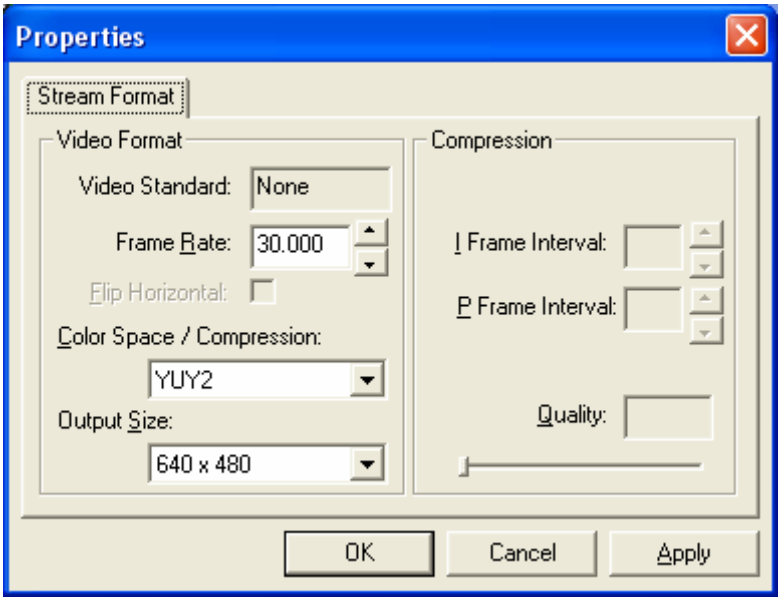

Fig. 2-8 Video format table before installing UM-CAM driver

Output the image size means the video quality, if the size is changed to higher, the resolution is higher, and the data quantity per second is bigger. The snapshot image size is according to output image size. Fig. 2-8 is Windows built-in driver, which Color Space/Compression allows to choose YUY2 only, the output size is limited due to YUY2, too. Fig. 2-9 is table of Video Format within installing UM-CAM driver, the Color Space includes YUY2 、RGB24 & I420, and more Output sizes are optional.

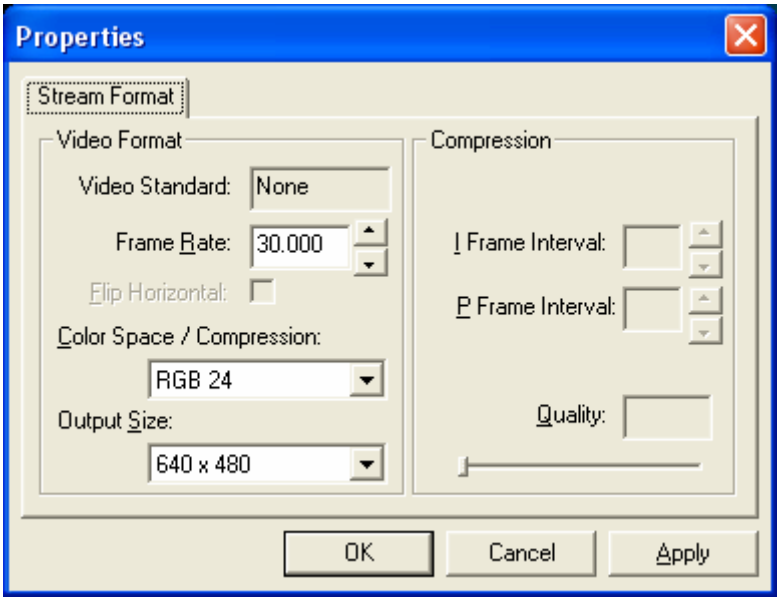

Fig. 2-9 Table of Video Format of UM-CAM driver

1.2.3 Video Format Source

Fig. 2-10 & Fig. 2-11 are Properties of Video Format source without installing UM-CAM driver, i.e., it uses Windows' built-in driver. Fig. 2-10 Video Proc Amp allows User to adjust the parameter.

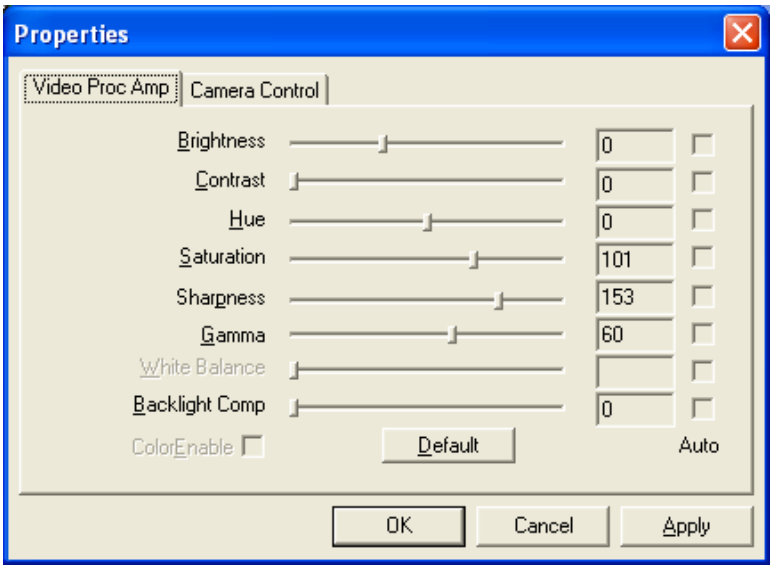

Fig. 2-10 Table of Video Proc Amp content without installing UM-CAM driver

Fig. 2-11 Table of Camera Control allows User to adjust the parameter. In generally, Windows built-in driver can support limited functions.

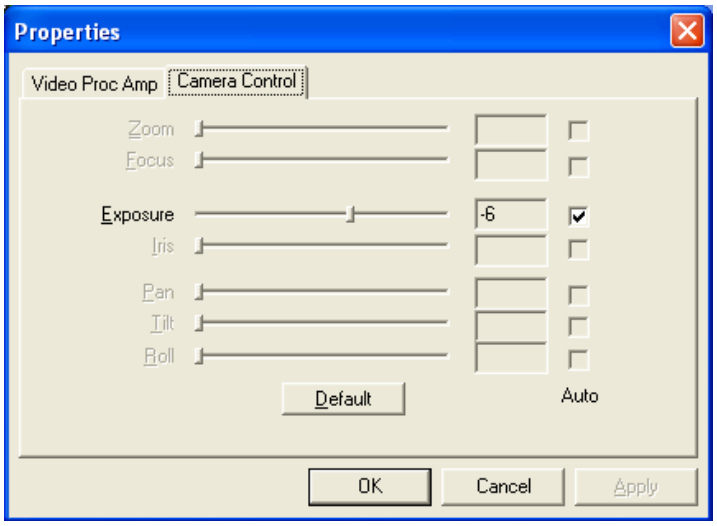

Fig. 2-11 Table of Camera Control without installing UM-CAM driver

Fig. 2-12, 2-13 & 2-14 are properties of Video Format source with installing UM-CAM driver. Firstly, it sets up Video image quality for Brightness 、Contrast 、Gamma etc. as Fig. 2-12. If the Video image is rotating, it can use vertical rotating and horizontal rotating. Besides, other functions can be applied by User.

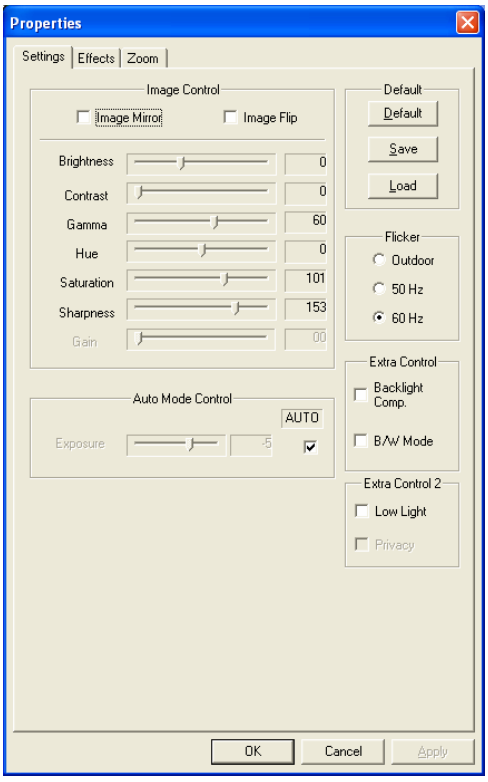

Fig. 2-12 Properties of Video Format source with installing UM-CAM driver

Fig.2-13 is Function of special Video Effects, beside of effects, there is Frame function, the Frame styles can be customer zed.

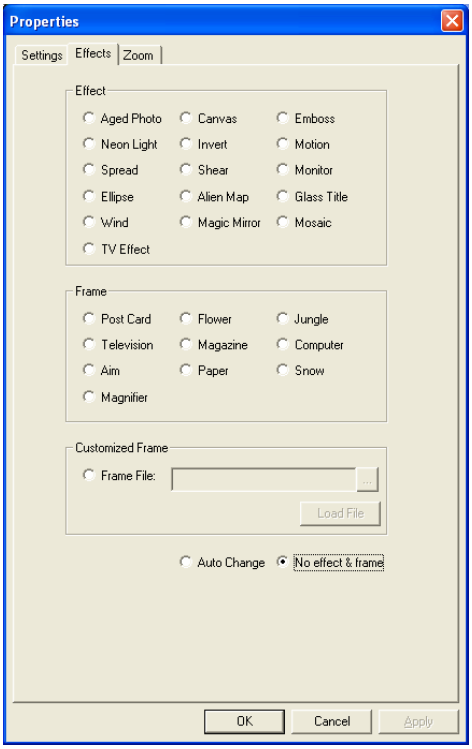

Fig. 2-13Properties of Video Format source with installing UM-CAM driver

Fig. 2-14 It can enlarge and shrink the image, also move the position and enable face tracking.

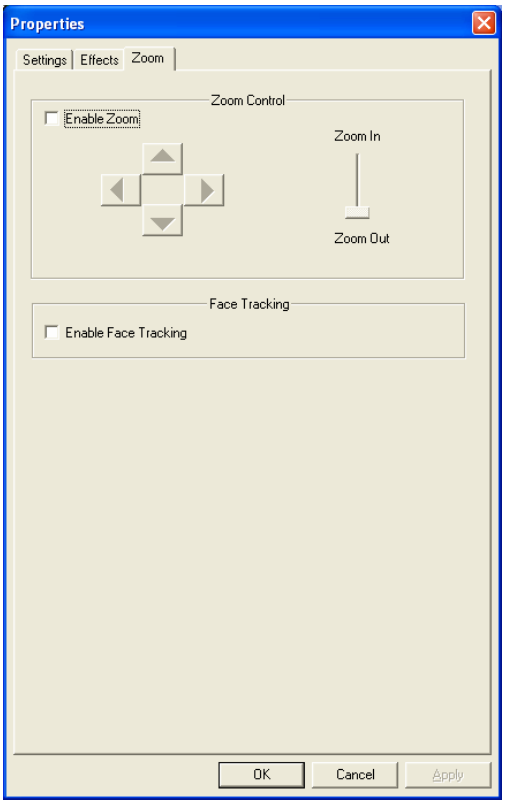

Fig. 2-14 Properties of video format source with installing UM-CAM driver

1.2.4 Video Compressor

Normally, the video size is huge before compressor. We can use Compressor function to reduce the file size. There are optional Compressors which are built-in or can be installed by DIVX or other tool. Once the installation is completed, you can see them at the optional Compressors.

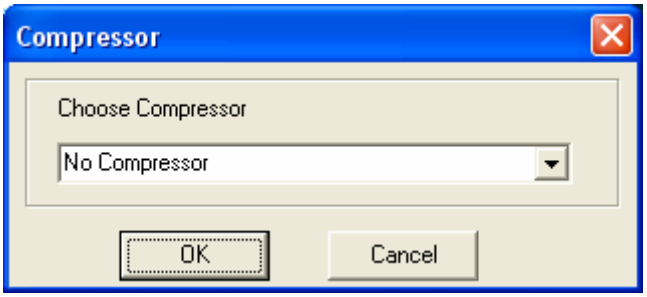

Fig. 2-15 Optional Compressors

1.2.5 JPG Quality

User can choose different JPG quality.

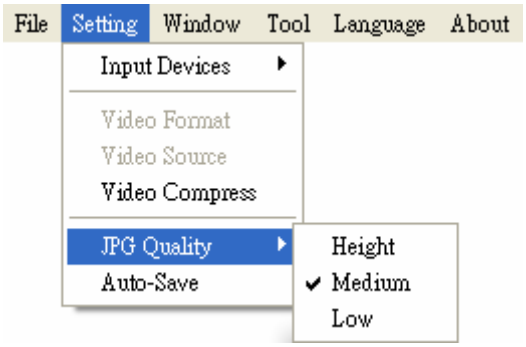

Fig. 2-16 Setting JPG qualities

1.2.6 Auto-Save

From「Setting->Auto-Save」shown Fig. 2-17, after checked auto-save, when clicking the save buttons it will not show the save dialog. The system will generate a file name and auto-save the file.

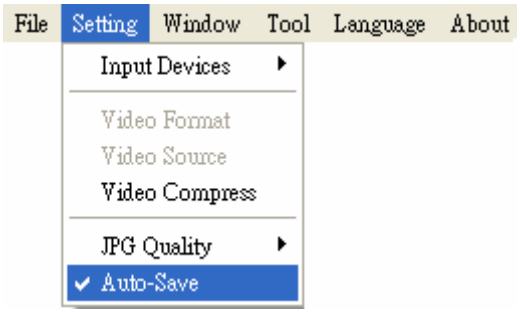

Fig. 2-17 auto-save option

1.3 Window

The Windows can be chosen per USER's preferred window size. But it need depend on User's PC to choose a suitable resolution as Fig. 2-18. For example, your PC is 1280*960 pixels; you can choose 1280*960.

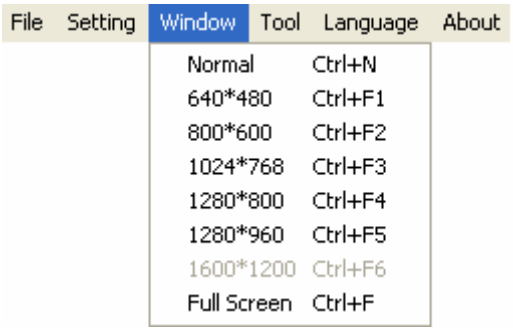

Fig. 2-18 optional window size

User can choose full screen under window mode. The original left window in the AP will become a single window, available tool bar of the connection (disconnection), snapshot, video recording and film broadcasting under the full screen.

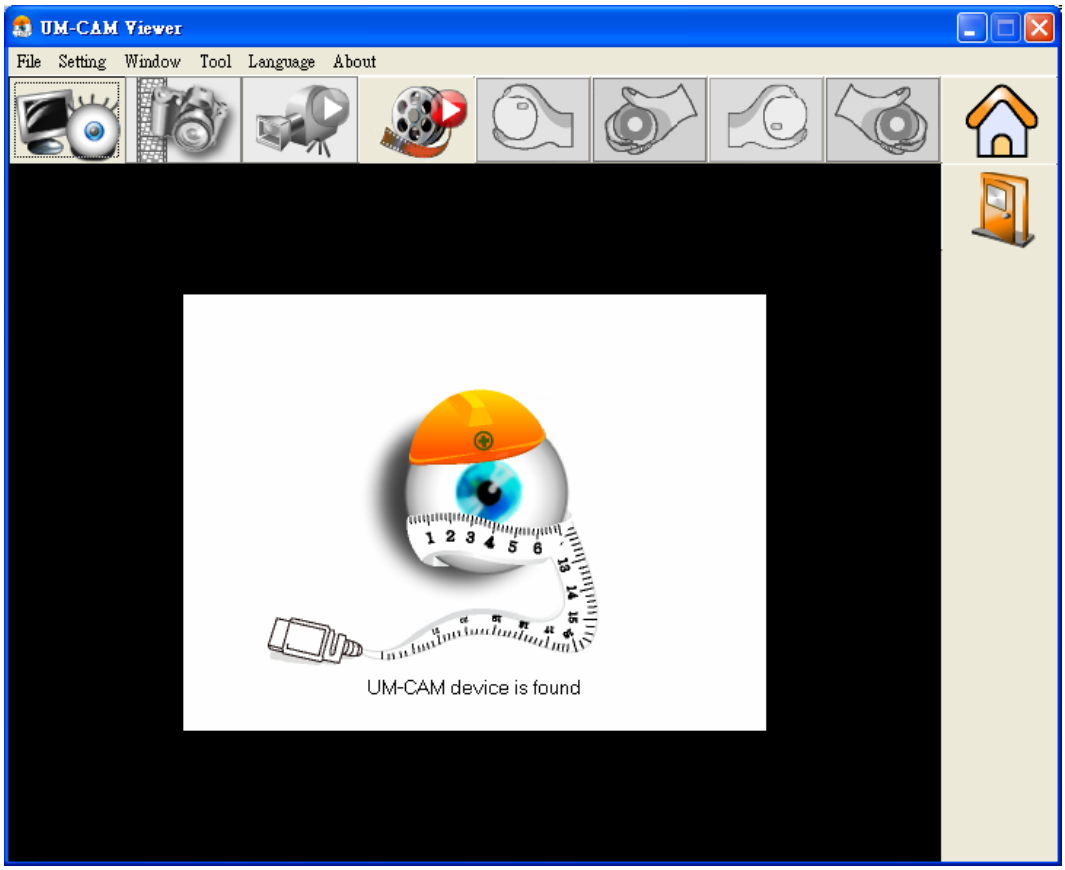

Fig. 2-19 Full screen of 640*480 under Window mode

If changing to single window and want to return to normal mode can click on Fig. 2-20 image to go back.

Fig.2-20 Normal Mode

Single window also has 4 functions of video control mode shown Fig. 2-21. To preview other functions of 「video control mode」 will be explained in section 4.3.

Fig.2-21 4 Functions of Video Control

Click snapshot button and will pop up fig. 2-22, it provides function of Open file, Save file, Delete image, Image process and Print image.

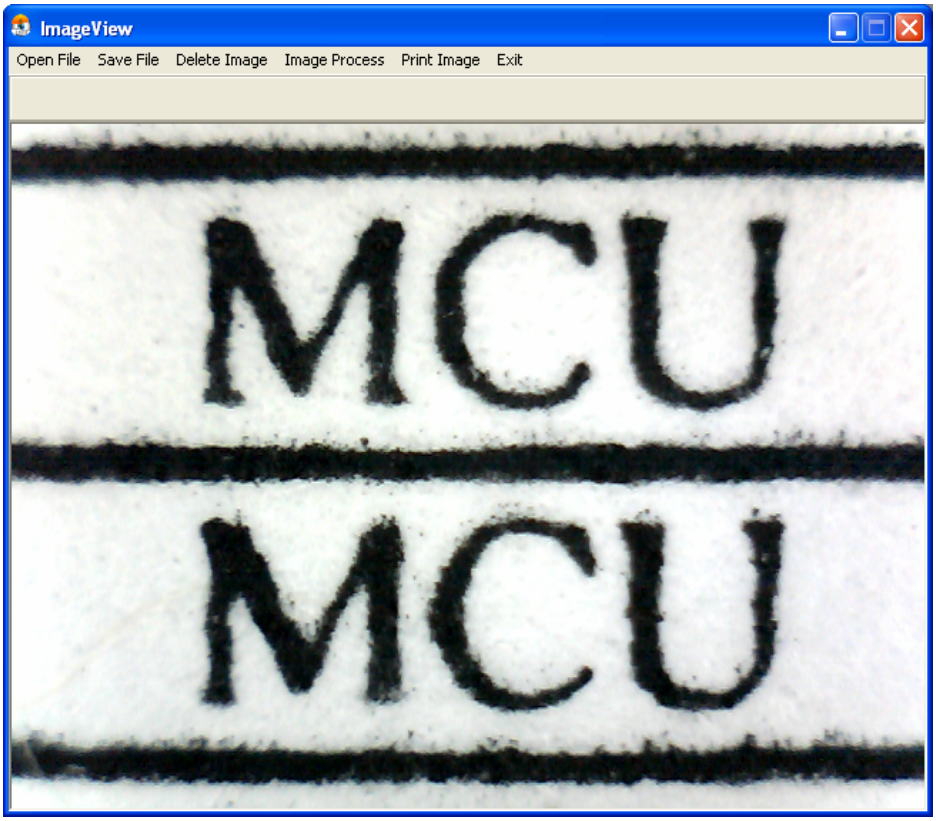

Fig. 2-22 ImageView of window

1.4 Tool

Use the Tool to open file and set up Path.

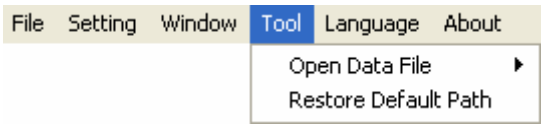

Fig. 2-23 Tool

1.4.1 Restore default path

The function allows User to preserve the initial setting route, easily find and Save the video and photos at the preserved route

1.4.2 Open Data file

Open files at BMP 、JPG & AVI folder.

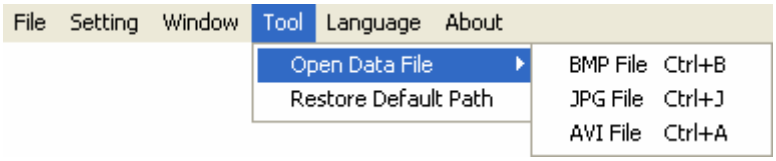

Fig.2-24 Open file folder

1.5 Language

The version includes 5 multi-languages ; English、Tradition Chinese、Simplified Chinese、Japanese & German. The initial language will automatically follow up User's OS system. It can choose the other language, too.

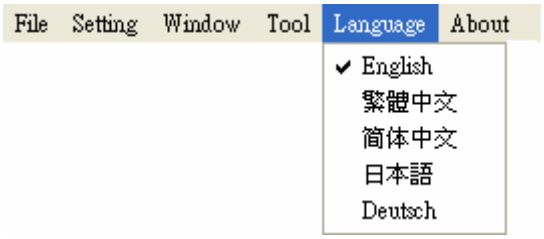

Fig.2-25 Select language

1.6 About

Show the UM-CAM relevant information.

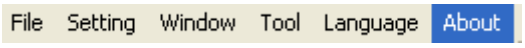

Fig.2-26 select about

Learn the application program version, UM-CAM hardware manufacturer UM-CAM and the copyright of the application program.

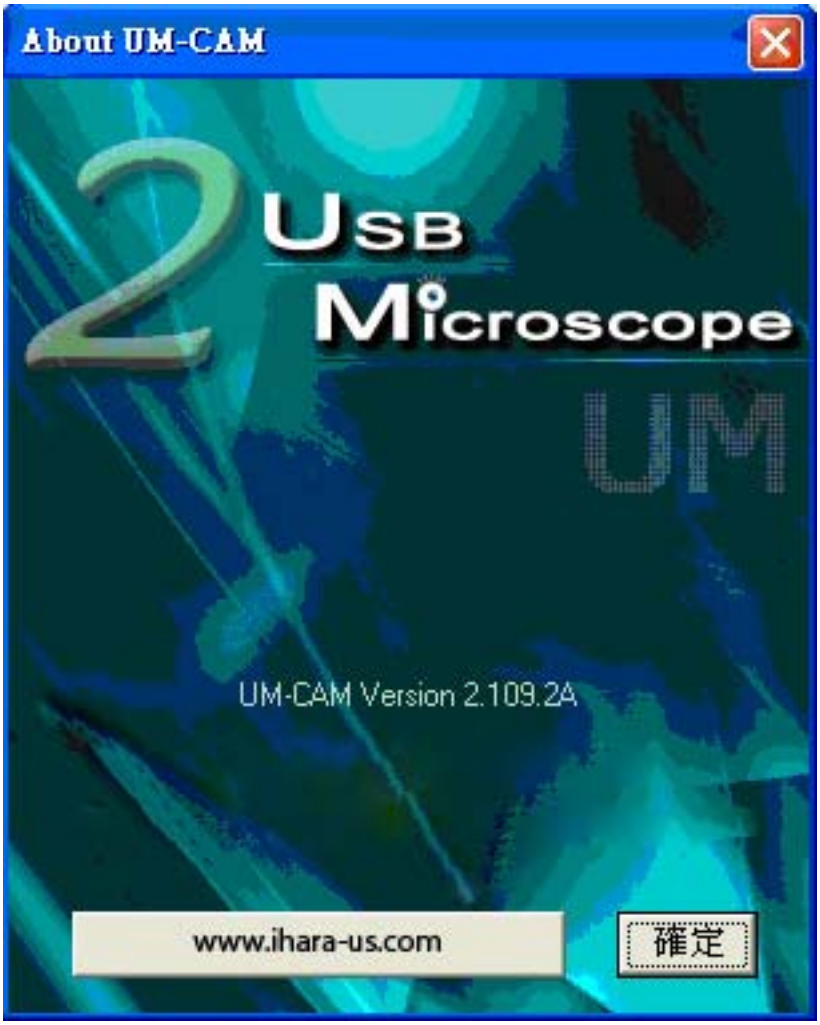

Fig.2-27 about UM-CAM

2. Major Keys

Fig.1-4 is a main button group which is very useful function or basic function, which includes connecting, taking pictures, saving, editing…etc. there are 10 functions button.

Fig. 1-4 main button group

2.1 Connect/Disconnect

2.1.1 Connect

The connect icon is as Fig. 3-1, the user will connect the line while pushing the connect button, namely connect with UM-CAM device. If it cannot connect, please reinsert UM-CAM device to the other USB port.

Fig.3-1 Connect button icon

2.1.2 Disconnect

The button icon which shows disconnect is like Fig. 3-2, the users please push this button to disconnect. When the user starts and broadcasts the film button, UM-CAM will be disconnected automatically. People who take off line establishment, Video Format m will restore the preserved setting value.

Fig 3-2 disconnect button icon

2.2 Snapshot

Snapshot icon is as Fig. 3-1, the function allows taking a photo in Preview、Video & Play, and image size depends on Video Format source, i.e. Height & Width.

Fig 3-3 snapshot button icon

2.3 Save Image

Save image icon is as Fig. 3-4, the saved file name is automatically created. The detail of the file name is as description 1.1.2.

Fig 3-4 save image button icon

2.4 Edit the Picture / Diverge From Editor's Picture

2.4.1 Editor's picture

The editor is as Fig. 3-5 including several convenient functions.

Fig. 3-5 editor icon

Fig. 3-6 editor tool

Fig. 3-7 Click () to start editor tool

Fig. 3-8 Click ( ) to start text tool

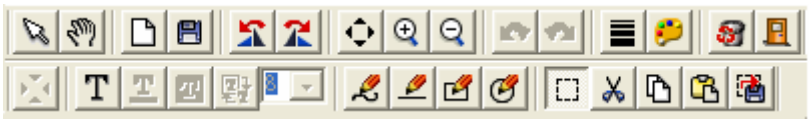

Fig.3-9 Click ( ) to start other functions

「 Editor Image」 toolbar includes many functions, below will explain each functions:

- Normal : When this button is clicked, all the buttons will return to normal.
- Move Image：When the「original fit 」button begins using, select 「 Move Image」and click mouse of left button to move on the image.
- New File：「 New file」 can open a blank page of image, image size is 400*300 by the Fig 1-1 of the right side window size.
- Save Image：Save Fig 1-1 is right side window of image.The image size by video formal of output size.
- Rotate Left：Image can rotate left 90 degree.
- Rotate Right ：Image can rotate right 90 degree.
- Fit The Window：This function can let image to fit the window size. When selecting this function, it cannot use 「 edit text」, 「select」,and 「drawing」functions.
- Zoom In：Enlarg image without interpolation therefore if the scale larger than orginal size distortion will appare.
- Zoom Out：To shirk image.

- Rndo：To go back the movemenet and only can use up to 3 times
- Redo：To go to next movemenet and only can use up to 3 times.
- Line Style：Choose line style by clicking 「Line style」button and it will pop up(Fig3-10) dialog box.

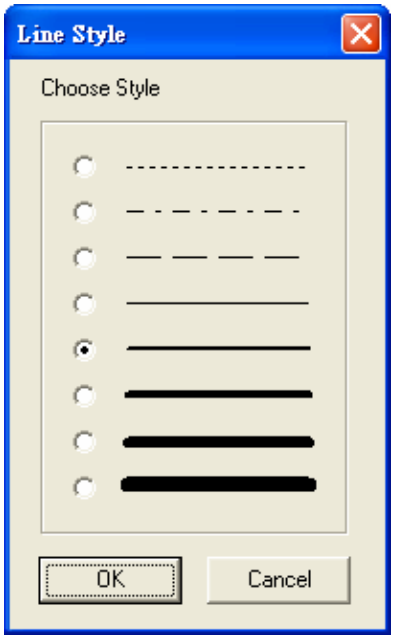

Fig. 3-10 Choose line styles

- Color：To choose pen's 「color」 click on the color button and it will pop up (Fig 3-11) dialog box.

Fig. 3-11 Choose color

- Delete Image：The Fig1-1 right side window of image will be deleted.
- Exit Editor：To exit image editor,the「image editor」toolbar will be closed.
- Orignal Fit：When the image size is bigger than the window, using this function, it can do 「 Edit text」, 「select」, and 「drawing」functions. The window won't see the whole image, but only some parts.
- Edit Text：Edit text is words that can be written on image.
- Edit Text Color：Text color can be changed by clicking「edit text color」button and it will pop up (Fig 3-11) dialog box.
- Edit Text Background Color：Text background color can be changed just by clicking 「edit background color」 and it will pop up (Fig 3-11) dialog box.
- Edit Text Background Transparent：Text background can be set as transparent with no background color.
- Text Size：Text size can be changed.
- Pen：Pen can draw anything and its function is like a regular pen and pencil.
- Line：Draw stright line.
- Rectangle：Draw rectangle.
- Ellipse：Draw ellipse.
- Select：Selects the area on the image, after the selection, it can cut, copy, paste, and save the selection area function.
- Cut：Cut frame on the Fig1-1 right side window of image.
- Copy：Copy selected frame on the Fig1-1 right side window of image.

- Paste  ：Paste whats been cut or copied image to display on the Fig1-1 right side window of image.
- Save Select  ：Save selected frame on the Fig1-1 right side window of image.

2.4.2 Leave Editor

Fig. 3-12 Editor icon

2.5 Delete Image

Fig. 3-13 delete image icon

2.6 Video recording / Stop Making Video Recording

2.6.1 Recording

Press video recording icon and firslty name the file name, the file name is automatically shown as description 1.1.2.

Fig. 3-14 video recording icon

2.6.2 Stop Recording

Fig 3-15 stop recording icon

2.7 Film Broadcasting / Stopping Broadcasting

2.7.1 Film Broadcasting

The recorded video will plays at left window as Fig. 1-1. Once it palys, the microscope is automatically disconnected.

Fig. 3-16 film broadcasting icon

Fig. 3-17 Tool of playing

- Play  : This button can play video.
- Pause  : This button can pause video.
- Stop  : This button can stop video.
- Repeat  : This button can repeat play video.
- Exit  : This button can exit video mode.
- No Flip「  」: Video image's flip direction, does not makes any flip shown in Fig 3-18.

Fig 3-18 Video image with no flip

- Vertical Flip「  」：The video image upside down 180 degree, which is vertical flip, shown in Fig. 3-19.

Fig. 3-19 Video image do vertical flip

- Horizontal Flip「  」：The video image left and right mirror 180 degree flip which is horizontal flip shown in Fig. 3-20。

Fig 3-20 Video image do horizontal flip

- Vertical and horizontal Flip「  」：The video image will do horizontal and vertical flip shown in Fig. 3-21

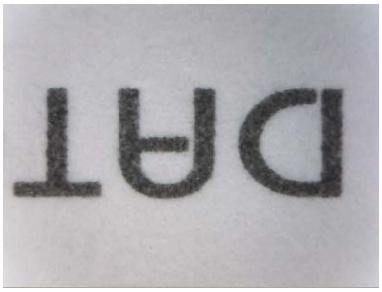

Fig. 3-21 video image becomes horizontal flip

Click right of mouse to show Fig. 3-22

Fig. 3-22

2.7.2 stop broadcast

Once it stops play, the microscope is still disconnected.

Fig. 3-23 stops broadcasting

2.8 Edit Image / Leave Editing

2.8.1 Image Editor

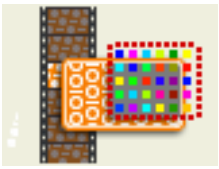

Fig. 3-24 Image Editor Icon

Once it clicks Fig. 3-18, it will show Fig. 3-25 .

Fig. 3-25 Tool of Image Editor Once it clicks  it can set up the value. The image will be changed, too.

Fig. 3-26 Changing Threshold

- Original Image  : This function can let image return to original image.
- Gray Level :  : This function can let the image from color change to gray
- Highlight Edge  : This function can let the image show it's highlight edge
- Highlight Pxiel  : This function will strengthen in the picture between the different pixels.
- Black/White  : This function can let the image from color turn to black and

white

- Inverse：This function can let the image become inverse.
- Exit：This button is to exit video mode.

2.8.2 Leave Image Editor

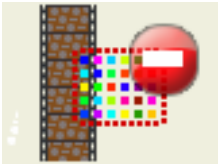

Fig. 3-27 Leave Image Editor

2.9 Print Image

Fig 3-28printing image

2.10 Diverge from the application program

Fig. 3-29 diverges from the application program

3 The file tabulates the group

The file tabulates pages and signs as Fig. 1-5 shows, file is it list file materials insert file in, include BMP materials insert, JPG materials insert and AVI materials insert three at present mainly to tabulate.

3.1 The File Tabulates

Fig.4-1 tabulate for BMP 、JPG & AVI files

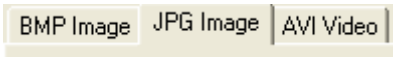

Fig. 4-1 file tabulates

3.2 The File Tabulates On Page Number

Fig. 4-2 the file tabulates on page number

3.2.1 Show the number of pages

001/001= X/ Y, X is sequence and Y is total number of pages.

3.2.2 Change page button

Fig 4-2 left and right button can be change page number. Left button is to decrease page number and right button is to increase page number.

3.2.3 Image Path

Click the 「Image Path」 to show Fig. 4-3 and choose the file director

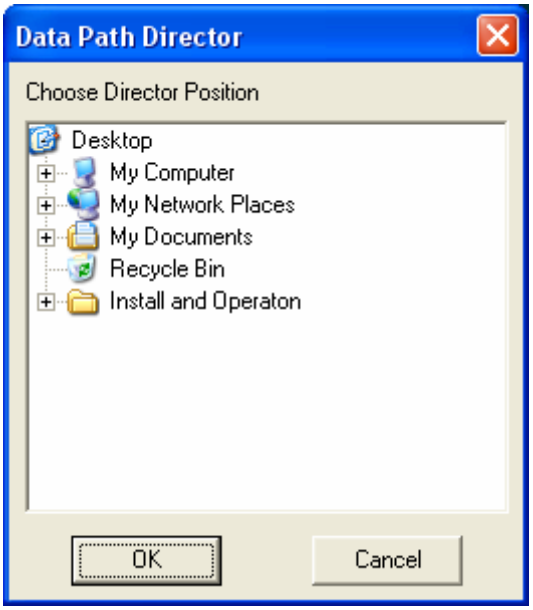

Fig. 4-3 Data Path Director

3.3 Quick Click

Click right of Mouse on the saved image and show Fig.4-4, it can directly Open or Delete file.

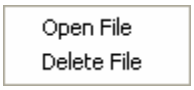

Fig. 4-4 Quick click

4 Four kinds of mode functions

New functions include four models separates as comparison, aiming, video control, and measurement shown Fig.5-1, select different mode then to change the toolbar. The different mode functions are：

1. Comparison mode :
   Comparison mode can do overlapping two frame. The frame can be whole or any size to compare. This mode can see two frams of simiarities.

2. Aiming mode :
   Provides a cross, area, rectangle and circular different aiming mode to aim the observation object .That can help capture observation object.

3. video control mode :
   The mode can control left hand or right hand to hold the machine, which can capture yourself or opsiticles, but the directions might not be correct. It can use the mode to adjust the dirctions and it can adjust contrast, brightness and exposure.

4. measurement mode :
   Measurement mode has ruler functions to measure at real time, which provides different measurement tools.

Fig.5-1 Mode of toolbar

4.1 Comparison mode

When connected, the defult of the toolbar is set as to compare shown in Fig.5-2 and Fig 5-3. In Fig.1-6 right side window has no image so some part of the buttons wouldn’t work in this mode. Comparesion mode can be overlap with another video image to compare and to cut half of the image for comparession.

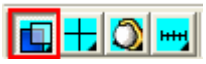

Fig. 5-2 Comparison mode

Fig. 5-3 Comparison mode toolbar

4.1.1 Load right side image 「」

When capture one imge or open one image, the Comparison toolbar of「load right side image 」button can be choosen. Shown in Fig.5-4.

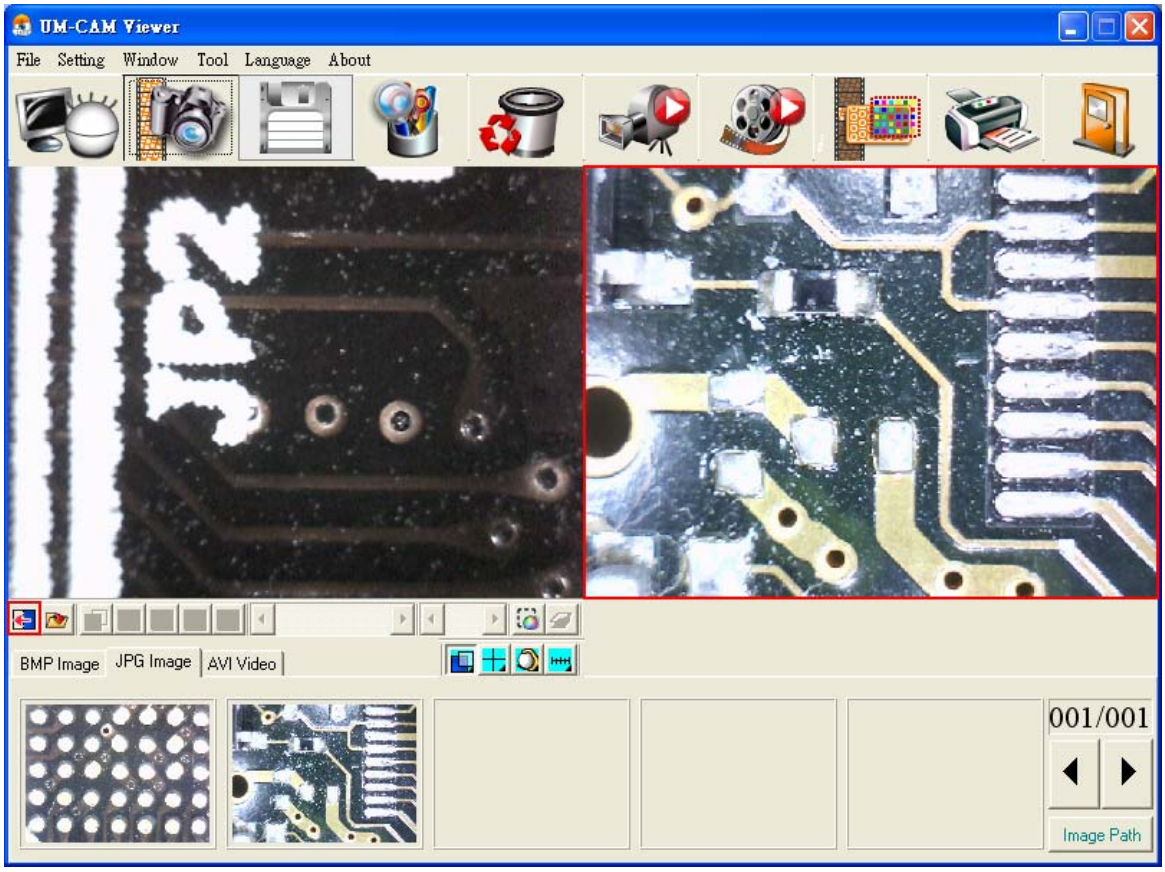

Fig.5-4 Right side widow has image

When clicking 「load right side image 」button, it can overlap and cut half of the image functions. Shown in Fig.5-5. If want to leave comparison mode just click on 「load right side image 」then it will return to preview mode.

Fig.5-5 Loading image will be compared

4.1.2 Load image 「 」

When the right side window doesn't have image (Fig.5-6), it can be open from 「load image 」button to open file.

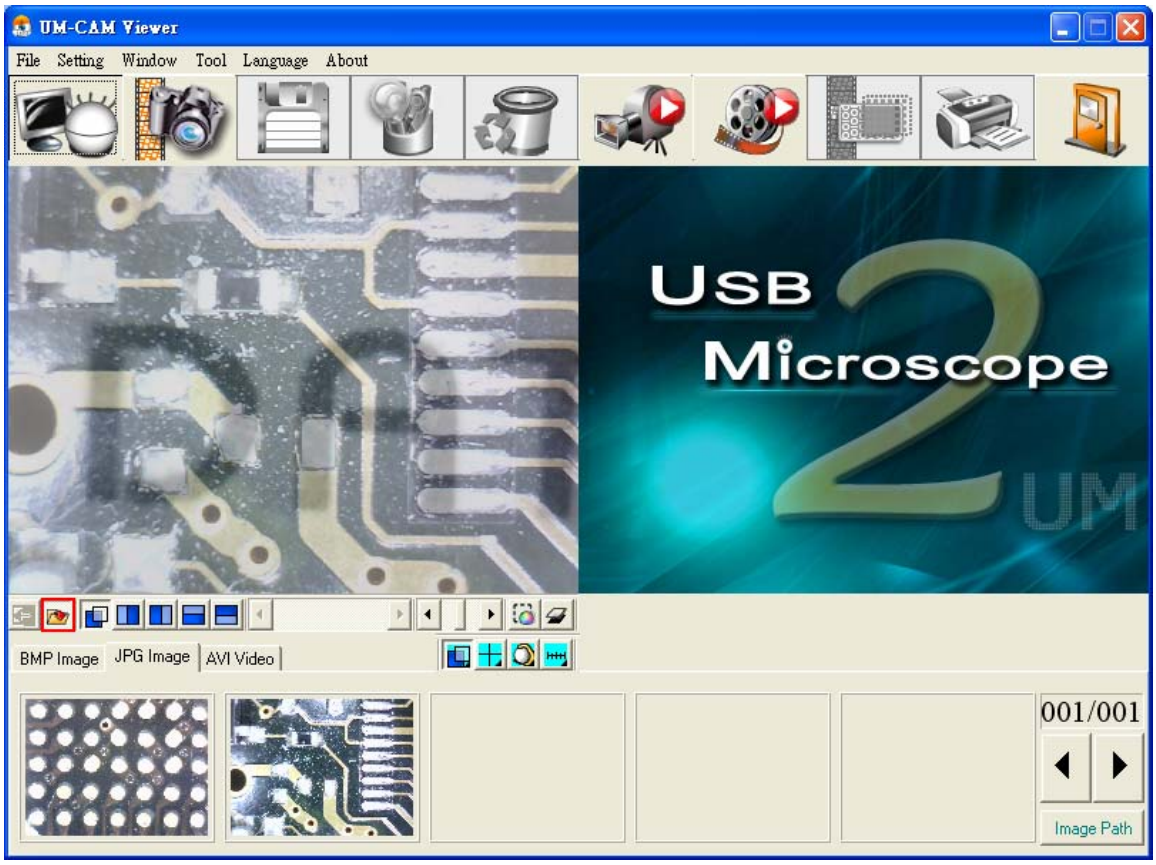

Fig.5-6 load image button

Click 「Load image」button. After opening the file, it can use overlapping and cut half image function. shown Fig.5-7. If want to exit the program just click on 「Load image」to go back to preview mode.

Fig. 5-7 After loading image

4.1.3 Overlap comparison 「 」

The 「overlap comparison」 can makes the image transparence. With overlap in the video image, then at the same time shows two frames. Show in Fig.5-8.

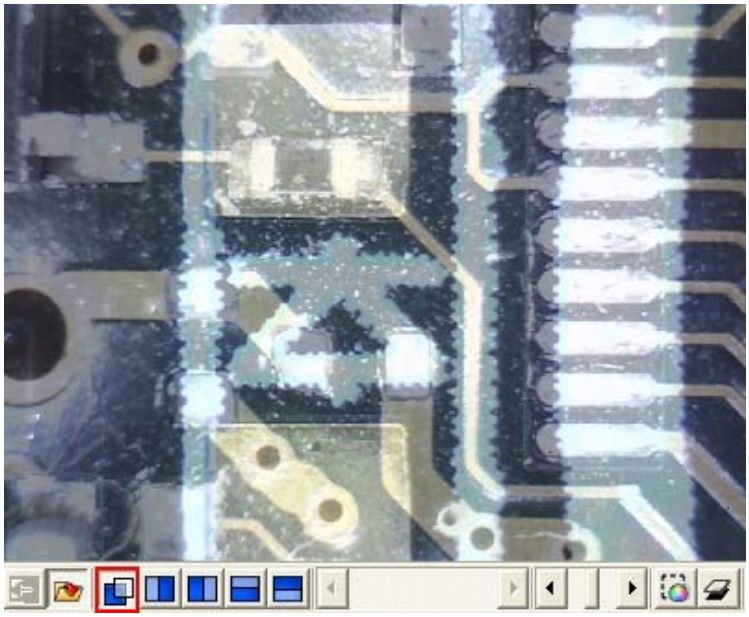

Fig.5-8 Overlap comparison

4.1.4 Left side comparison 「 」

When the window separates into left and right sides, the left side frame is video image, and the right side frame is loaded image. Show in Fig.5-9.

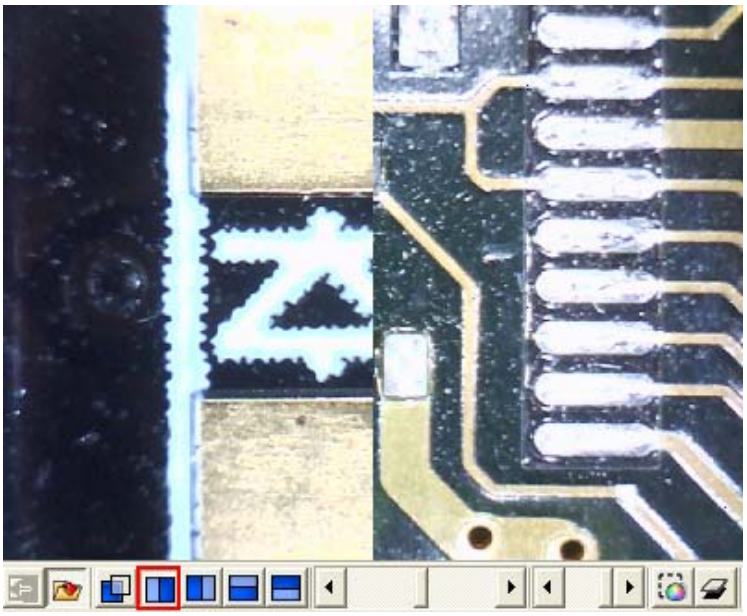

Fig.5-9 Left side comparison

4.1.5 Right side comparison 「 」

The window separates to left and right, the right side frame is the video image and left side frame is loaded image. Show in Fig.5-10.

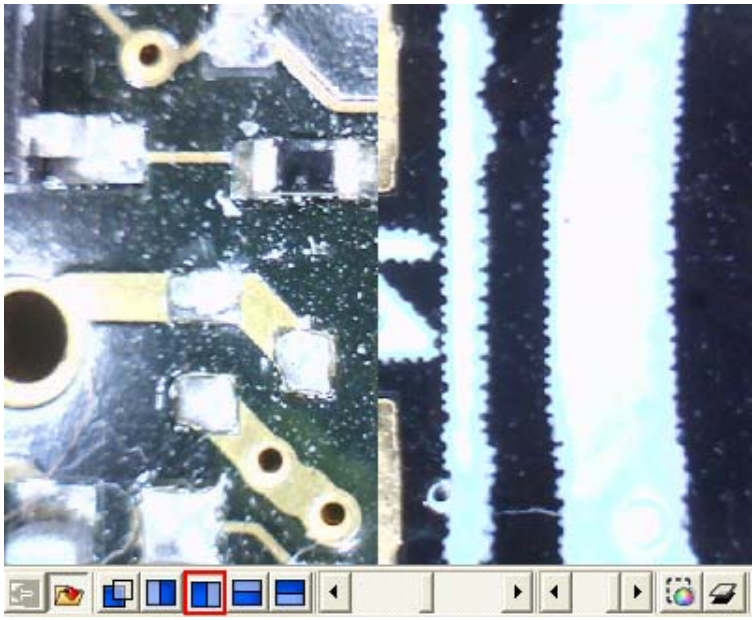

Fig.5-10 Right side comparison

4.1.6 Top side comparison 「 」

Window separates into two half which is top and bottom. Top is video image, and bottom is loaded image. Show in Fig.5-11.

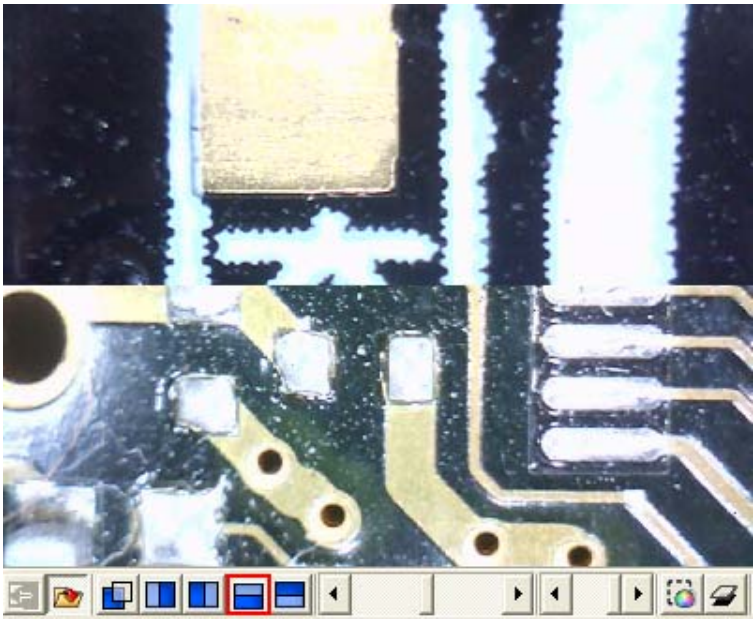

Fig.5-11 Top side comparison

4.1.7 Bottom side comparison 「 」

Window separates into two half, bottom side is video image, and top side is loaded image. Show Fig.5-12.

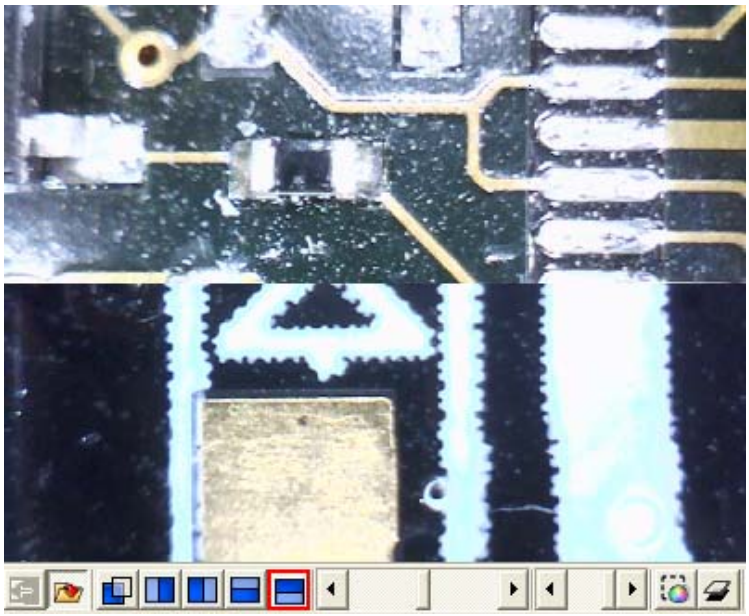

Fig.5-12 Bottom side comparison

4.1.8 Window ratio adjustment

When choose half compare, can use this function to adjust the frame of ratio. Show Fig.5-13.

Fig.5-13 Window ratio adjust by scrollbar

4.1.9 Transparent adjustment

Image can be adjusted from the scrollbar to change the pictures transparency. Show Fig.5-14.

Fig. 5-14 Transparency adjust by scrollbar

4.1.10 Knockout color 「 」

Choose to knockout background color and some color on image can be cut out.

4.1.11 Combined image 「 」

Before capture image click the button, which will combine video image and loaded image to combine. If not, the capture images will only video image.

4.2 Aiming mode

The aiming mode may draw different type like the cross, circular, rectangle, and area. It helps the user observation. It can draw the different aiming mode in the video image. Fig.5-15 is the selection to aiming mode, aiming toolbar shown in Fig.5-16. This mode may overlap the different aiming functions.

Fig. 5-15 Aiming mode

Fig. 5-16 Aiming mode of toolbar

4.2.1 Draws cross 「┼」

Click this button to draw the cross which may adjust the size by scrollbar. Show in Fig.5-17.

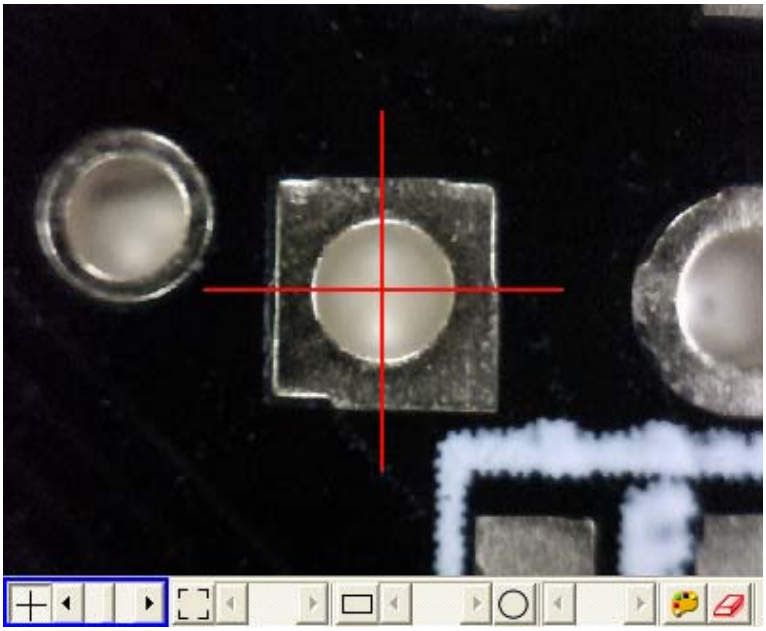

Fig.5-17 draws cross

4.2.2 Draw area 「⛶」

Click the button to draw the area to adjust the size by scrollbar. Show in Fig.5-18.

Fig.5-18 Draw area

4.2.3 Draw rectangle 「▭」

Click this button to draw the rectangle to adjust the size by the scrollbar. Show in Fig.5-19.

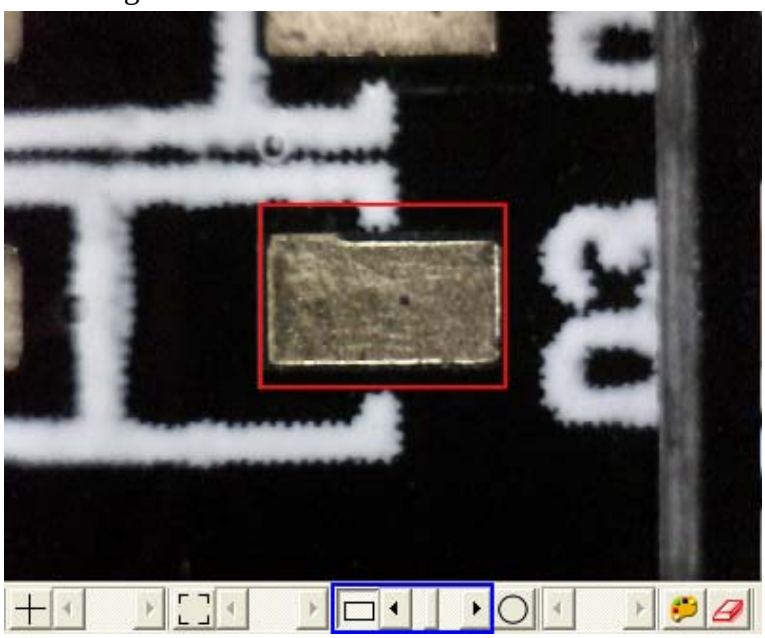

Fig.5-19 Draw rectangle

4.2.4 Draw Circular 「○」

Click this button to draw circular to adjust size by scrollbar. Show in Fig.5-20.

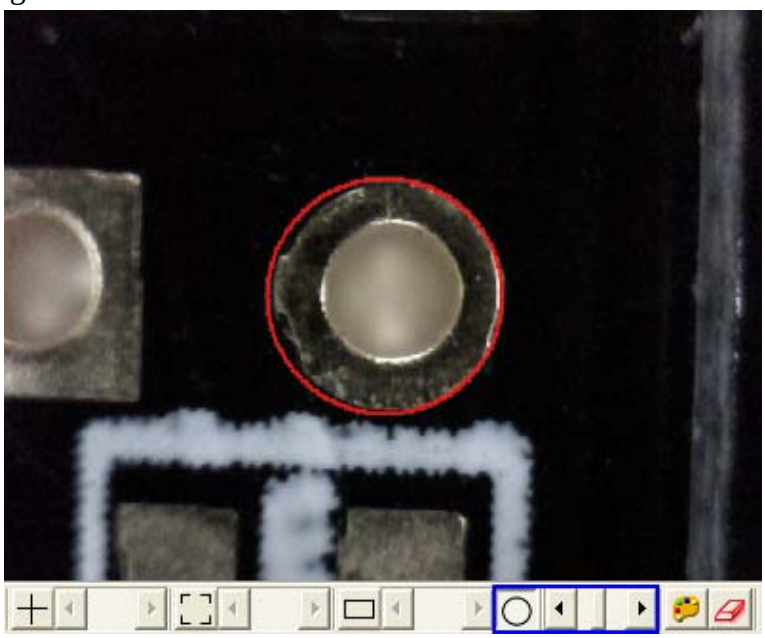

Fig.5-20 Draw Circular

4.2.5 Choose color 「」

Click this button, will pop up choose color dialog box and from there to choose color.

4.2.6 Clear frame 「」

To clear all aiming lines on fame

4.3 Video control mode

This toolbar has the functions to flip video image. When the left or right hand holds the microscope to look at self or observation, the video image will flip and move direction to be opposite. By the mode, it can preview the correct direction. The brightness, contrast and exposure tool can be adjusted and also can cause the video image to be clearer in different scene. Fig.5-21 is the selection video control mode. Fig. 5-22 is its toolbar.

Fig.5-21 video control mode

Fig. 5-22 video control mode toolbar

4.3.1 Right hand to look at observation 「  」

Right hand holds the microscope to look at observation or observes other people. The video image does not have any flip. This function is normal way. Fig. 5-23 is right hand to look at observation.

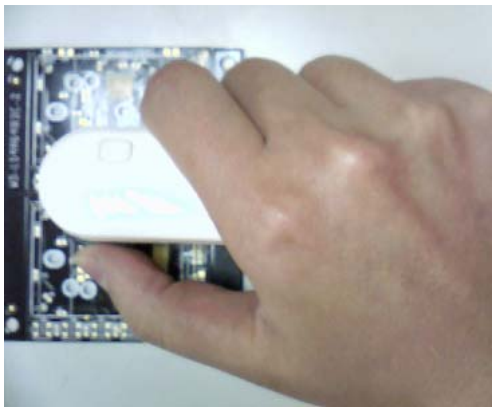

Fig. 5-23 right hand to look at observation

4.3.2 Right hand to look at yourself 「  」

Right hand holds the microscope to look at ourselves, when the user must watch oneself or use as web-cam, then selects this function, it lets the video image to flip vertically. Fig. 5-24 is right hand to look at self.

Fig. 5-24 right hand to look at your self

4.3.3 Left hand to look at observation 「  」

Left hand holds the microscope to look at the observation or observes other people. When the right hand holds the microscope, selects this function, it lets the video image to flip vertical and horizontal. Fig. 5-25 is left hand to look at observation.

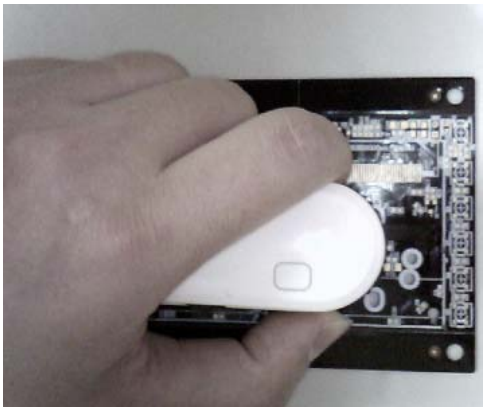

Fig 5-25 Left hand to look at observation

4.3.4 Left hand to look at yourself 「」

Left hand holds the microscope and whiling to look at self as a web camera, the video image will flip left-right 180 degree. By this function it can flip correct directions. Fig. 5-26 is left hand to look at self.

Fig 5-26 left hand to look at your self

4.3.5 Adjust Brightness 「」

To adjust brightness is to click on the brightness button. By scrollbar adjust brightness. If want to default just click it again.

4.3.6 Adjust Contrast 「」

To adjust contract just click the contrast button which can adjust by the scrollbar. If want to default just click it again.

4.3.7 Adjust Exposure 「」

When adjusting the exposure, click on the exposure button and to default just click it again. If this button cannot click, it means there's no diver to support this function. If adjust has no response, then go to 「setting->video source」it will pop up shown Fig. 5-6. the 「auto mode control」must be unchecked. If want to use 「auto mode control」must be checked again.

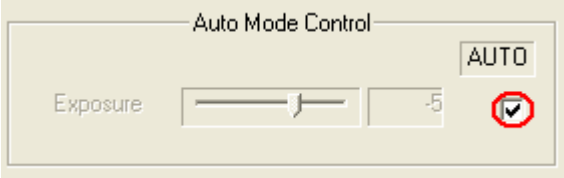

Fig 5-27 auto mode control

4.4 Measurement mode

Measurement mode provide a scale which can be draw ruler and to measure observation object. Another way is to Freeze frame or loading image after then measuring. The measurement toolbar has line, circular, rectangle etc. Also, it can show length, area, radius, diameter, etc, information. Fig.5-28. is measurement mode; its toolbar is shown in Fig.5-29.

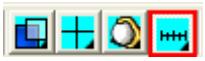

Fig.5-28 Measurement mode

Fig. 5-29 Measurement mode toolbar

Before measuring, make sure to calibrate the scale, please note 「scale setting」the explanation.

4.4.1 Freeze frame 「」

This function can let the previewing video image to freeze. Once the image

freezes.

4.4.2 Load image「 」

Before capture image, it can be reloaded. After reloading image, measurement functions can be used.

4.4.3 Save image「 」

After measuring, it can save image by clicking 「save image 」button. The save file name will be marked as vertical and horizontal scale. If want to load the image to do measurement, then just click「scale setting 」button to set vertical and horizontal scale, and these scale of value form file name. If file name has v420h560 of string means horizontal 5.60mm and is vertical is 4.20mm.

4.4.4 Copy to clipboard「 」

Select「Copy to Clipboard 」button then the current frame will be copied to clipboard,also, it will be pasted to right side windows at Fig.1. After copying, it can be pasted on word or excel. Etc.

4.4.5 Scale setting「 」

(1) Select suitable ruler

Before setting scale, first find the higher accurate ruler to measure. Use generally ruler shown as Fig. 5-30.

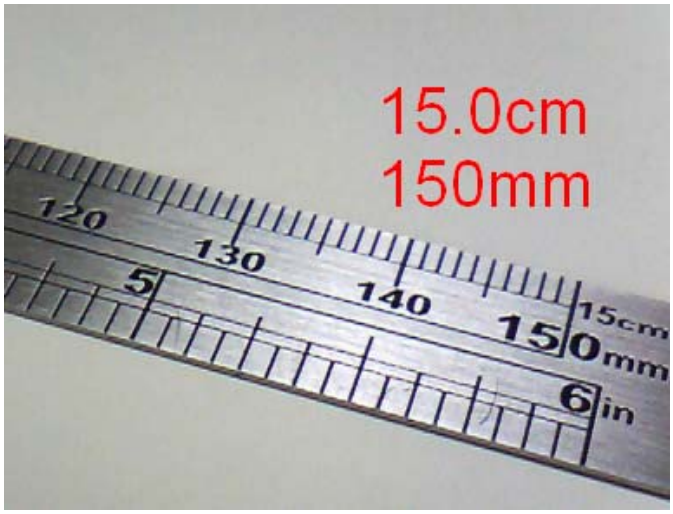

Fig.5-30 Metal ruler

There's another higher accuracy ruler (micro meter ruler) shown as Fig.5-31. This ruler is 10mm of scale. If use higher accuracy ruler, it can correct measure scale in high magnifier.

The use 「metal ruler」 and 「micro meter ruler」 the biggest difference is as follows:

- When the magnifier is high, uses the micro meter ruler to be able easily and accurate knows the scale range.
- When the magnifier is high, metal ruler's error is relatively high.
- When the magnifier is low, it can select suitable the metal ruler.

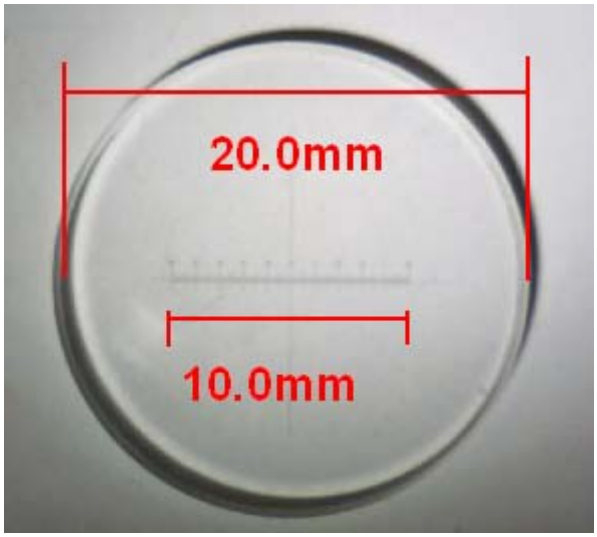

Fig.5-31 Micro Meter Ruler

(2) Calculate scale rang

First, the scale setting must calculate the horizontal and vertical scale range, the following has several steps to decide the scale range, suggested that the windows size adjust 640*480 the single windows：

- To decide measure distance between machine and observation objects.
- The machine have to adjust right focus, causes the video image for the clearest.
- Calculate the observation video image of horizontal and vertical scale. Calculate the range shown in Fig.5-32.

After horizontal and vertical scales conform, the machine and the observation distance cannot change, and the focus cannot the readjustment.

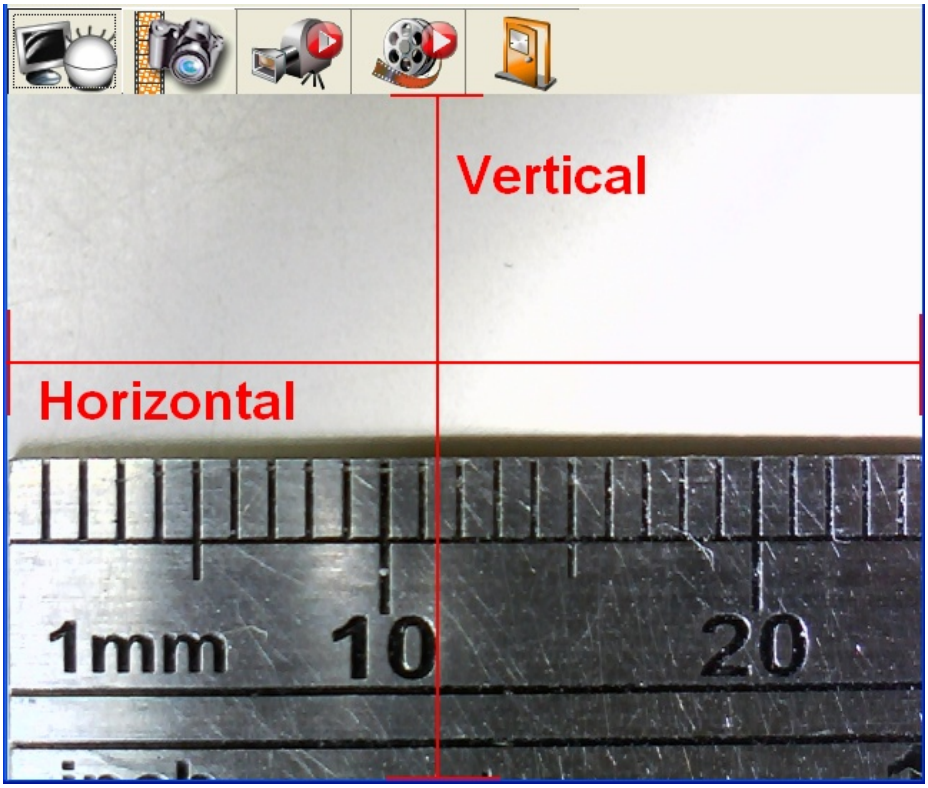

Fig.5-32 Horizontal and vertical measurement range

According to the above steps it can measure horizontal and vertical scale. Several examples as follows:

EX1: The not close to observation object of measurement

Use the 「metal ruler」 for measurement of the base, the machine and the observation object of distance is 2.6 cm, the focus of the video image is clear. Image shown in Fig.5-33 and Fig.5-34 is the result after measurement, horizontal and vertical scale range is 24.2mm and 18.1mm.

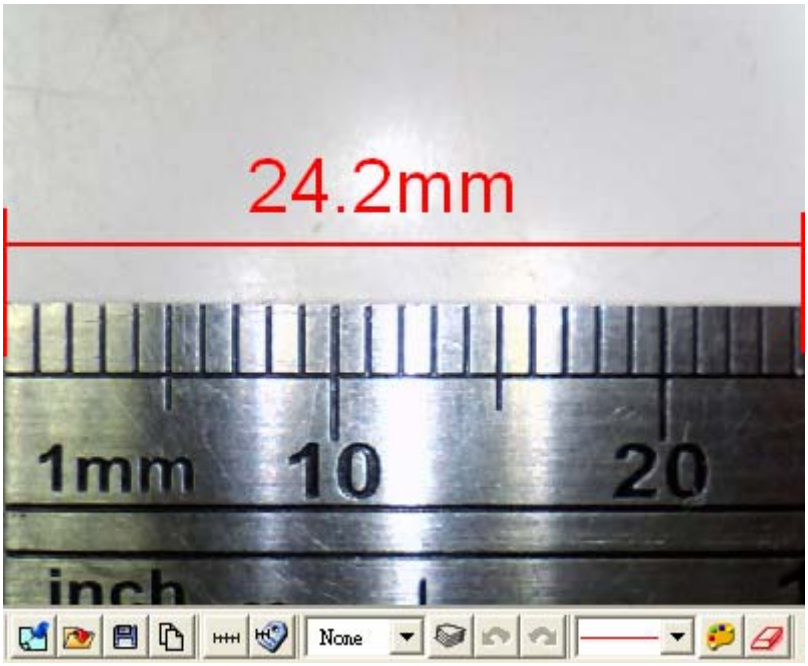

Fig. 5-33 horizontal scale range is 24.2mm

Fig. 5-34 vertical scale range is 18.1mm

EX2: The close to observation object of measurement is low magnifier.

Use the「metal ruler」 for measurement of the base, the machine and the observation object of distance is close, the focus of the video image is clear. Image shown in Fig.5-35 and Fig.5-36 is the result after measurement, horizontal and vertical scale range is 5.60mm and 4.20mm.

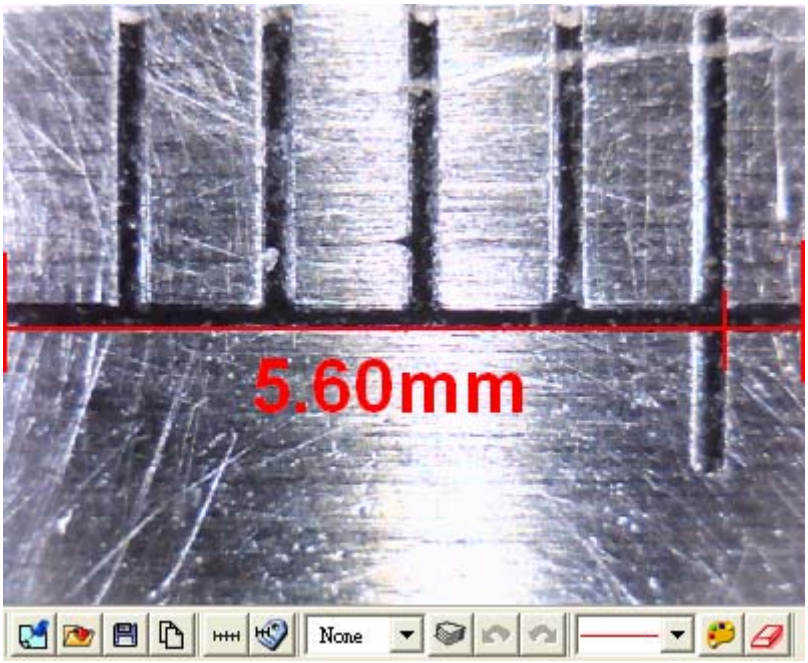

Fig. 5-35 horizontal scale range is 5.60mm

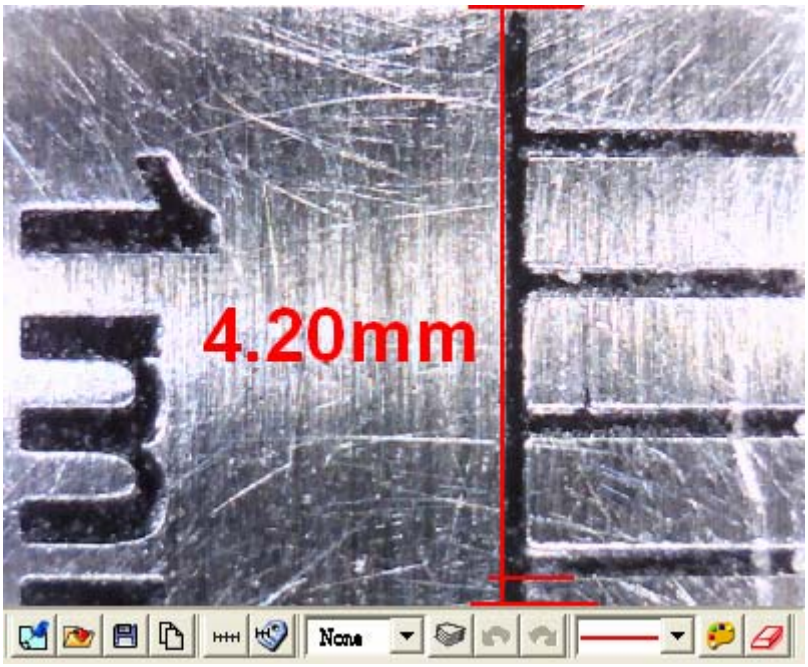

Fig. 5-36 vertical scale range is 4.20mm

EX3: The close to observation object of measurement is high magnifier.

Use the「metal ruler」 for measurement of the base, the machine and the observation object of distance is close, the focus of the video image is clear. Image shown in Fig.5-37 and Fig. 5-38 is the result after measurement, horizontal and vertical scale range is 1.40mm and 1.05mm.

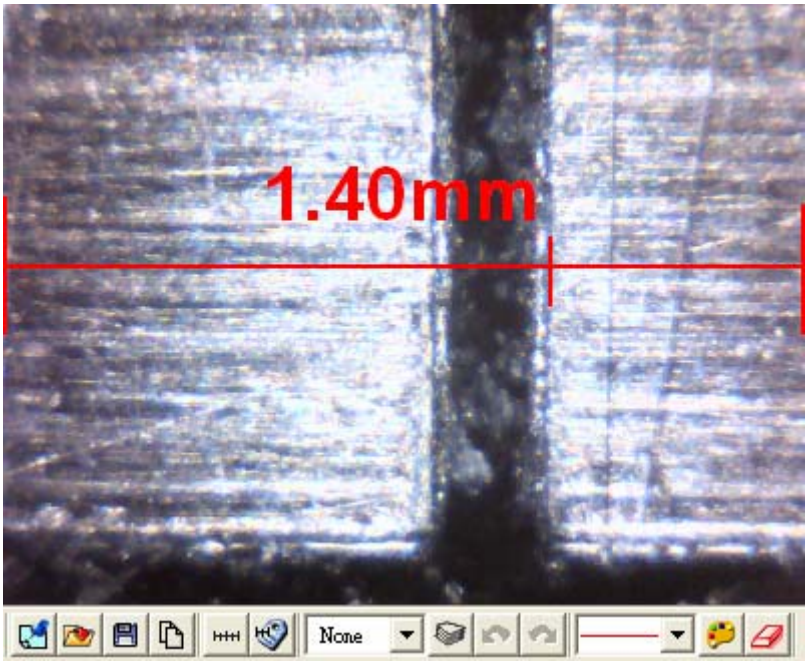

Fig. 5-37 horizontal scale range is 1.40mm

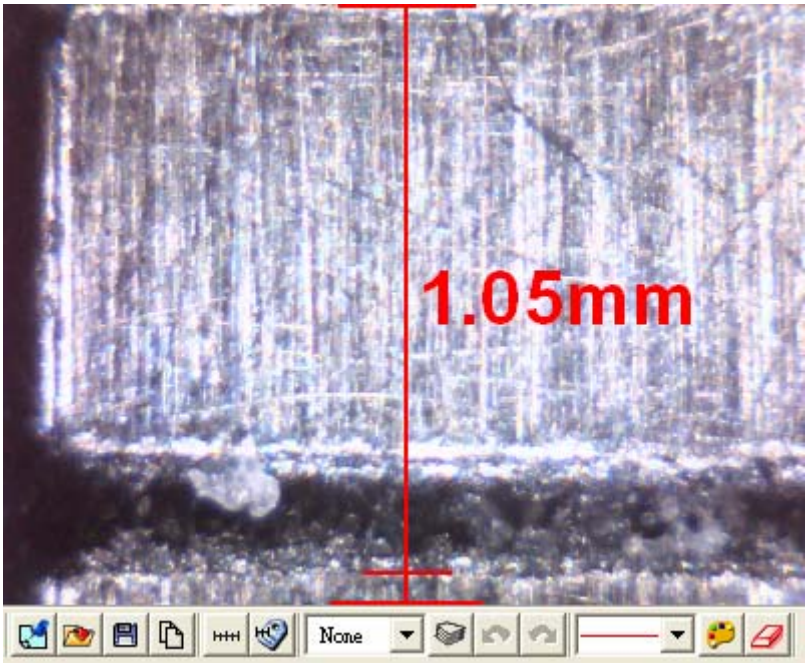

Fig. 5-38 vertical scale range is 1.05mm

EX4: The close to observation object of measurement is low magnifier and uses the micro meter ruler.

Use the「micro meter ruler」for measurement of the base, the machine and the observation object of distance is close, the focus of the video image is clear. Image shown in Fig.5-39 and Fig.5-40 is the result after measurement, horizontal and vertical scale range is 5.60mm and 4.20mm. Using「micro meter ruler」can be easier and accurate to get scale range.

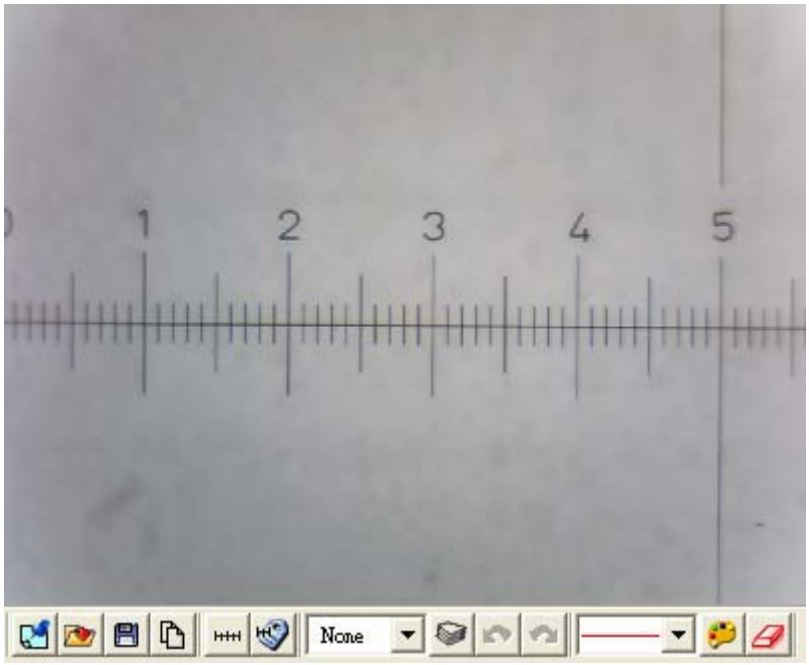

Fig. 5-39 horizontal scale range is 5.60mm

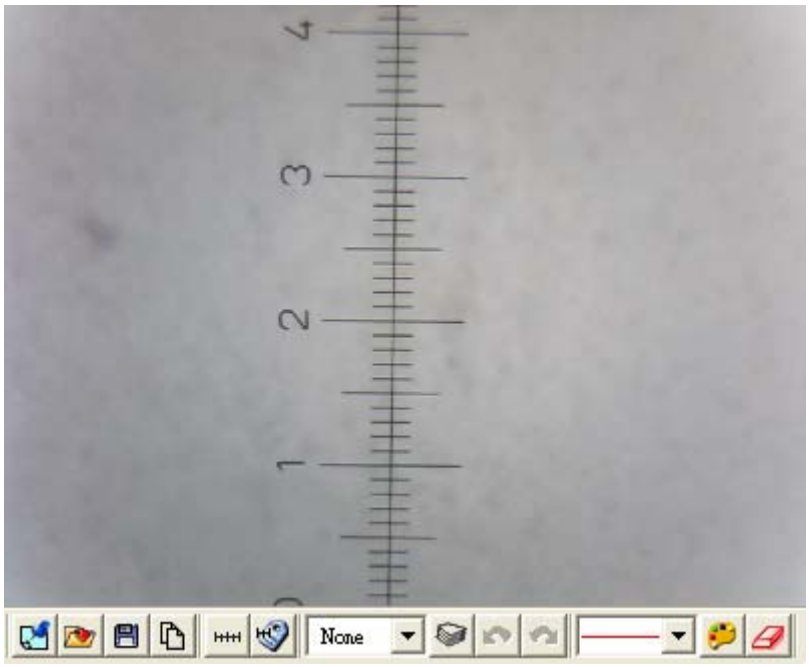

Fig. 5-40 vertical scale range is 4.20mm

EX5: close up to observation object of measurement is high magnifier and uses the micro meter ruler.

Use the「micro meter ruler」for measurement of the base, the machine and the observation object of distance is close, the focus of the video image is clear. Image shown in Fig.5-41 and Fig. 5-42 is the result after measurement, horizontal and vertical scale range is 1.40mm and 1.05mm. Using「micro meter ruler」can be easier and accurate to get scale range.

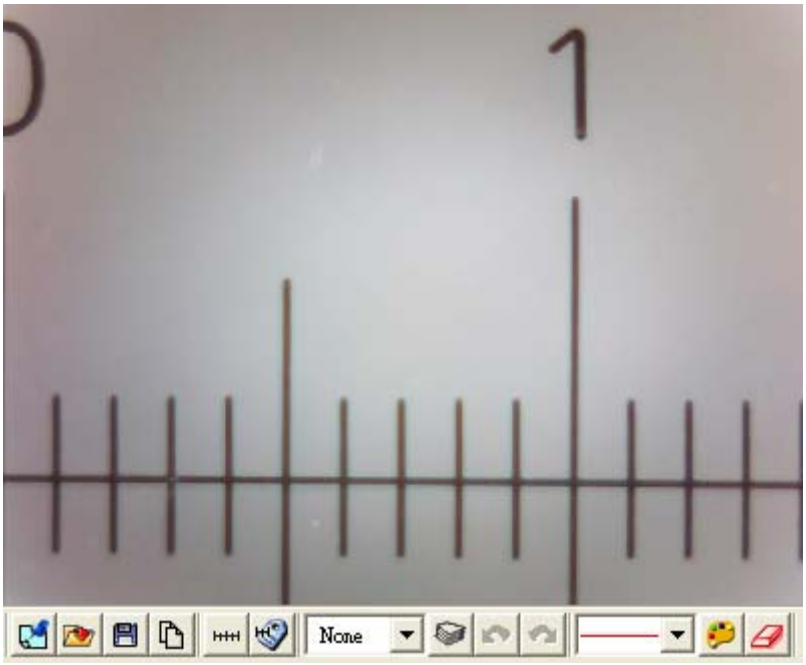

Fig. 5-41 horizontal scale range is 1.40mm

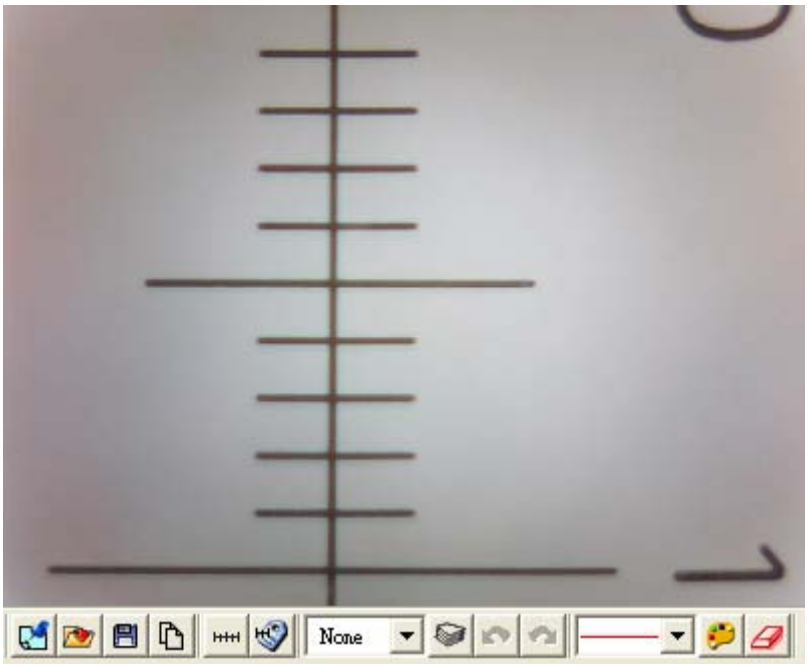

Fig.5-42 vertical scale range is 1.05mm

(3) Factor of the measuring error

Causes measuring error's of factor include the following several reasons below：

- Ruler accuracy is not high enough, like metal ruler and micro meter ruler's differences.
- Unable to know the accuracy horizontal and vertical scale range.
- The resolution is not the same with the Windows size.

Why is the resolution not the same with the Windows size? For example the present resolution (original video image of output size) is 640*480, the measurement of the Windows's for general is 400*300 sizes. When the original video image size is 640*480 by reducing to 400*300, the measurements will have caused error. Therefore, the measurement is to adjust the resolution size and windows size to become the same. To chooses the application toolbar. 「Setting-> video format」will pop up shown in Figure (Fig. 5-43), to change「output size」value then, this output size expression video source resolution.

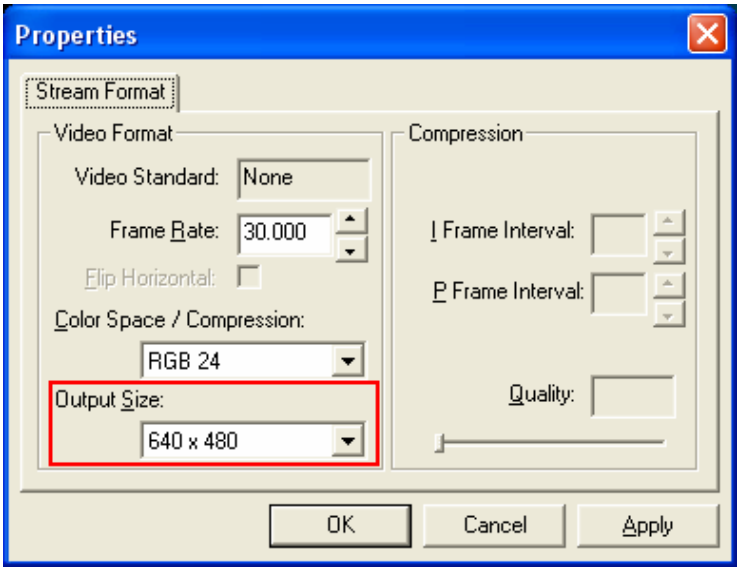

Fig.5-43 Resolution adjustment

Another window adjusts as shown Fig.5-44 below.

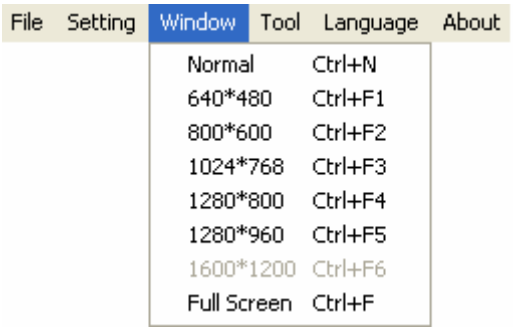

Fig.5-44 window size adjustment

(4) Setting scale

The setting scale dialog box show in Fig.5-45. The following several to explain operation

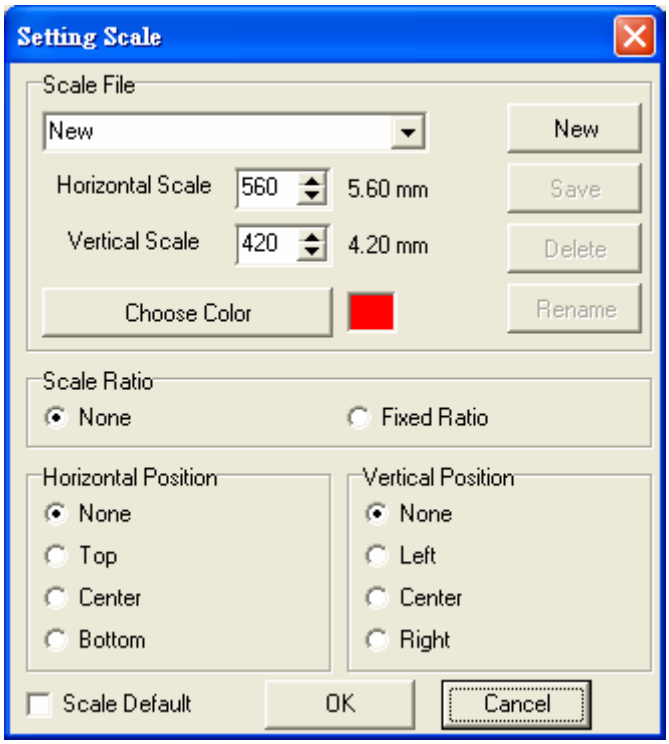

Fig.5-45 Setting scale dialog

- Scale default file

Scale default files have two types「Default Height Magnification」 and 「Default Height Magnification」 shown in Fig.5-46

Fig.5-46Scale default File

The microscope itself is close to observation objects. It has two focus points, divides into the high and low magnifier. , The scale also will divide into two kinds. The low ranges of horizontal and vertical scale are 5.60mm and 4.20mm, but the high ranges of horizontal and vertical scale are 1.40mm and 1.05mm. If user were thinking default setting is not ideal, after can readjustment horizontal and vertical scale, or increases new file of scales.

If want to return to the default file, check 「Scale default」box than it will

return back to two default files and the other files will be deleted.

- New file of scale

Click「new」button than it will pop up shown in Fig.5-47 a dialog box and input new scale name.

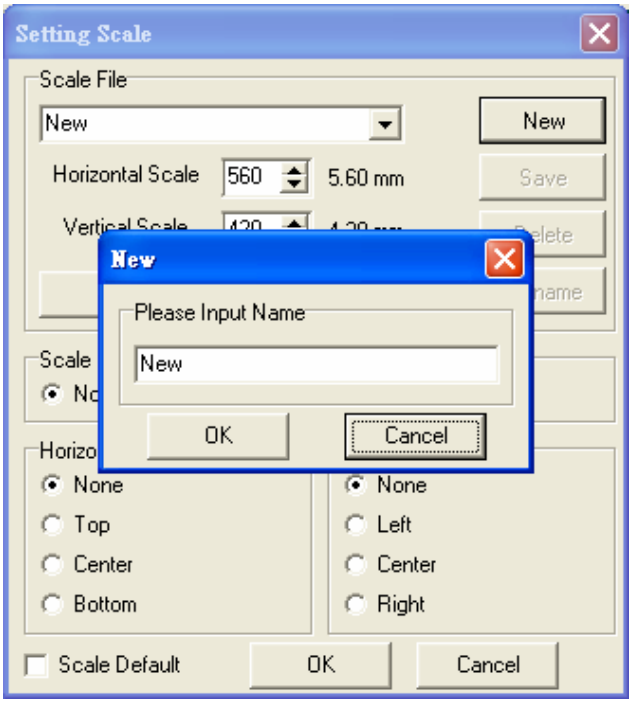

Fig.5-47 New scale name file dialog

After creating new file, input vertical and horizontal's scale value shown in Fig.5-48 and if want to change scale color, select on「choose color」 button to change color.

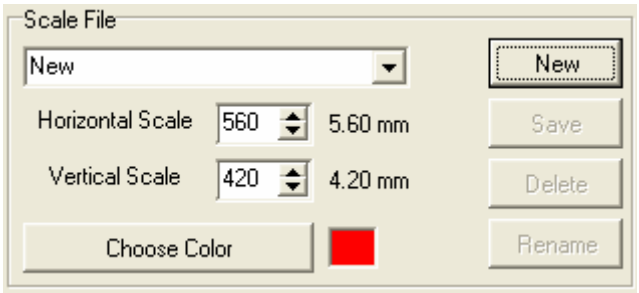

Fig.5-48 Input vertical and horizontal scale value

- Scale ratio

The machine's Sensor of image ratio is 4:3, if checked fixed ratio, then the horizontal and vertical scale will make the adjustment by 4:3 ratio, shown in Fig.5-49. For example inputs in the horizontal scale value to 410, the vertical scale automatic adjust to 307.

Other facts, when measurement horizontal and vertical scales range, only need

measure horizontal or a vertical scale range. After horizontal scale value input, then automatic result the vertical scale value.

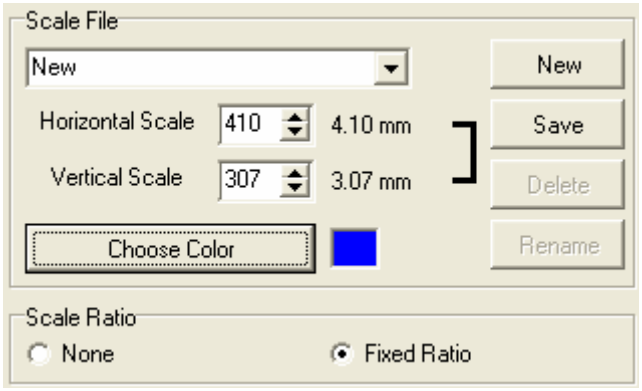

Fig.5-49 Fixed ratio adjustment

- Ruler display position

Ruler display 「horizontal position」and 「vertical position」, if choose "「none」 does not display the ruler. Fig.5-50 is the horizontal position setting in center, the vertical position setting in left side, result shown in Fig.5-51.

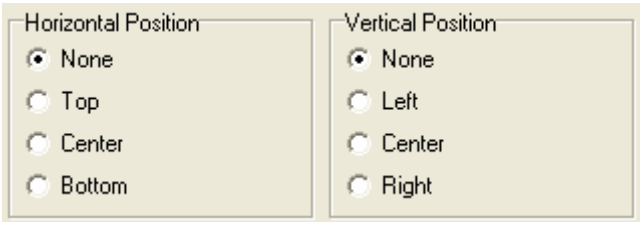

Fig.5-50 Ruler vertical and horizontal position setting

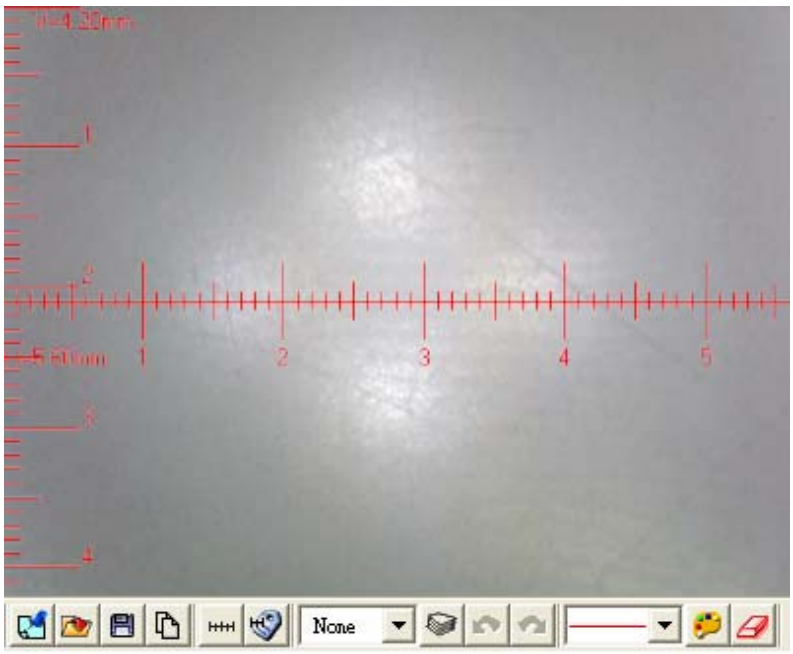

Fig.5-51 Ruler vertical and horizontal Display

- To delete and rename scale file

On the drop down menu choose to delete or rename file shown in Fig.5-52 and select「Delete」or「Rename」 button.

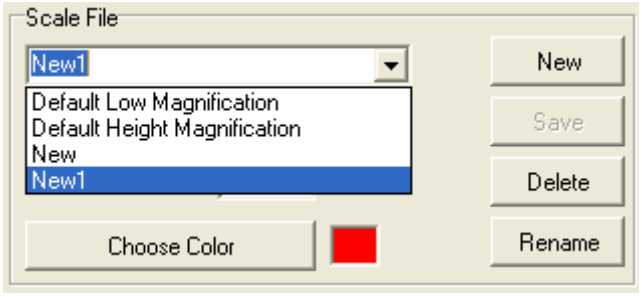

Fig.5-52 drop down menu choose file

4.4.6 Scale information setting 「」

This dialog may set whether can apply the unit, shown in Fig.5-53. Choose「length」can apply a line the length, by capital letter “L” expression, if length is 2.33mm, will express line is L=2.33mm. If select「none」, it will not apply the length. 「perimeter」 by capital letter “P” expression, 「area」 by capital letter “A” expression,「circumference」 by capital letter “C” expression,「radius」 by capital letter “R” expression, 「diameter」by capital letter “D” expression.

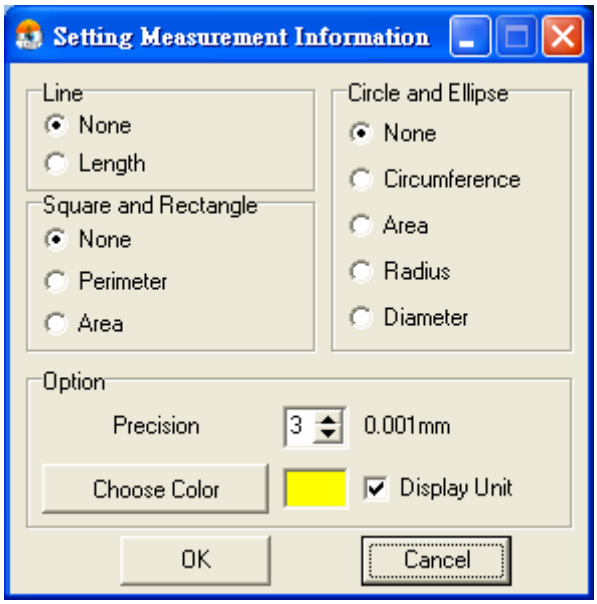

Fig.5-53 Scale information setting dialog

The「 precision」 is refers to under the decimal point of effective number of digits. The effective number of digits can be adjusted. 「Choose color」 may

choose the text color.「Display unit」 does not check its unit “mm” did not display. Attention, after setting option, and also choose the 「measuring means style」.

4.4.7 Measurement tool styles

The measuring contains the line, the circle, the ellipse, the rectangle to be possible to choose, shown in Fig.5-54. According to the different demand uses the different measuring tools.

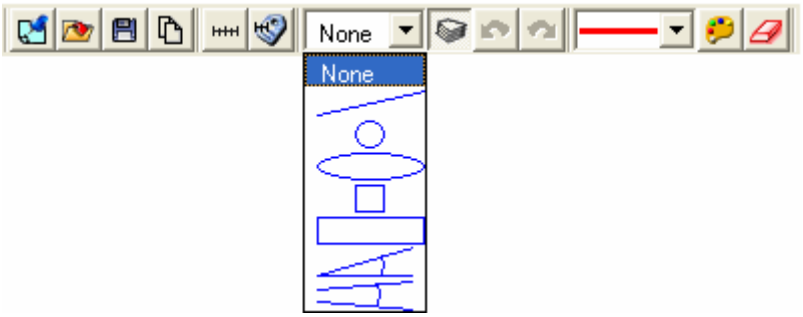

Fig.5-54 Measurement Tool Styles

Fig. 5-55 Samples for measurement tool of line、circle、square.

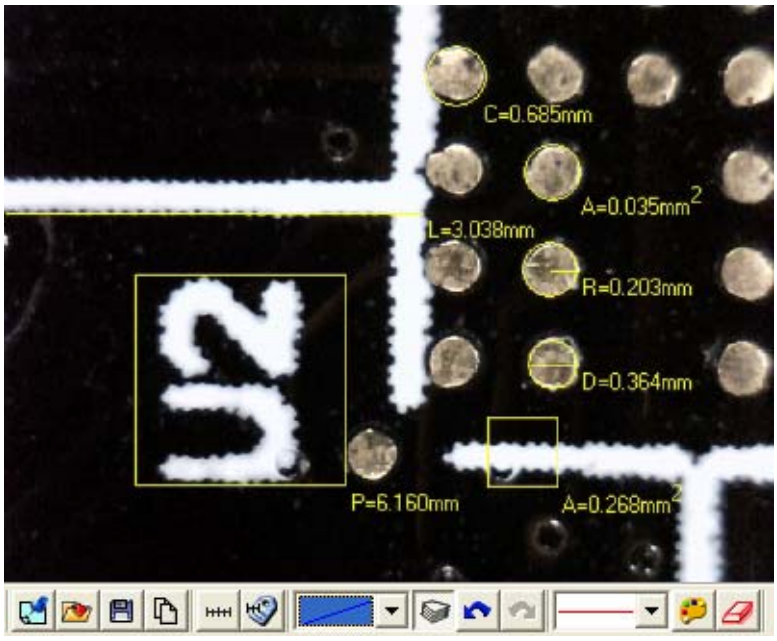

Fig. 5-55 Samples for measurement tool

Fig. 5-56 Sample of measurement tool of angle, there are 2 types of angle measurement tool, one is constructed by 3 points and the other is constructed by 4 points. Both of tools are optional per different demand.

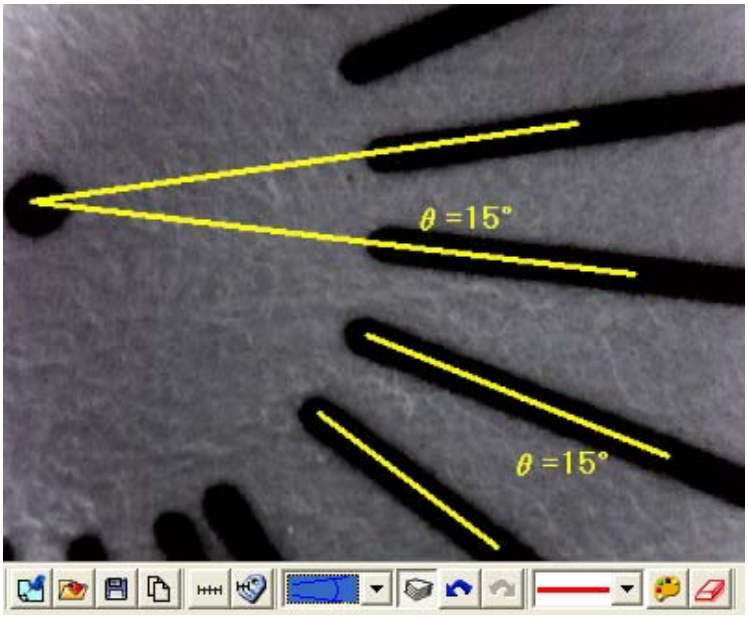

Fig. 5-56 Sample of measurement tool of angle

4.4.8 Draw overlap line 「」

While selecting this function, it can be drawn many times in the fame. After clicking 「draw overlap line」 undo or redo can be used show in Fig 5-57, if not selected it only can repeat drawings.

Fig.5-57 Overlap tool

4.4.9 Undo 「」

Undo function that can go back to the movement.

4.4.10 Redo 「」

Redo function can also go to the next movement.

4.4.11 Line styles

There are lines styles shown in Fig.5-58 and can choose different lines.

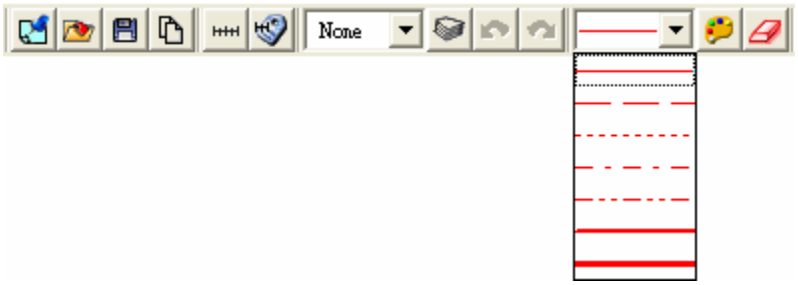

Fig.5-58 Line styles

4.4.12 Choose color 「  」

The tool can select colors to become different color. The line and background color can’t be similar.

4.4.13 Clear frame 「  」

Clear all things that are drawn on the fame.「Undo」and「Redo」 record will be erasing.