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# MANUAL



## 3025-LCD

### MICROSCOPE SYSTEM



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# I . Introduction

## 1.1 About LCD Digital Microscope

### **New generation of the microscopes!**

This LCD digital microscope is a brand new system that has an embedded system. With a 8.4" LCD screen, user-friendly interface, powerful processing function (real-time preview, dynamic calibrating and measuring), multiple peripheral interfaces, and comfortable design; it is a new generation microscope that is easy to operate. It is ideal for teaching, research and electronic checking.

## 1.2 Features

1. Embedded operating system WinCE 5.0, can link mouse or keyboard, just like a micro computer.
2. 8.4 Inch LCD screen, brings up a bright and vivid image, so it can be viewed by many observers at the same time.
3. User-friendly interface. Can operate the operating system by USB mouse, keyboard and **Touch screen**
4. Built-in high resolution 2 Megapixel camera, provides high quality images.
5. Powerful software with international advanced technology. Support **real-time** preview, dynamic calibrating and measuring, and can capture images or videos.
6. LCD screen rotatable at maximum 30°elevation angle and 180°pivoting, makes the observation much more comfortable, and is suitable for long-time observation.
7. Touch screen, easy to operate.
8. Support multiple peripheral interfaces, such as VGA, USB, SD Card, RCA, Mini USB, Audio, and so on.
9. (New) Support 100M Ethernet network and WI-FI wireless network. And can communicate with PC. It lays a foundation of multimedia and network interactive teaching.
10. The images or videos captured can be stored in the SD card for further analyzing.
11. Automatic measurement and real-time measurement result display.
12. Quick Focus®, coaxial fine and coarse focus system facilitates smooth focusing.
13. Parfocal objective lenses ensure the image stays in focus when the objective power is changed

## 1.3 System Specification

### ARM926EJ embedded system CPU

- 16KB I-Cache, 16KB D-Cache
- Support full-duplex video with resolution up to VGA(640x480), and frame rate 30fps
- Image zooming, picture in picture, image post processing.
- Real time operating system WINCE5.0, supported by MMU
- 16KB TCM
- Highest frequency: 266MHz @ 1.2V

### EMS memory interface

- Support maximum 512MB SDRAM
- Support large capability Nand Flash
- Bootstrap support NOR Flash

### Camera video frequency interface

- Support multiple input format: RAW, RGB and YUV
- 2.0M pixel CMOS digital imaging, 30f/s(640x480) real-time display
- CCIR-656 in-out interface
- Stepped digital zooming, bit range from 1/32 to 4 times
- White balance adjustment and image correction
- Electronic viewfinder and screen menu function

### Human machine interface

- 8.4 Inch(Diagonal)TFT liquid crystal display, resolution 800x600
- Support keyboard, mouse input;
- Hardware switch button: reset, soft switch button, power switch;
- Can configure touching and handwriting function according to customer's demands.

### Extend card

- Support up to 4G High Speed SD card

### Peripheral Interface

- Support USB 1.1 HOST flash memory disk
- Min USB interface AB type
- Support VGA interface
- Support AV OUT interface
- Audio output 3.5" interface

### Audio Module

- AC'97 audio controller
- Build-in two channels stereo speaker.

### Network Module

- Support WI-FI wireless network
- Support 100M Ethernet network

### Power management

- Four power modes: common, wait, sleep and shut down
- Support close part of modess to reduce power consumption

### Measurement function

- Image measurement: Calibration and real-time dynamic image measurement, After calibration, can using physical length unit to measure dynamic images, such as micron, millimeter, inch; Support several basic measurement tools, as cross ruler, rectangle ruler and so on;
- Image effect adjustment: brightness, contrast and saturation adjustment, automatic white balance;
- Snap: image capture function, can store in JPG format
- Recording: record dynamic image as AVI files
- File browser: browse the image and video files stored in the system;

### Operation circumstance

- Core voltage: 1.2V
- I/O voltage: 2.5V/3.3V
- Power supply LED indicator light
- Simple Chinese or English WINCE 5.0 operating system
- Support Media Player software and can choose applications as Word, Excel and so on, according to the customers needs

## 1.4 Camera Specification

LCD Size	8.4 Inch TFT Touch Screen
Image Sensor	1/3.2"CMOS
Valid Pixel	1600×1200(2.0M Pixel)
Pixel Size	2.8um×2.8um
Digital Output	24-bit (color)
Image Format frame rate	1600×1200 7.5f/s
	800×600 30f/s
Sensitivity	1.8v@550um/lux/s
SNR	42. 3dB
Dynamic Range	71dB
Exposure	Manual/Auto Exposure Process, Exposure Time Adjustable (1~500ms)
White Balance	Manual/Auto White Balance
Operating System	Embedded operating system WinCE 5.0
Software	NMS
Software function	Real-time image preview, measure and so on.
Output	VGA,RCA,USB and Min USB, SD card, Audio, RJ-45, Support mouse and keyboard output
Outward appearance	

Observation LCD Screen	Can rotate at maximum 30° elevation angle and 180° pivoting
Accessories	<b>Data Wire, Touching Pen, Mouse, Power Adaptor</b>

## 1.5 Microscope Specification

Viewing Head	Compensation Free binocular head, 30° inclined, Interpupillary 48-75mm	●	
Eyepiece	Wide Field Eyepiece WF 10×/18	●	
	Extra Wide Field Eyepiece EW10×/20 with Diopter Adjustment	○	
Objective	Infinitive Semi-plan Achromatic Objectives	4×	●
		10×	●
		40×	●
		100×	●
Nosepiece	Quadruple Nosepiece	●	
Stage	Double Layers Mechanical Stage 140mm×140mm/ 75mm×50mm	●	
Condenser	Sliding-in centerable condenser NA12.5	●	
Focusing	Coaxial Coarse & Fine Adjustment, Moving Range 20mm	●	
Lumination	6V/ 20W Halogen Lamp, Brightness Adjustable	●	
Phase Contrast Kit		○	
Dark Field Attachment		○	
Note: ● Standard Outfit, ○ Optional			

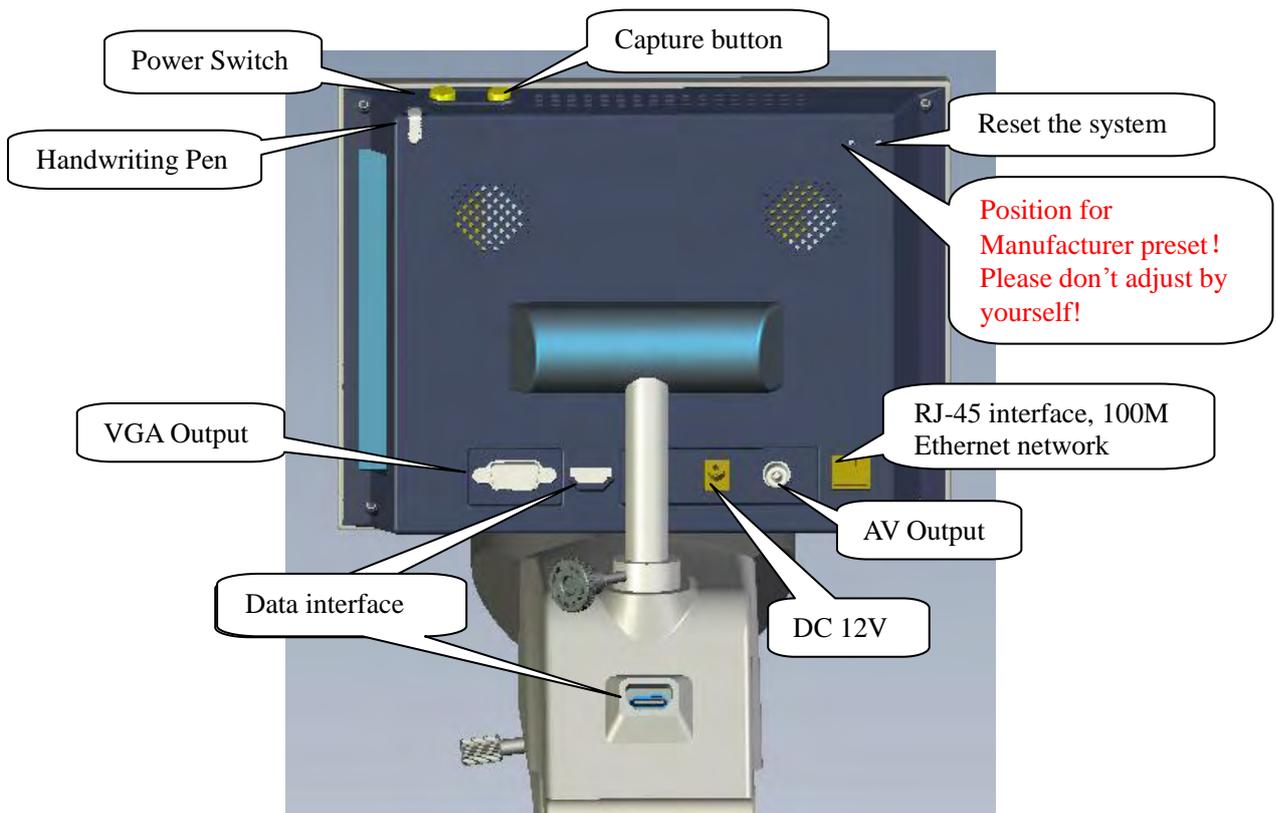
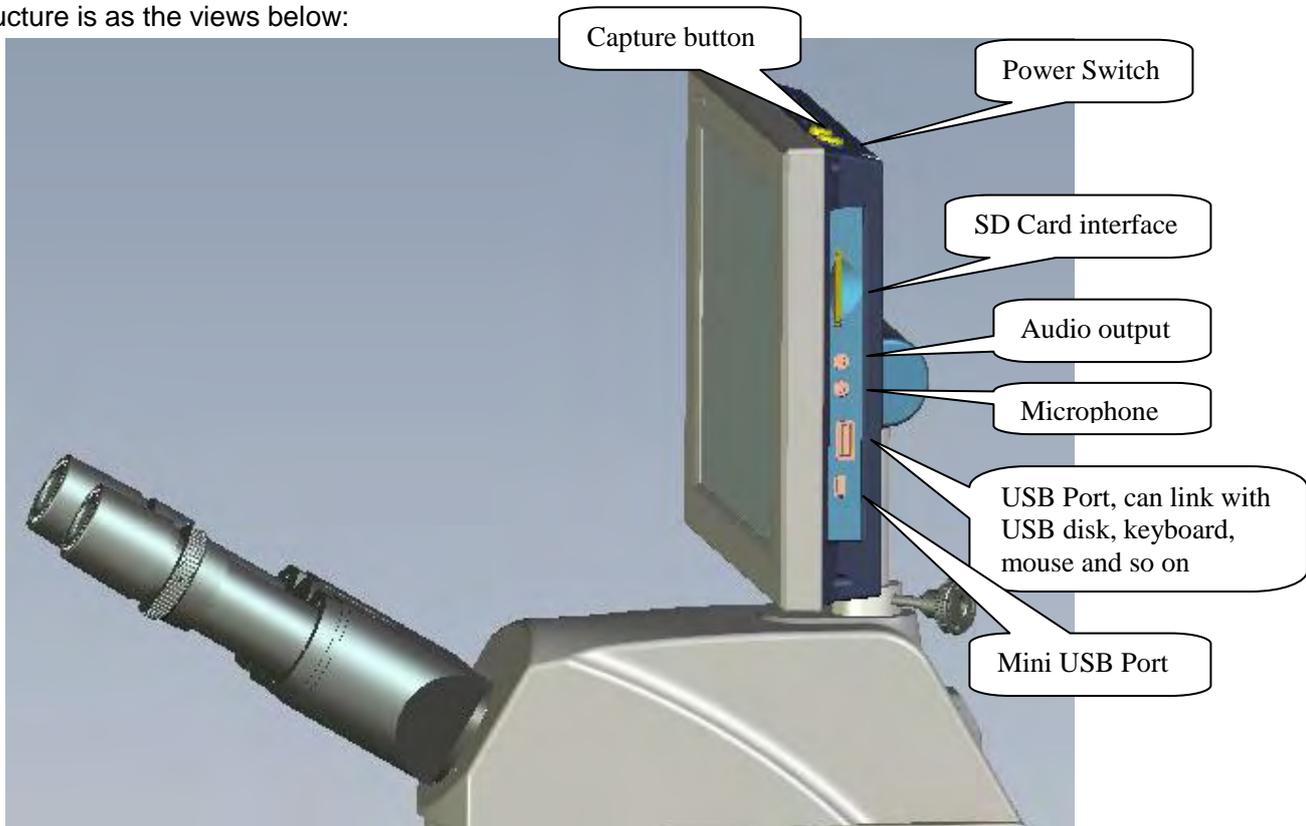
### 2) Objectives (plan achromatic)

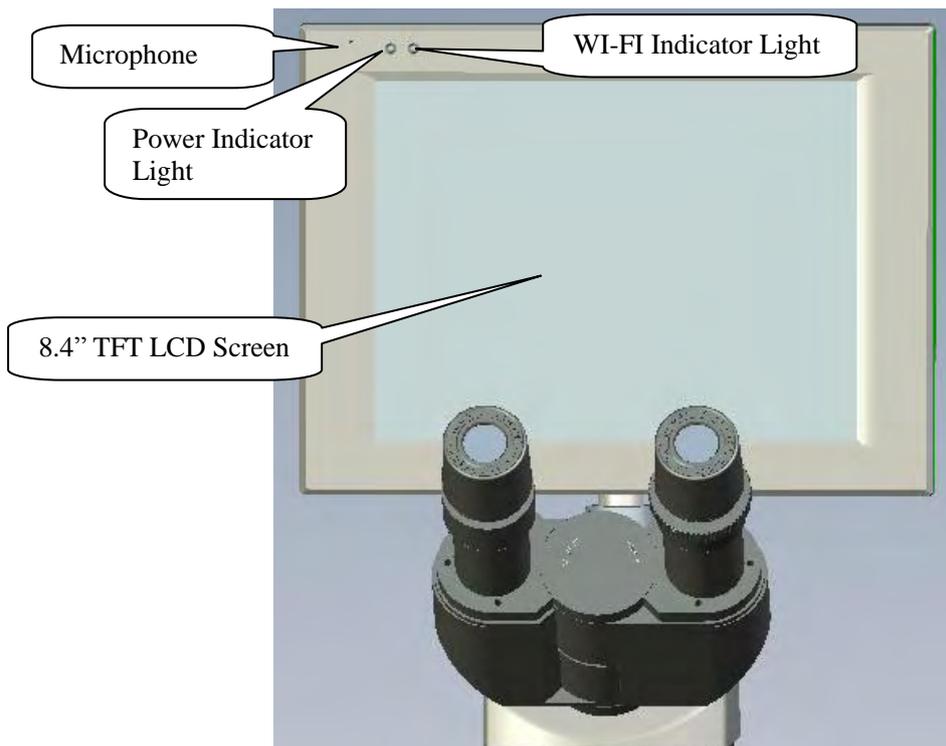
X factors	Numerical aperture (NA)	Thickness of cover glass (mm)	Working mode
4X	0.1	0.17	Dry
10X	0.25	0.17	Dry
40X	0.65	0.17	Dry
100X	1.25	0.17	Oil

# II. Structure and Installation

## 2.1 Structure

Structure is as the views below:





## 2.2 Working Location

Choose a working location without direct light, place the equipment far away from window and without facing window, since the direct light will affect the image contrast and observation.

Working conditions of digital microscope:

- 1) Environment temperature: 0°C-40°C, max relative humidity: 85%.
- 2) Cover the microscope with the plastic cover while not in use.

## III. Usage and Operating

### 3.1 Windows CE

#### (a) About Windows CE

**Windows CE (also known officially as Windows Embedded CE, and sometimes abbreviated WinCE) is a variation of Microsoft's Windows operating system for minimalistic computers and embedded systems.**

**Like the full-scale Windows systems, Windows CE is a 32-bit multitasking, multithreading operating system that has a scalable, open architecture**

design, especially designed for including or embedding in mobile and other space-constrained devices. Actually, it is an electronic device operation system, and "CE" is reported to have originally stood for "Consumer Electronics." Standard communications support is also built into Windows CE, enabling access to the Internet to send and receive e-mail or browse the World Wide Web. In addition, a graphical user interface incorporating many elements of the familiar Desk-Top Windows user interface is also available, facilitating ease-of-use for end users.

#### The meaning of "C" and "E" in Windows CE

"C" Stands for:

Compact  
Consumer  
Connectivity  
Companion  
...

"E" stands for:

Electronics

### (b) Open the Soft keyboard

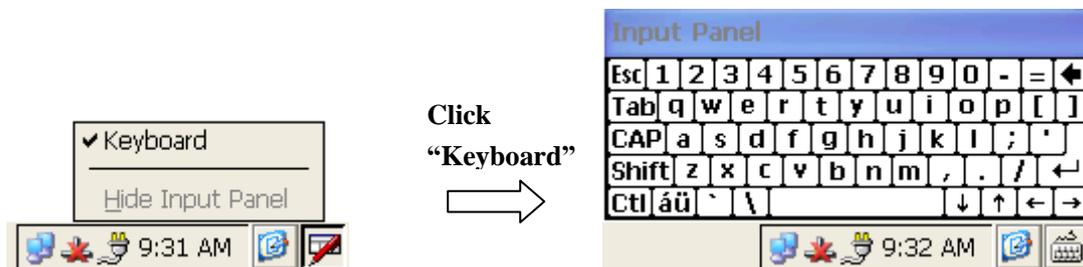
Besides the keyboard (you can link a keyboard with the USB port), thanks to the touch screen, the system also supports the soft keyboard.

Click the icon  on the taskbar at the bottom of the main window to open the keyboard.



#### OPEN:

Click "Keyboard". The soft keyboard displays.

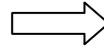


#### CLOSE:

Click the keyboard icon  again, and select "Hide Input Panel" to close the keyboard.



Click “Hide Input Panel”

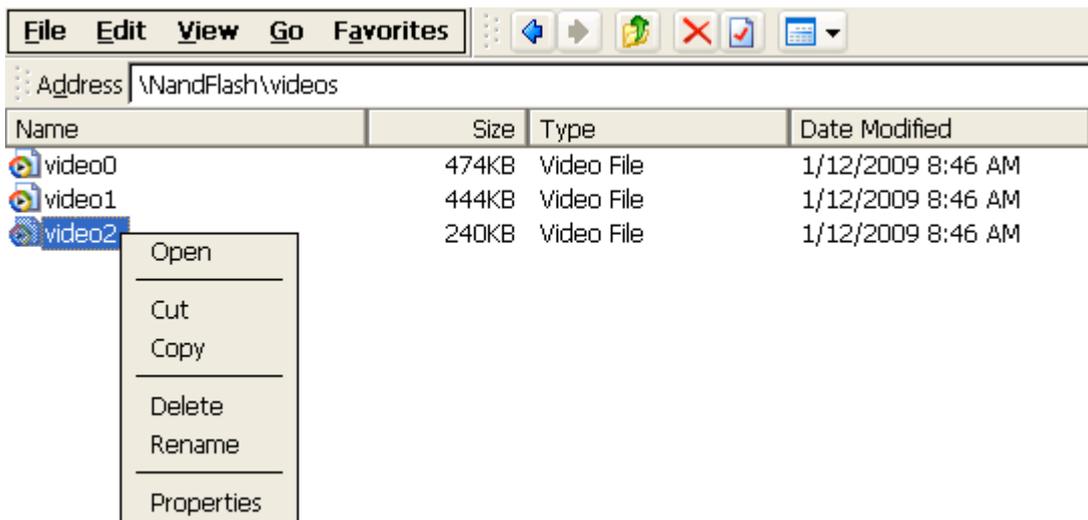


### (c) The mouse right click function

If you use the mouse, you can use the right key of the mouse for the right click function. But if you use the handwriting pen, click **for more than 2 seconds**, for the system to respond as a right click.

**For Example:**

Select the file, and click it for more than 2 seconds, the right click menu will come out as follows:

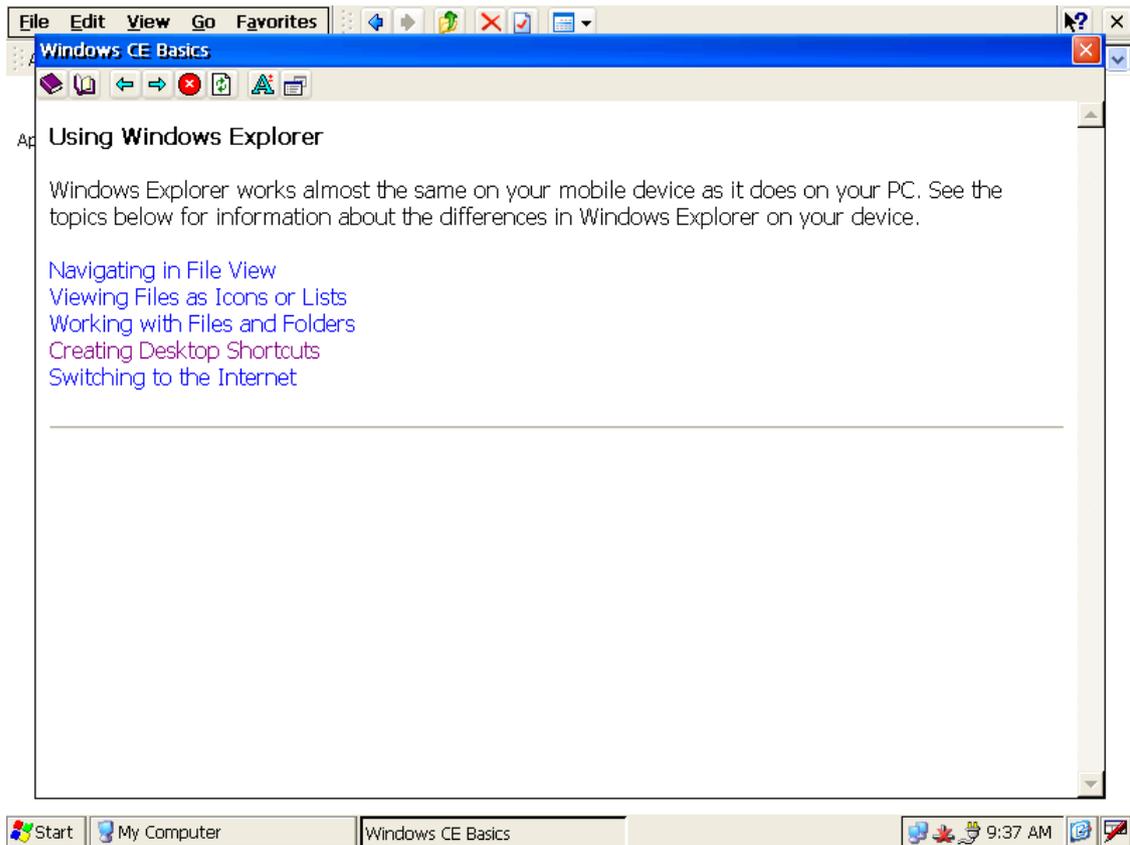


### (d) Get the help

Click the icon  on the command bar.



WinCE help window comes out. Just click the items you want. The system will give out the relevant help information.



## 3.2 The software - NMS

### (a) Main function

**NMS is a software especially designed for Windows CE system. This special software makes it very easy to capture, record, calibrate and measure digital images. The main function is as follows:**

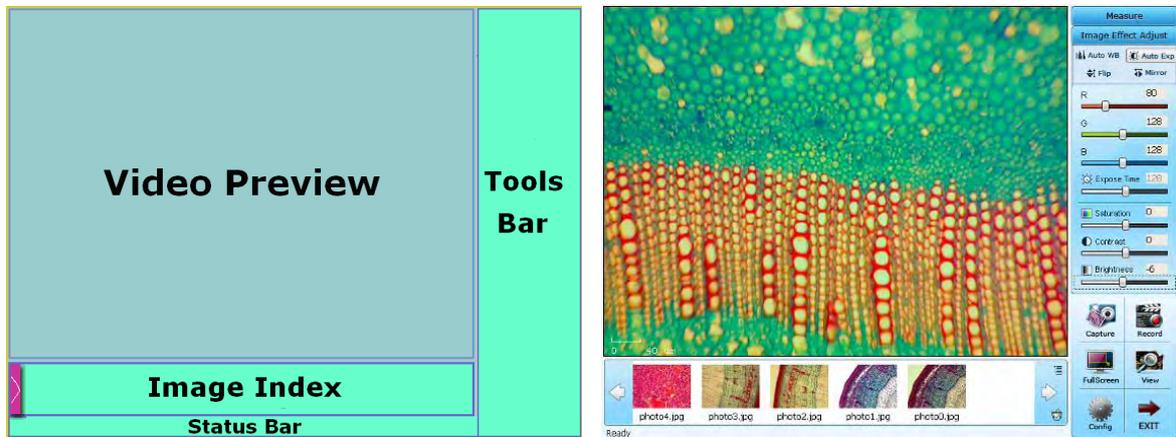
- 1) Real time preview images**
- 2) Adjust the color**
- 3) Capture images**
- 4) Record videos**
- 5) View the captured image**
- 6) Real time measurement**
- 7) Support WIFI function, can communicate with the PC by wired network or wireless network: can receive and display the real time images on the PC.**

### (b) Start NMS

- 1. Turn on the power to start the WinCE5.0 operating system.**



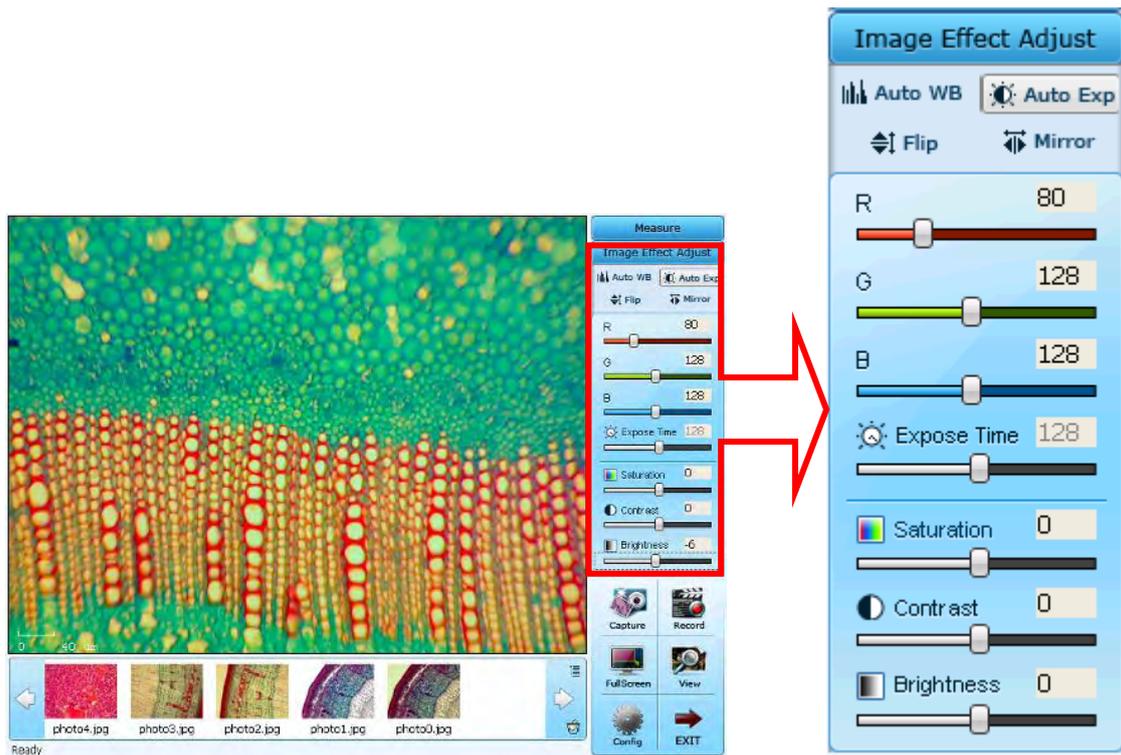
2. Double click the icon on the desktop. The main interface displays as shown below:



The software is divided into 4 parts:

- a) **Video Preview:** display real-time dynamic image, resolution 640x480,
- b) **Tools:** Located on the right of the main window, there are various tools, buttons and icons.
- c) **Image Index:** Located under the video or image preview window, and display the captured images.
- d) **Status Bar:** Located at the bottom of the main window. Depending on a still image or displaying video in the active image window, the status bar gives different information.

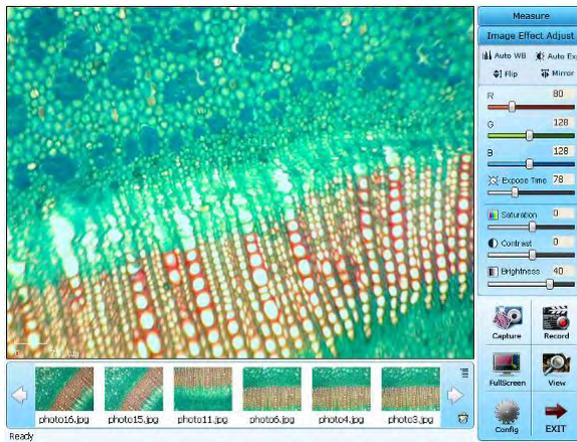
### (c) Image Effect Adjust



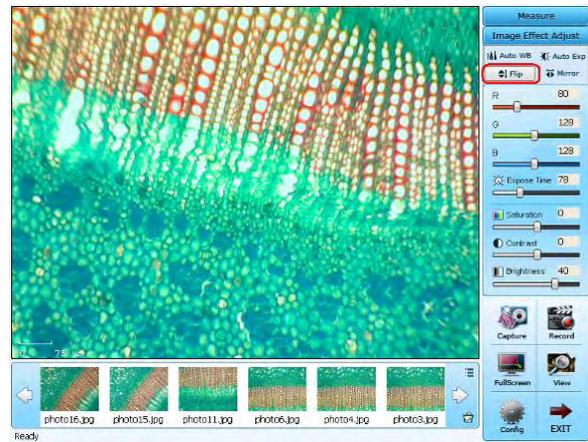
 <b>Auto White Balance:</b>	Press the Auto WB button, the system will do <b>auto white balance</b> . Press again to <b>manual white balance</b> . <b>Attention:</b> If you set it to auto white balance, you can not adjust the R G B values.
 <b>Auto Exposure:</b>	Press the Auto Exp button, the system will do <b>auto exposure</b> . Press again to <b>manual Exposure</b> . <b>Attention:</b> the default station is set to auto exposure. And you can only adjust the exposure value when it has been set to manual exposure.
 <b>Vertical Flip:</b>	Flip the active image by the <b>horizontal axis</b> , press to set or reset a flip state. When the active image window is showing the live images, the command actually flips the live images.
 <b>Horizontal Flip:</b>	Flip the active image by the <b>Vertical axis</b> , press to set or reset a flip state. When the active image window is showing the video, the command actually flips the live images.

## Examples:

### **Vertical Flip:**

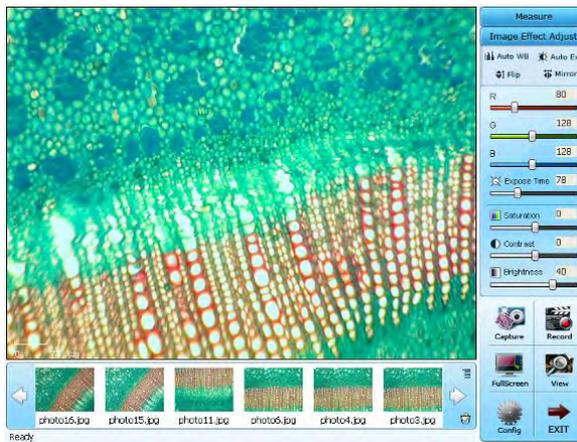


Original Image

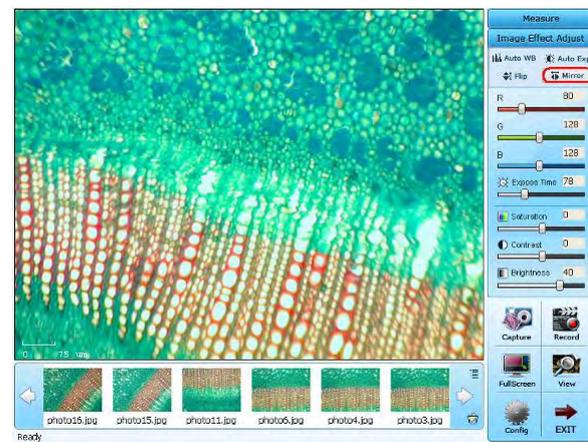


After click the Flip button

### **Horizontal Flip:**

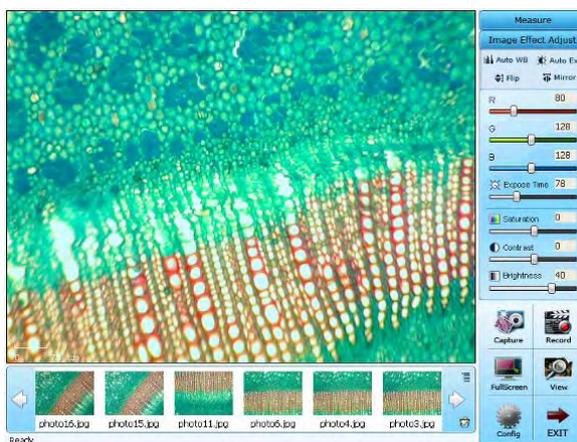


Original Image

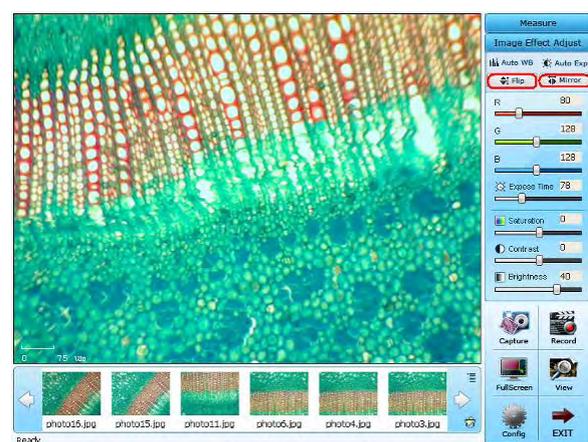


After click the Mirror button

### **Vertical and Horizontal Flip:**



Original Image



After click both the Flip and mirror button

## Color parameters:

 R 80	Use the slider to adjust the <b>Red</b> gain of the <b>camera</b> . It works <b>only</b> at <b>manual white balance</b> station.
 G 128	Use the slider to adjust the <b>Green</b> gain of the <b>camera</b> . It works only at <b>manual white balance</b> station.
 B 128	Use the slider to adjust the <b>Blue</b> gain of the <b>camera</b> . It works only at <b>manual white balance</b> station.
 Expose Time 128	Use the slider to adjust the <b>Exposure</b> value of the <b>camera</b> . It works only at <b>manual exposure</b> station.
 Saturation 0	Use the slider to adjust the <b>Saturation</b> of the <b>screen</b> .
 Contrast 0	Use the slider to adjust the <b>Contrast</b> of the <b>screen</b> .
 Brightness 0	Use the slider to adjust the <b>Brightness</b> of the <b>screen</b> .

## Attention:

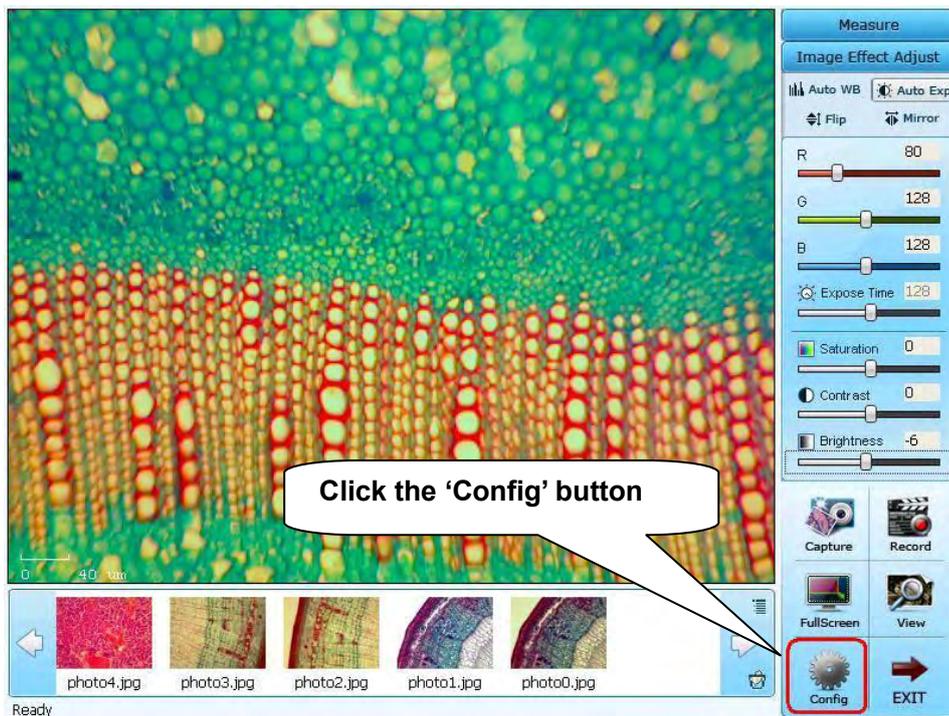
- 1) If you press the button  **Auto WB**, you can not adjust the RGB values, for it is at the auto white balance station.
- 2) For the same reason, you can only adjust the Exposure value, when it is at manual exposure station  **Auto Exp** (not press the button down).
- 3) Move the slider of the RGB value can adjust the color of the **image**, and the adjust result can be stored into the image.
- 4) Move the slider of the saturation contrast brightness value can adjust the color of the **screen**, but the adjust result can **not** be stored into the image.

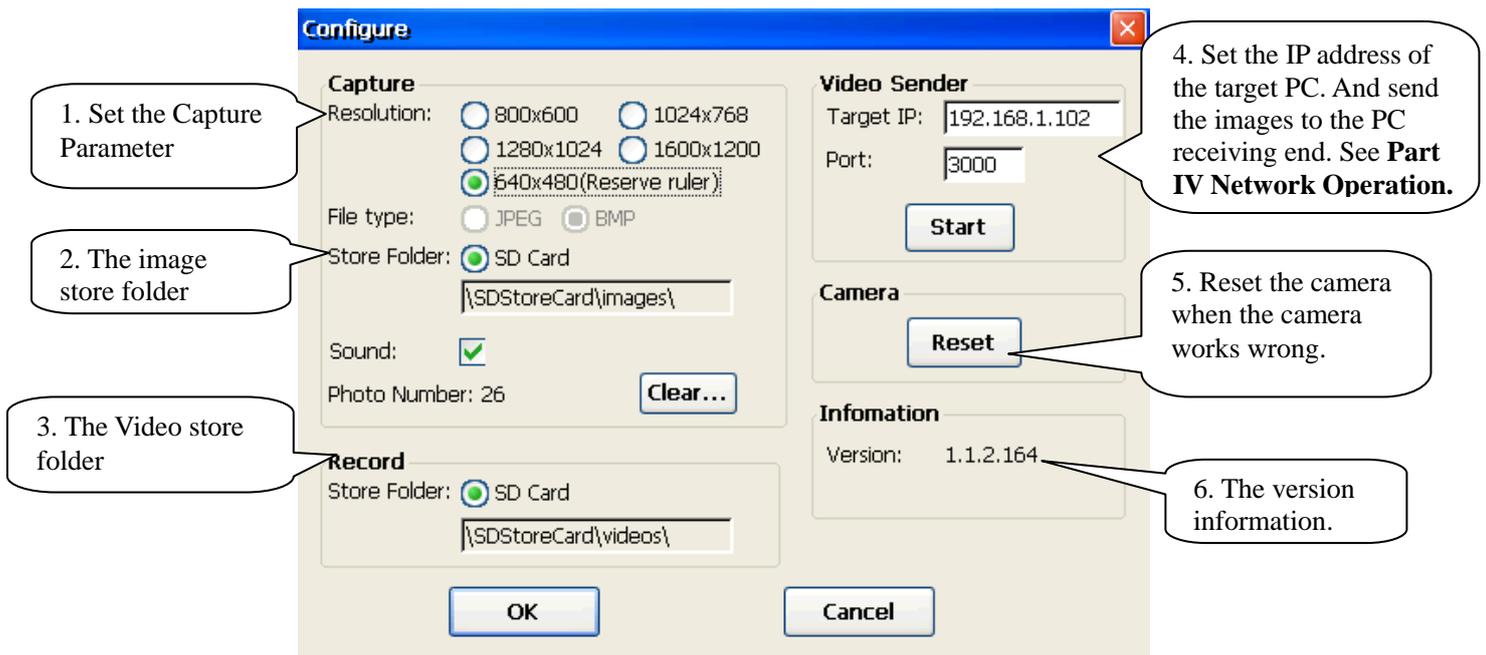
## (d) Buttons function:

 Capture :	Click “Capture” to capture a still image, the captured image will displays in the image index part. <b>Equivalent Command:</b> the <b>Capture button</b> on the main board of the LCD Head, see the <a href="#">Structure</a>
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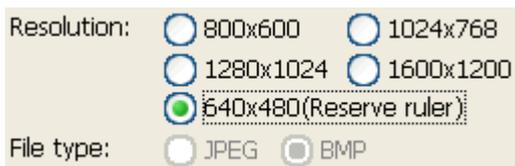
	<p>Click “Record” to capture an active video (click again to stop recording). In the mean time, the status bar displays “Recording” and the button changes to “Stop”, Click stop to stop recording. And the status bar will display the captured videos name and storage folder. <b>The store folder: \\SDStoreCard\Videos.</b></p>
	<p>Full screen display the active image. <b>Equivalent Command:</b> Double click the active image on the video preview window to access full screen preview, and double click again to return back.</p>
	<p>Click this button to switch between <b>active video window</b> and <b>captured image preview window.</b></p>
	<p>This commend configure the capture option (resolution, format, store path ...), the video sender information (IP address and port) and so on. The Configure dialog is showing below.</p>
	<p>Exit the system.</p>

### Access the configure interface





### 1, Set and the capture parameter



: Set the resolution of the capture image, rang

from 800x600 to 1600x1200, If you want to reserve ruler to the image, please select 640x480, and the image file type will be changed into BMP

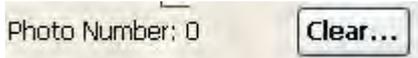


: The captured images are stored in 'images'

folder in the SD Card.

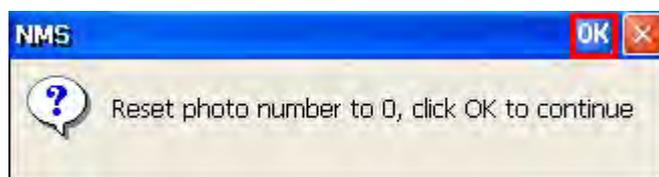


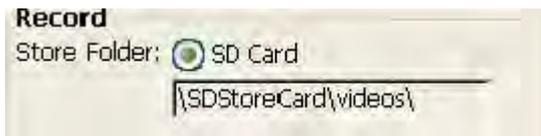
: Click to turn off the sound.



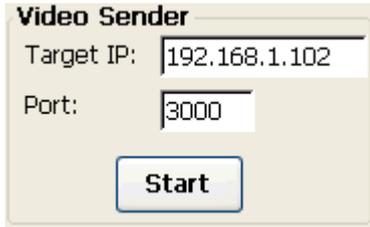
: Click 'Clear...' button to reset the photo number to

0, click OK to check, or click 'X' to cancel.





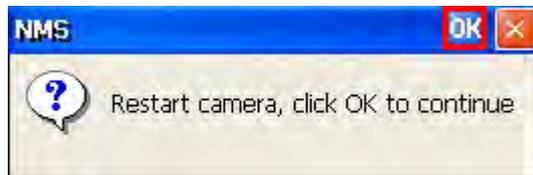
: The captured videos are stored in the 'video' folder in the SD Card.



: Set the IP address of the target PC and send the image data to it. See [Part IV Network Operation](#).

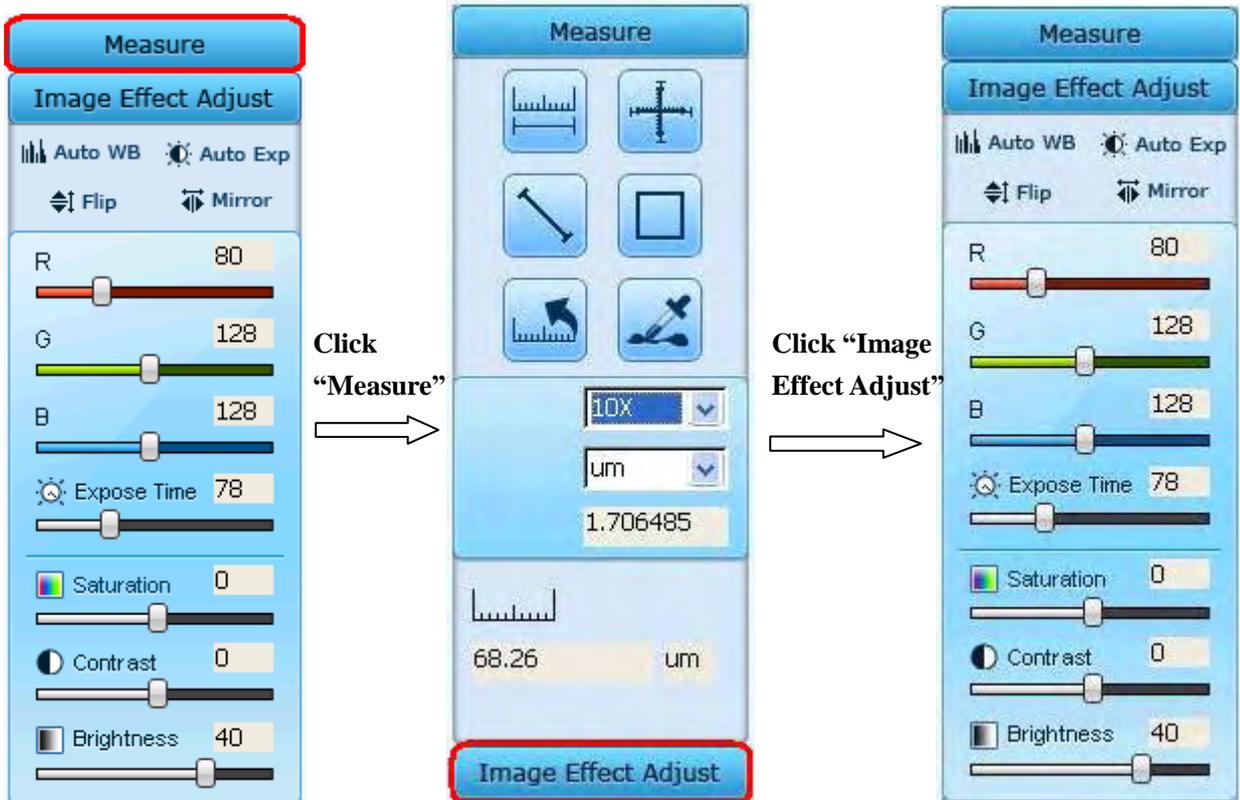
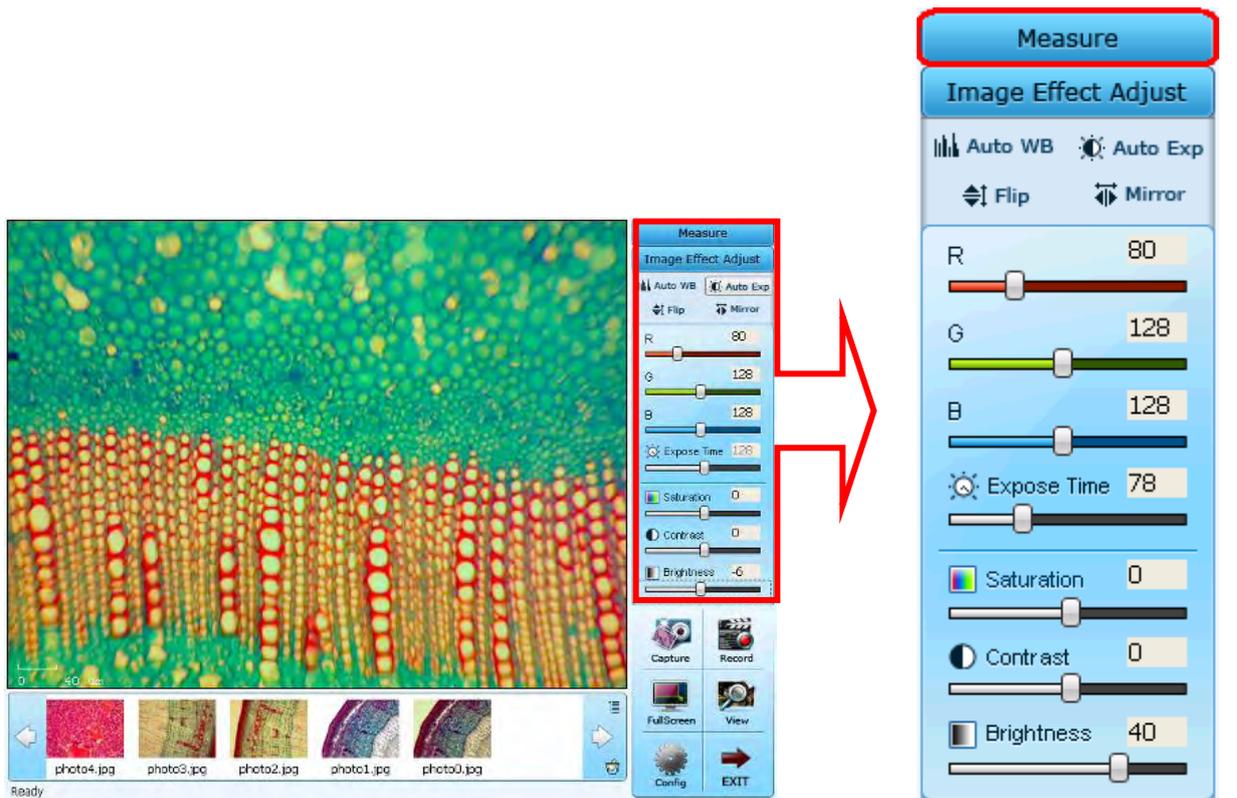


: If the camera doesn't work, click the 'Reset' button to reset the camera. Click 'OK' to reset, or click 'X' to cancel.



## (e) Dimension Calibration and Dynamic Measurement

**NMS supplies several measurement tools, it supports dimension calibration and dynamic measurement. To do the measurement, simply click on the image to define control points. The program will automatically perform measurements, and calculate areas. All measurements are drawn over a special measurement layer. It is simple, convenient, easy to learn and suitable for needs of different users. Before doing measurement, please do calibration first.**



Click "Measure", the system will switch from the "Image Effect Adjust" to the "Measure".

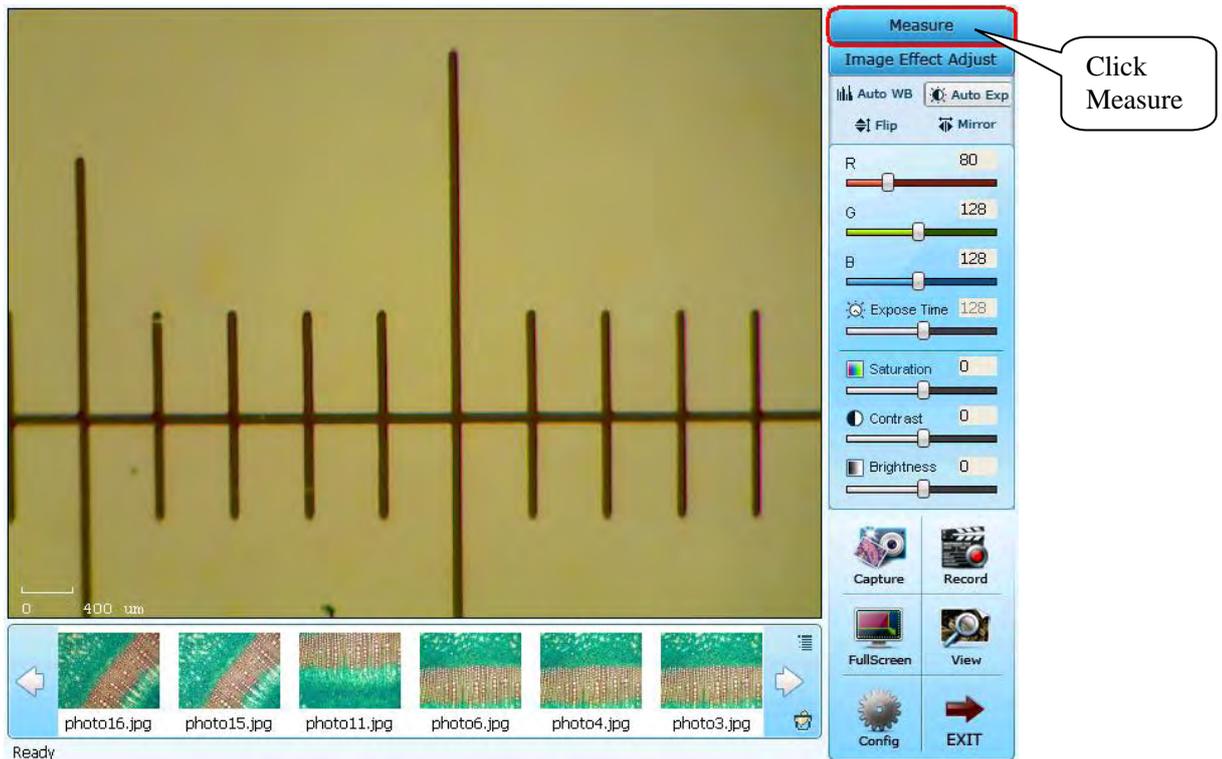
Click "Image Effect Adjust", the system will switch from the "Measure" to the "Image Effect Adjust".

	Calibration.
	Reticle ruler.
	Line measurement
	Rectangle measurement.
	Recovery to the default setting.
	Set the color of the measure tools.

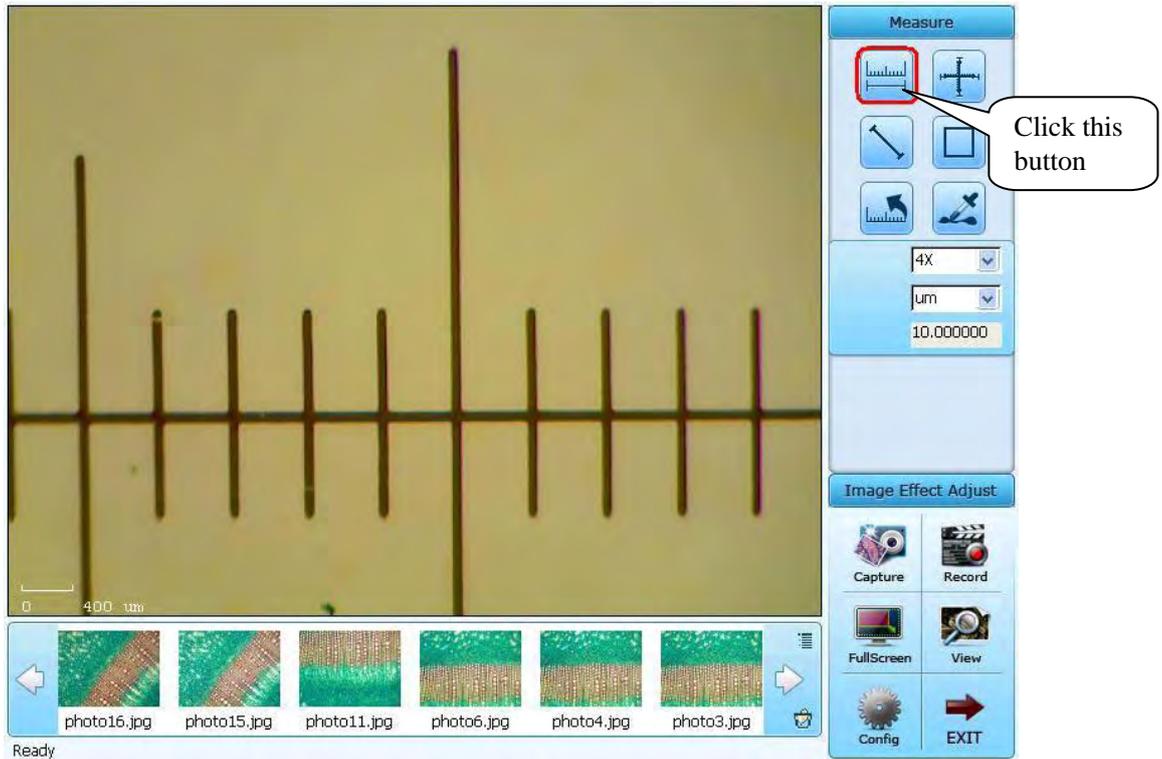
①  **Dimension Calibration**

Here the objective is 10X and the micrometer is 0.1mm.

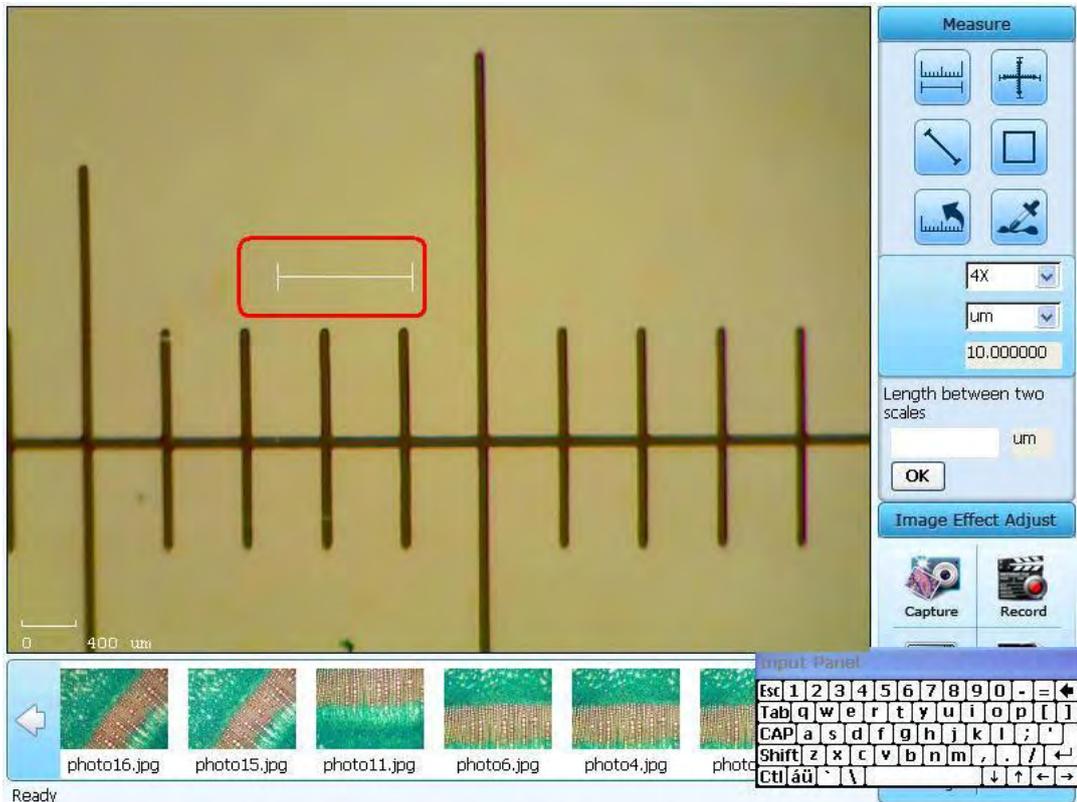
**1. Put a micrometer on the stage; select the objective (example here is 10X), focus the microscope to make the micrometer display clearly on the LCD screen.**



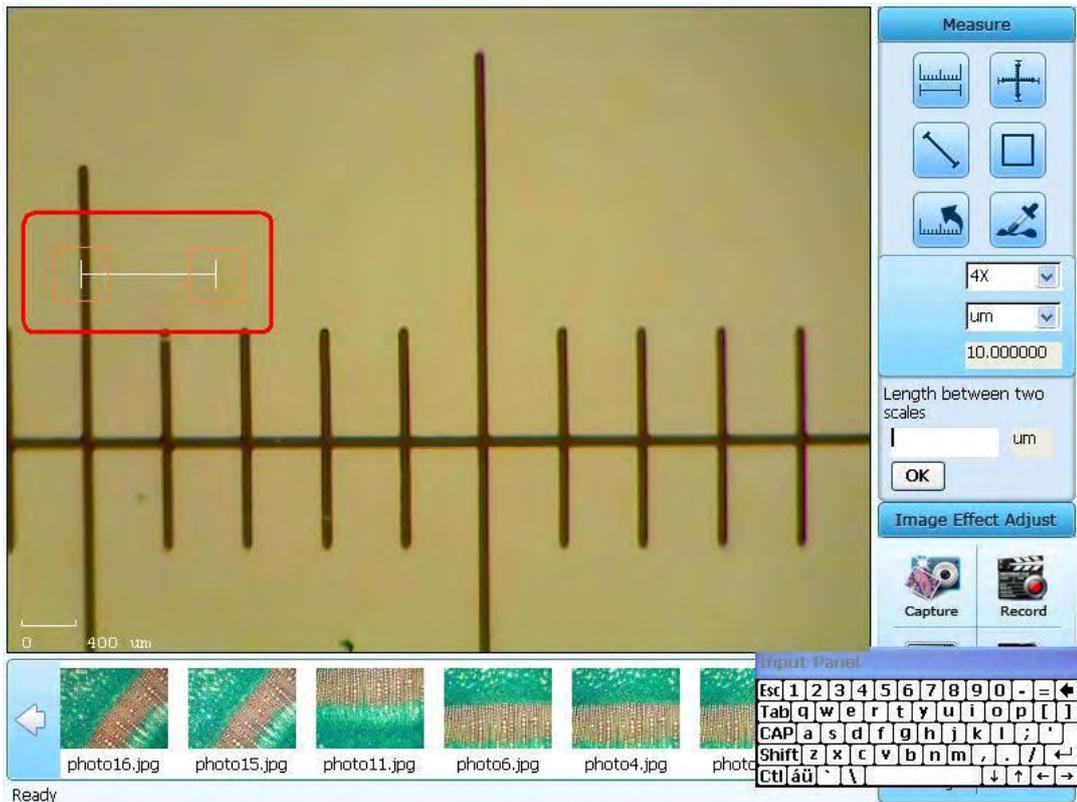
**2. Switch the command bar from "Image Effect Adjust" to "Measure"**



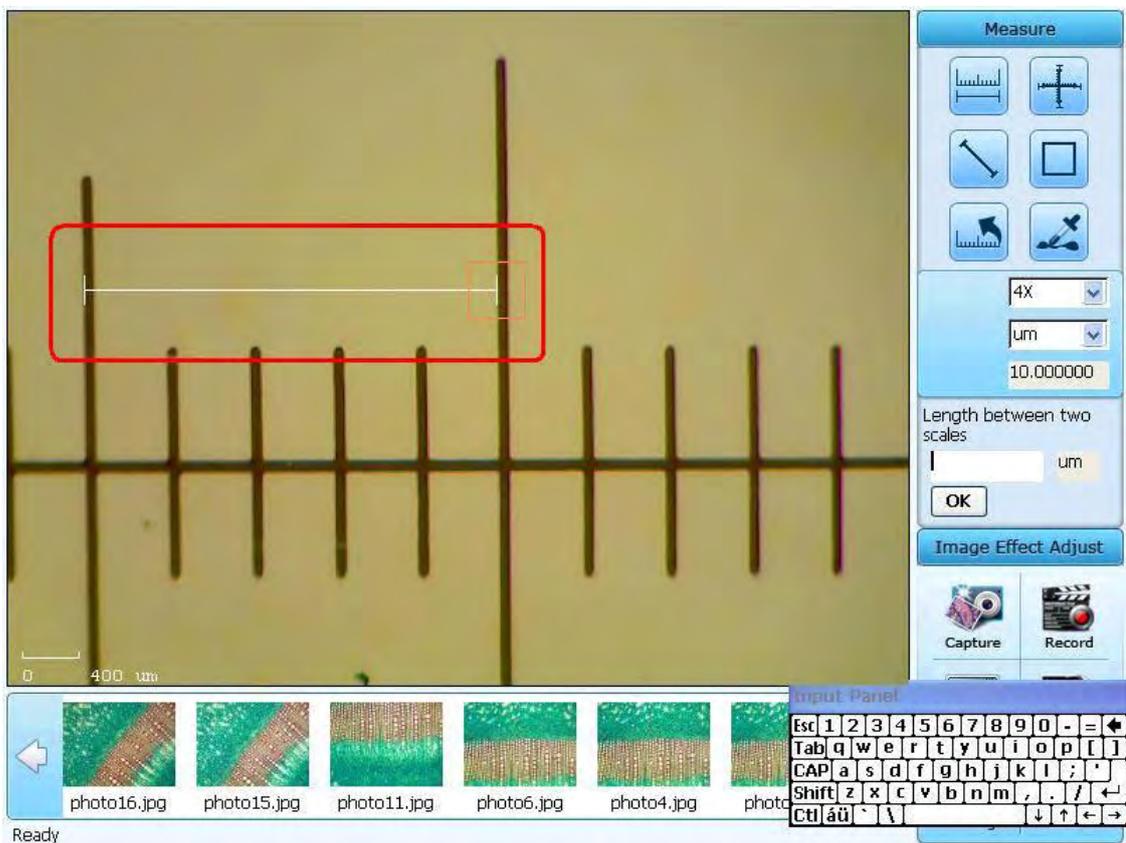
3. Click the icon  on the command bar, there will come out an adjustable calibrating line.



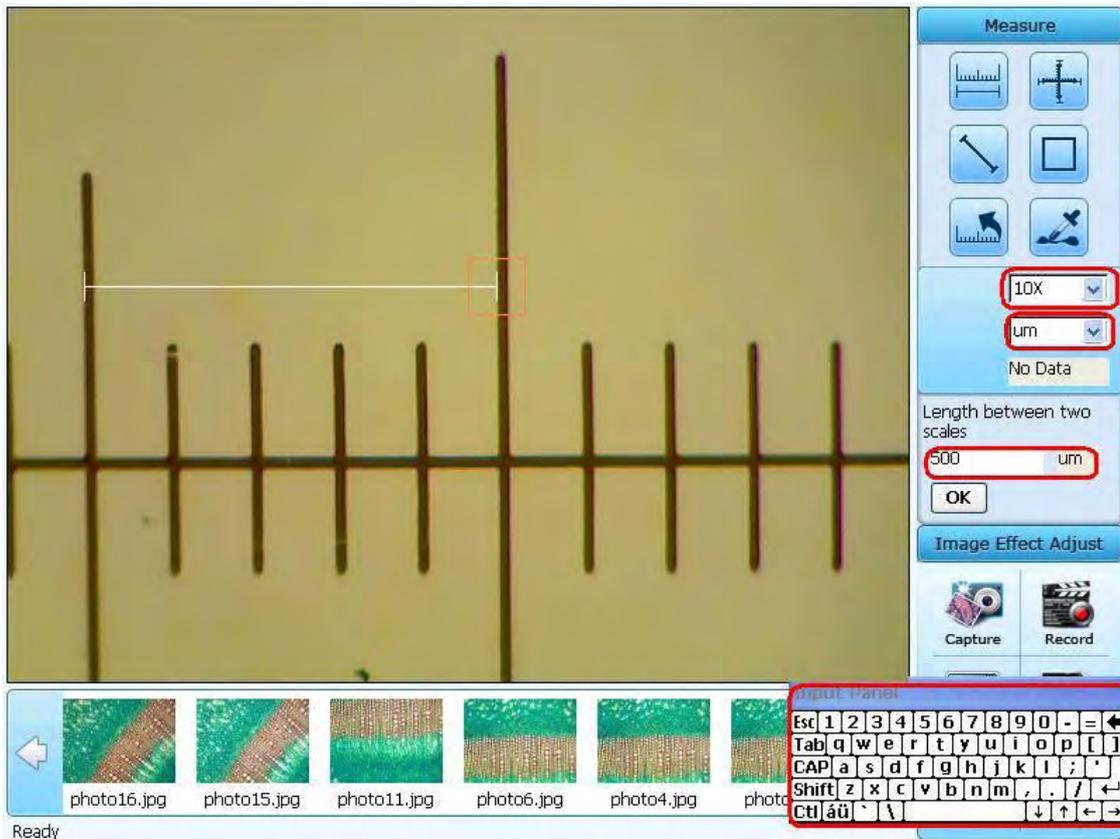
4. Move the line and set the begin point.



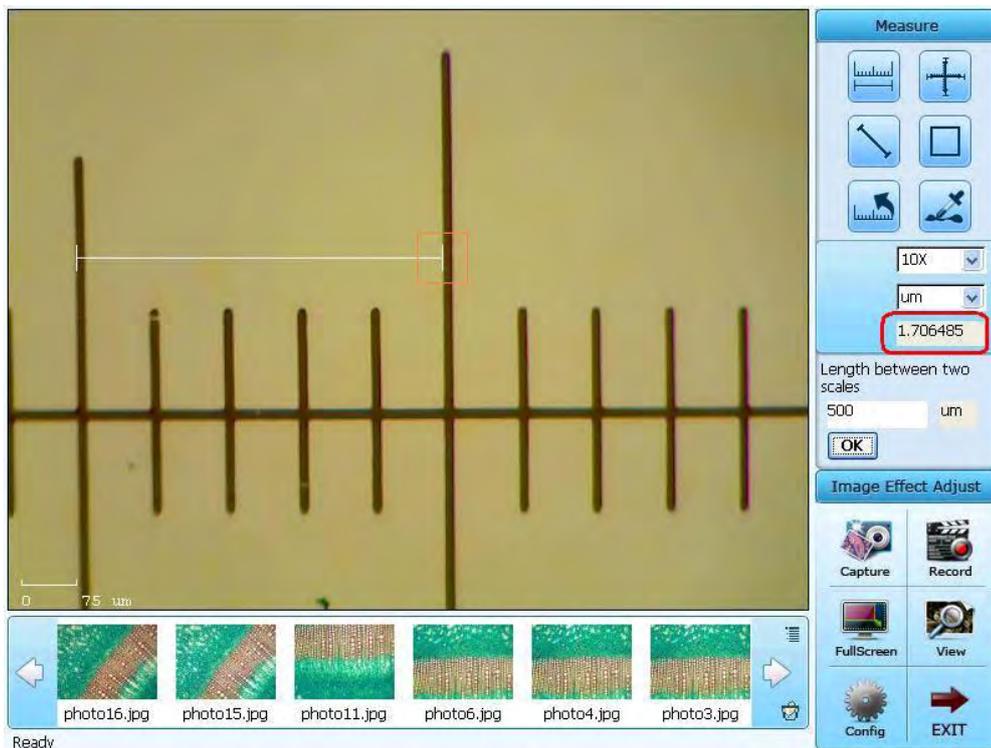
**5. Set the end point.**



**6. Set the objective magnification, length unit and input the actual length (with the keyboard or the soft keyboard).**



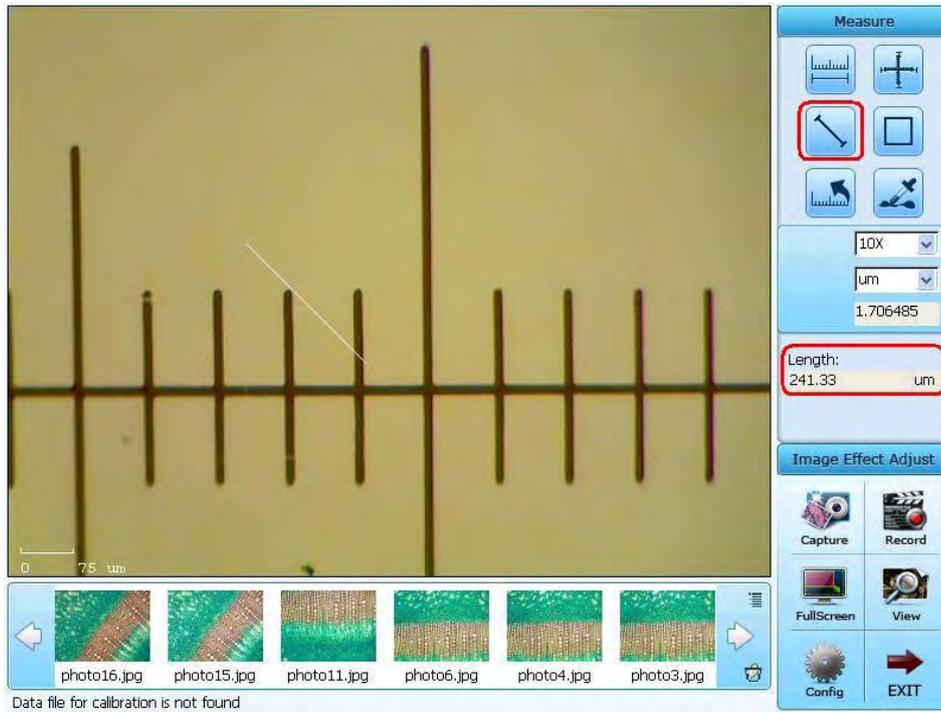
**7. Click "OK", the system will calculate the dimension data that just has calibrated (the actual length of each pixel) by itself and displays in the control panel, as follows:**



**The dimension calibration of 10X objective has been finished. Repeat the above steps to calibrate 4X, 40X and 100 X.**

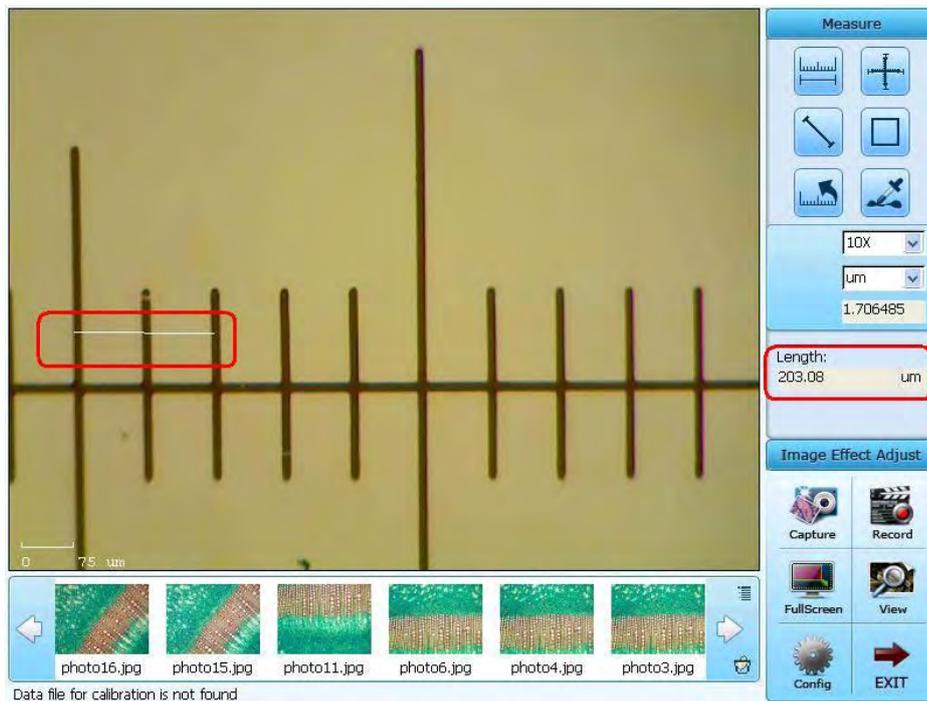
## ② Length Measurement

1. Click the icon  on the command bar.



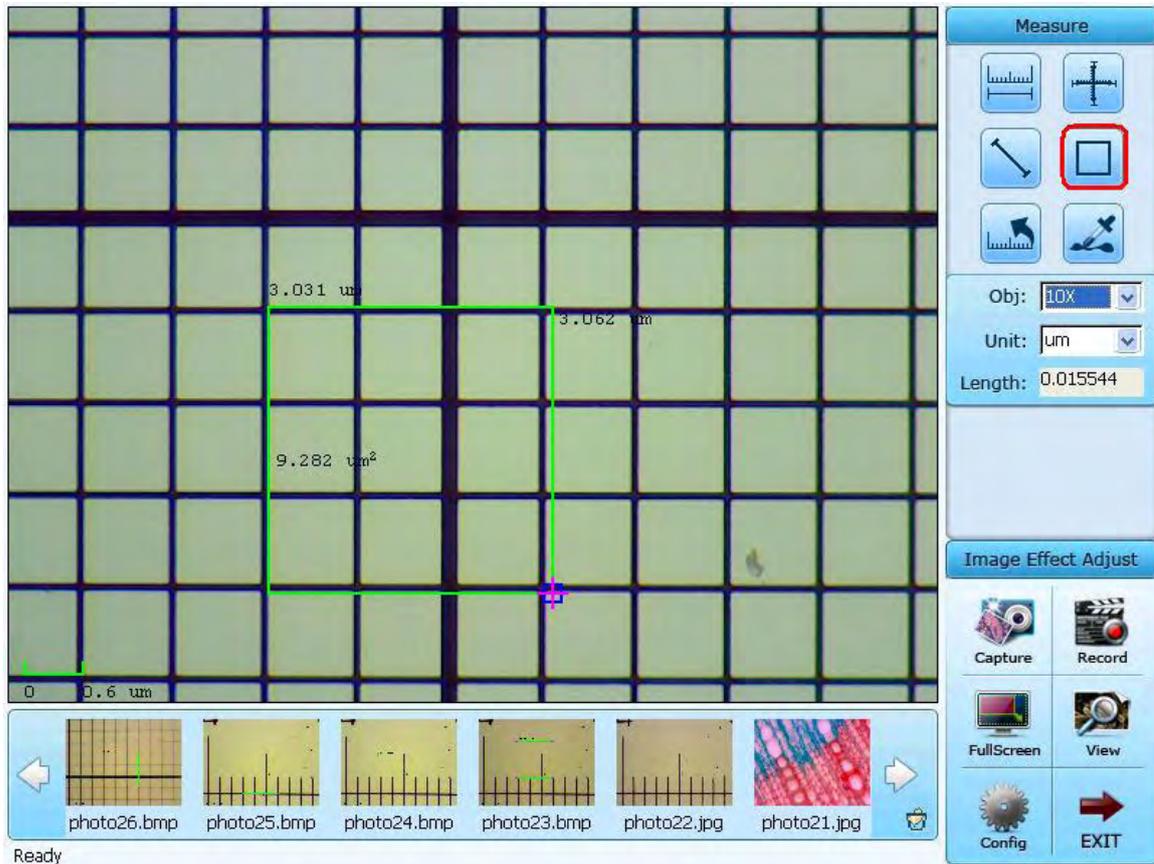
2. Move the line to the place you want to measure. Set the begin point and the end point of the line, the system will then calculate the length itself according to the dimension you have just calibrated.

Here the result of line length is 203.08um, and is coincident with the actual length.



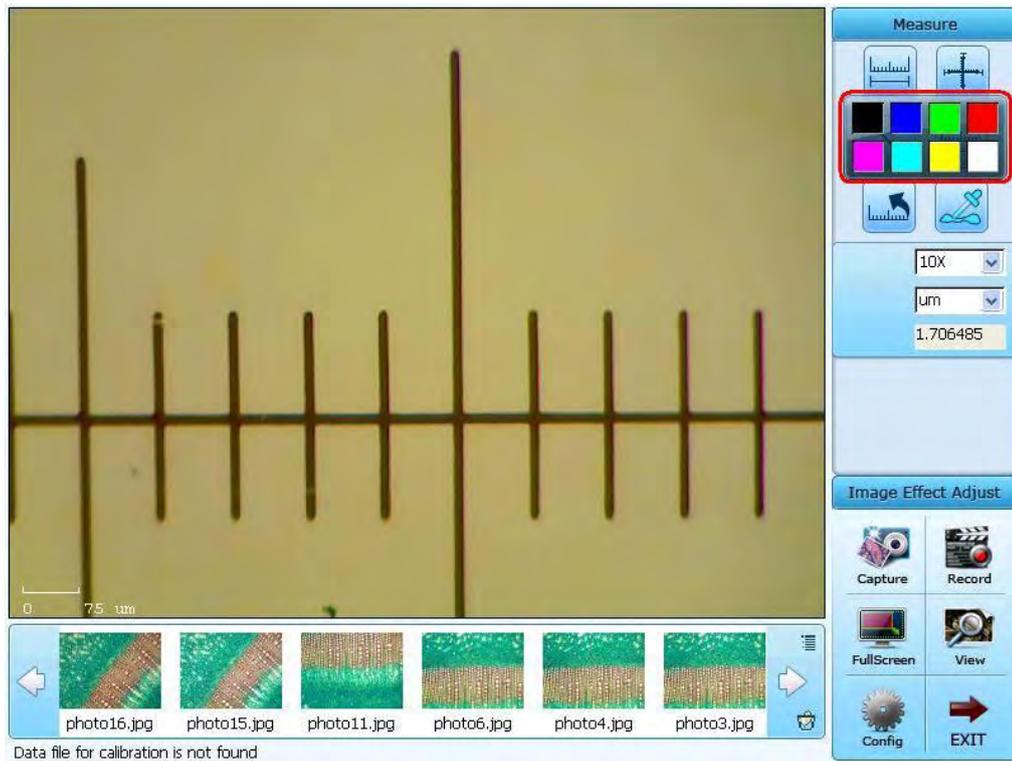
### ③ Rectangle Measurement

1. Click the rectangle button, a rectangle tool appears; click the center or the four corners of the rectangle with the mouse or writing pen; you can drag the selection to magnify or reduce the rectangle.

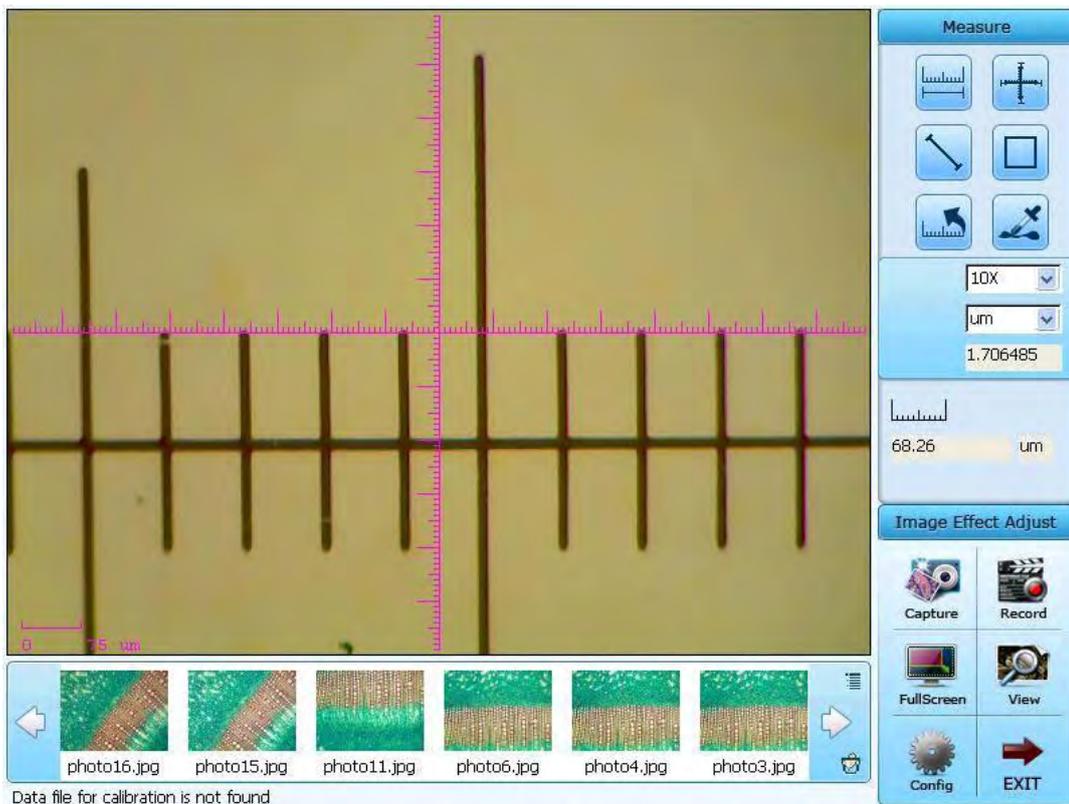


### ④ Color Selecting

1. Click this button, a color plate appears; select your color preference to set the line color.



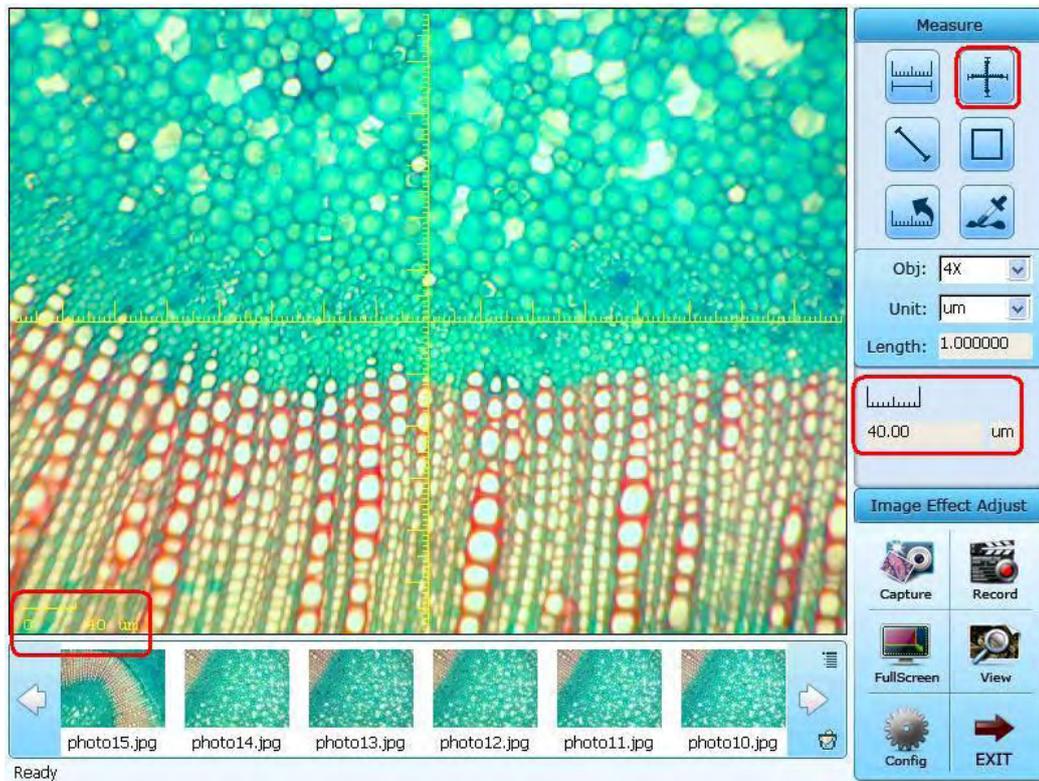
**2. All the tools color has been changed into mauve.**



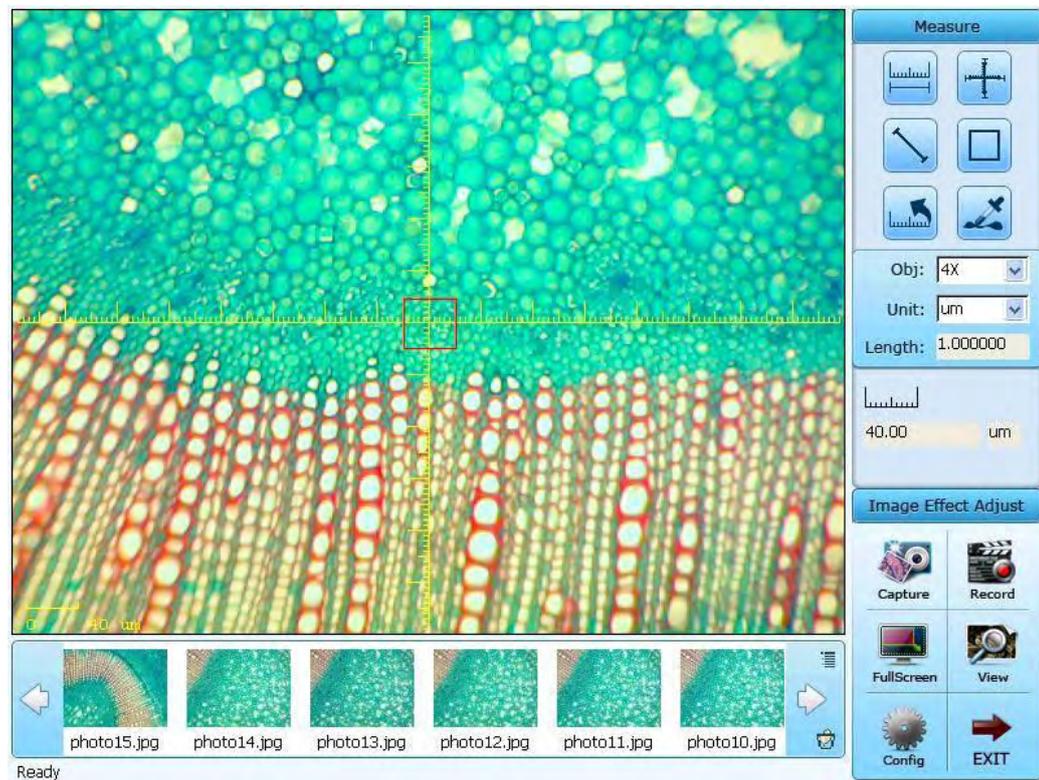
⑤  **Reticle Ruler**

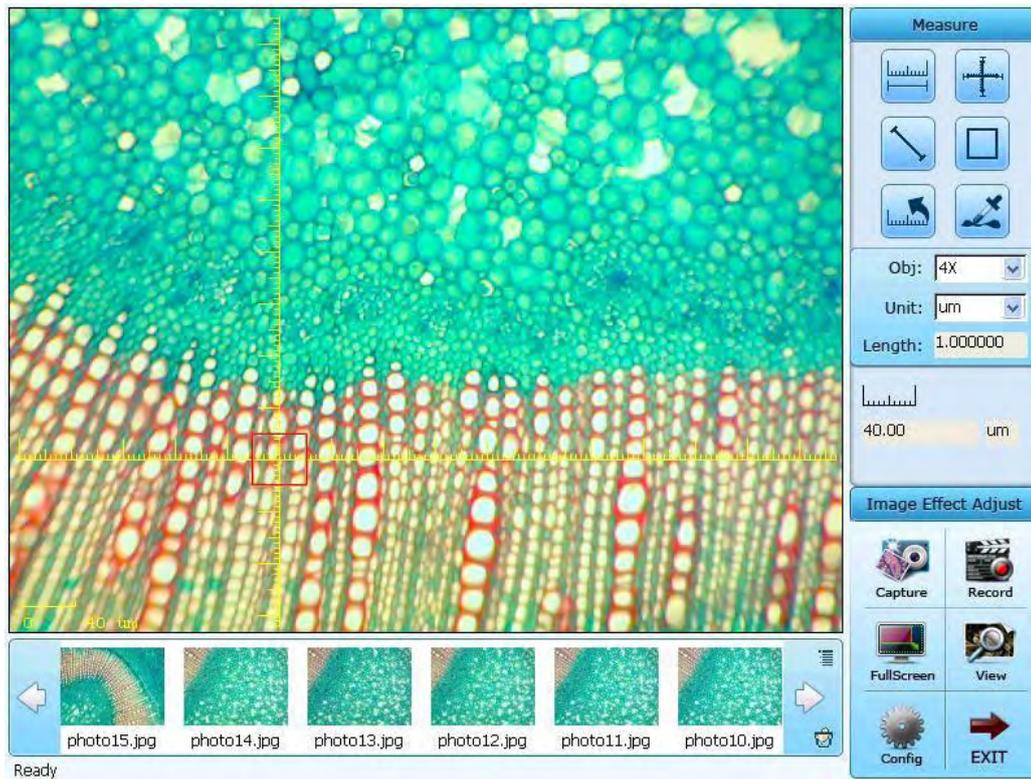
**1. Click the reticle button. There will be a reticle tool on the image, click the center of the reticle with the mouse or writing pen, a red square in the center of the reticle will appear; when you drag the square, the reticle will move**

following the square. At the same time, the control panel will display the minimum scale value of the current reticle after dimension calibrating.



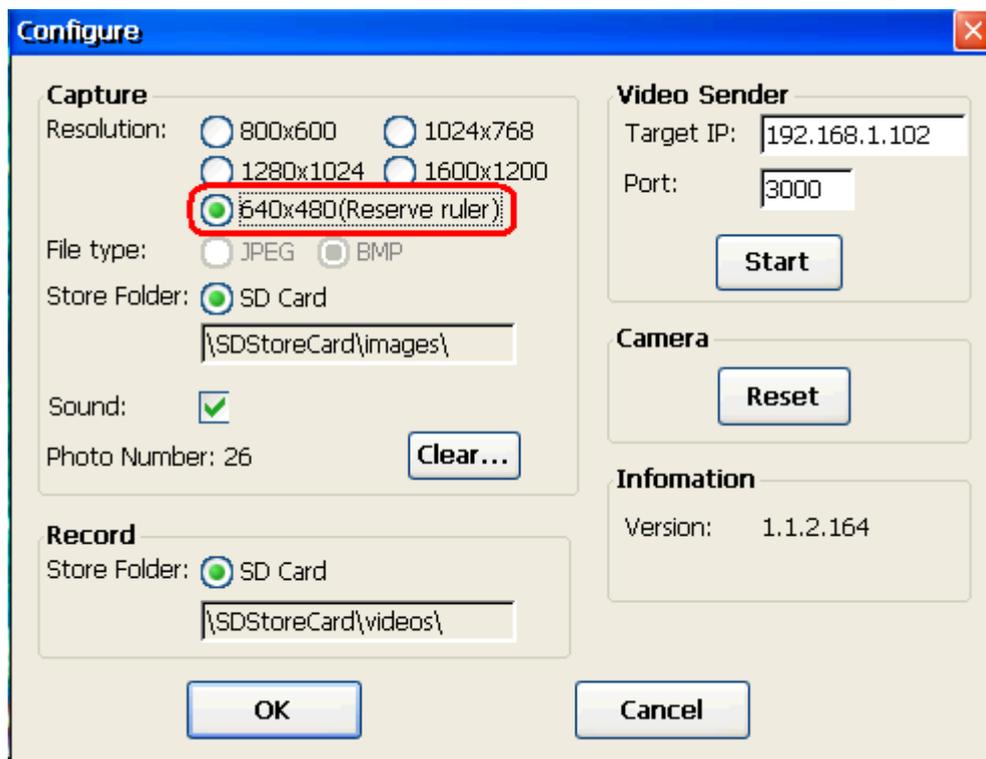
2. Click the center of the reticle and a square appears; you can move the square to any place you want.

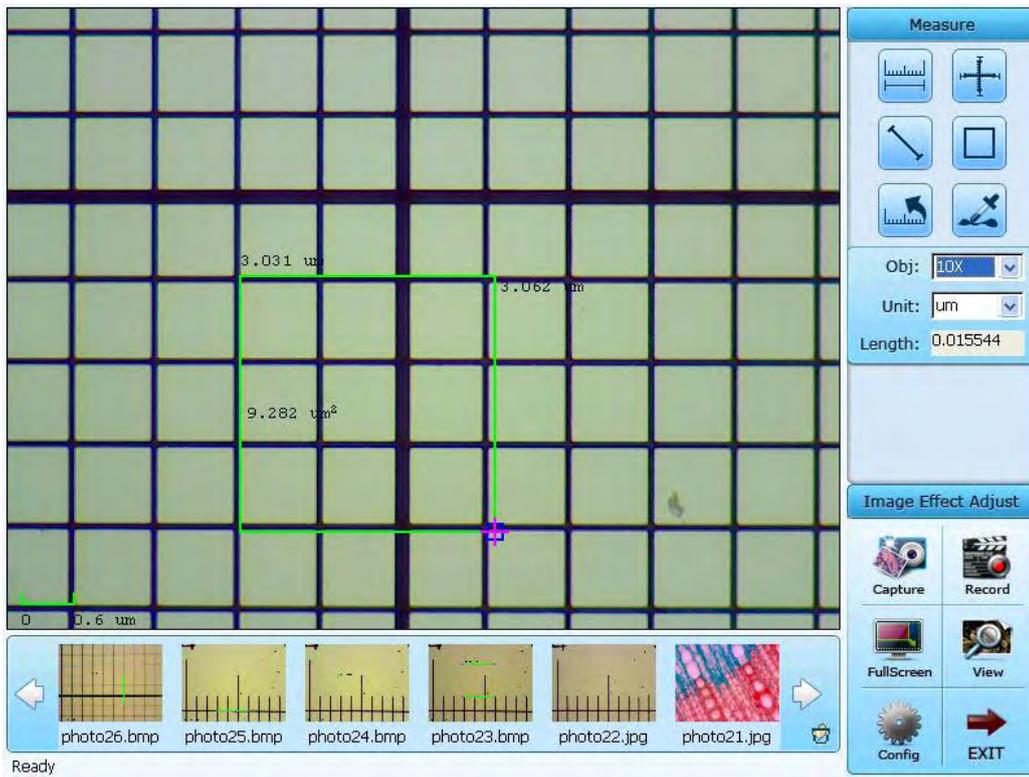




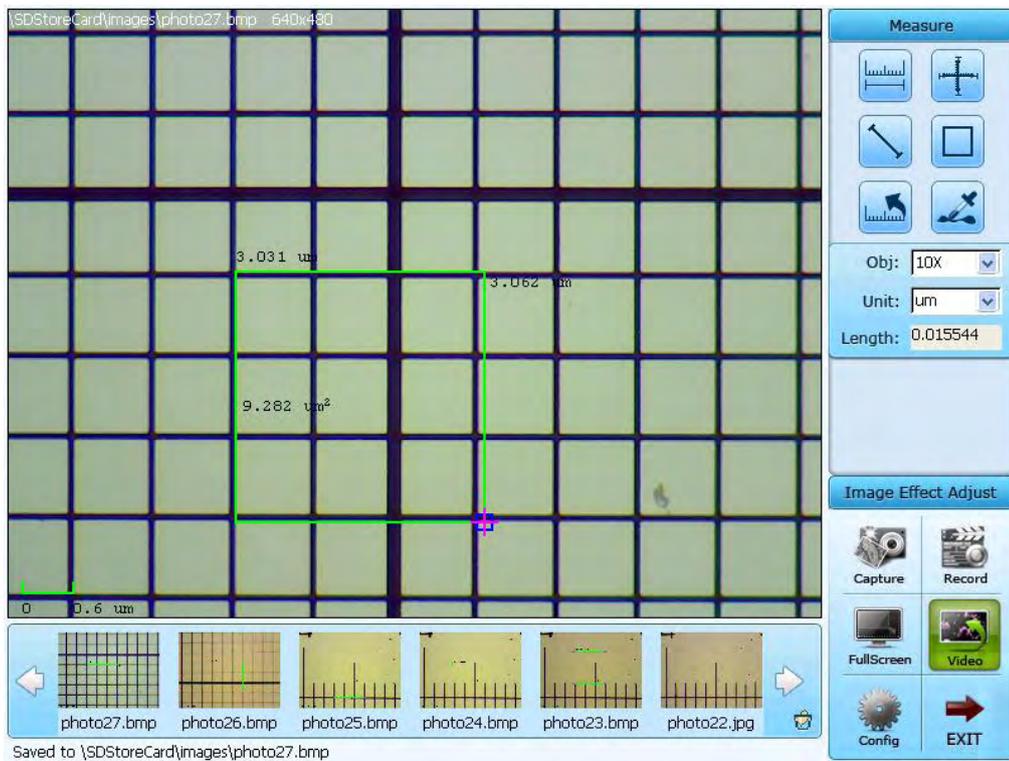
## ⑥ Store the measurement result

In order to store the measurement result, you should set the resolution to 640x480(Reserve ruler) first, as the picture below.



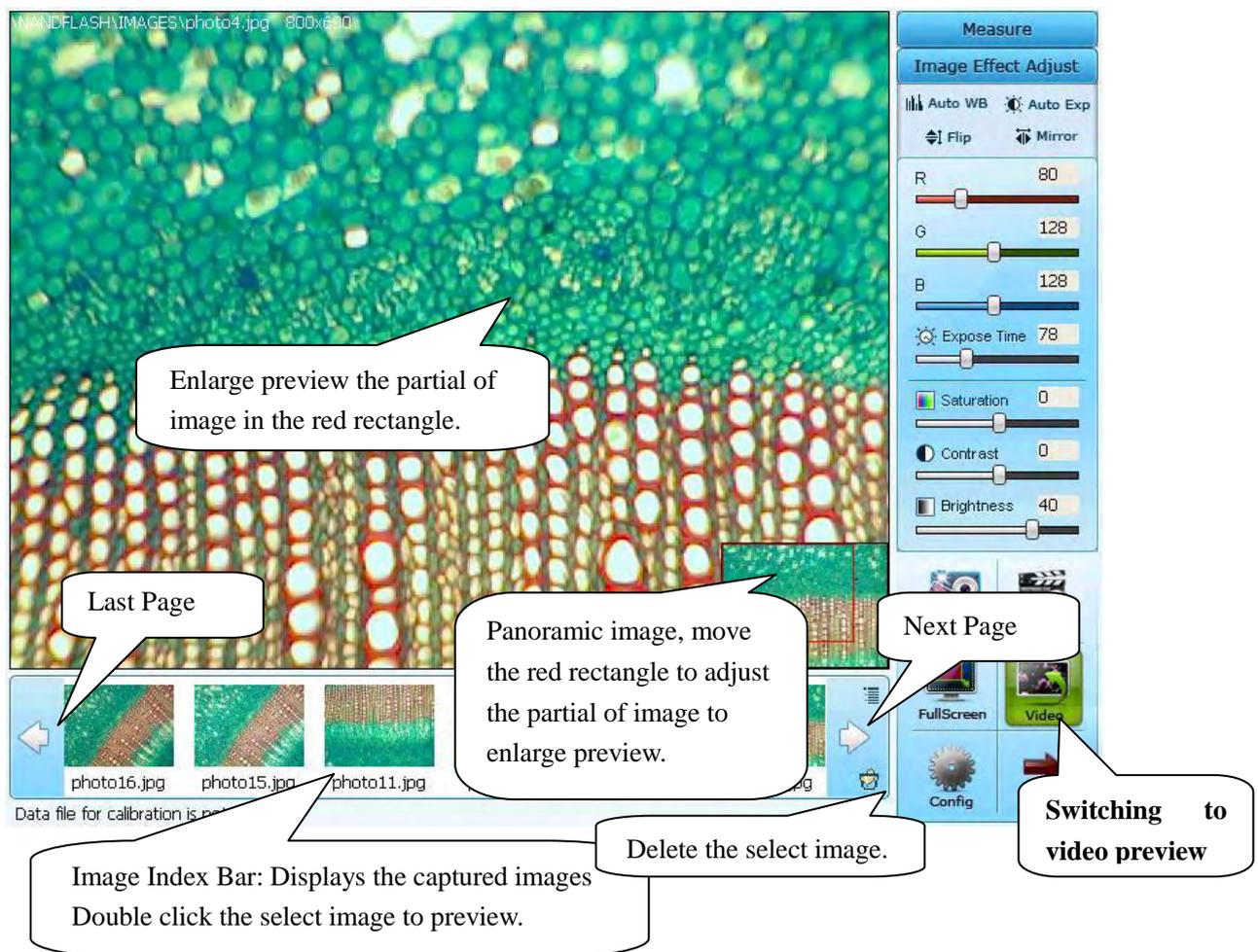


Capture an image with the measurement result.



Preview the captured image 'photo27.bmp'.

## (f) Image Preview Window



### (1) Switch to the image preview window:



Click the view icon to switch from video preview to image preview.

The image preview window displays partial enlargement image, you can drag the red rectangle in the panoramic image to adjust the part of image to enlarge preview.

Double click a select image in the image index bar to access to the image preview window.

### (2) Delete an image:

Select the image you want to delete, or click the icon , the system will ask you to check delete, click ok if you want to delete, and click cancel if you don't want to delete.

**Equivalent Command:** Use the right click function, use the right key of the

mouse or click the select image directly on the touch screen by the handwriting pen for more than 2 seconds, the system will respond as a right click, and a right key menu appears; select "Delete".

### (3) Switch back to video preview window:



Click the video icon to return to video preview window.

## (g) Attention: If the System halted

**Attention:** The unstable voltage or wrong operation may cause the system stop/freeze up, or not work normally. If this happens, reset your system.

There're two ways:

- (1) Press the "Power Button" for more than 2 seconds to close the system, and then press again to restart your system.
- (2) Click the small "Reset" hole with the end of a paper clip (or other tool that has a small point) to reset your system, as shown in the picture below.



## IV. Network Operation

### 4.1 About WIFI

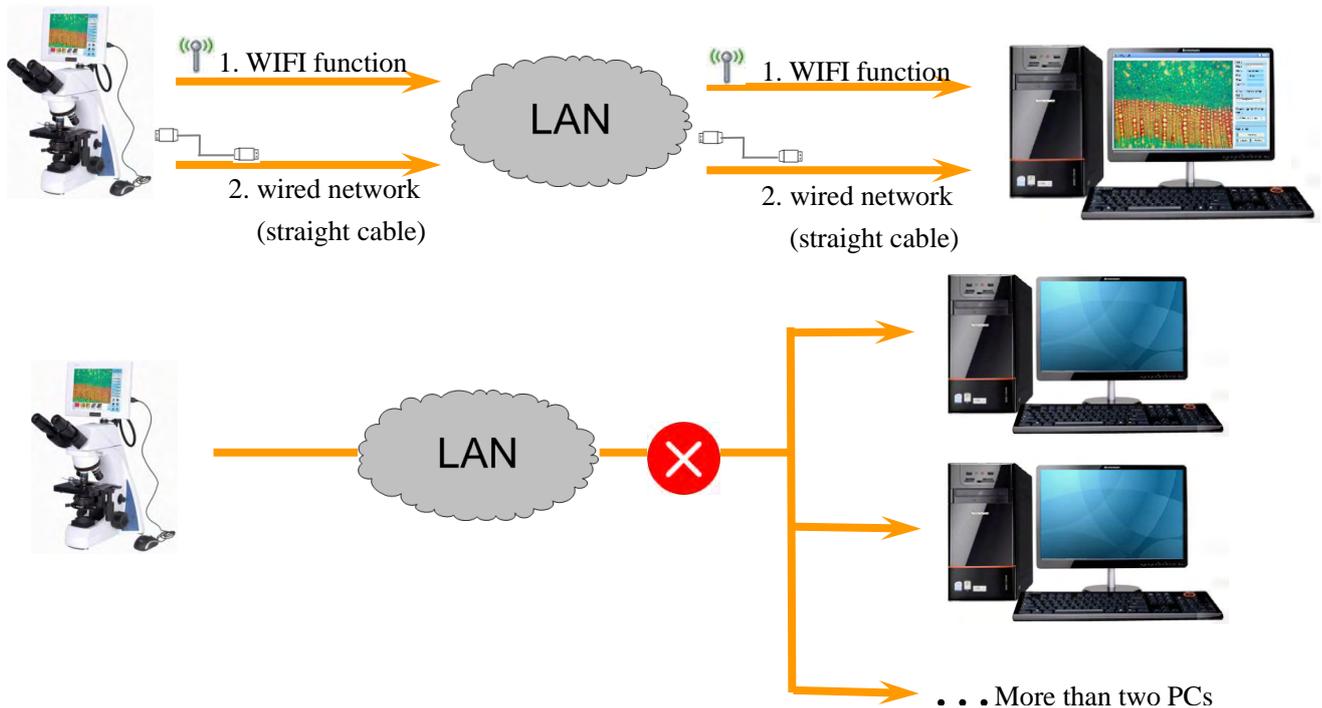
Our LCD digital microscope supports both wired network and WI-FI wireless network.

To use this WIFI function, you need a computer and a router (wireless support) or wireless network card.

What is WIFI? "WIFI" means "wireless fidelity". The term "WIFI" refers to certain kinds of wireless local area networks, or WLAN (as opposed to LAN, or computers that are networked together with wires).

## 4.2 Communication Model

### (a) Network Communication (With the LAN)

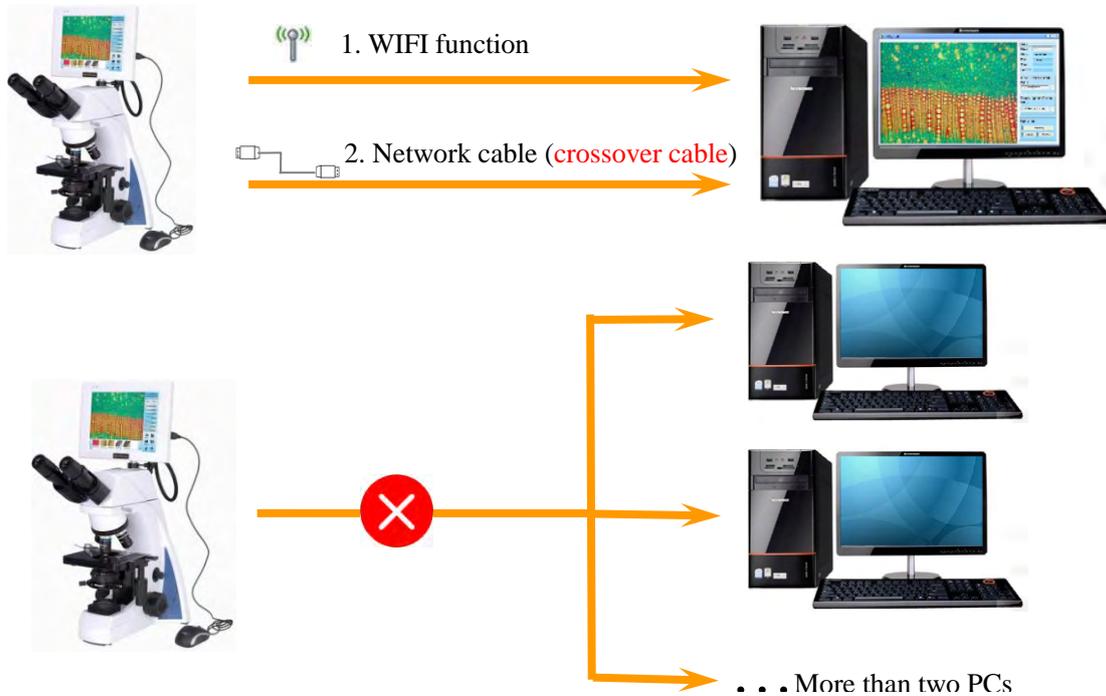


#### Attention:

1. There are two ways to link the LCD digital microscope to the LAN, one is with its WIFI function, and the other one is through the network cable. The PC has the same two ways to link to the LAN, too.
2. To use the WIFI function, the **router** of the LAN and the **PC** receiver must support wireless function, and you should check whether the router and the PC's network card support wireless function.
3. To use the wired network, the network cable should be a straight cable. See the part V to know [what are straight and crossover cable](#).
4. The PC receiver must install the NMSClient software to receive the images sending by the LCD microscope.
5. **The LCD microscope, router and PC's IP address must on the same LAN.**
6. In order to ensure the image transmission quality in using the WIFI function, please make sure the wireless signal is not too low, for example, the LCD microscope is not very far from the router and in a non-blocking space.

## (b) Point to Point Model (Without the LAN)

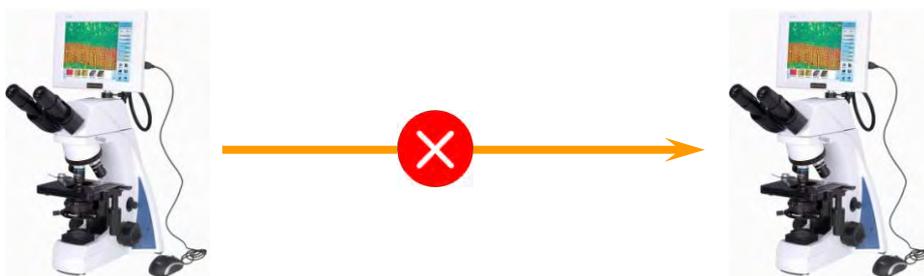
There are two ways to communicate with the PC **without** the LAN: One is by WIFI function (wireless), and the other is by network cable (here is crossover cable). We call both of them point-to-point communication.



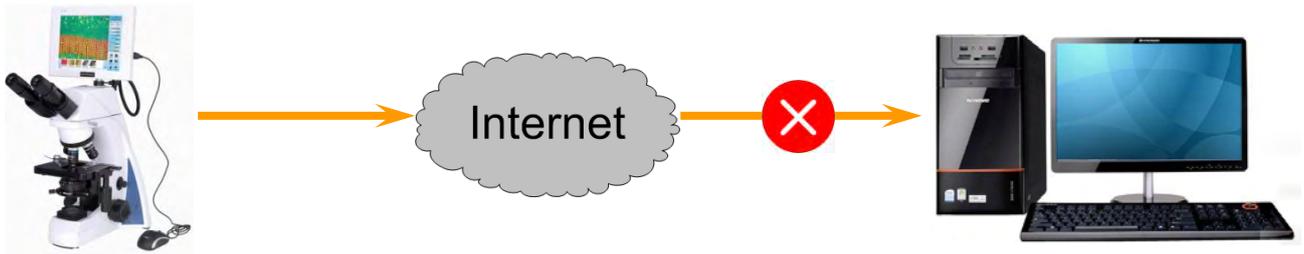
### Attention:

1. To use the WIFI function, the PC receiver must support wireless function, please check whether your network card support wireless function or not.
2. To use network cable to link the LCD Microscope and PC, the network cable must be a crossover cable. See the part V to know [what are straight and crossover cable](#).
3. The NMSCClient software must be installed on the PC to receive the images sent by the LCD microscope.
4. In this model, one LCD microscope can only communicate with one PC, it can not communicate with more than two PCs.
5. In order to ensure the image transmission quality when using the WIFI function, please make sure the LCD microscope is not very far from the PC and is in a non-blocking space.

## (c) LCD Microscope to LCD Microscope (is not supported)



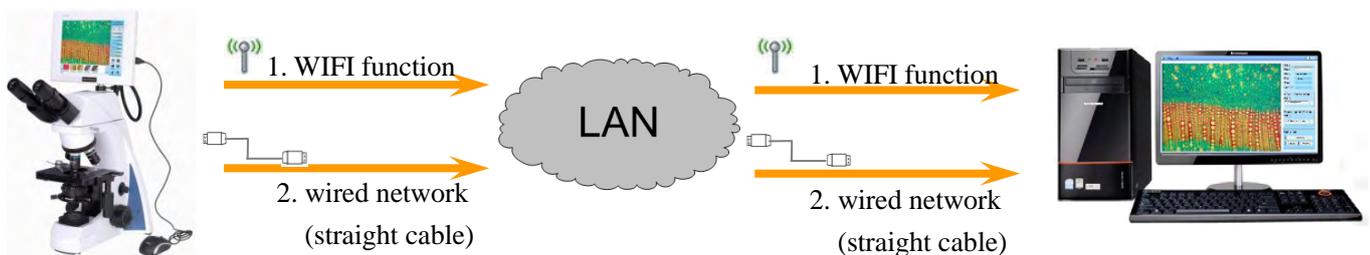
## (d) Visit the Internet



### Attention:

We can use the LCD microscope to visit a website, but we can **not** receive the microscope images through the internet, just browse the web pages.

## 4.3 Network Communication



### Attention:

1. There are two ways to link the LCD digital microscope to the LAN, one is with its WIFI function, and the other one is through the network cable. The PC has the same two ways to link to the LAN, too.
2. To use the WIFI function, the **router** of the LAN and the **PC** must support wireless function, and you should check whether the router and the PC's network card support wireless function.
3. To use the wired network, the network cable should be a straight cable. See the part V to know [what are straight and crossover cable](#).
4. The NMSClient software must be installed on the PC to receive the images sending by the LCD microscope.
5. The LCD microscope, router and PC's IP address must be on the same LAN. And at present, only one PC can receive the images sent by the LCD microscope.
6. In order to ensure the image transmission quality in using the WIFI function, please make sure the signal is not too low, for example, the LCD microscope is not very far from the router and is in a non-blocking space.

### 4.3.1 WIFI function

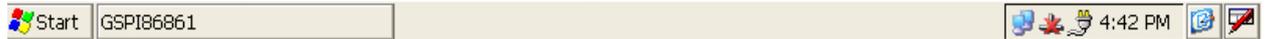
**To use this WIFI function, you need a computer and a wireless support router.**

The LCD Digital Microscope communicates with the PC by a router (LAN).

## (1) Link the LCD microscope to the LAN

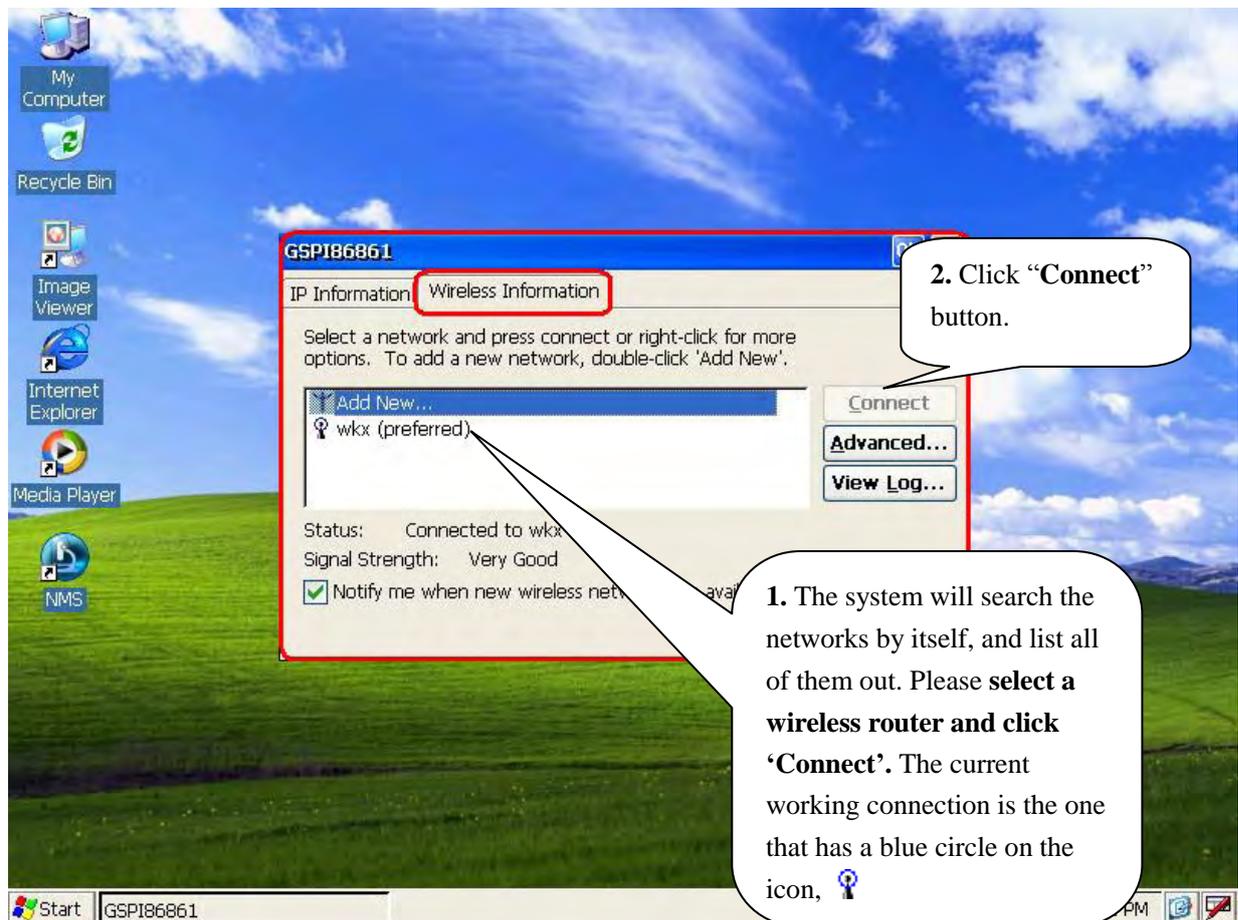
(1) Start your system Window CE.

(2) A dialog appears listing all the networks the system has searched. You can also get this dialog box by **double clicking** the icon  on the task bar.



(3) Select a wireless router, and click the button **“Connect”**

As the picture shows below:



The LCD will connect to the router and get the IP address by itself.

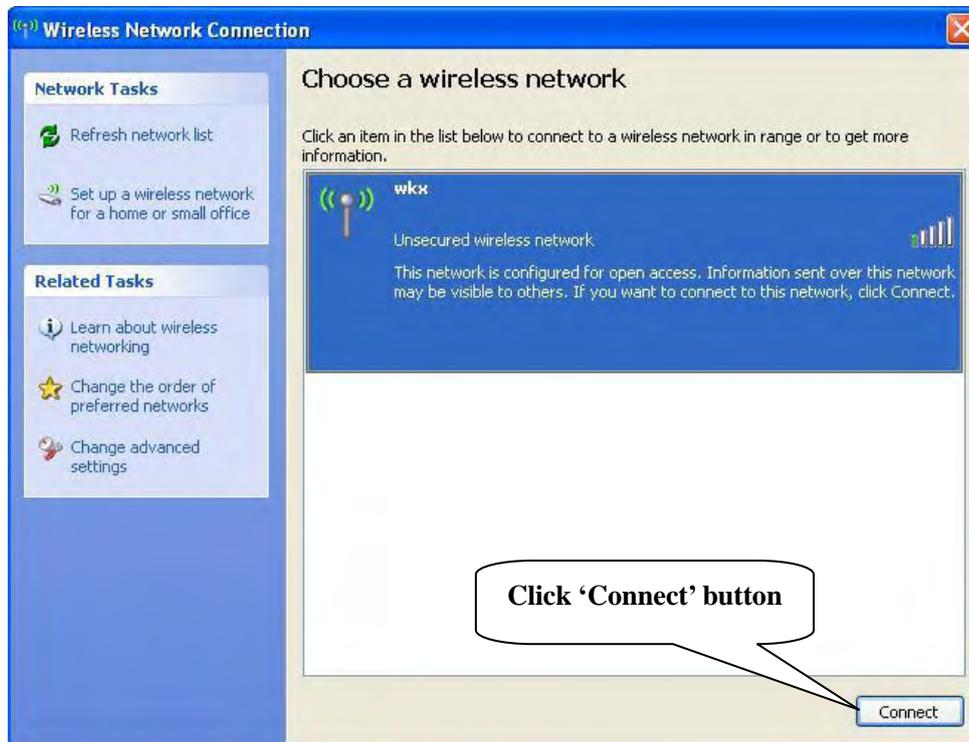
## (2) Link the PC to the LAN

The PC can link to the router by WIFI function, or by network cable.

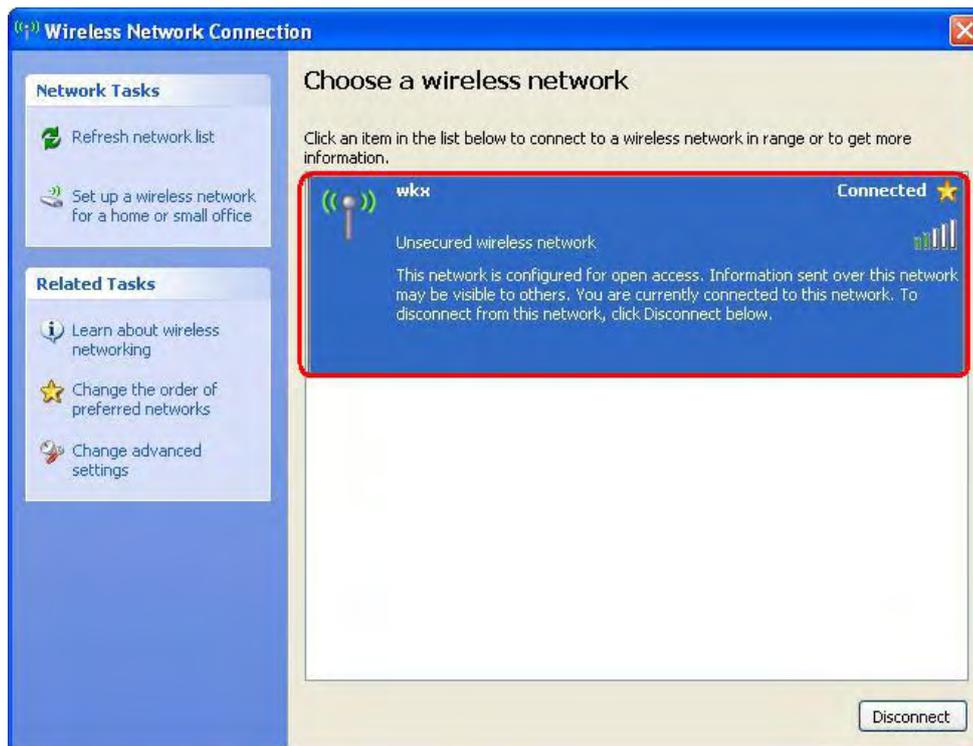
Here we show a wireless network. For a wired network, please see the chapter [4.3.2 Wired Network](#).

If you use the wireless network, please make sure your PC has a wireless network card and supports wireless function.

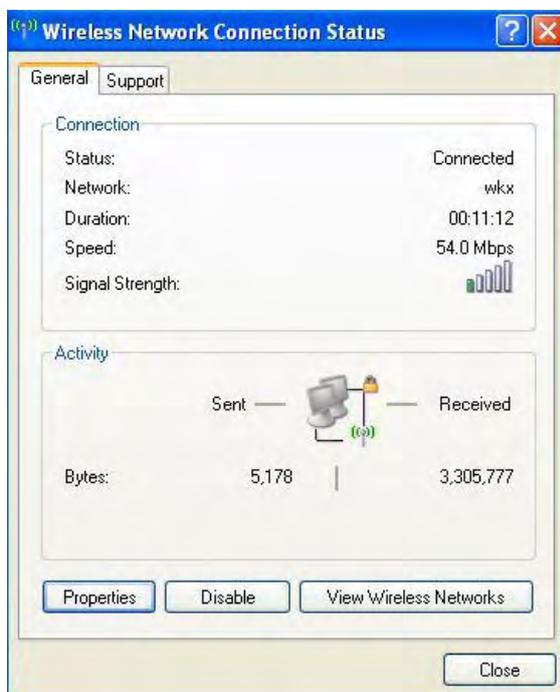
(1) Double click the icon  on the task bar 



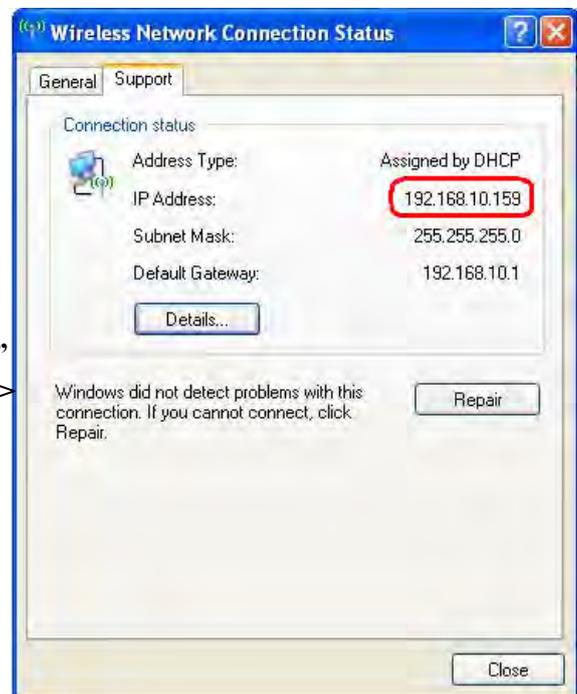
(2) Click the 'Connect' button. The PC will connect the router and get the IP address by itself.



(3) Now the wireless icon on the task bar displays as , double click it.



Click  
"Support"

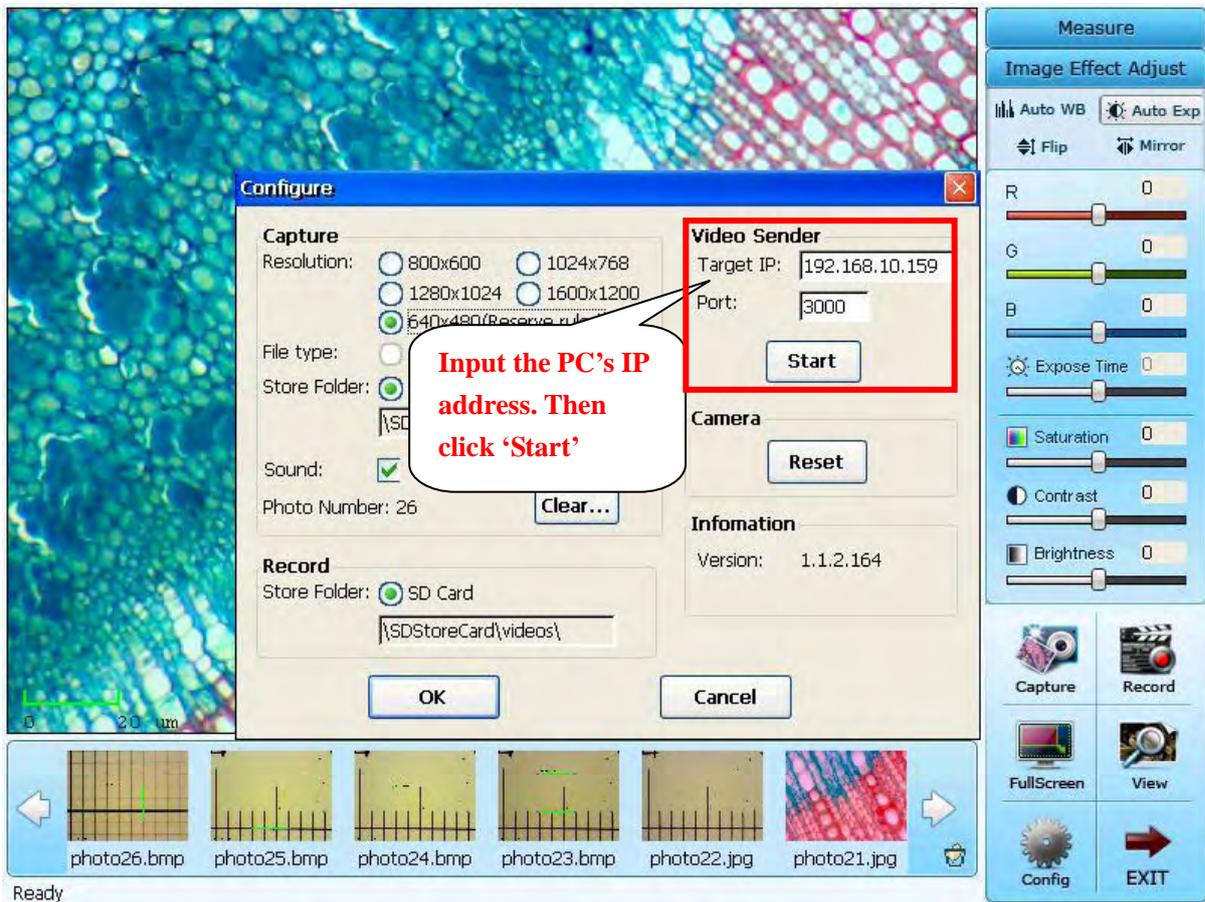


(4) Check the IP address, and record it.

### (3) The LCD microscope begins to send images

(1) Start your software "NMS"

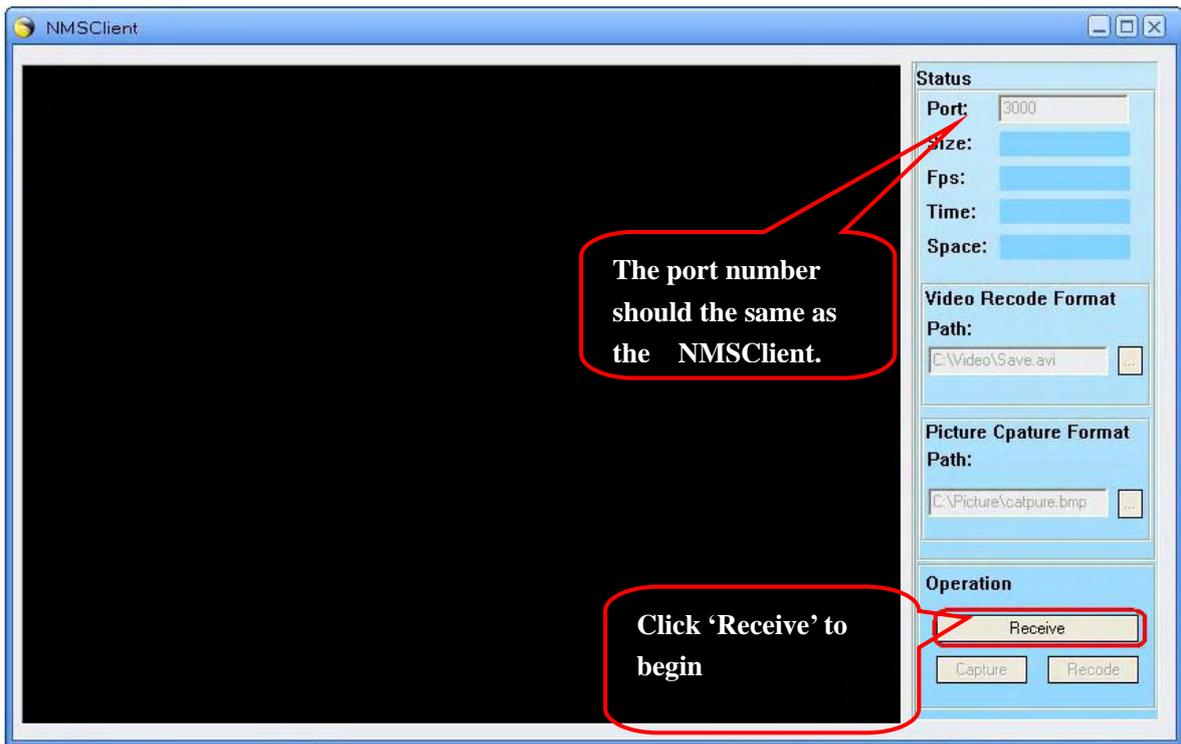
- (2) Click the button  , a “Configure” dialog box appears. Set the IP Address (The IP Address of the PC), port number (rang from 2000 to 5000), and click “Start” button, the system begins to send the data via WIFI wireless net. The button now changes from Start to Stop; you can click “Stop” to stop sending.



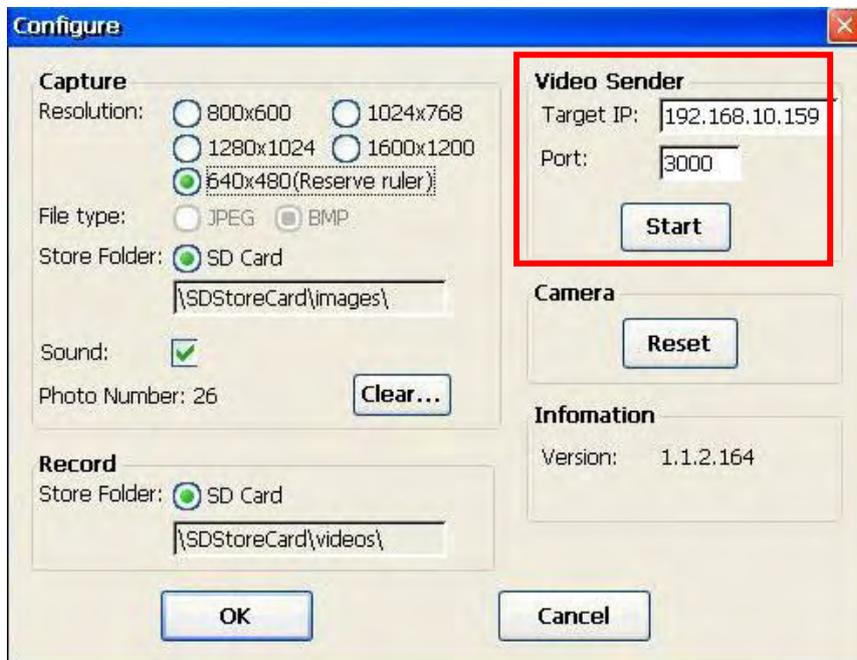
Now we have finished the setting of the LCD digital, and it is sending video, you can click “Stop” to stop sending video.

#### (4) The PC begin to receive images

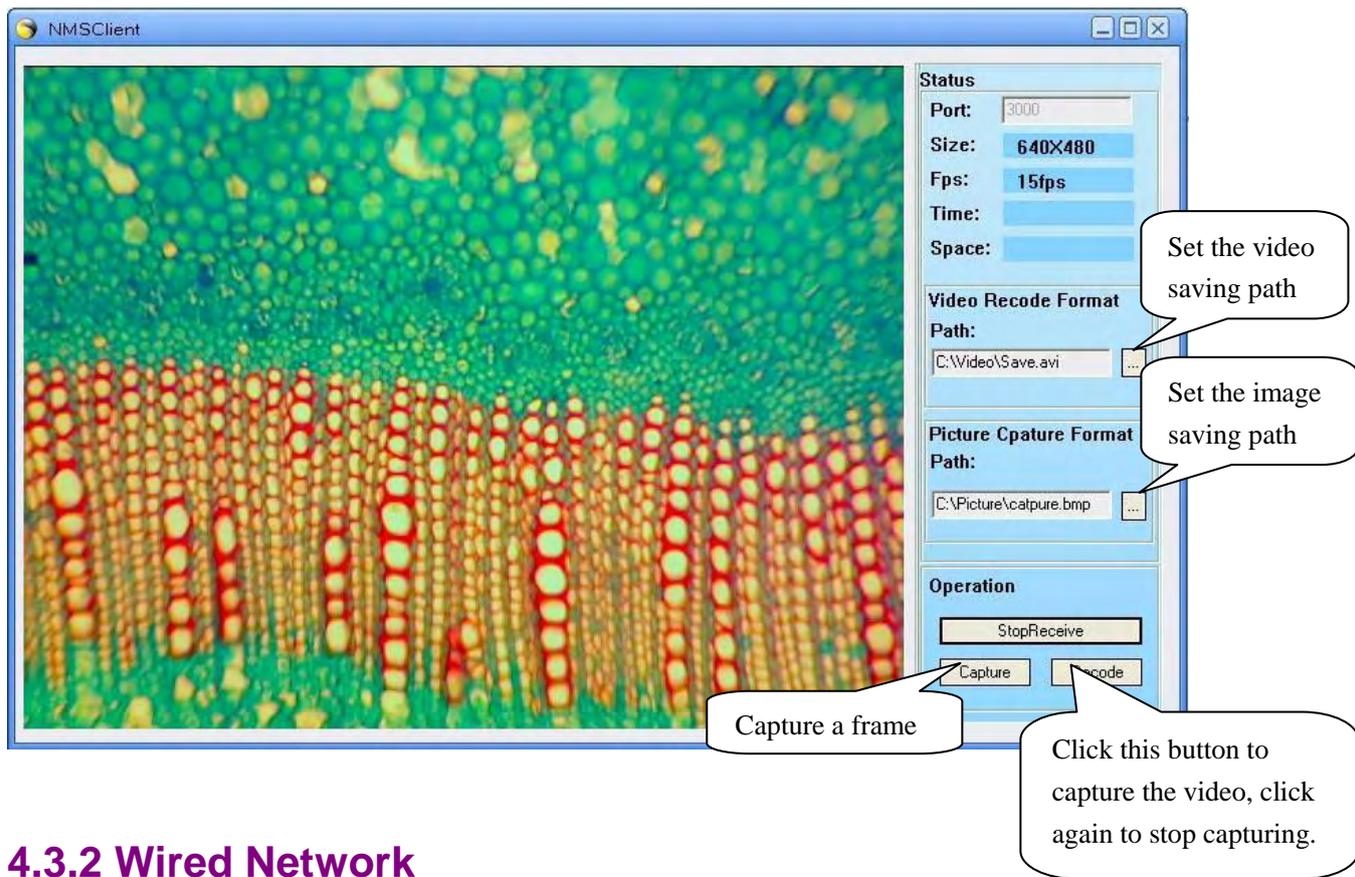
- (1) Make sure the software NMSCClient has been installed on the PC.
- (2) Launch the “NMSCClient” software.
- (3) Click the Receive button.



**Attention:** The port number of video sender and the NMSClient should be the same. And make sure your microscope video sender has been started.



(4) The NMSClient begins to receive video, and displays the real time video. You can capture images or record videos.



### 4.3.2 Wired Network

#### (1) Link the LCD microscope to the LAN

- (1) Link the LCD digital microscope to the router with network cable ([straight cable](#))
- (2) Set the IP address of the LCD digital microscope, and the operation is the same as the Windows XP system.

**Note:** the LCD's IP address should in the same LAN as the router.

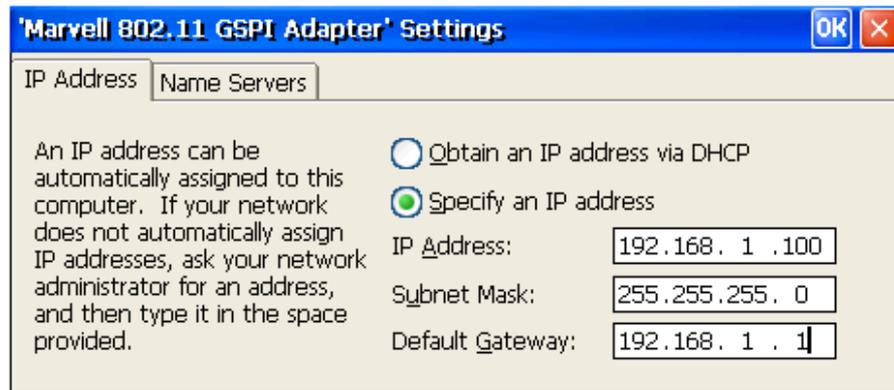
Click "Start-> Settings->Network and Dial-up Connections";



Double click the wire network icon 



Set the IP address, for example



Click OK.

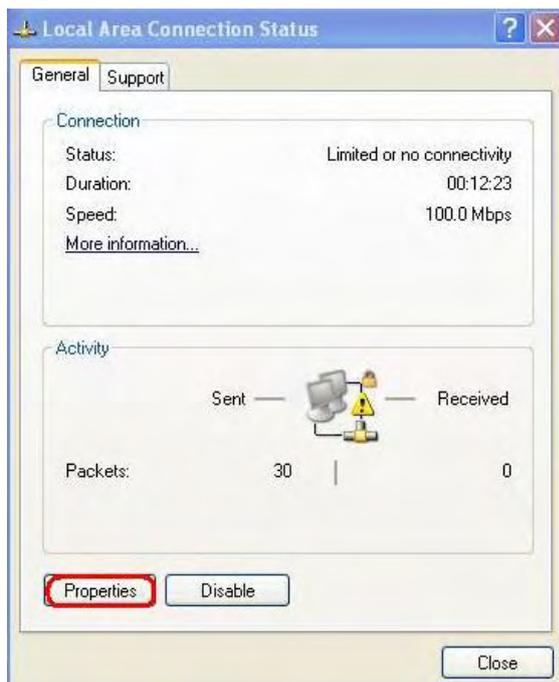
## (2) Link the PC to the LAN

(1) Link the PC to the **router** with network cable ([straight cable](#))

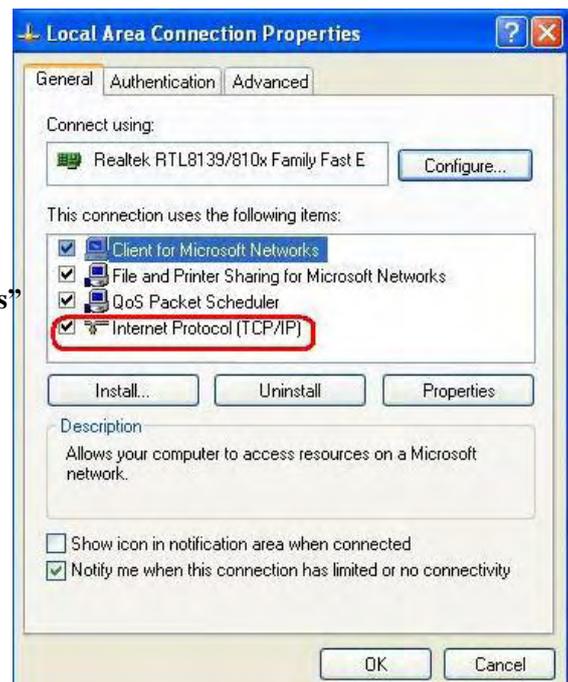
(2) Set the IP address of the PC.

**Note:** The PC's IP address should in the same LAN as the router.

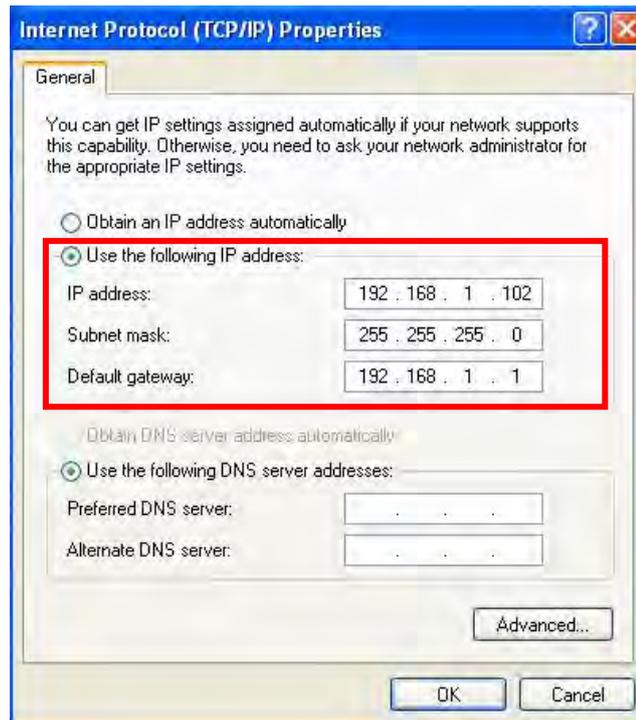
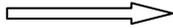
Double click the icon  on the task bar 



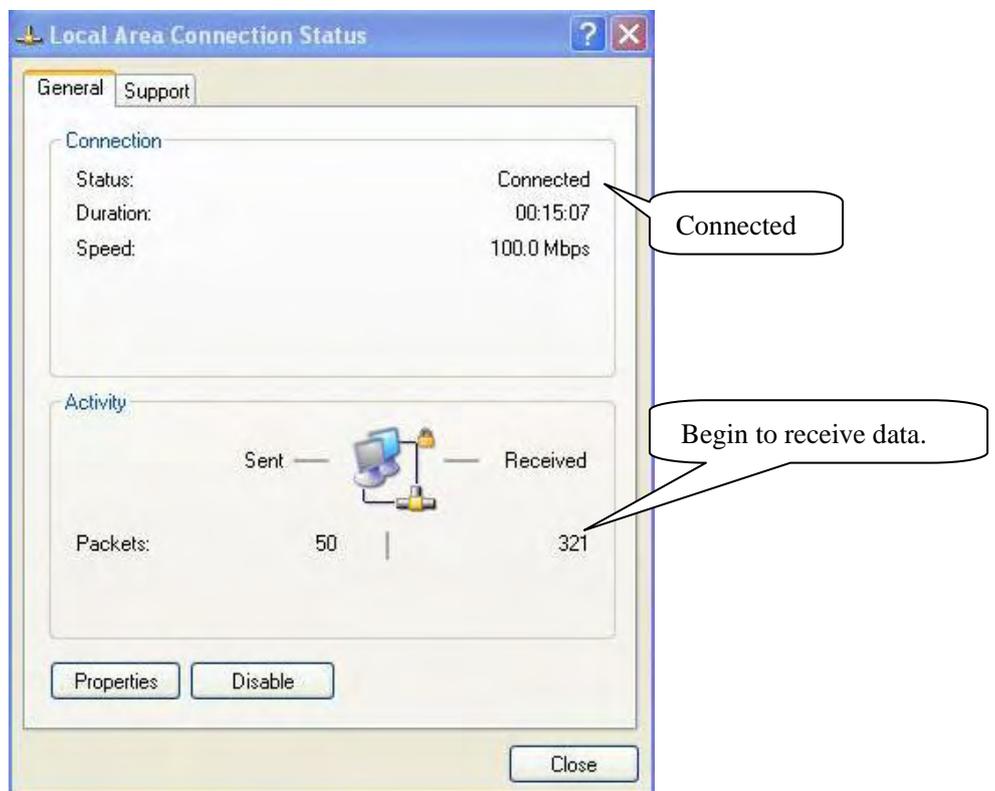
Click  
"Properties"



Click "Internet Protocol(TCP/IP)



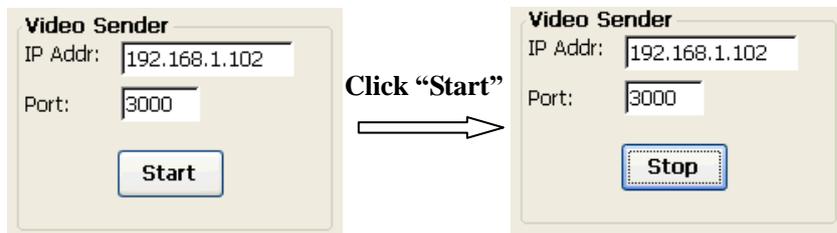
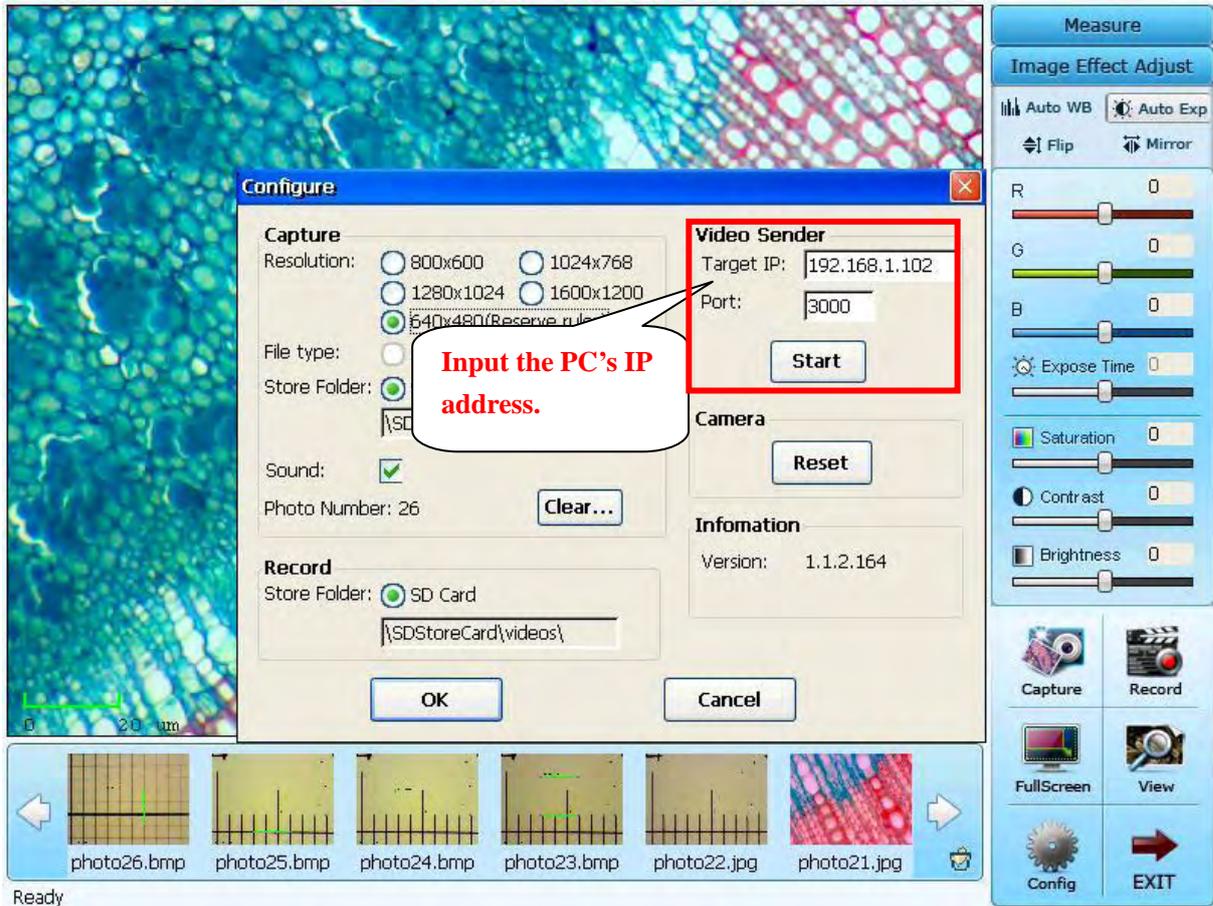
Now we have set the IP address of the PC, if the PC begins to receive, you will find the local area connection status displays as follows:



**(3) The LCD microscope begins to send images**

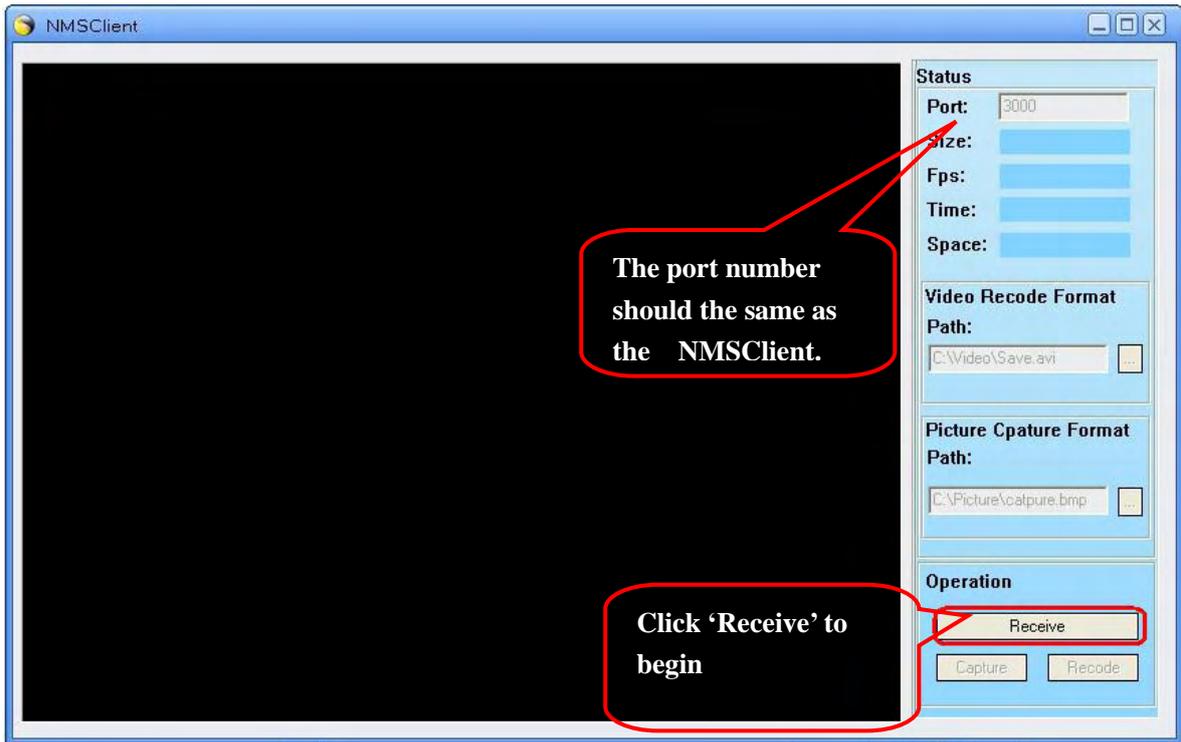
(1) Launch your software “NMS” on the desktop.

(2) Click the button  , a “Configure” dialog box appears. Set the IP Address as the PC’s IP address, port number (range from 2000 to 5000), and click “Start” button, the system begins to send the datas. The button now changes from Start to Stop; you can click “Stop” to stop send.

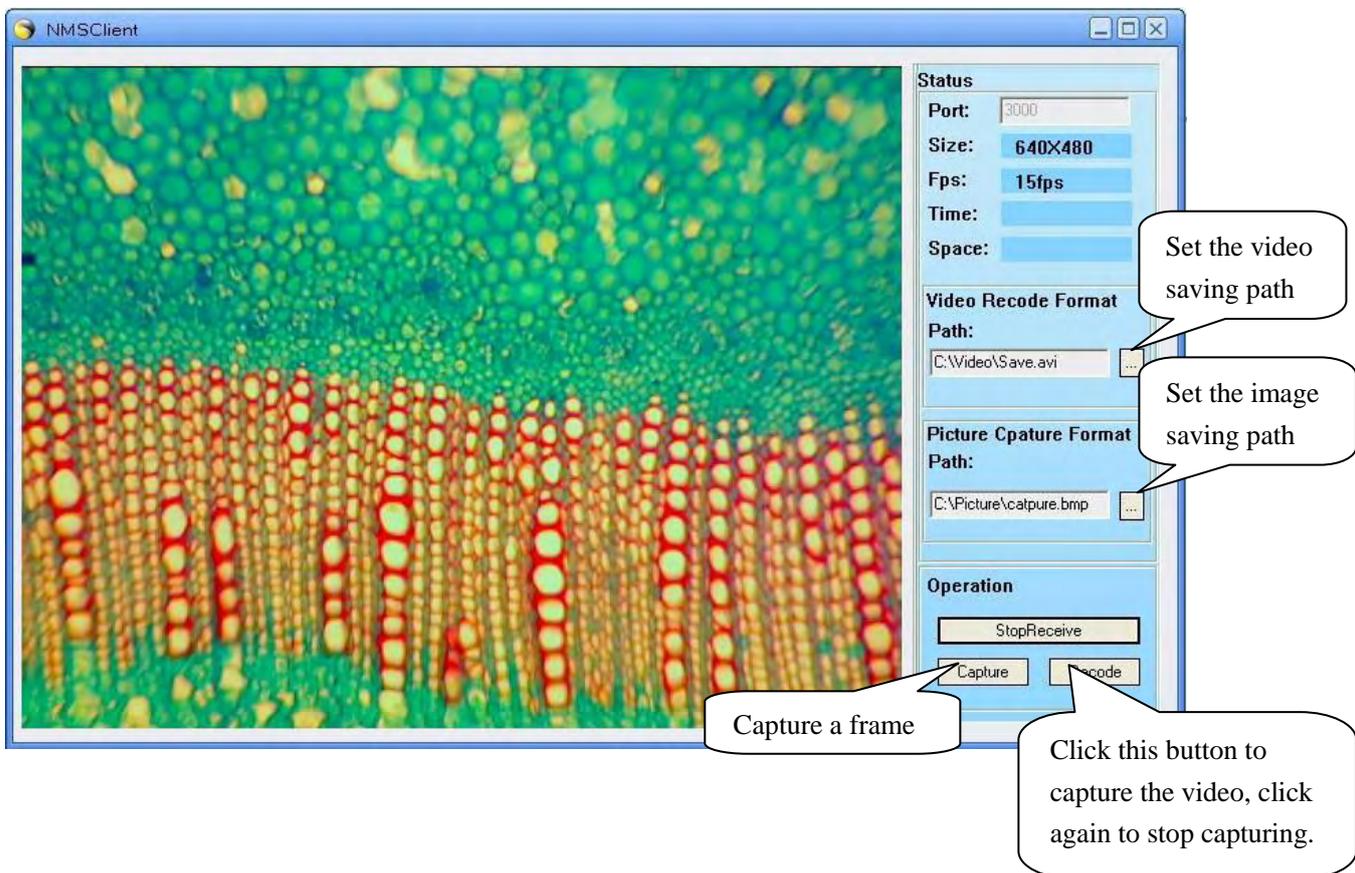


#### (4) The PC begin to receive images

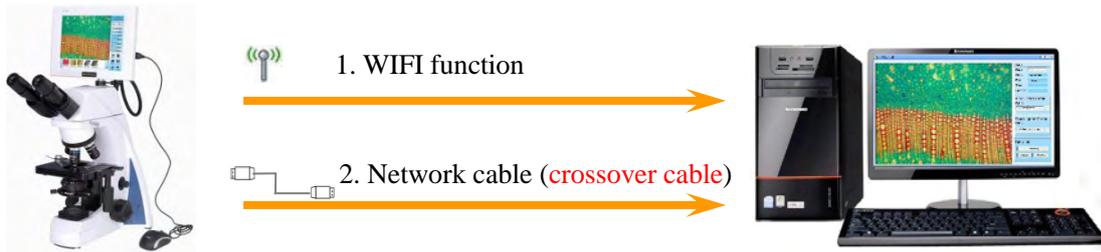
- (1) Make sure the software NMSClient has been installed in the PC.
- (2) Launch the “NMSClient” software.
- (3) Click the Receive button.



(4) Wait a minute, the NMSClient begins to receive video, and displays the real time video. You can capture images or record videos.



## 4.4 Point-to-point Model



### Attention:

1. Use the WIFI function, the PC receiver must support wireless function, please check whether your network card support wireless function.
2. Use network cable to link the LCD Microscope and PC, the network cable must be a crossover cable. See the part V to know [what are straight and crossover cable](#).
3. PC receiver must install the NMSClient software to receive the images sent by the LCD microscope.
4. In this model, one LCD microscope can only communicate with one PC, it cannot communicate with more than two PCs.
5. In order to ensure the image transmission quality when using the WIFI function, please make sure the LCD microscope is not very far from the PC and in a non-blocking space.

### 4.4.1 WIFI Function

**For point-to-point communication, you need a computer with a wireless network card.**

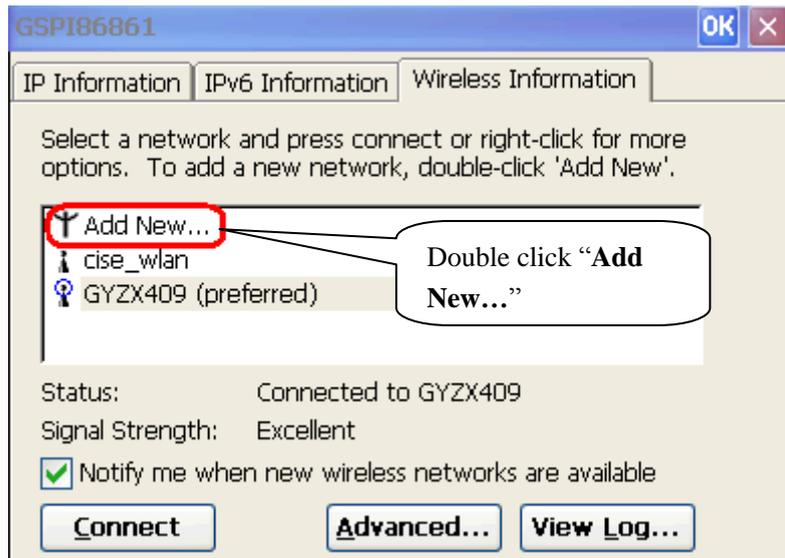
The LCD Digital Microscope communicates with the PC directly, without a router.

#### (1) New point-to-point network

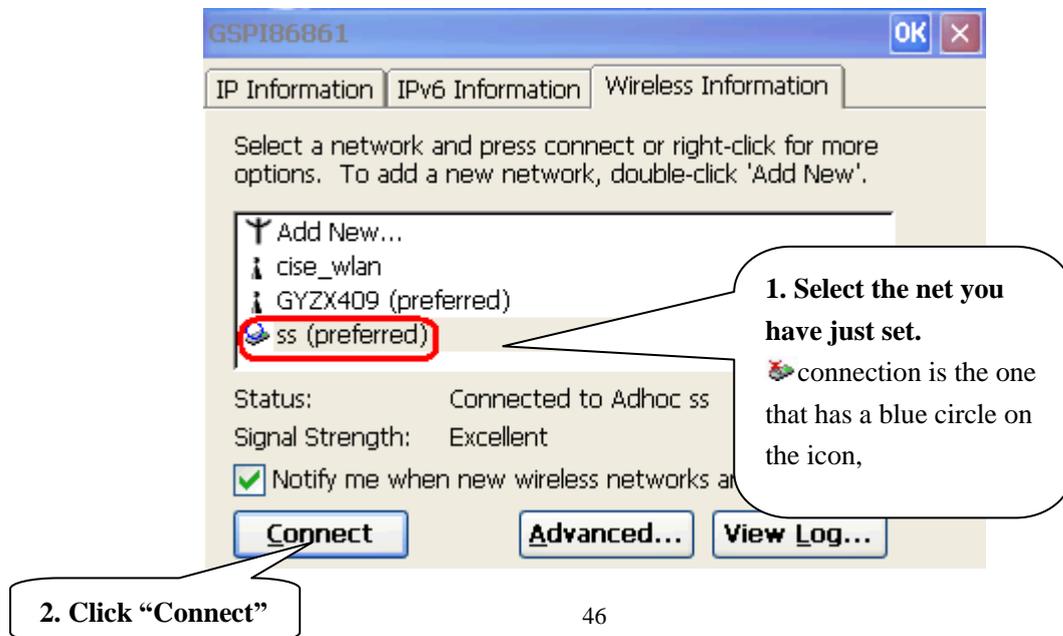
- (1) Start your system Window CE.
- (2) A dialog box appears. You can also get this dialog by double clicking the icon  on the task bar.



- (3) Double click “Add New...”.
- (4) Comes out a “Wireless Network Properties” dialog. Settings should be as below:



(5) After setting, there's a new point-to-point (computer-to-computer) network has been setup.



(4) Set the IP address of the LCD digital microscope, the same operation as the Windows XP system.

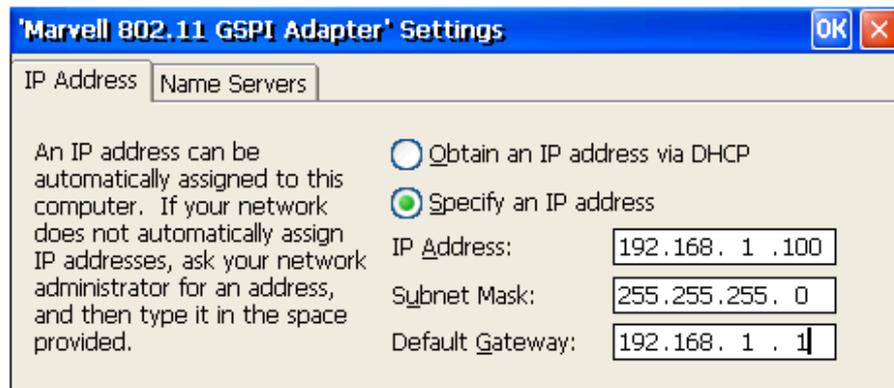
Click “Start-> Settings->Network and Dial-up Connections“;



Double click the wireless icon 



Set the IP address, for example



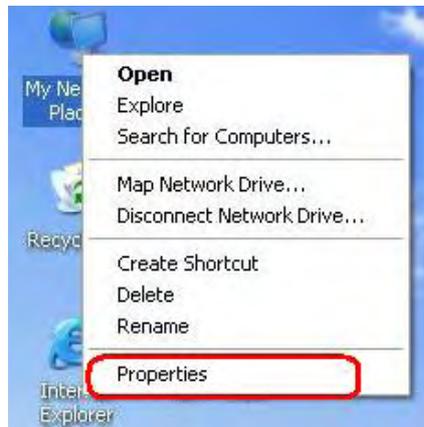
Click OK.

## (2) Link the PC to the new network

**Make sure your PC has a wireless network card and the card has the installed driver.**

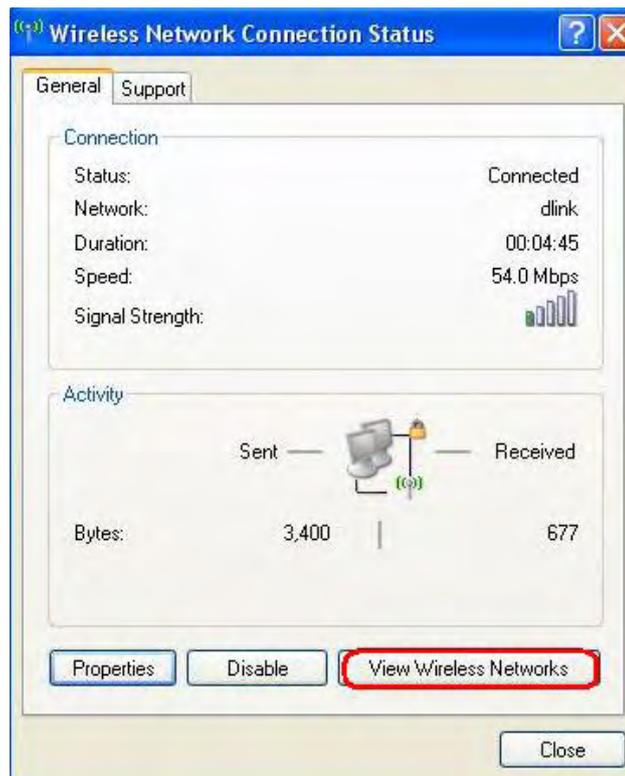
First, you should set the PC's IP address to the same LAN as the LCD digital microscope.

1. Right click the My Network Places icon  on the desktop, click 'Properties'.

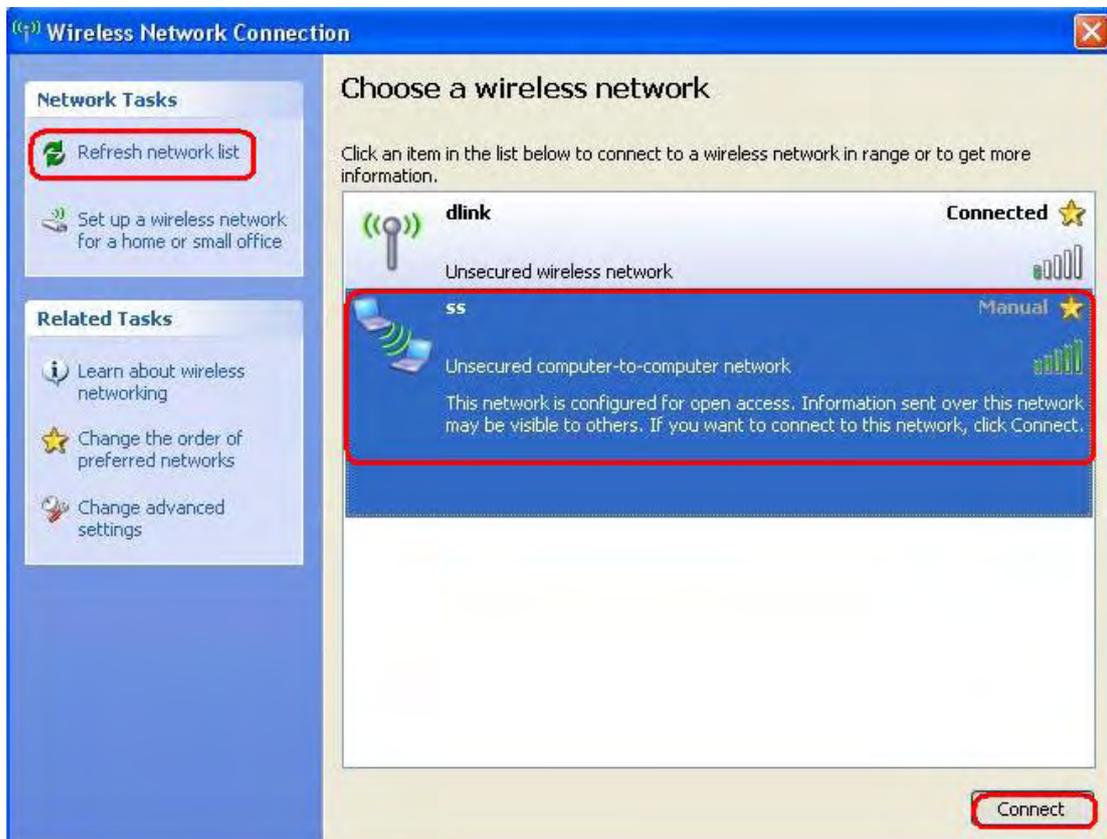


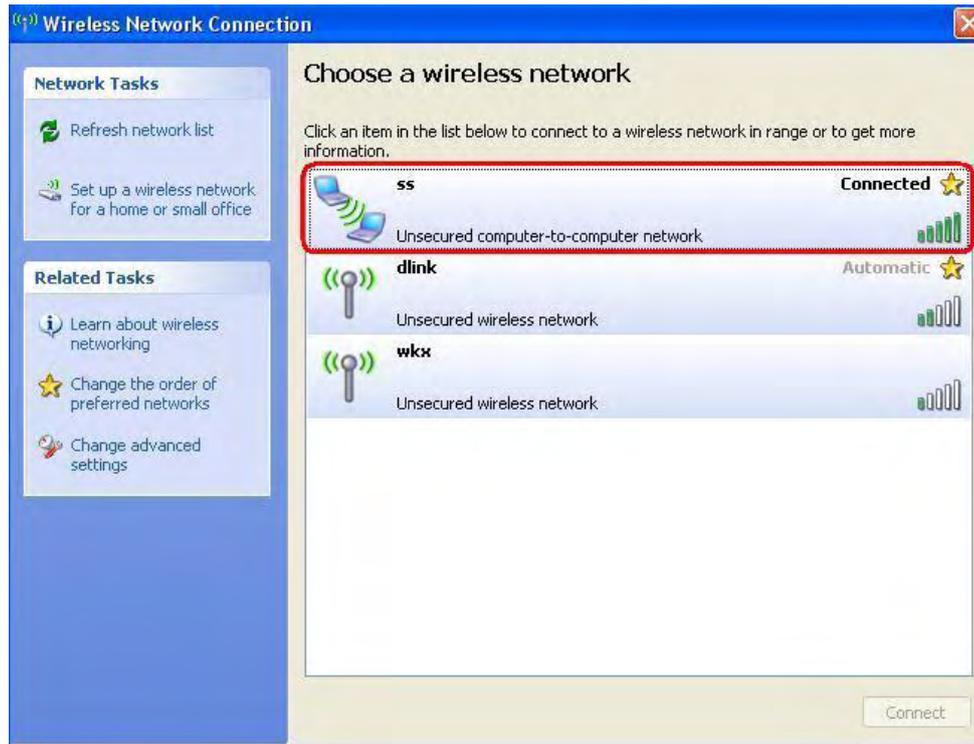
2. Double click the "Wireless Network Connection". There will come out a 'Wireless Network Connection Status' dialog. Or you can also get this dialog by double clicking the icon  on the task bar. 



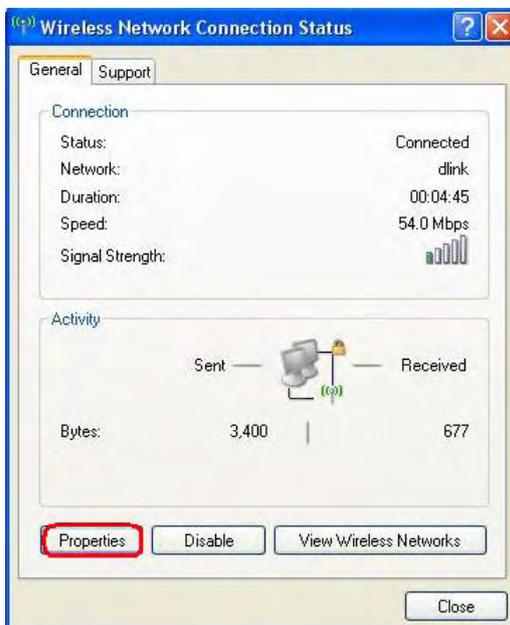


3. The system will search the wireless network by itself, please select the Point-to-Point network you have just created. If not, please click the “Refresh network list” on the left control bar. Then click the button “Connect”.

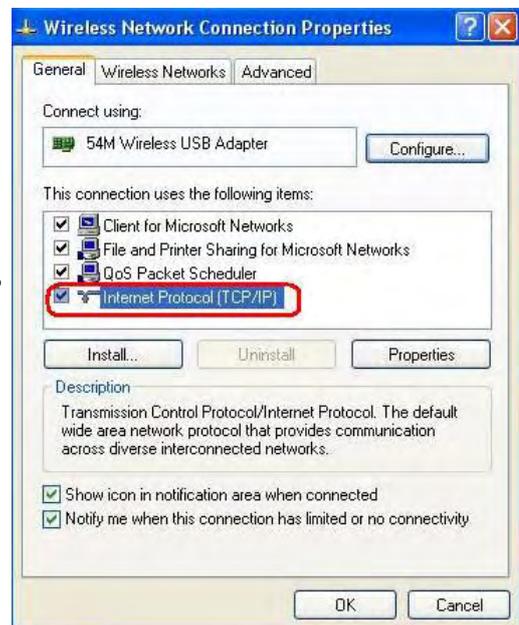




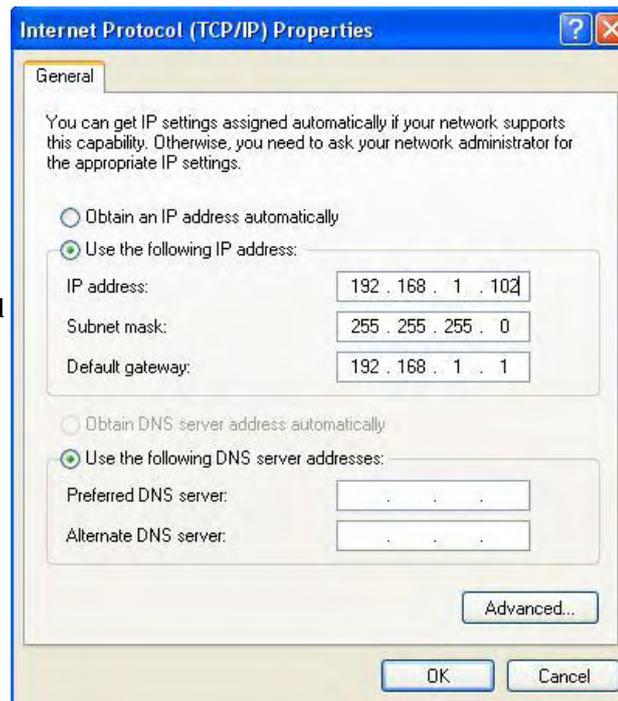
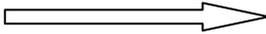
#### 4. Click Properties



Click  
"Properties"  
→



Click “Internet Protocol (TCP/IP) Properties”

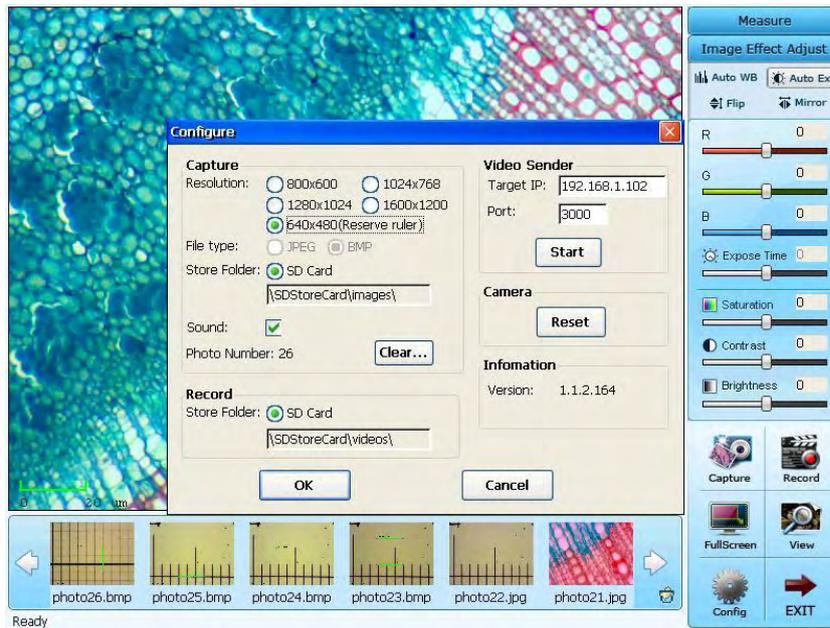


**Attention: The IP address should be set to in the same LAN as the LCD digital microscope.**

### (3) The LCD microscope begin to send images

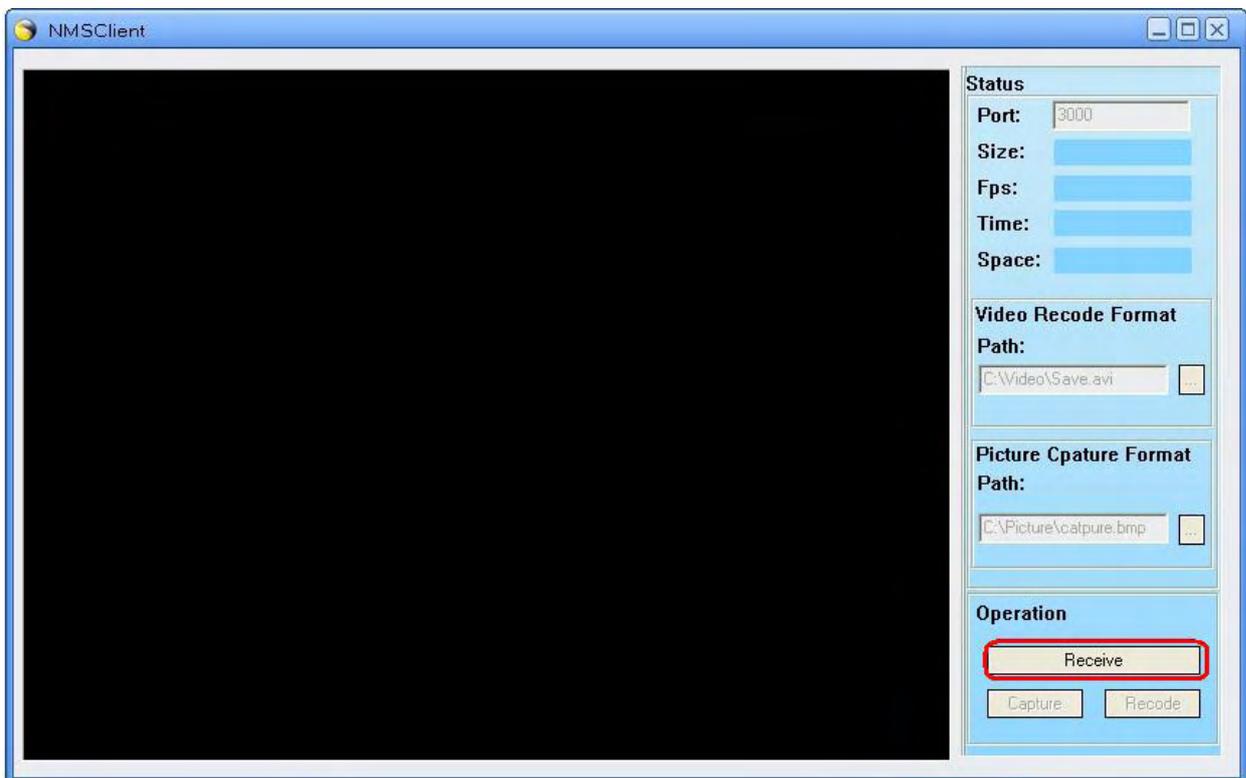
(5) Start your measuring software “NMS”

(6) Click the button , a “Configure” dialog box appears. Set the IP Address (reference the router), port number (rang from 2000 to 5000), and click the “Start” button, the system begins to send the data via WIFI wireless network. The button now changes from Start to Stop; you can click “Stop” to stop sending.

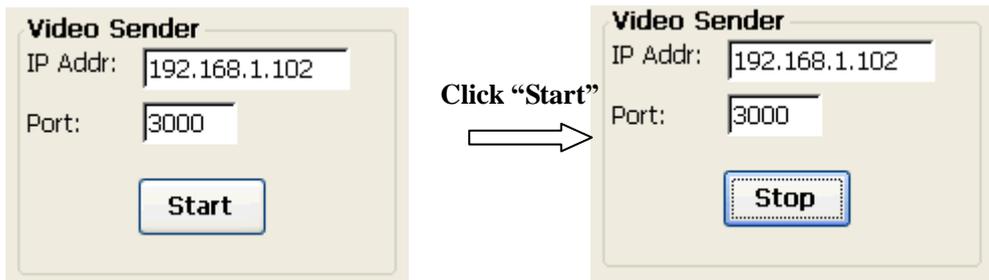


#### (4) The PC begin to receive images

- (1) Make sure the software NMSClient has been installed in the PC.
- (2) Launch the “NMSClient” software.
- (3) Click the Receive button.

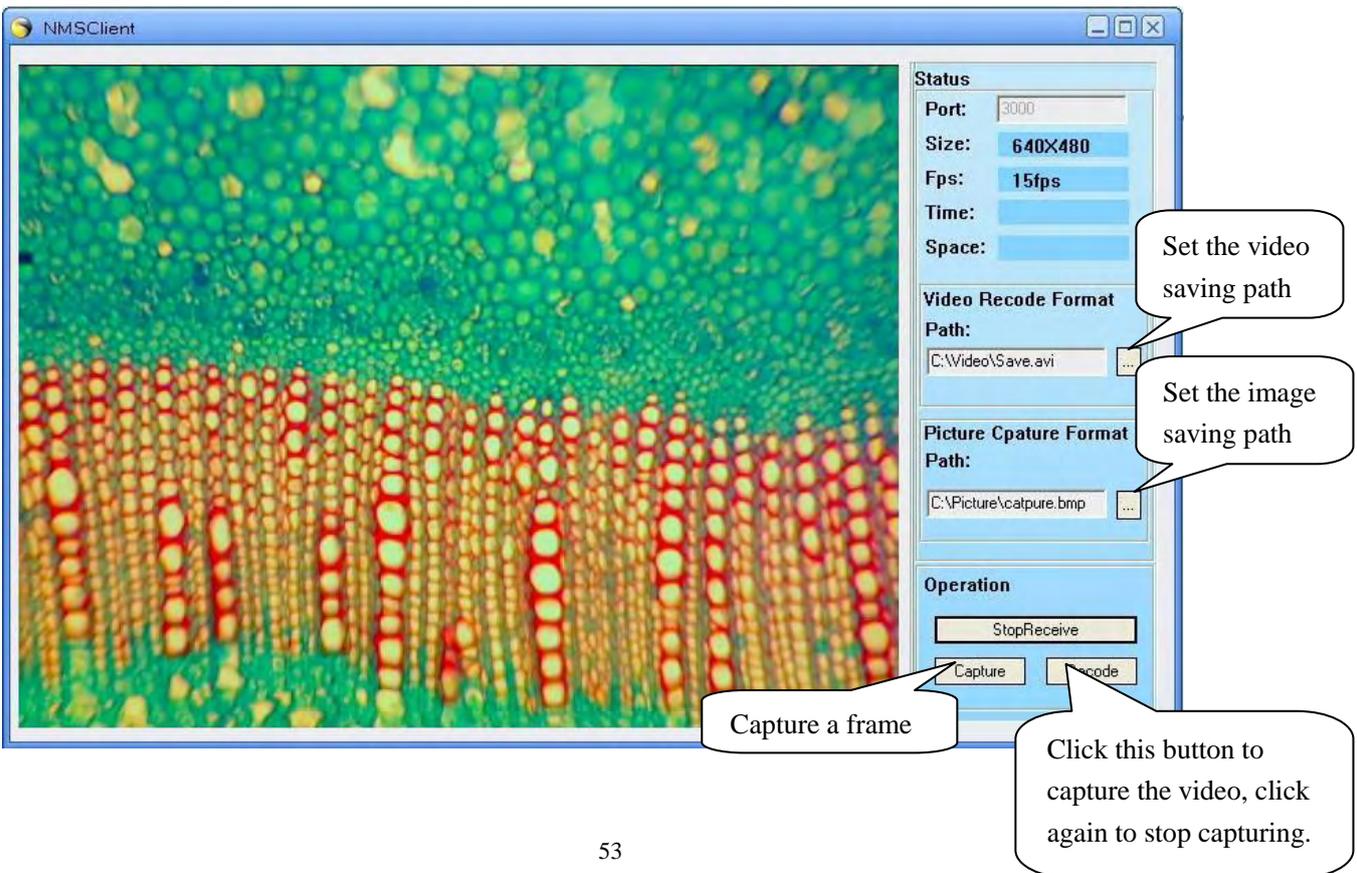


Attention: The port number of video sender and the NMSClient should be the same. Make sure your microscope video sender has been started.



**Attention: Sometimes a 'windows security Alert' dialog box appears -- just click the 'Unblock' button.**

(4) The NMSClnt begins to receive video, and displays the real time video. You can capture images or record videos.



## 4.4.2 By Network Cable (crossover cable)

### (1) Set the LCD microscope

(1) Link the LCD digital microscope to the PC with network cable (**crossover cable**)

(2) Set the IP address of the LCD digital microscope

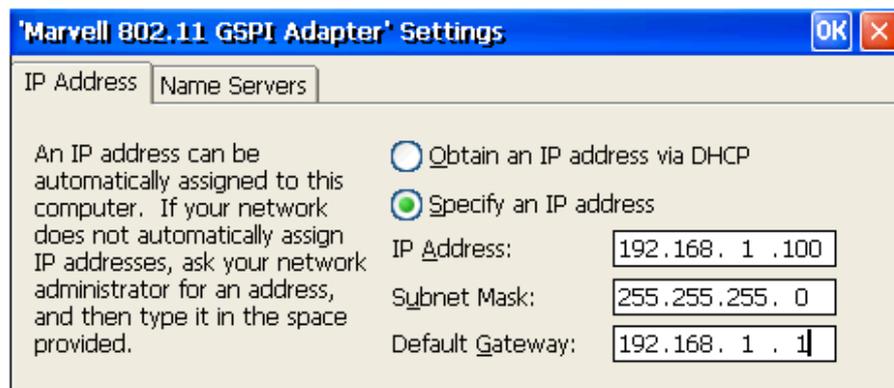
Click “Start-> Settings->Network and Dial-up Connections“;



Double click the wired network icon 



Set the IP address, for example



Click OK.

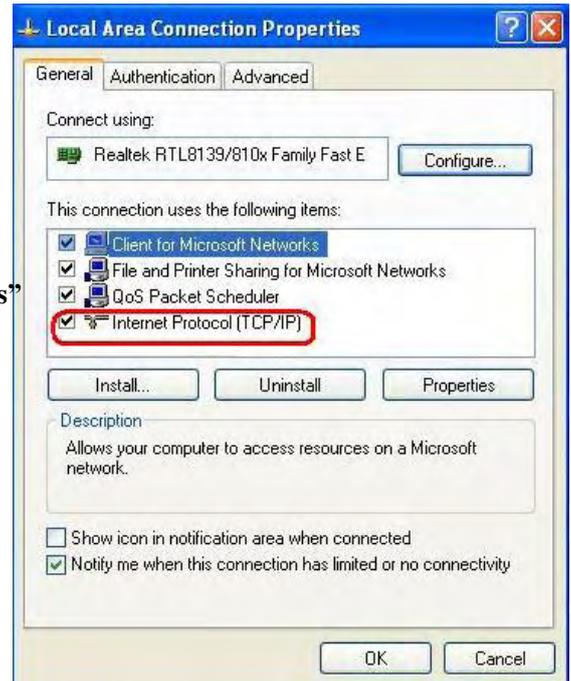
### (2) Set the PC

(1) Double click the icon  on the task bar

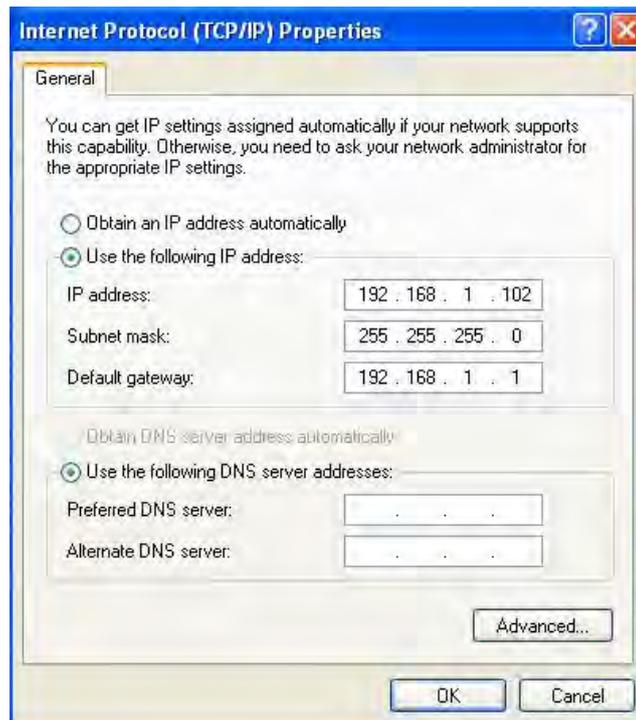




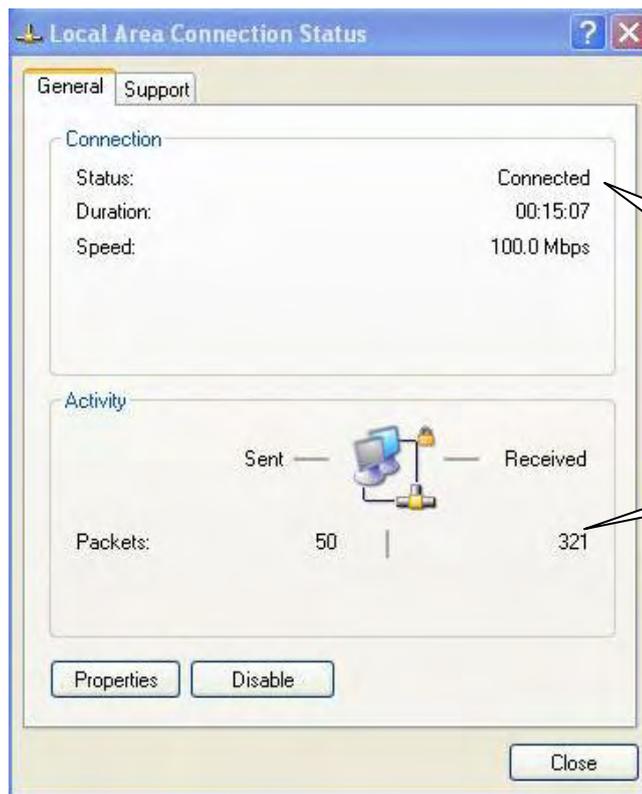
Click  
"Properties"



Click "Internet  
Protocol(TCP/IP)"



Now we have set the IP address of the PC, if the PC begins to receive, you will find the local area connection status display as follows:

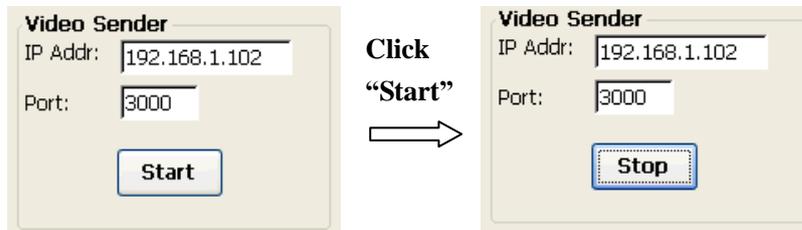
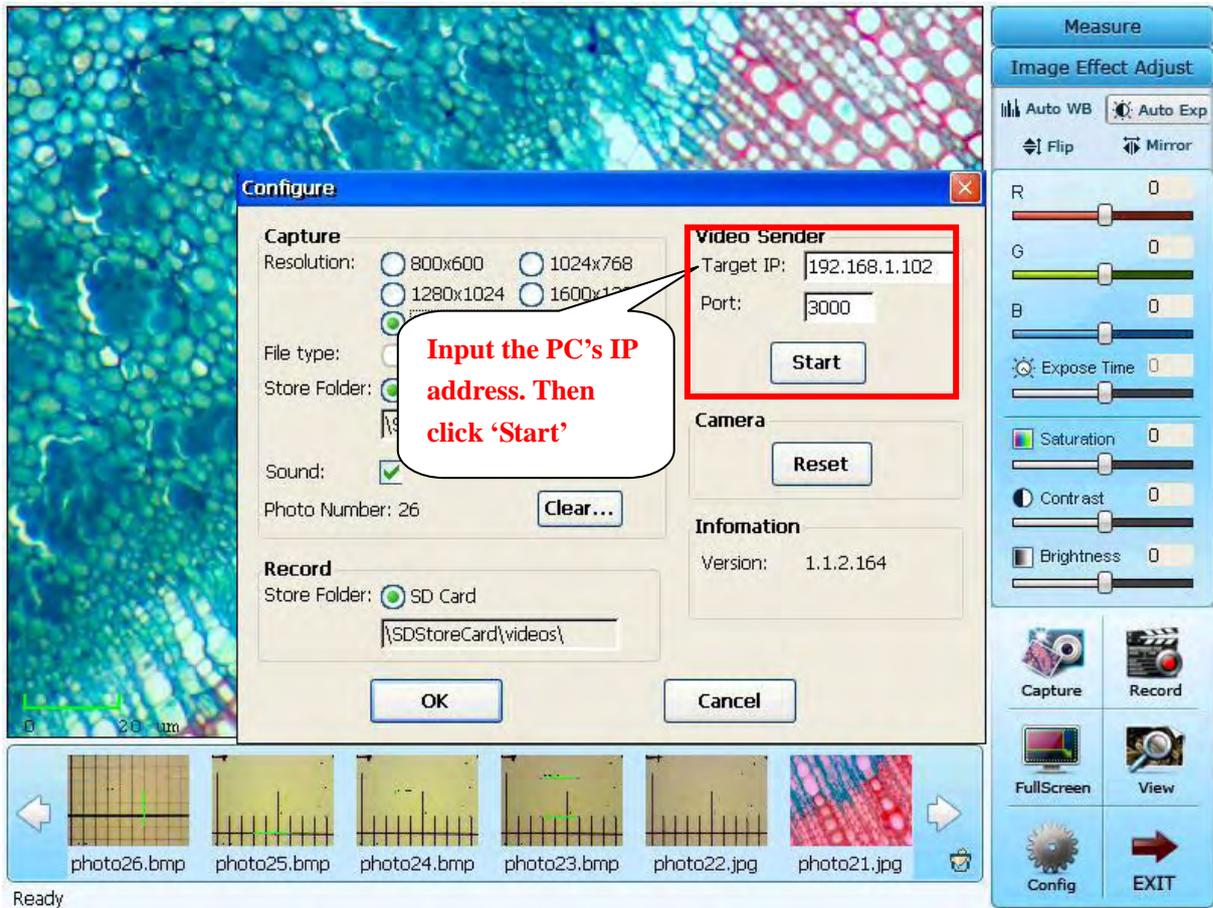


Connected

The packets number will be changed if it begins to receive data.

### (3) The LCD microscope begin to send images

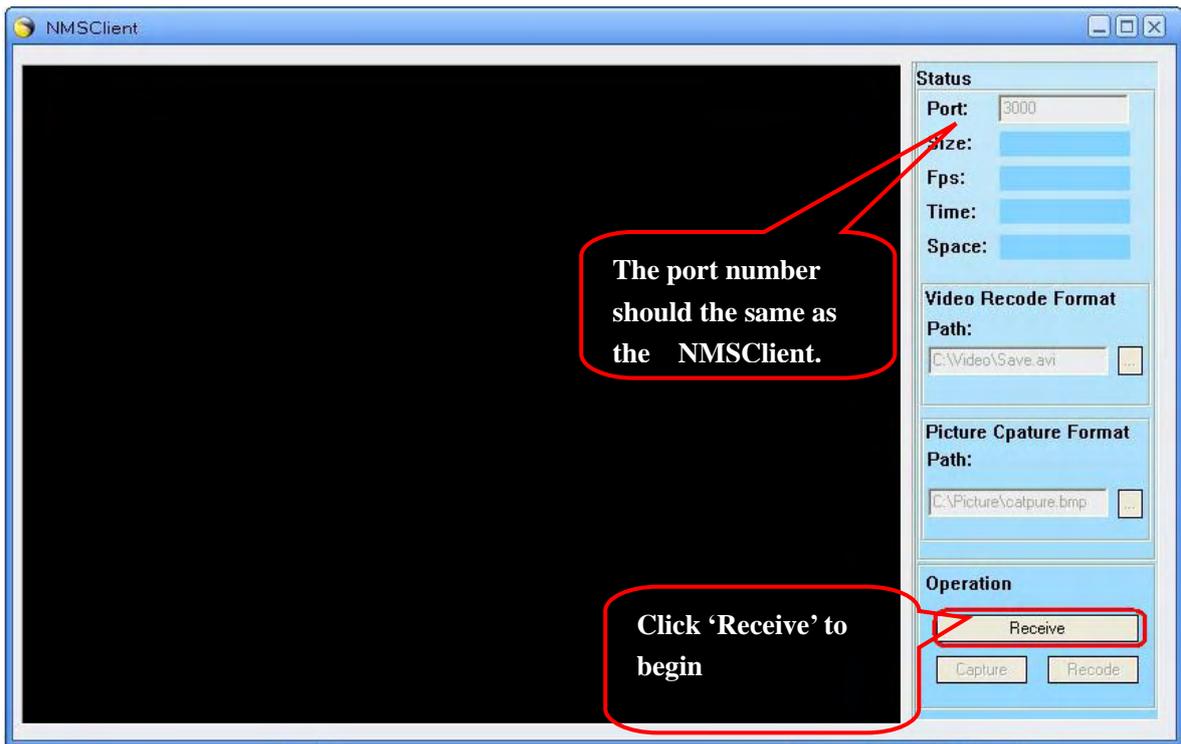
- (1) Start your software "NMS"
- (2) Click the button , there will come out an "Configure" dialog, set the IP Address (The IP Address of the PC), port number (range from 2000 to 5000), and click the "Start" button, the system begins to send the data via WIFI wireless network. The button now changes from Start to Stop; you can click "Stop" to stop sending.



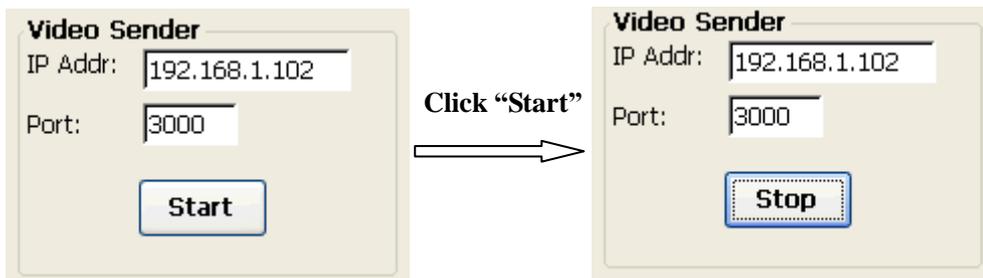
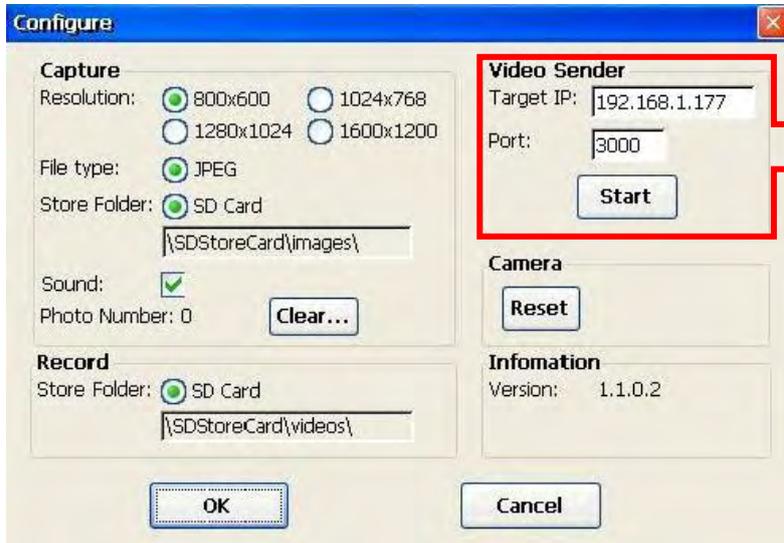
Now we have finished the setting of the LCD digital, and it is sending video, you can click “Stop” to stop sending video.

#### (4) The PC begin to receive images

- (1) Make sure the software NMSCient has been installed in the PC.
- (2) Launch the “NMSCient” software.
- (3) Click the Receive button.



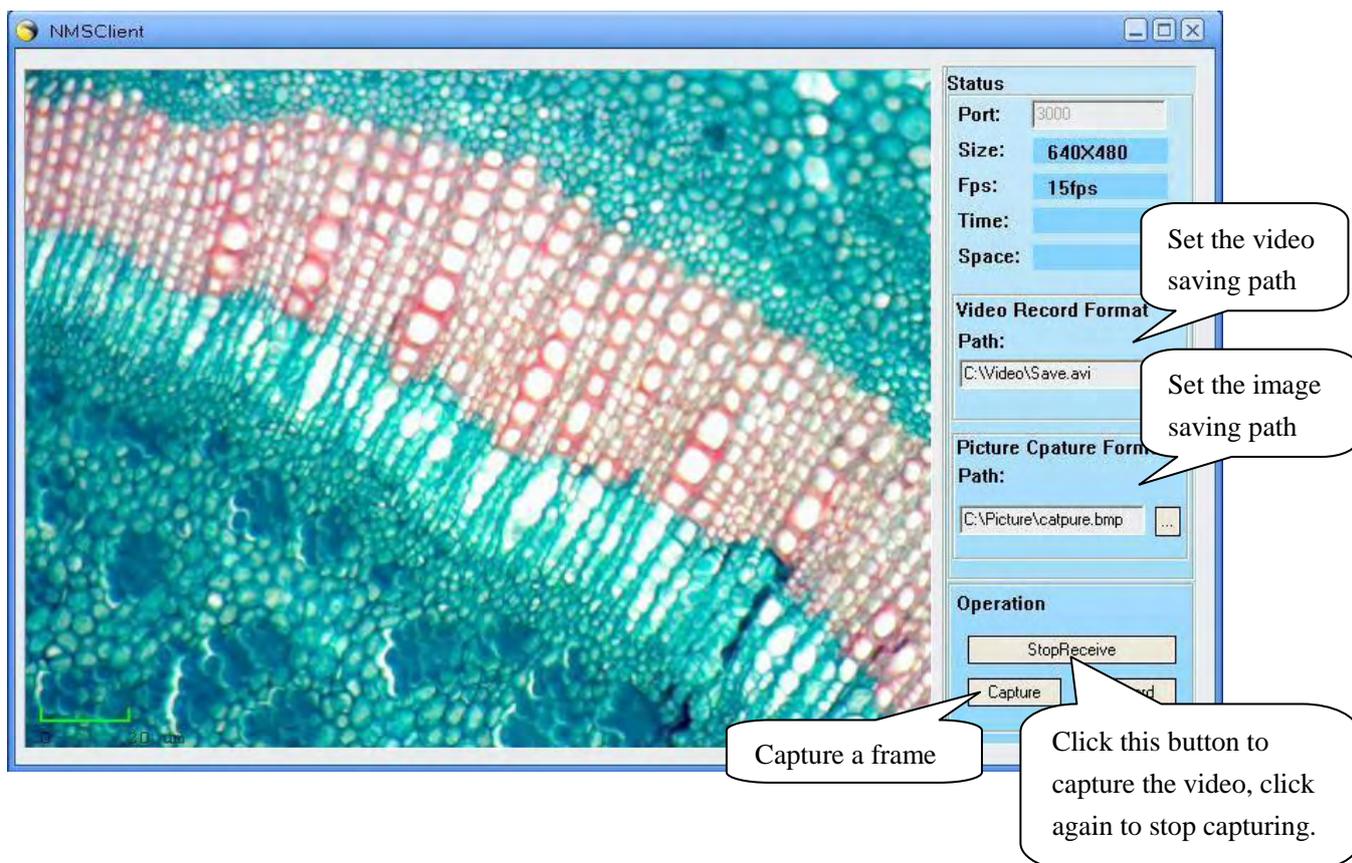
**Attention:** The port number of video sender and the NMSClient should be the same. Make sure your microscope video sender has been started.





**Attention: Sometimes a 'windows security Alert' dialog box appears -- just click the 'Unblock' button.**

(4) The NMSClnt begins to receive video, and displays the real time video. You can capture images or record videos.



## V. Common Failure and Solution

When failure occurs, please look up the cause from the codes listed below to get rid of the failure.

# Common Failure and Solution Codes

The failure and solution contains 3 sections: Optical section, mechanical section and electronic section. Here we just give the electronic section

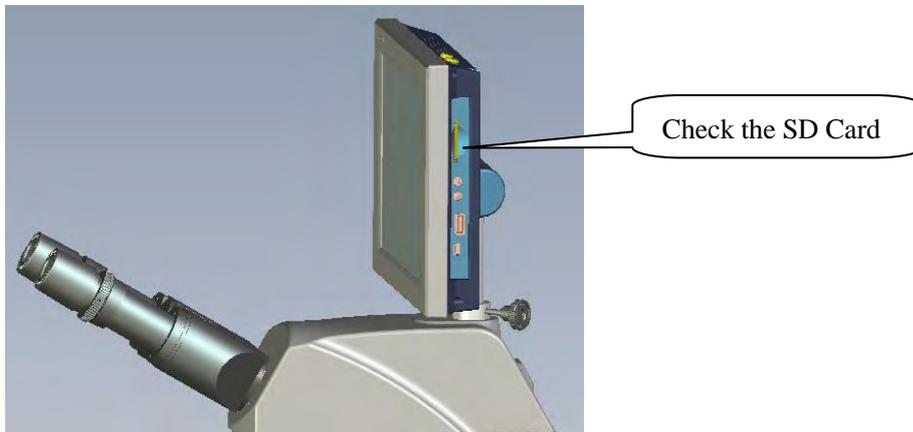
## 5.1 Electric section

### (a) Error messages

#### Code5:

**Indication:** Can't save image, please check SD card. Code:5.

**Solution:** The SD card is not in the position, check and put it in the position.



#### Code6:

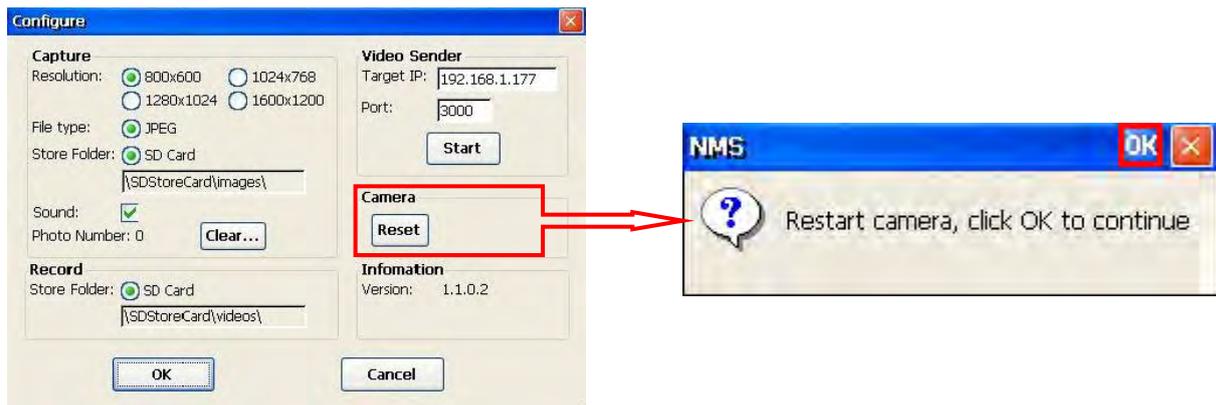
**Indication:** SD card maybe full, please check. Code: 6.

**Solution:** Check whether the SD card is full; make sure the SD Card has enough memory space.

#### Code7:

**Indication:** Capture failed, Code: 7, please reset camera by clicking "Reset" button on Config Dialog window.

**Solution:** Click the  button to open the configure dialog, and then click the 'Reset' button to reset the camera.



## Code9:

**Indication:** Capture failed, Code: 9, please reboot device to solve this issue.

**Solution:** Reboot the system to solve the problem.

## (b) Can not switch on the system

**Problem:** Can not switch on the system or the system can not work.

**Causes:** Power isn't connected properly.

**Solutions:** Check the power supply of the LED head, make sure the 12V DC is connect properly. Or Plug the power and link again.

## (c) Blur image on LCD

**Problem:** Blurred image on LCD or the system doesn't work normally

**Causes:** The line for data transfer isn't connected tightly.

**Solutions:** Check and link again. Make sure the connection is secure/tight.  
(Very important)

## (d) Right key function

**Problem:** Cannot use the right key function of the digital LCD.

**Solutions:** 1) Use a mouse to operate, just plug a mouse to the USB port of the LCD.

2) Use the handwriting pen, press for more than 2 seconds, the system will respond as a right click.

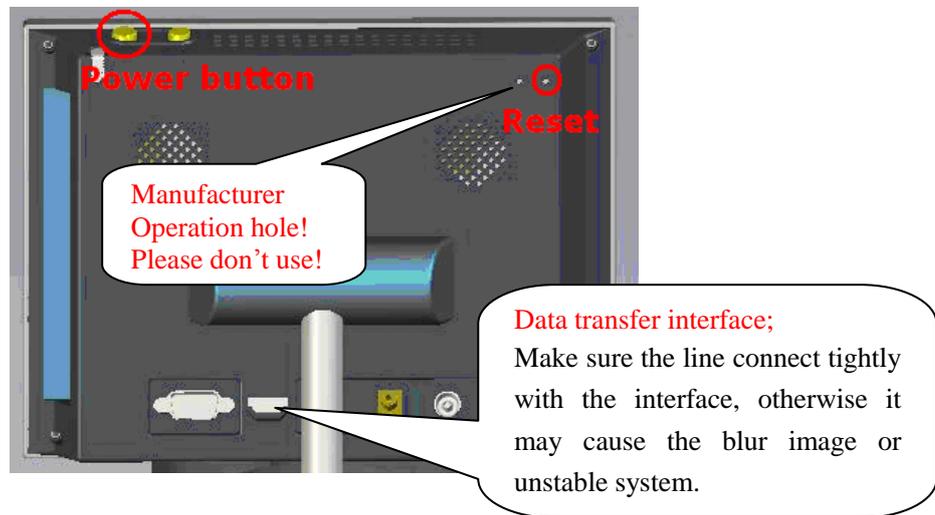
## (e) System Stopped or Froze

**Problem:** The system stopped or froze, and no response of any operation.

**Causes:** Wrong operation or unstable voltage.

**Solutions:** 1) Press the "Power Button" for more than 2 seconds,

2) Click the small "Reset" hole with the end of a paper clip (or other tools that have a small point) to reset your system.



## (f) No respond of the touch screen.

**Problem:** The touch screen isn't responding properly to your taps.

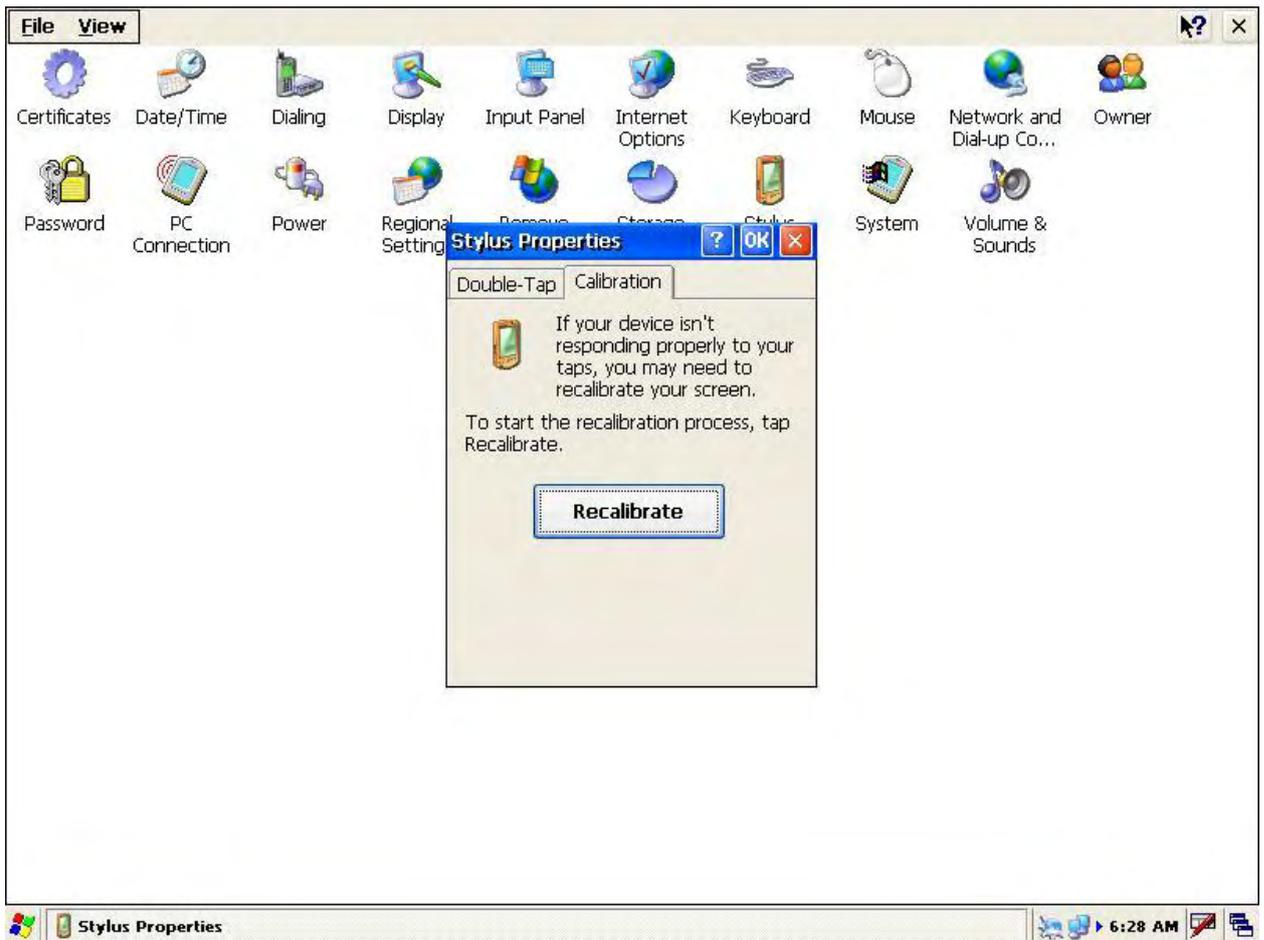
**Causes:** The screen stylus is not in the right place.

**Solutions:** Recalibrate your screen again. Do as follows:

1) Enter the control panel.



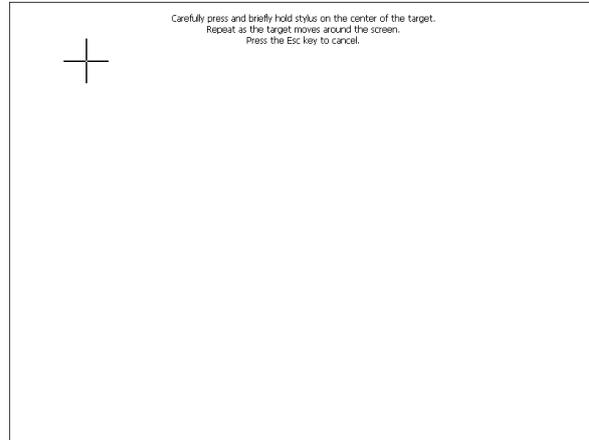
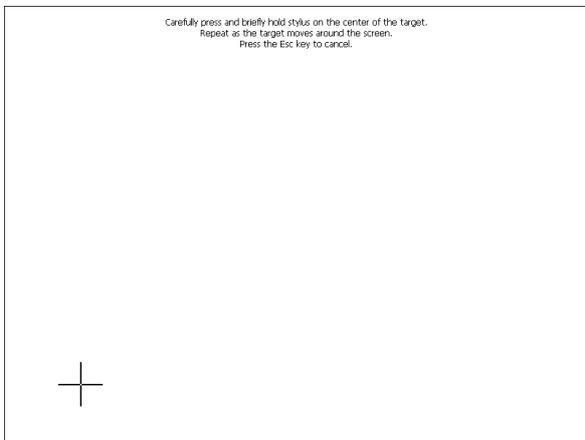
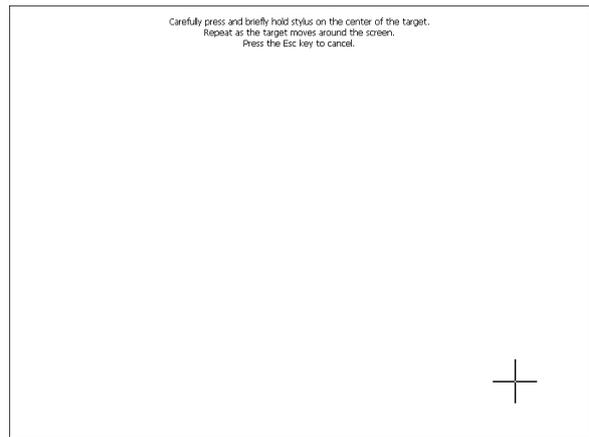
2) Double click the 'Stylus' button, a 'Stylus Properties' dialog box appears; click the 'Recalibrate' button.



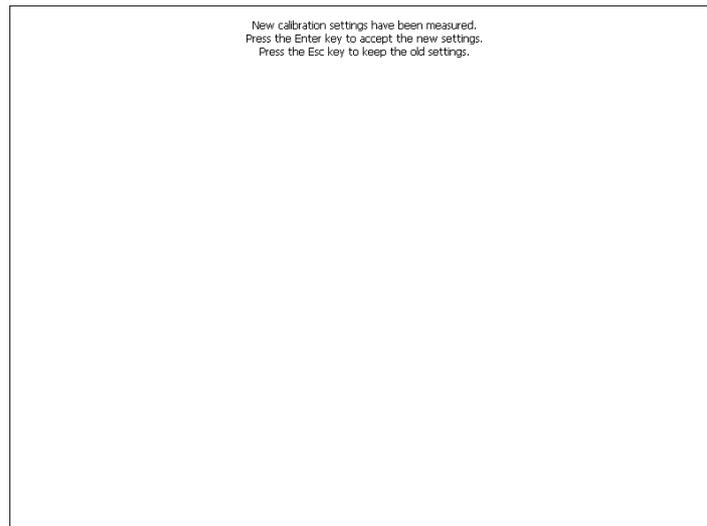
3) There will be a crosshair in the center of the screen. **Carefully press and briefly hold stylus on the center of the target.** Press the Esc key to cancel. As follows:



4) Repeat as the target moves around the screen. Press the Esc key to cancel. As follows:



5) New calibration settings have been measured. Press the **Enter** key to accept the new settings. Press the **Esc** key to keep the old settings.



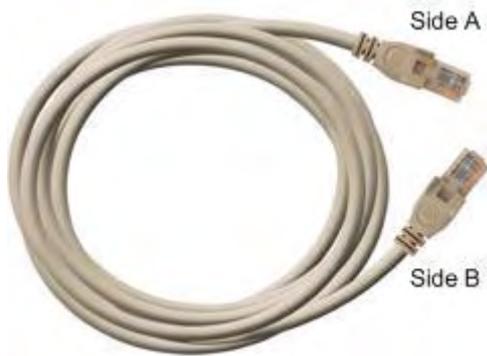
6) Now the screen recalibration has been finished, you can use the touch screen again.

## (g) What are Straight and Crossover cable

Common Ethernet network cables are straight and crossover cable. This Ethernet network cable is made of 4 pair high performance cable that consists of twisted pair conductors that are used for data transmission. Both ends of the cable are called RJ45 connectors.

The cable can be categorized as **Cat 5, Cat 5e, Cat 6 UTP cable**. Cat 5 UTP cable can support 10/100 Mbps Ethernet network, whereas Cat 5e and Cat 6 UTP cable can support Ethernet network running at 10/100/1000 Mbps. (You might heard about Cat 3 UTP cable, it's not popular anymore since it can only support 10 Mbps Ethernet network. )

Straight and crossover cable can be Cat 5, Cat 5e or Cat 6 UTP cable; the only difference is each type will have different wire arrangement in the cable for serving different purposes.



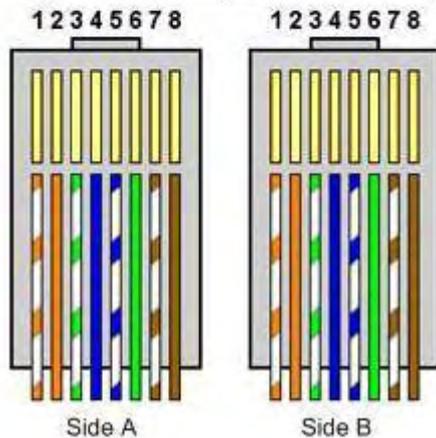
### **Straight Cable**

You usually use straight cable to connect different types of devices. This type of cable can be used to:

- 1) Connect a computer to a switch/hub's normal port.
- 2) Connect a computer to a cable/DSL modem's LAN port.
- 3) Connect a router's WAN port to a cable/DSL modem's LAN port.
- 4) Connect a router's LAN port to a switch/hub's uplink port. (normally used for expanding network)
- 5) Connect 2 switches/hubs with one of the switch/hub using an uplink port and the other one using normal port.

If you need to check what straight cable looks like. **Both sides (side A and side B) of cable have wire arrangement with same color**. Check out [different types of straight cable](#) that are available below:

Pin ID	Side A	Side B
1	Orange-white	Orange-white
2	Orange	Orange
3	Green-white	Green-white
4	Blue	Blue
5	Blue-white	Blue-white
6	Green	Green
7	Brown-white	Brown-white
8	Brown	Brown



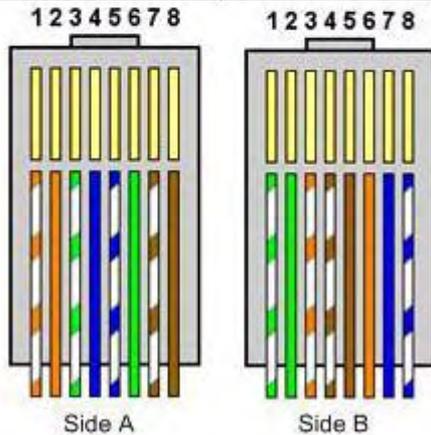
## Crossover Cable

Sometimes you will use crossover cable, it's usually used to connect same type of devices. A crossover cable can be used to:

- 1) Connect 2 computers directly.
- 2) Connect a router's LAN port to a switch/hub's normal port. (normally used for expanding network)
- 3) Connect 2 switches/hubs by using normal port in both switches/hubs.

In you need to check what crossover cable looks like, **both side (side A and side B) of cable have wire arrangement with following different color** .

Pin ID	side A	side B
1	Orange-white	green-white
2	Orange	green
3	green-white	orange-white
4	blue	brown-white
5	blue-white	Brown
6	green	orange
7	brown-white	Blue
8	brown	blue-white



Lastly, if you still not sure which type of cable to be used sometimes, **try both cables and see which works.**

**Note:** If there is **auto MDI/MDI-X** feature support on the switch, hub, network card or other network devices, you don't have to use crossover cable in the situation which I mentioned above. This is because crossover function would be enabled automatically when it's needed.

# MAINTENANCE

Please remember to *never* leave the microscope with any of the objectives or eyepieces removed and always protect the microscope with the dust cover when not in use.

# SERVICE

ACCU-SCOPE<sup>®</sup> microscopes are precision instruments which require periodic servicing to keep them performing properly and to compensate for normal wear. A regular schedule of preventative maintenance by qualified personnel is highly recommended. Your authorized ACCU-SCOPE<sup>®</sup> distributor can arrange for this service. Should unexpected problems be experienced with your instrument, proceed as follows:

1. Contact the ACCU-SCOPE<sup>®</sup> distributor from whom you purchased the microscope. Some problems can be resolved simply over the telephone.
2. If it is determined that the microscope should be returned to your ACCU-SCOPE<sup>®</sup> distributor or to ACCU-SCOPE<sup>®</sup> for warranty repair, pack the instrument in its original Styrofoam shipping carton. If you no longer have this carton, pack the microscope in a crush-resistant carton with a minimum of three inches of a shock absorbing material surrounding it to prevent in-transit damage. The microscope should be wrapped in a plastic bag to prevent Styrofoam dust from damaging the microscope. Always ship the microscope in an upright position; **NEVER SHIP A MICROSCOPE ON ITS SIDE**. The microscope or component should be shipped prepaid and insured.

## LIMITED MICROSCOPE WARRANTY

This microscope is warranted to be free from defects in material and workmanship for a period of five years from the date of invoice to the original (end user) purchaser. The illuminator and power supply are warranted for a period of one year from the date of invoice to the original (end user) purchaser. The camera/LCD screen are warranted for a period of one year from the date of invoice to the original (end user) purchaser. This warranty does not cover damage caused in-transit, misuse, neglect, abuse or damage resulting from improper servicing or modification by other than ACCU-SCOPE approved service personnel. This warranty does not cover any routine maintenance work or any other work, which is reasonably expected to be performed by the purchaser. Normal wear is excluded from this warranty. No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage or other conditions beyond the control of ACCU-SCOPE INC. This warranty expressly excludes any liability by ACCU-SCOPE INC. for consequential loss or damage on any grounds, such as (but not limited to) the non-availability to the End User of the product(s) under warranty or the need to repair work processes. Should any defect in material, workmanship or electronic component occur under this warranty contact your ACCU-SCOPE distributor or ACCU-SCOPE at (631) 864-1000. This warranty is limited to the continental United States of America. All items returned for warranty repair must be sent freight prepaid and insured to ACCU-SCOPE INC., 73 Mall Drive, Commack, NY 11725 – USA. All warranty repairs will be returned freight prepaid to any destination within the continental United States of America, for all foreign warranty repairs return freight charges are the responsibility of the individual/company who returned the merchandise for repair.

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