(The Digital Microscope DB2-180M)

AD2.0-N User Manual

Contents

1. Introduction

1.1 About AD2.0-N

AD2.0-N is a Brand new USB2.0 interface video capture device, with a digital image decoding chip which makes your image displays much more clearly and fluently.

1, USB2.0 interface, 480MB super high bandwidth;

2, High definition, can capture both image and video;

3, Image resolution can reach 720*576 for PAL system, and 720*480 for NTSC system;

4, Support external analog video signal;

5, Real-time preview and capture images, video real-time compress and capture.

6, Support three output interfaces: RCA USB2.0 and S-Video, so it can display pictures both on TV and PC.

1.2 Specification

Image Sensor	1/3″ CCD
CCD Total pixels	PAL:795(H)×596(V) NTSC:811(H)×508(V)
Horizontal Resolution	Color 500TV Line
Signal System	PAL/NTSC
Video output	1.0V[p-p],75Ω, Video Composite(BNC)
SNR	>50dB
Minimum Illumination	0.2Lux
Exposure	Auto Exposure
White balance	Auto White balance
Power Supply	DC12V/500mA
Dimensions(mm)	38mm×38mm
Digital output	24bit
Image Output	USB2.0,RCA,S-Video
Operation system	Win2000,WinXP 32/64bit,WinVista 32bit

1.3 Features

Our DB2-180M with a USB2.0 TV tuner/video capture controller inside which can turn the analog signal to digital signal, so it can support three output interfaces, as RCA, USB2.0 and S-Video, and can display pictures both on the TV and PC.

1, File format: bmp, jpg, avi;

2, Show time: can display the date & time in red within capture screen;

3, Timer shot: captures and saves a bitmap picture after five seconds, timer adjustable;

4, Can record the video and audio at the same time;

5, Interpolation display, the biggest resolution can reach1440*1152 (1.58M pixel);

6, Real time video preview and real time image adjustable.

1.4 Minimum System Requirements

System Requirements

- Operating System Windows 2000, XP 32/64bit or Windows Vista 32bit
- DirectX 9.0 or higher (for Windows 2000)
- Video adapter supports 24bit color or more
- CPU with 1.5GHz or more
- System Memory 256MB or more, Display Memory 128MB or more
- USB2.0 interface to display images on PC (or RCA interface to display images on TV)
- Hard Disk Space 1GB for installation plus additional space for captured images

Since video processing is hardware intensive, a faster computer with a fast hard disk drive and extra memory will yield better results.

1.5 Packaging Box Contents

The AD2.0-N camera packaging contains:

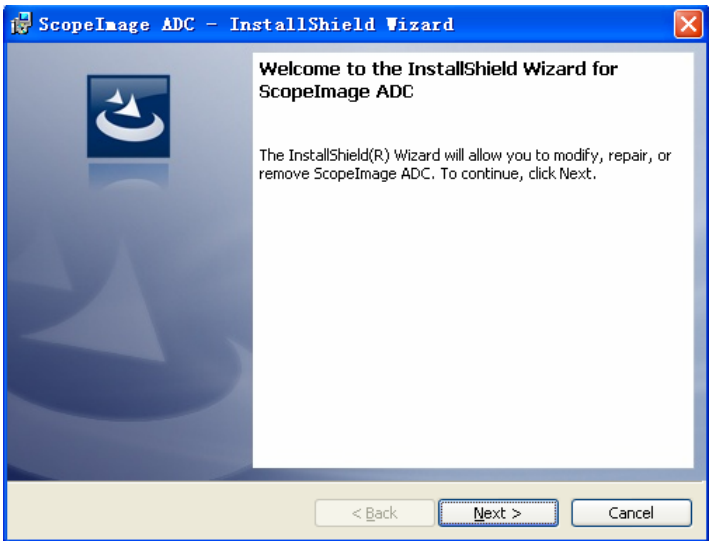
1. The DB2-180 Digital Microscope with a High-Quality Camera Device, an Analog to Digital Converter, and an IR Cutoff Filter inside.
2. High Quality USB2.0 Cable, RCA Cable.
3. CD: Include the basic software 'ScopeImage ADC' and the advanced image processing software 'ScopeImage Advanced'. The Driver contains the device hardware driver, TWAIN DS and DirectShow Source Filter. Additional information and manuals/documents can be found on the CD.

2. Install Instruction

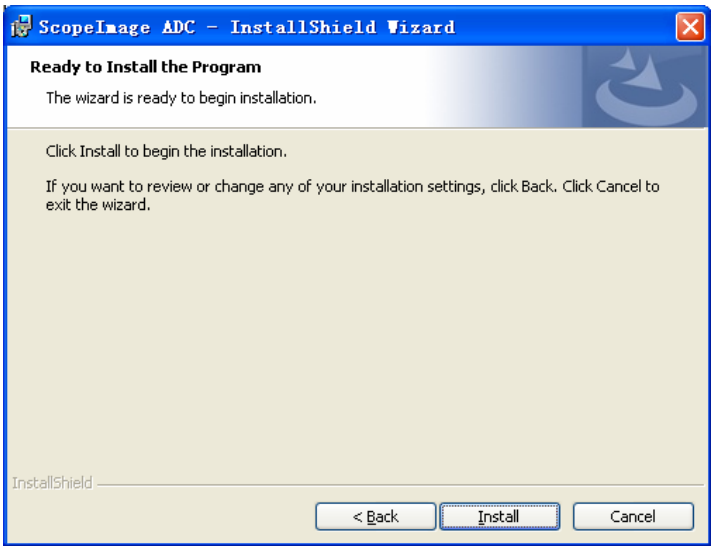
2.1 Install the hardware and software

1. **Connect the Camera to the Computer: link one end of the USB cable with the computer, and the other end to the microscope.**
2. The computer's Operating System should recognize it, and pops up a found new hardware dialog, Please click "Cancel".

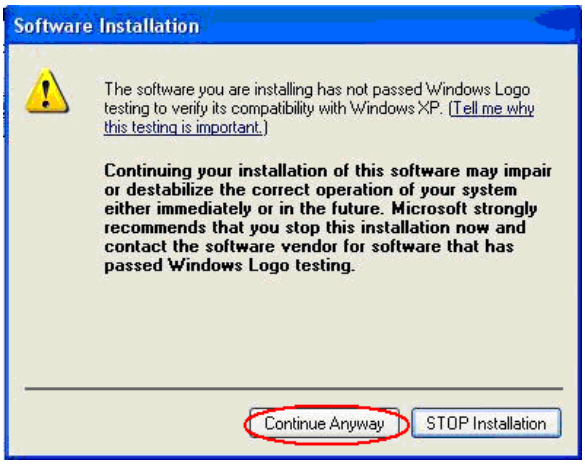
3. Double click the ’setup.exe’ in the CD. The wizard will lead you to install **both the hardware and software,** after the installation, you can use the camera. Please follow the clue to install it.



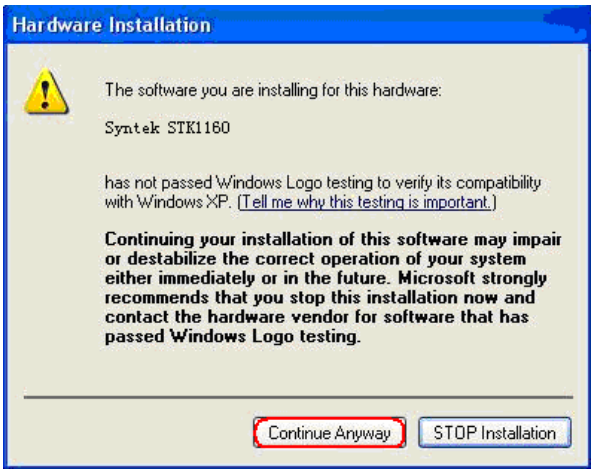
3. Click ‘next’.



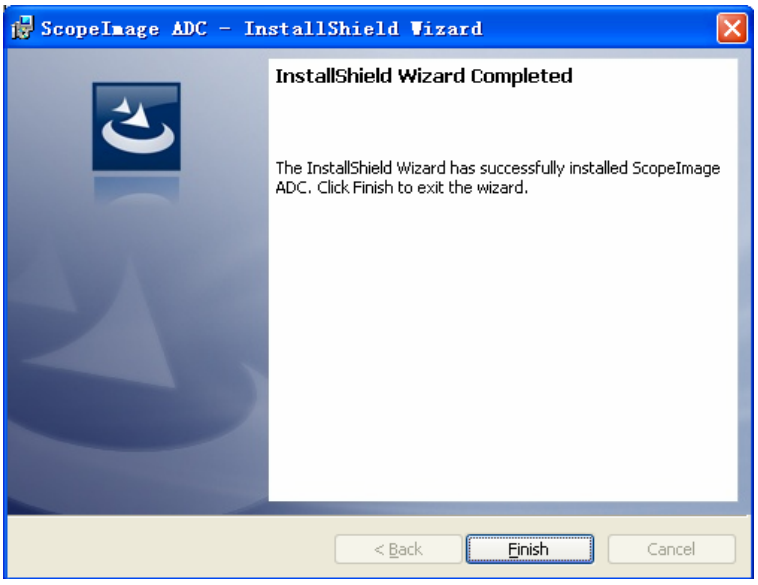
4. Click Install



3. Software Installation. Click 'Continue Anyway'.



4. Hardware Installation. Click 'Continue Anyway'



5. Click 'Finish'. Installation is completed.

6. Wait a minute; the system will install the audio device automatically.

When there appeared “Your new hardware is installed and ready to use”, you can use your USB2.0 camera device.

2.2 Check whether the device is rightly installed

(1). After the installation, there will be a quick launch icon on the desktop, as follows:

(2). Check the Start->ScopeImage ADC, as Fig 5.2.1

Fig 5.2.1

(3). Check the hardware driver, whether there an “**Imaging Devices**” Syntek STK1160 in “**Device Manager / Hardware**”, as Fig 5.2.2 (Make sure the digital camera is on, and the camera is linked with the computer, when you check the hardware driver.)

Fig 5.2.2

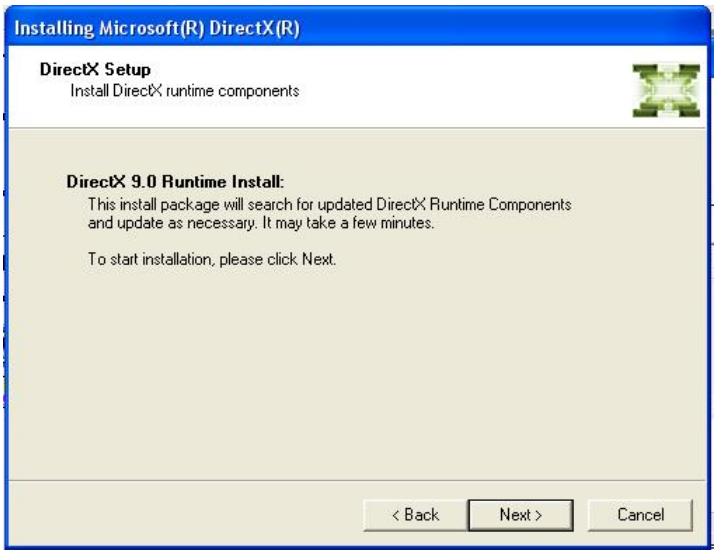
Note: If there’s no imaging device in the device manager, or there’s **a yellow warning symbol** before the imaging device “Syntek STK1160”, it means you have not installed the hardware device rightly, and you need to update the driver, please refer to the chapter “2.5 How to update the driver” to reinstall the driver.

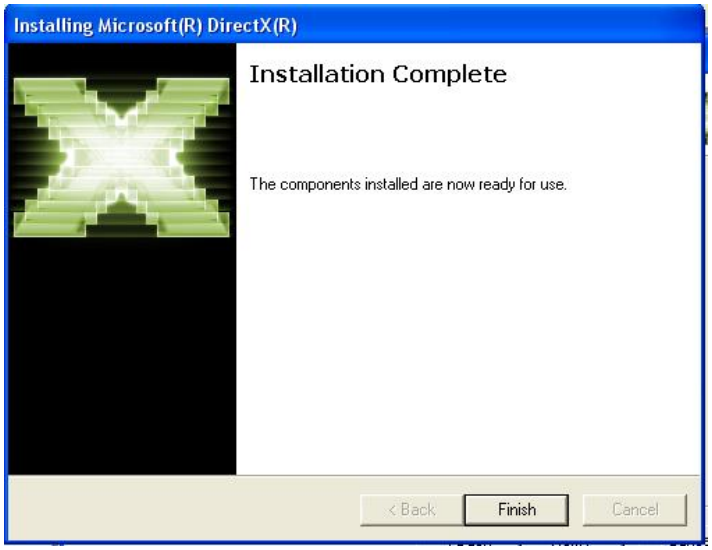
2.3 Repair bag installation

To obtain better picture quality, please install DirectX9.0.

If the system is Windows XP Service SP2 or over, you can skip over this step.

Double click the document dxsetup.exe in the folder of DirectX9.0,





2.4 Uninstall

Click Start->Program->ScopeImage ADC->Uninstall.exe, and follow the clue to uninstall it.

The hardware and software are both uninstalled.

2.5 How to Update the Driver

There are several conditions you should update the driver:

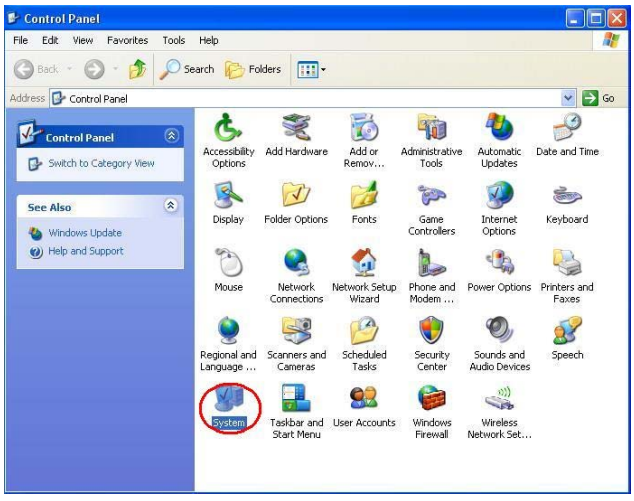
(1) If you have installed the software more than once, or change another USB2.0 port, or not attach the camera to your computer when you run the AD2.0-N-En-Setup.exe, you need to update your hardware driver.

(2) If the camera doesn't work, and there's **a yellow warning symbol in the 'Device Manage'**, you need to update the driver.

How to update the driver, please see the follows:

1. Attach the camera to the computer, there will come out a dialog box telling found new hardware, choose "these time only", then click next.

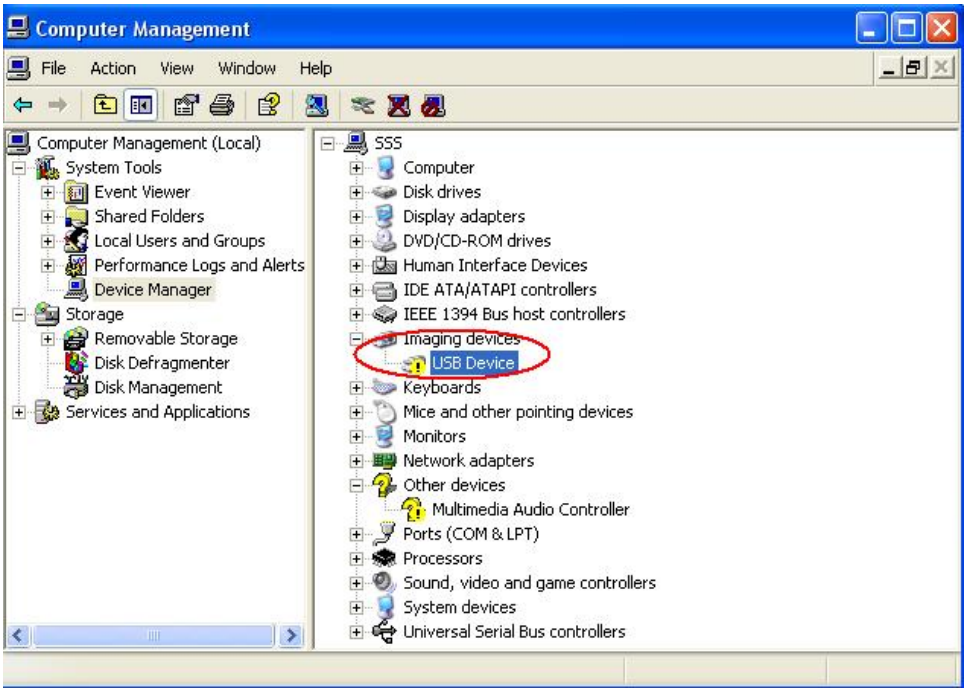
   Or you can do this by control panel, as follows:



(1) Access Windows Control Panel. Double click System

(2) Select Device Manager.

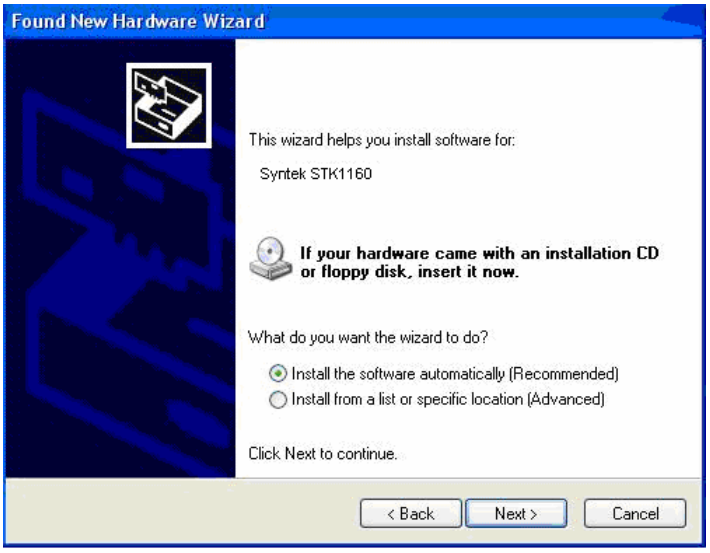
(3) Click 'Imaging devices'



(4) Check whether there is a yellow warning symbol under the 'Imaging devices', if yes, p lease do the following steps.

Right click 'USB Device', click 'Update Driver…', comes out 'Found New Hardware Wizard dialog, please choose "this time only", then click next.

Click 'Next'



There are two ways for you to update your driver, you can choose 'Install the software automatically', and then click next; or you can also choose 'Install from a list or specific location (Advanced), then click next. Generally, we advise you to choose the first choice.

1) If you choose 'Install the software automatically', click next.

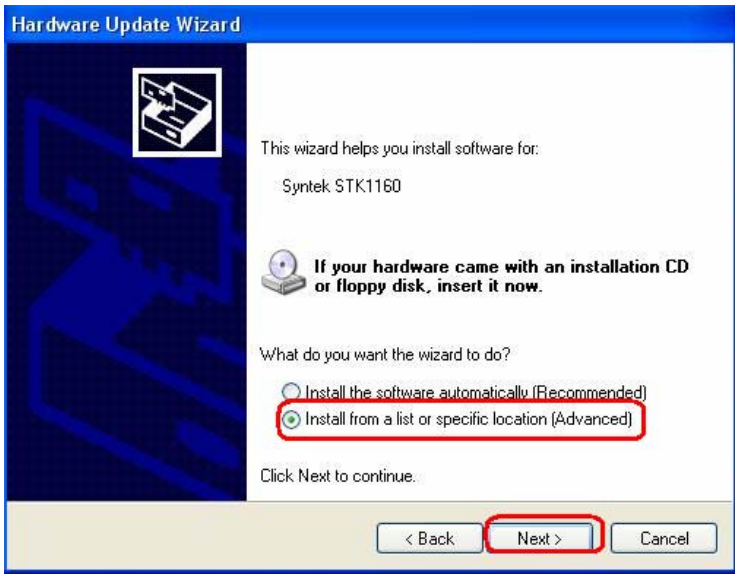
2) Choose ‘Continue Anyway’.

3) Click ‘Finish’.

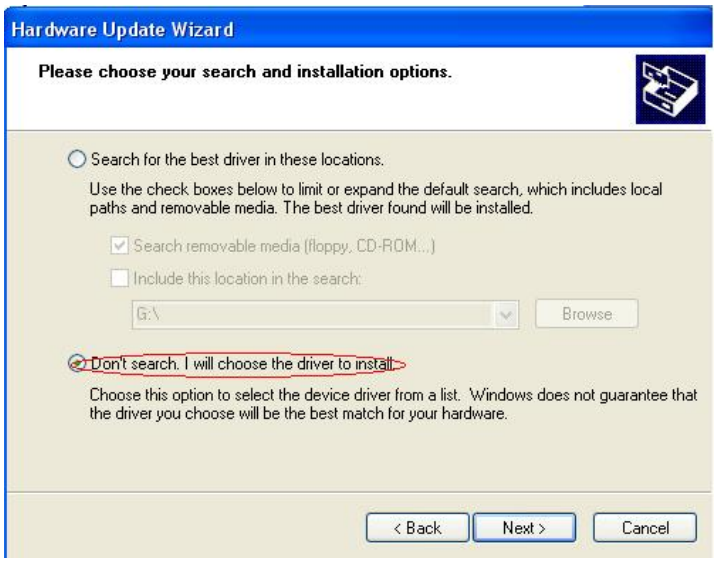
Hardware install has been finished; you can see the “**Syntek STK1160**” bellow “**Imaging Devices**” in “**Device Manager / Hardware**”.

Sometimes the system can not find the driver by itself and the driver update is failure; you can redo it by choosing the second choice ‘Install from a list or specific location (Advanced)’, then click next.

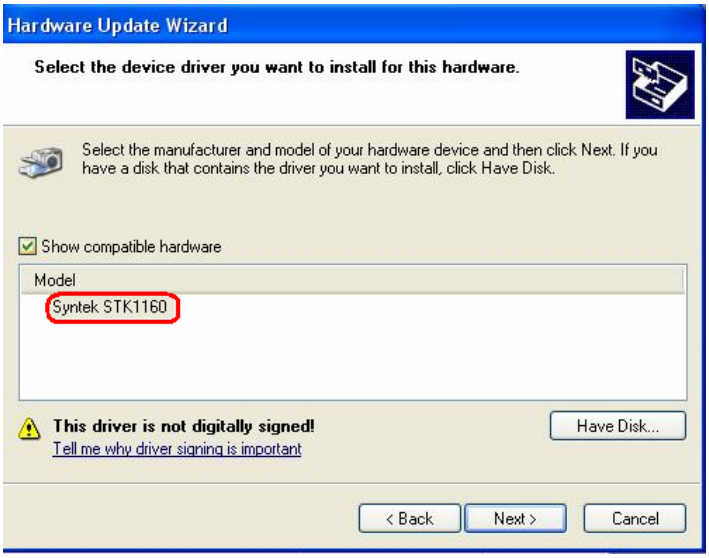
(1) Choose ‘Install from a list or specific location (Advanced), click next.



(2) Choose ‘Don’t search, I will choose the driver to install’, click next.



(3) Select ‘Syntek STK1160’, click next.



(4) Choose ‘Continue Anyway’.

(5) Click ‘Finish’.

Hardware install has been finished; you can see the "**Syntek STK1160**" bellow "**Imaging Devices**" in "**Device Manager / Hardware**".

3. Camera User Guide

3.1 An Overview of the AD2.0-N

Our digital microscope DB2-180M with a USB2.0 TV tuner/video capture controller inside which can turn the analog signal to digital signal, so it can support three output interfaces, as RCA, USB2.0 and S-Video, and can display the video **both on the TV and PC.**

As to display the video on the PC, we supply two powerful software, they are ScopeImage ADC and ScopeImage Advanced. It is extremely convenient to do the basic and advanced image processing and measurement to the images captured. The simple operation ensures you doing all these processing works at great ease.

Attention

You are not able to use both of the applications at the same time since they are using the same device (AD2.0-N). You need to close one application to open anther one, otherwise they won't work properly. For the same reason, you also can not use the twain and directshow at the same time.

3.2 Use the TV to Preview

1. Link one end of the video cable (with yellow ports) to the TV, and the other end to the digital camera's RCA interface. As pictures show in Fig 3.2.1 and Fig 3.2.2

2. Turn on the power supply of the microscope.

3. Open the TV, and adjust the video model to Auto, then the TV shows the real time video images, just the same as what you have seen in the microscopy eyepiece.

Fig 3.2.1

Fig 3.2.2

3.3 Use the ScopeImage ADC to Preview (On the PC)

1. Link one end of the USB cable to the PC, and the other end to the digital camera's USB interface. As pictures show in Fig 3.3.1 and Fig 3.3.2

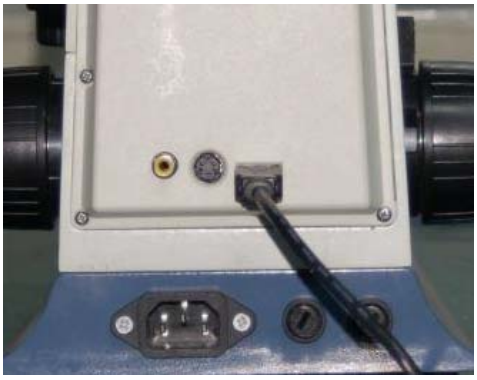


Fig 3.3.1

Fig 3.3.2

2. Turn on the power supply of the microscope.

3. Make sure the hardware and software have been installed rightly.

4. Launch the software 'ScopeImage ADC' by the icon on the desktop or by the Start Menu. The video preview window and video control window will come out together, and each part of the software's function is introduced as below.

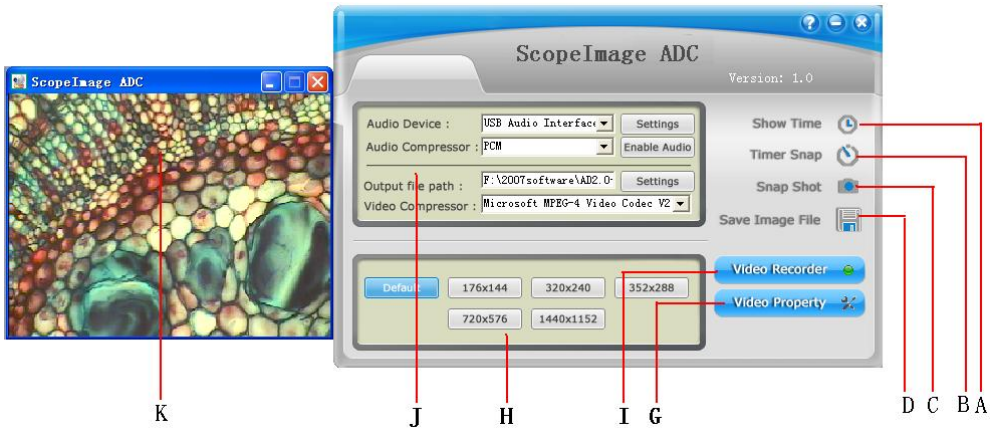


Fig 3.3.3

A. Show Time - Display date & time in red within capture screen.

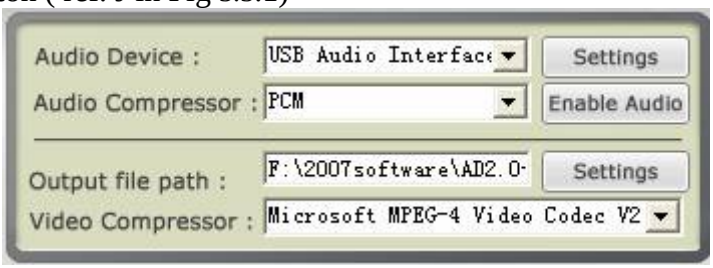
B. Timer Shot - Captures and saves a bitmap picture after five seconds. Timer adjustable by clicking on have file options button. Ref. D)
C. Snap Shot -Capture and saves an instant bitmap picture.
D. Save File - Displays and allows capture of destination path and filename of bitmap capture file.
E. About - Accolades window
G. Advanced setting, audio setting, fine tuning.
H. Video and Image capture size.
I. Record -Start and end video record
J. Recorder Settings - Adjust video and audio recorder settings
K. Video preview window

Still Shot Capture

1. Select picture capture size format (ref. H in Fig 3.3.1)
2. Enter destination filename and path (ref. D in Fig 3.3.1)
3. Focus camera on source.
4. Click on Snap Shot Button (ref. C in Fig 3.3.1)

Video Capturing

1. Focus camera on capture source.
2. Click on the run Recorder button to begin recording. (ref. in Fig 3.3.1).
3. To stop recording click on **the same button.**
4. Output file path [*] and audio settings can be changed by clicking the Record Settings button (ref. J in Fig 3.3.1)



(**Note:** Audio settings only apply to the camera that has audio capture features)
[*] Default files will be saved under **ScopeImage ADC** installing folder Such as: C:\Program Files\ **ScopeImage ADC**

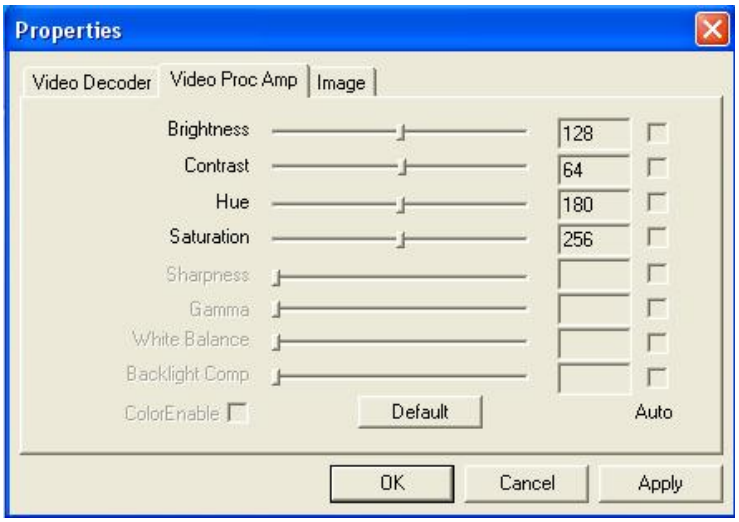
Resolution Setting

You can select the video capture size by simply selecting one of the five video resolution options available (denoted by H in Fig 3.3.1). The default setting resolution is 320*240. You will immediately see the results in the viewer screen alongside the control centre panel.

Video Property Setting

The advanced settings window allows the user to adjust image characteristics by clicking on the **Video Property button**.

Use the picture property window shown below to adjust picture quality. By sliding the Control Adjust Bar the effect can be seen immediately on the viewer window. These setting can be saved by clicking the OK button or cancelled by restoring the default settings.



3.4 Use the ScopeImage Advanced to Preview (On the PC)

Our camera support Directshow and Twain interface, any software that support this interface can use our camera, here make a simple introduction of the directshow technique and twain technique, and shows you how use these interfaces of the camera in **ScopeImage Advanced** for example. **You can refer to the 'User Manual.pdf' of ScopeImage Advanced to get more information about how to use the software.**

The DirectShow technique is widely used in the low-resolution video device such as resolution smaller than 640*480. For high resolution, Twain technique should be used.

3.4.1 Introduce of DirectShow Technique

DirectShow is designed to address each of these challenges. Its main design goal is to simplify the task of creating multimedia applications on the Windows® platform by isolating applications from the complexities of data transports, hardware differences, and synchronization issues.

To achieve the throughput necessary for streaming video and audio, DirectShow uses DirectDraw® and DirectSound® to render data efficiently to the system's sound and graphics cards. Synchronization is achieved by encapsulating the multimedia data in time-stamped media samples. To handle the variety of sources, formats, and hardware devices, DirectShow uses a modular architecture in which operating system components called filters can be mixed and matched to provide support for many different scenarios.

DirectShow includes filters that support for codec written for the Audio Compression Manager (ACM) and Video Compression Manager (VCM) interfaces.

DirectShow enables applications to play files and streams from various sources, including local files and remote files on a network. DirectShow can compress and decompress for some file formats, and many third-party hardware and software decoders are compatible with DirectShow. In addition, DirectShow supports legacy VFW codec based on the Video Compression Manager (VCM) and Audio Compression Manager (ACM) interfaces. Playback makes full use of DirectDraw hardware acceleration and DirectSound capabilities when the hardware supports it.

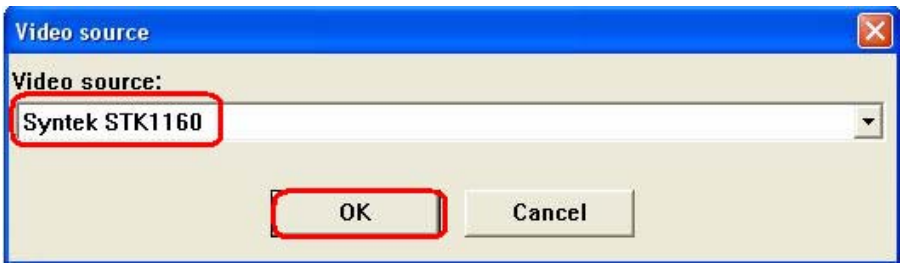
(Note: When you run the installation, the twain device and software, the directshow filter have been installed with the software already.)

3.4.2 How to Use Directshow interface to Preview in ScopeImage Advanced

1. Select video source.

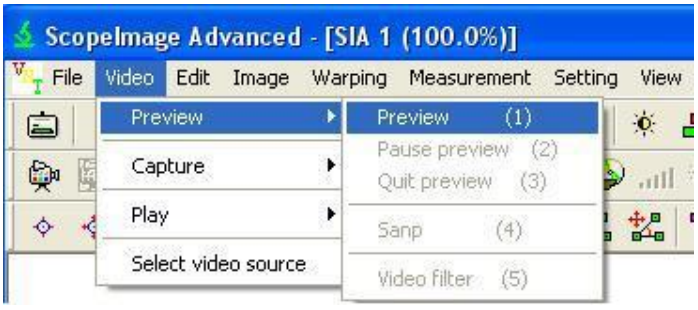
Click the menu ‘video ->Select video source’, there will come out a dialog for you to choose video source, please select ‘Syntek STK1160’, and click ‘OK’.

(**Note: You need to select video source first, otherwise you can not open the directshow preview window. And remember to click the button ’OK’.)**

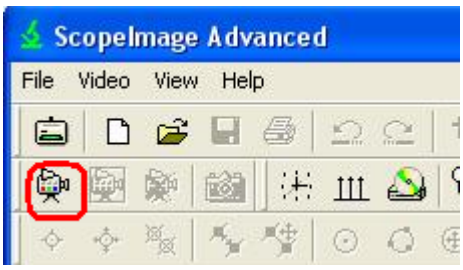


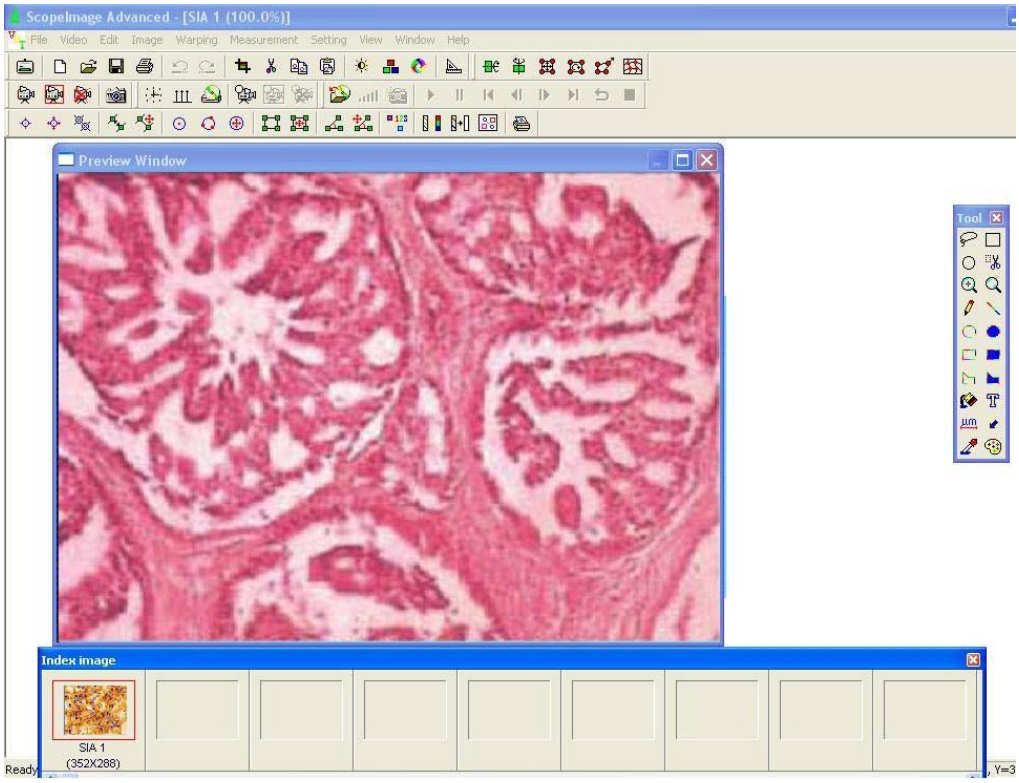
2. Open the preview window.

Click the menu ‘Video->Preview->Preview’. Or you can click the icon  on the toolbar. Then the preview window will appear, and you can preview the images now.



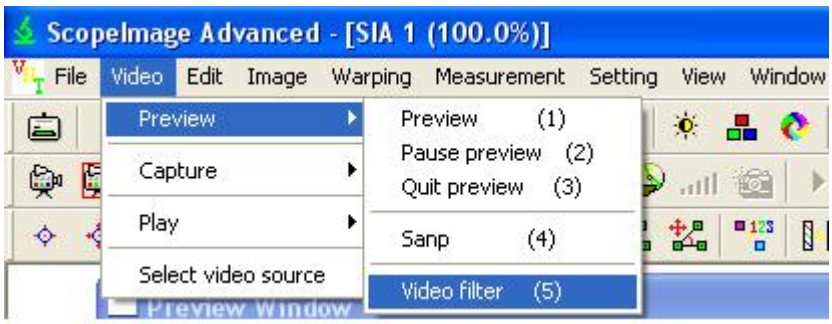
or

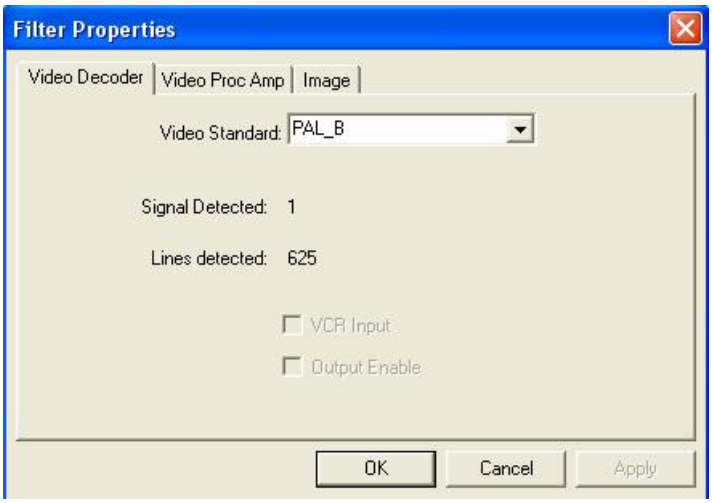




3. **Adjust the color.**

Sometimes, if the color is not very good, you may need to adjust the color by yourself, please click the menu 'Video->Preview->Video filter' to open the video filter properties. As follows:





3.4.3 Introduce of Twain Technique

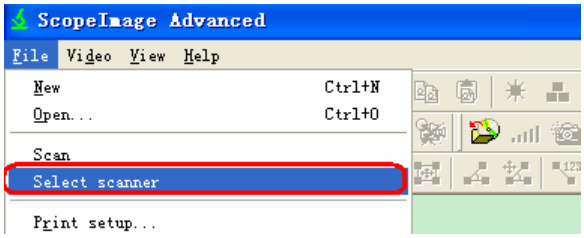
TWAIN Interface is a cross-platform interface for acquiring images captured by certain scanners, digital cameras, and frame grabbers. The manufacturer of the TWAIN device must provide a Source Manager and TWAIN Data source for your device to work with ScopeImage Advanced.

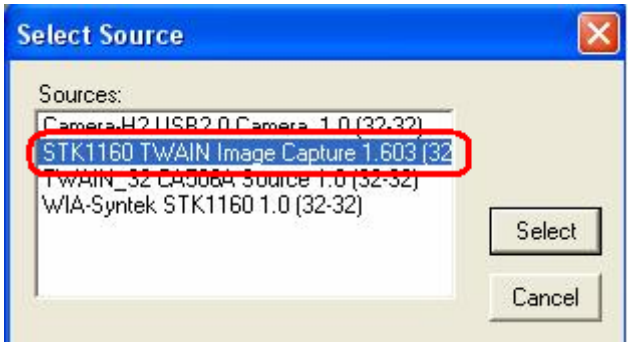
You must install the TWAIN device and its software, and restart your computer, before you can use it to import images into ScopeImage Advanced. See the documentation provided by your device manufacturer for installation information.

(Note: When you run the installation, the twain device and software, the directshow filter have been installed with the software already.)

3.4.4 Use Twain interface to Preview in ScopeImage Advanced

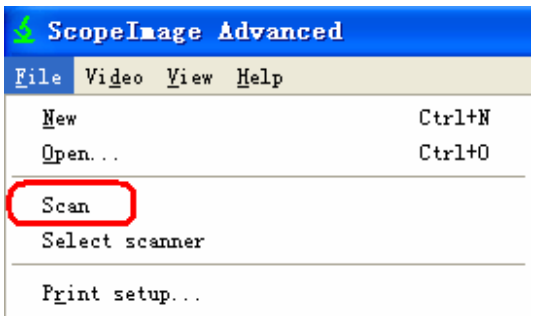
1. First you need to select a scanner; open the File menu->Select scanner, there will come out a 'Select Source' dialog for you to choose the device, please choose '**STK1160 TWAIN Image Capture 1.603**', as follows:





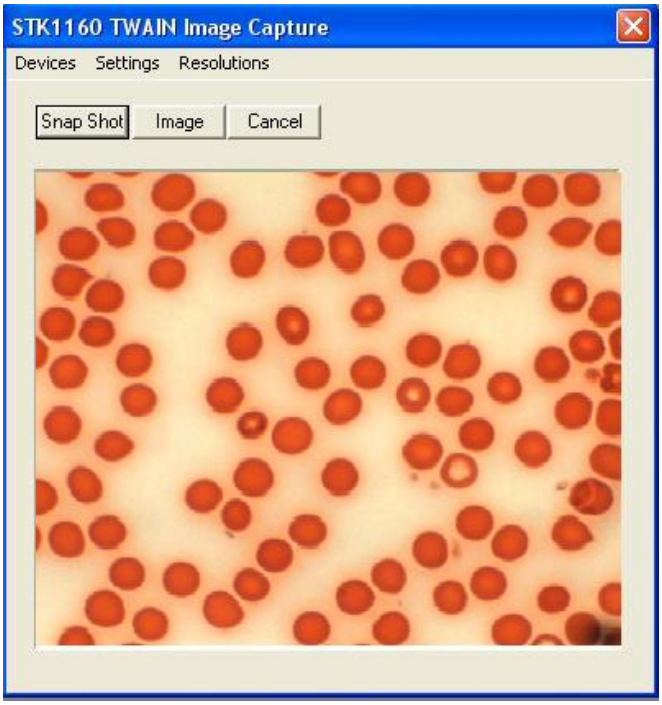
Note: You do not need to repeat this step for subsequent use of the TWAIN module. But if more than one TWAIN device is installed in your system and you want to switch devices, you should repeat this step to select the twain device again

2. Second, open File menu-> Scan **or** you can click the icon on the toolbar.



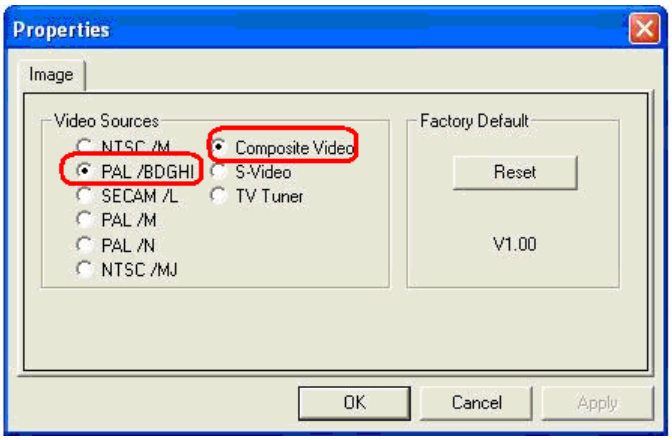
or

3. Now comes out the video preview window, you can preview the video and do some basic operation. The button and menu function are as follows:



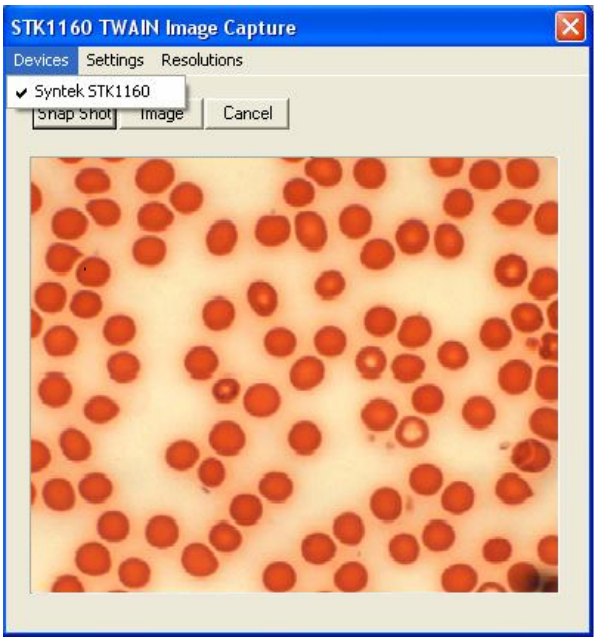
'Snap Shot' Button: To capture the current images;

'Image' Button: To select video sources, please select the video standard for **PAL/BDGHI**, the input signal for **Composite Video**, as follows:

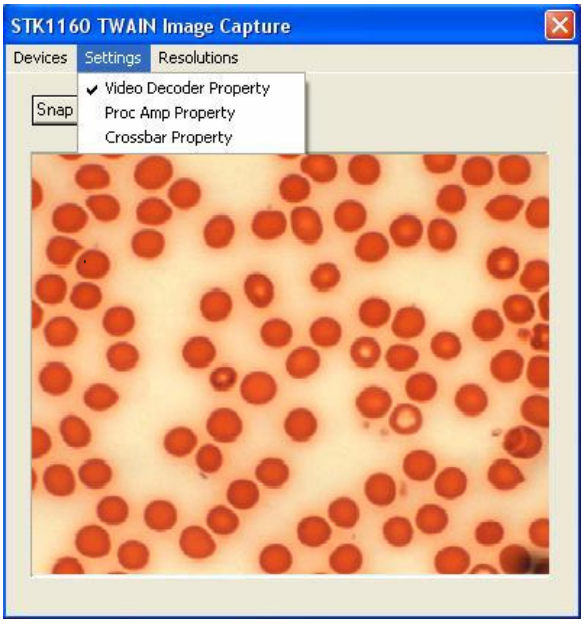


The use of the Menu

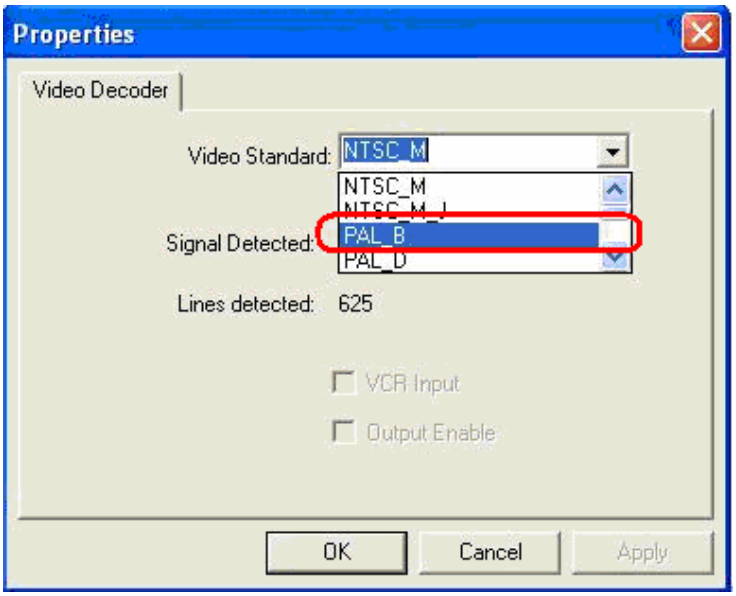
A) Devices: Show the name of the current device.



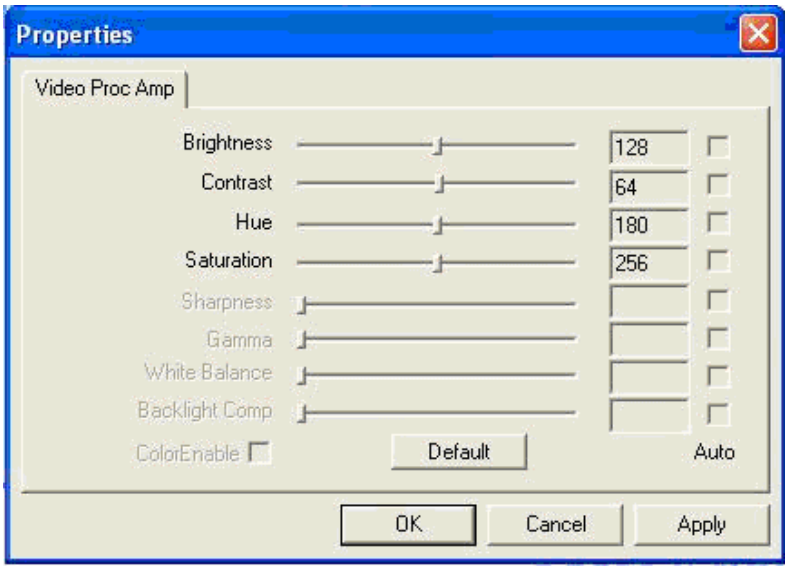
B) Settings: Set the properties of the camera.



Video Decoder Property: please select Video Decoder for PAL_B, as follows.

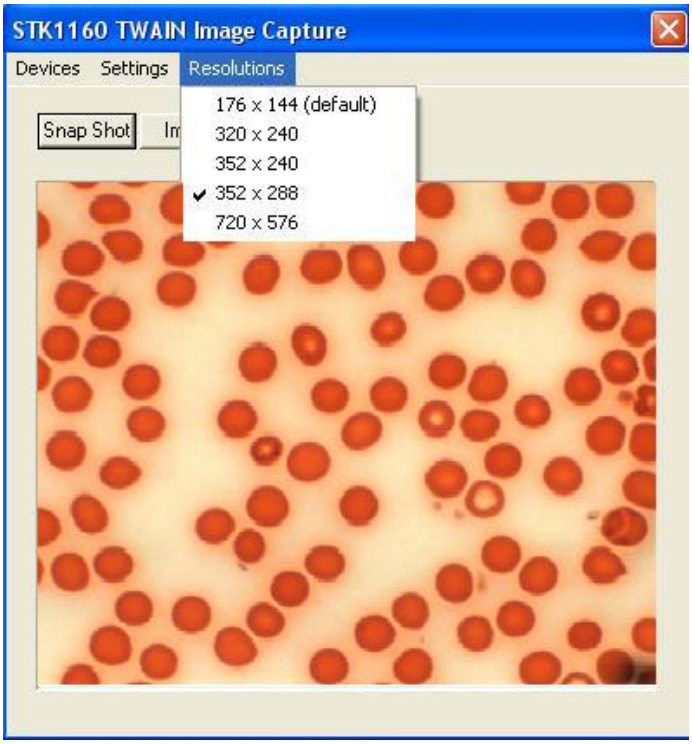


Proc Amp Property: To adjust the color of the image, such as brightness, contrast, hue, saturation and so on.



Crossbar Property: select the input signal as ‘0:Video Composite In’.

C) Resolutions: To set the resolution of the preview images, totally 5 styles, as 720*576, 352*288, 352*240, 320*240 and 176*144;



4. Trouble shooting

4.1 “Not found valid capture device”

When launching ScopeImage ADC, the camera do not work and there appears a message box telling “Not found valid capture device”. As Fig4.1.1

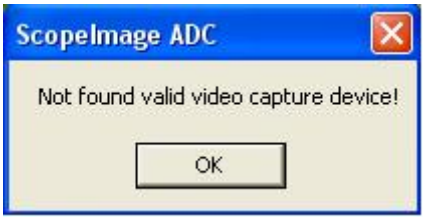


Fig 4.1.1

There may several causes, please do as follows

1. Check whether you have open more then one application, or use the twain and directshow interface at the same time.

You are not able to use both of the applications at the same time since they are using the same device (AD2.0-N). You need to close one application to open anther one, otherwise they won't work properly. For the same reason, you also can not use the twain and directshow at the same time.

Just close the application and open again.

2. Check whether the hardware device is rightly installed.

Open the Device Manage, check whether there is an imaging devices in it, and whether the hardware drivers is rightly installed. Please refer to the chapter "2.2 Check whether the device is rightly installed". If not please refer to the chapter "2.5 How to update the driver".There are detail steps about how to install and update the hardware driver.

3. Check the video property settings

Link the camera to the computer,check whether there are pictures on the computer. If TV has pictures but the computer not, please check the video properties, make sure the Video Sources are PAL/BDGHI and Composite Video (Fig 4.1.3). Please **try it several times**.
Note: This is very important, there will be no pictures if the video source settings are wrong.

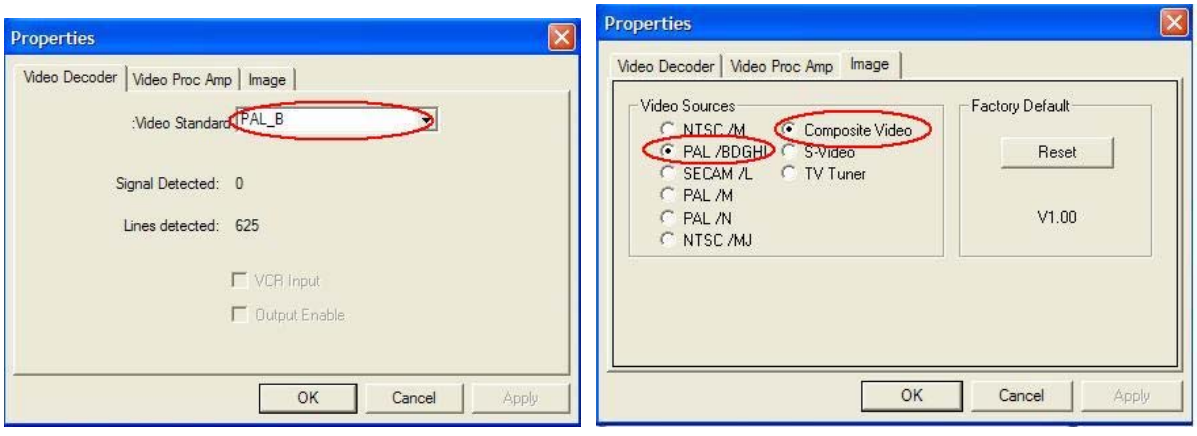


Fig 4.1.3

4. Check the the link between the camera head and the contact on the microscope main body.

If the above is OK and the imaging device driver is rightly installed, please check whether the fault is caused by the link between the camera head and the contact on the

microscope main body. Please see the picture below(Fig 4.1.2) and you will see the contact that connect to the digital head.

Fig 4.1.2

Do as follows:

Link the microscope with the TV using the video cable. (Not to the computer) Refer to the chapter“3.2 Use the TV to Preview”.

If there are pictures on TV, it means the link between the camera head and the contact on the microscope main body is OK, pleased follow the step 4.

If not, we can be sure that the problem is in the bad link between the camera head and the microscope main body. Please take off the digital head and install it again or you just rotate the head a little to make the digital head connect the microscope body properly. At the same time, please pay attation to the TV, whether there will be images. Most times, the problem is the bad contact.

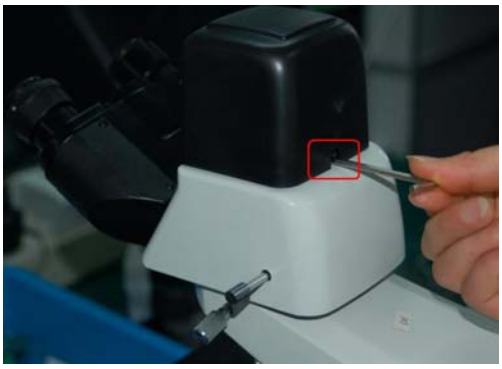
5. Check the connection on the head

If there still no pictures on the computer, I’m afraid the bad connection is on the head, follow the steps below:

1, tool: the inner-hexagon screw

2, check the port behind the head of the camera

3, use the tool to open the head of the camera.



4, check these two places

5, Make sure the connection between them is well. You may poke the three metal spring plates with a stike that thin enough, like a needle and so on, to make these meatal plates contact well.

6, Put it back and try again.

If you have tried the steps above and it still doesn't work, I am sorry that maybe you have to return it back.

4.2 Other questions

Q: How many and which video compress format can be chosen to use when you record video. Some seems can not use.

A: ScopeImage ADC supports all the compress formats in the list. And they can just be used when the PC have installed the relevant video encoder and decoder.

Q: After unplugging the USB cable, there is still an image device in the Device Manage.

A: This A/D converter doesn't support USB hot-plug. When unplugging the USB device, the image device will still exist in a certain time, but it doesn't effect the using of the other devices.

Version 2008.05