

DVP-7020BE

16 Channel PCI-bus

Surveillance

Capture card

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CE notification

The DVP-7020BE, developed by ADVANTECH CO., LTD., has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information

On-line Technical Support

For technical support and service, please visit our support website at: <http://www.advantech.com/support>

Part No. 2062702010
Printed in Taiwan

1st Edition
July. 2006
Rev. 1.00

CHAPTER
1

General Information

Chapter 1 General Information

DVP-7020BE is 16 channel input, PCI-bus video capture card. It supports up to 16 channel input by share-frame technology and captures up to D1 resolution at 120/100 fps frame rate. DVP-7020BE supports NTSC/PAL composite video input through BNC connectors and digitizes the data to PC through PCI bus. The DVP-7020BE is a digital video surveillance card with SDK (software develop kit).

1.1 Hardware Requirement

- 👁 Intel Pentium III 1GHz or above (CPU speed depends on video frame rate, channels and resolution)
- 👁 256 MB RAM or above
- 👁 Free PCI slot(s)
- 👁 CD-ROM
- 👁 Hard disk with 1G free space

1.2 Software Requirement

- 👁 Microsoft Windows XP with DirectX 9.0 or above

1.3 Block Diagram

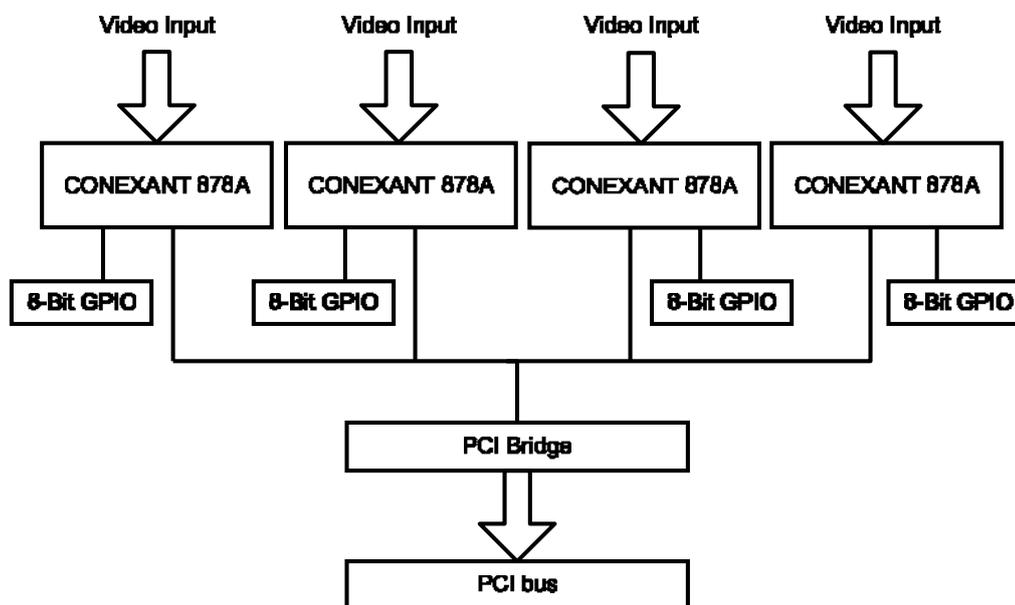


Figure 1.1 System diagram

1.4 Packing List

DVP-7020BE PCI capture card	X 1
Utility CD (Driver, Manual, SDK, Sample, Sample source code)	X 1
Connection cable for WDT	X 1
DVA-210 (4 Channel expand board)	X 3

1.5 Dimensions

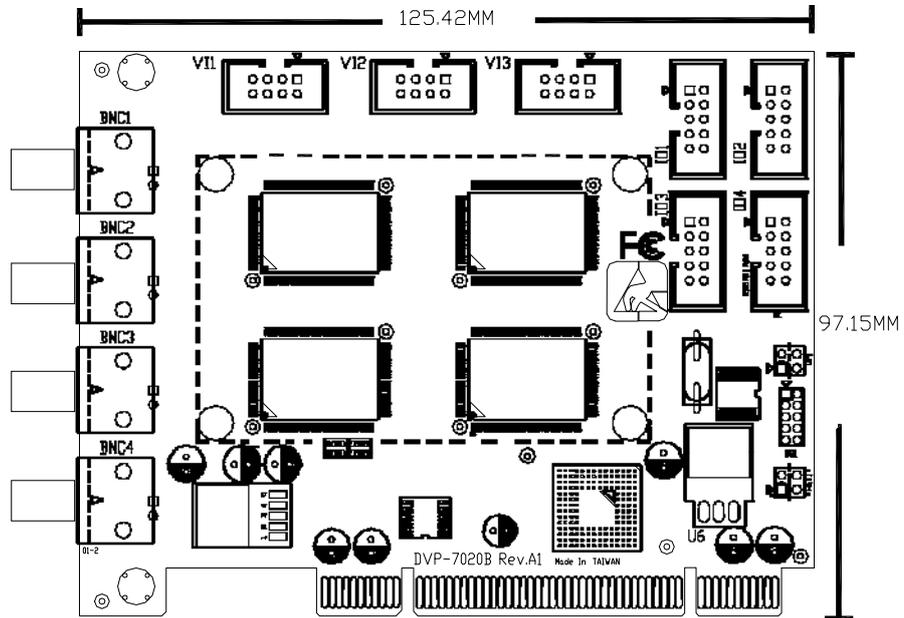


Figure 1.2 Dimensions

1.6 Connector location

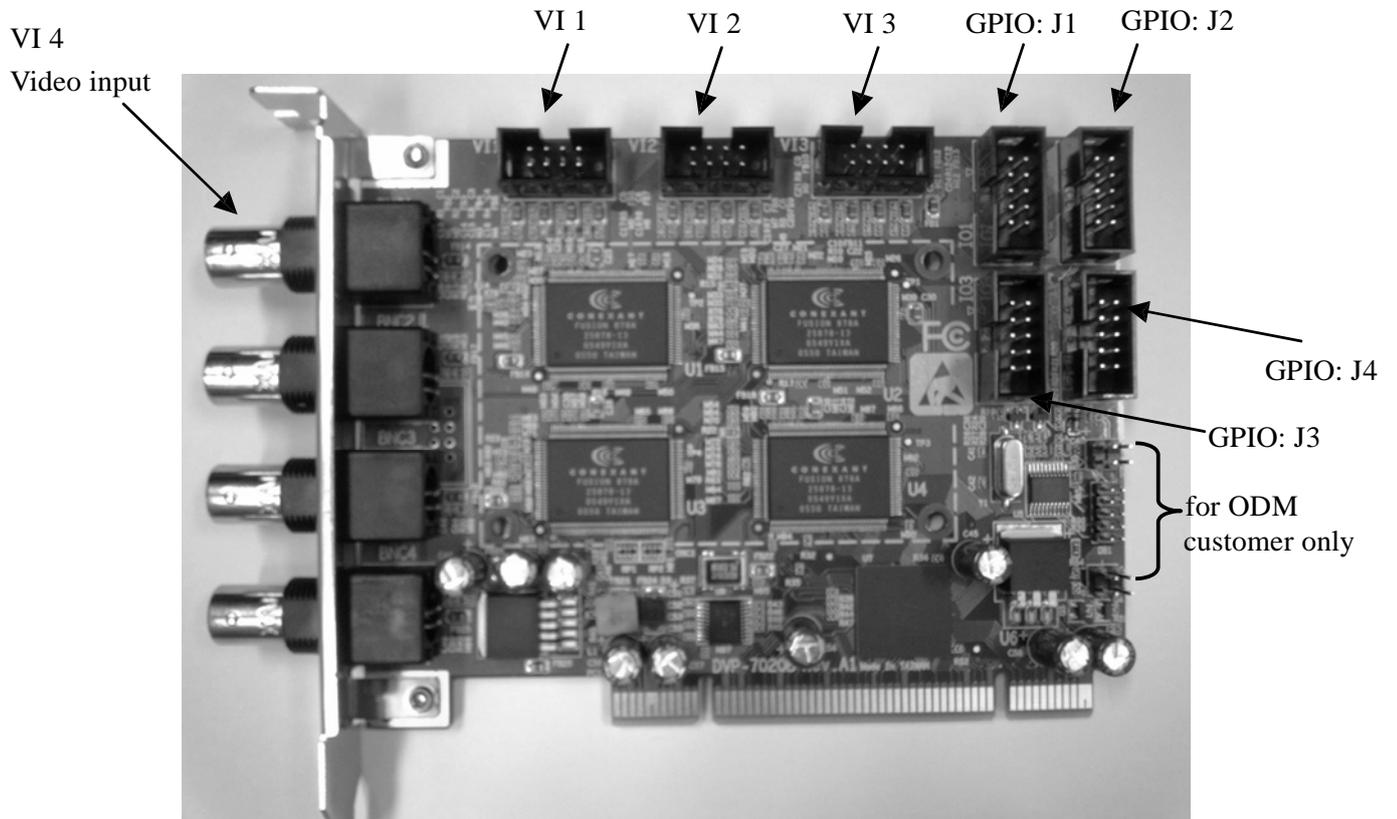


Figure 1.3 Connector location

1.7 Pin definition

1.7.1 GPIO: J1

- 8 bit TTL/CMOS level Digital I/O.

GPIO (J1) Pin define	
Pin no.	Description
Pin 1	OUT0
Pin 2	OUT1
Pin 3	OUT2
Pin 4	OUT3
Pin 5	IN0
Pin 6	IN1
Pin 7	IN2
Pin 8	IN3
Pin 9	VCC
Pin 10	GND

Table 1.1 GPIO J1 pin definition

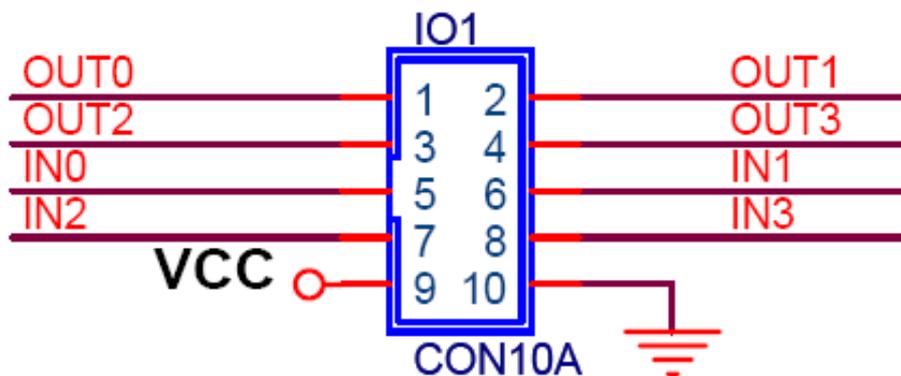


Figure 1.4 GPIO(J1) pin definition

1.7.2 GPIO: J2

- 8 bit TTL/CMOS level Digital I/O.

GPIO (J2) Pin define	
Pin no.	Description
Pin 1	OUT4
Pin 2	OUT5
Pin 3	OUT6
Pin 4	OUT7
Pin 5	IN4
Pin 6	IN5
Pin 7	IN6
Pin 8	IN7
Pin 9	VCC
Pin 10	GND

Table 1.2 GPIO J2 pin definition

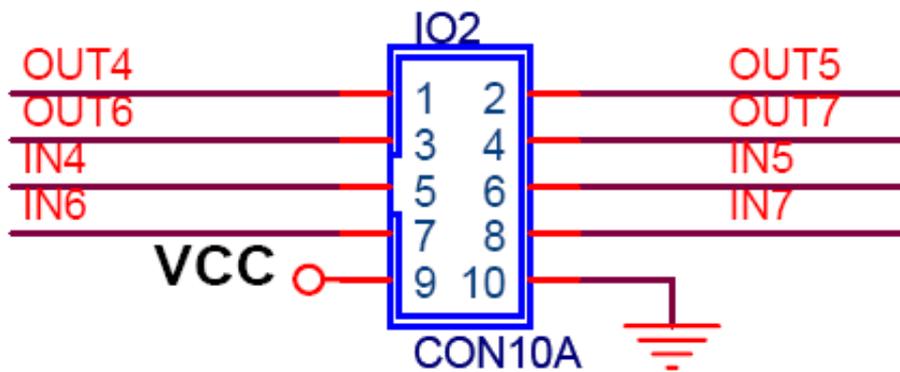


Figure 1.5 GPIO(J2) pin definition

1.7.3 GPIO: J3

- 8 bit TTL/CMOS level Digital I/O.

GPIO (J3) Pin define	
Pin no.	Description
Pin 1	OUT8
Pin 2	OUT9
Pin 3	OUT10
Pin 4	OUT11
Pin 5	IN8
Pin 6	IN9
Pin 7	IN10
Pin 8	IN11
Pin 9	VCC
Pin 10	GND

Table 1.3 GPIO J3 pin definition

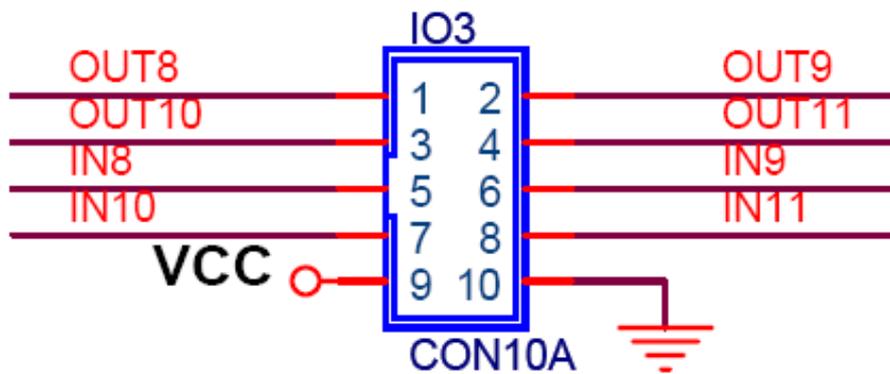


Figure 1.6 GPIO(3) pin definition

1.7.4 GPIO: J4

- 8 bit TTL/CMOS level Digital I/O.

GPIO (J4) Pin define	
Pin no.	Description
Pin 1	OUT8
Pin 2	OUT9
Pin 3	OUT10
Pin 4	OUT11
Pin 5	IN8
Pin 6	IN9
Pin 7	IN10
Pin 8	IN11
Pin 9	VCC
Pin 10	GND

Table 1.4 GPIO J4 pin definition

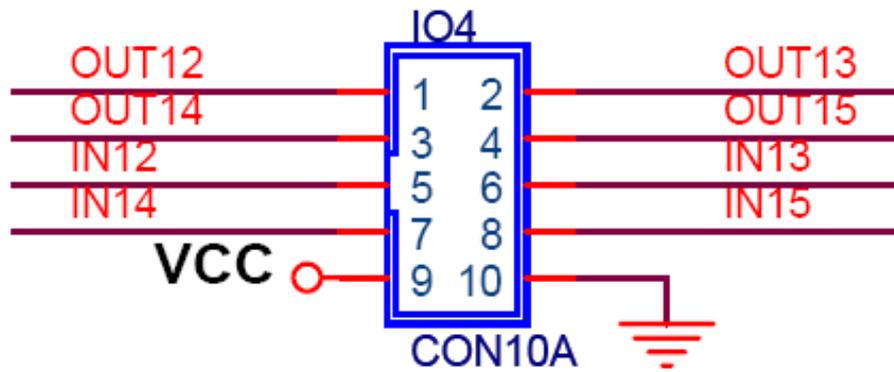


Figure 1.7 GPIO(J4) pin definition

1.7.6 External video input: VI

By share frame technology, DVP-7020BE can receive 16 channel composite inputs through 4 VIs. The description for these 4VIs are shown in Figure 1.8~1.11

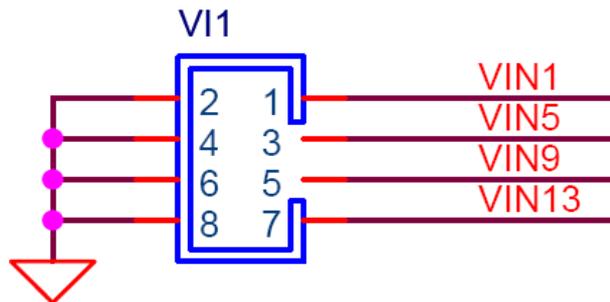


Figure 1.8 VI 1 pin definition

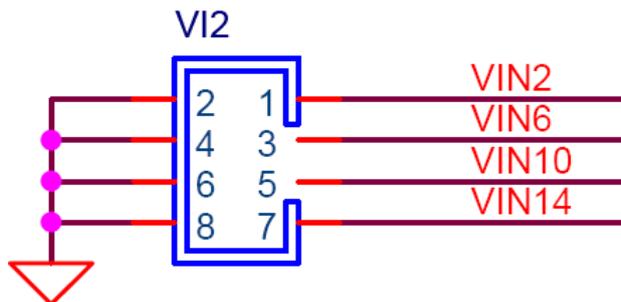


Figure 1.9 VI 2 pin definition

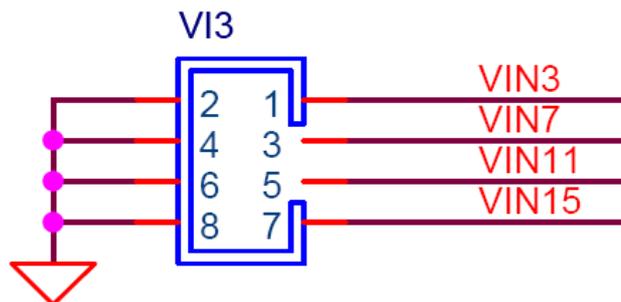


Figure 1.10 VI 3 pin definition

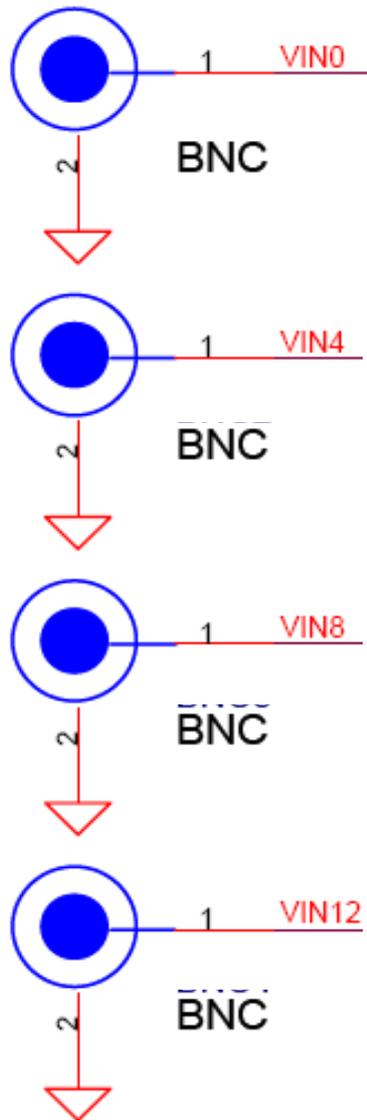


Figure 1.11 VI 4pin definition

1.8 Hardware Installation

- 1 Turn off your computer and unplug the power cord.
- 2 Remove the cover of your computer.
- 3 Touch the metal part on the surface of your computer to neutralize the static electricity that might be on your body.
- 4 Place the DVP-7020BE into Mother Board PCI slot.
- 5 Connect appropriate accessories (Video cable to camera. if necessary) to the DVP-7020BE.
- 6 Replace the cover of your computer chassis.
- 7 Plug in the power cord and turn on the computer.

Note: *Keep the anti-static bag for future use. You might need the original bag to store the card if you have to remove the card from the PC or transport it elsewhere.*

1.9 Software / Driver Installation

Before you begin

To facilitate the installation of the enhanced display device drivers and utility software, you should read the instructions in this chapter carefully before you attempt installation. The device drivers for the DVP-7020BE board are located on the software installation CD. The auto-run function of the driver CD will guide and link you to the utilities and device drivers under Windows system. Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software user's manual before performing the installation.

Installation

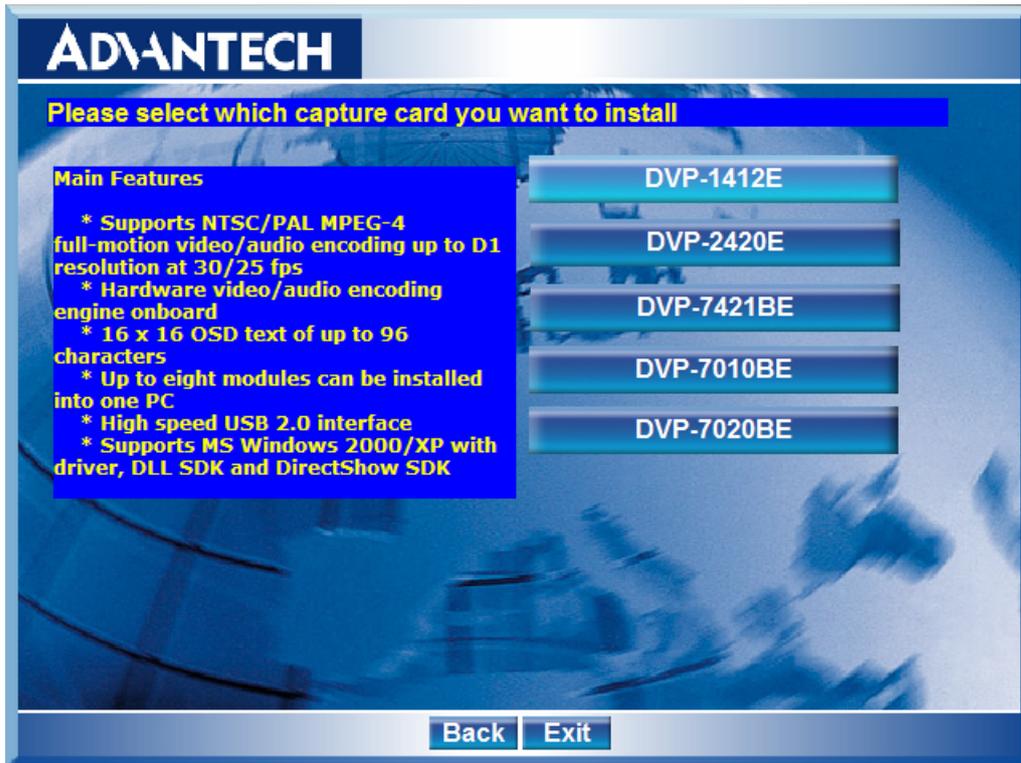
1. Insert the driver CD into your system's CD-ROM drive. Double-click the autorun icon. Then, a message pops up telling you to start the installation. Please click continue



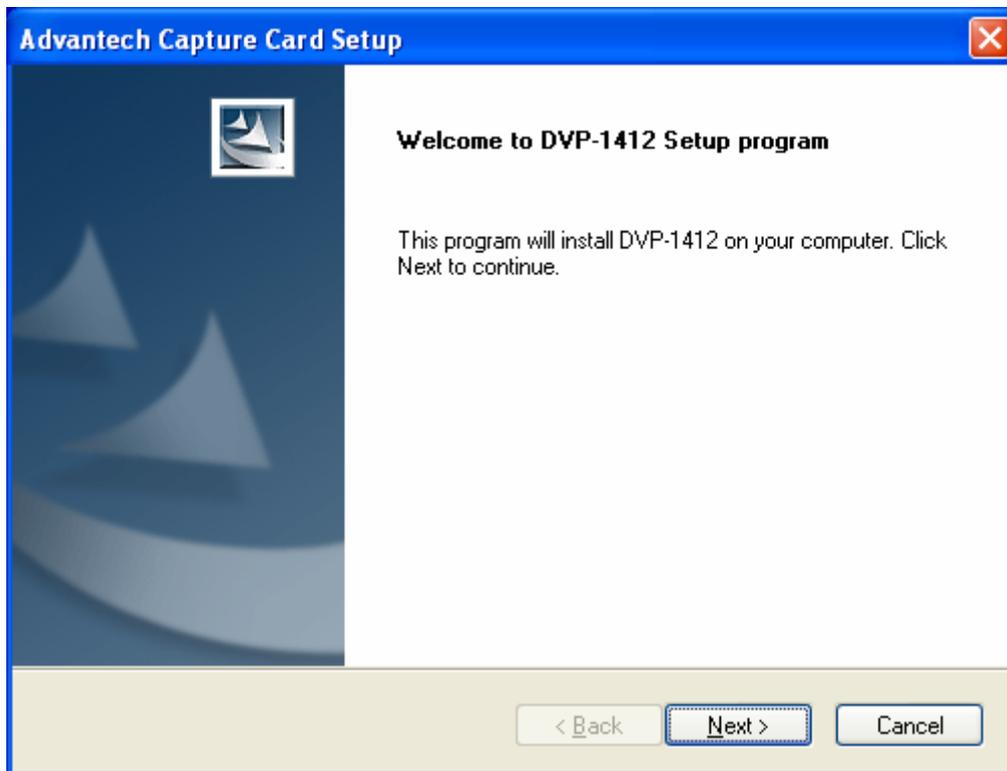
2. Click "Installation" to proceed to the next step



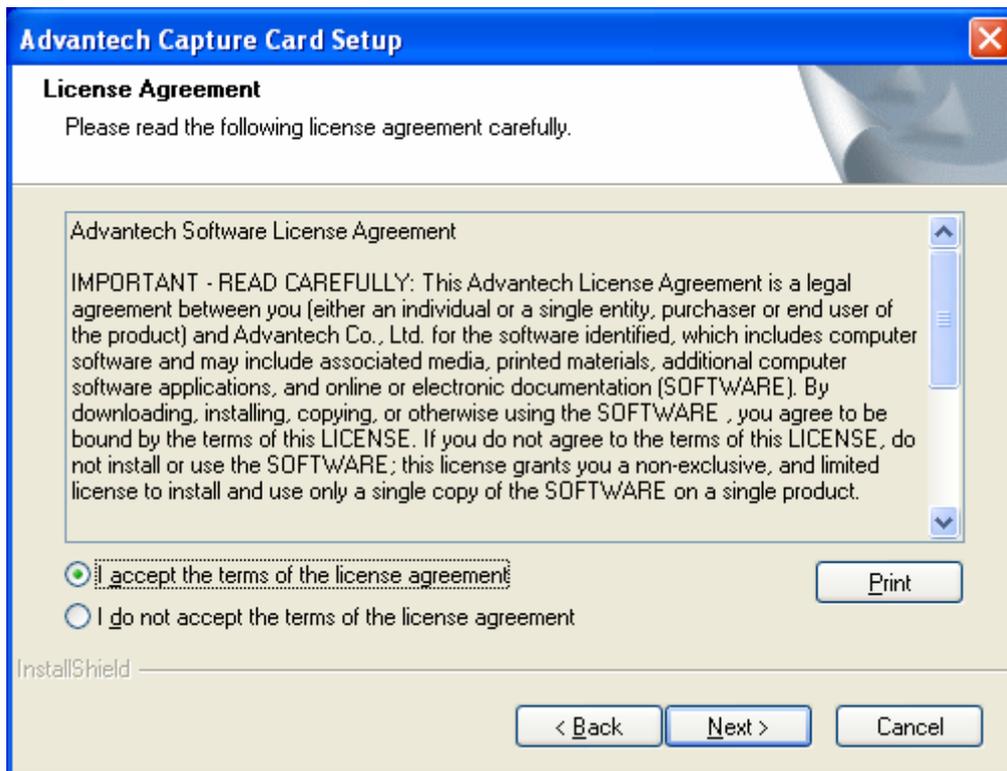
3. Choose the video capture card that you want to install.



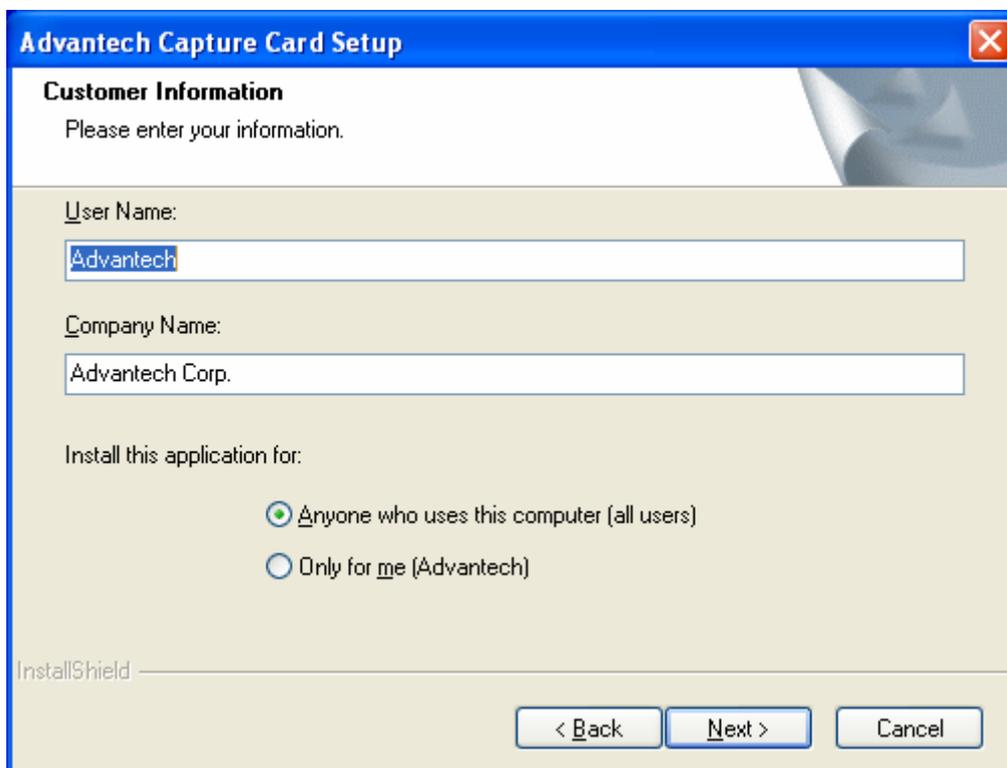
4. Click "Next" when you see the following message.



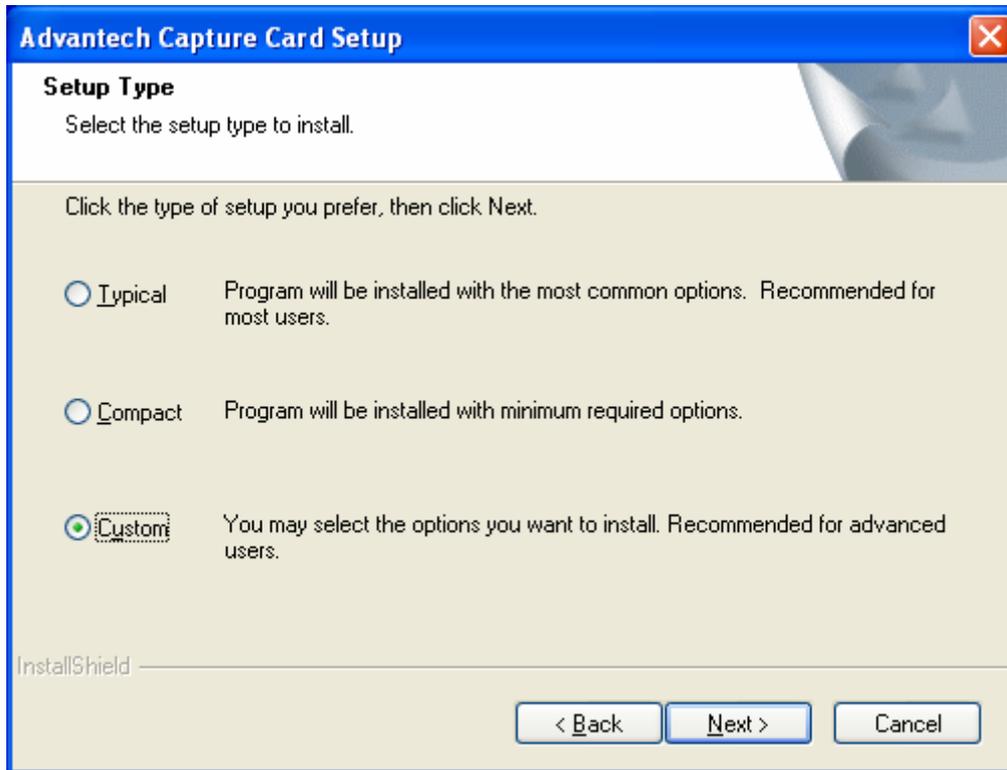
- Please read the following license agreement and select "Yes" or "No" to next status.



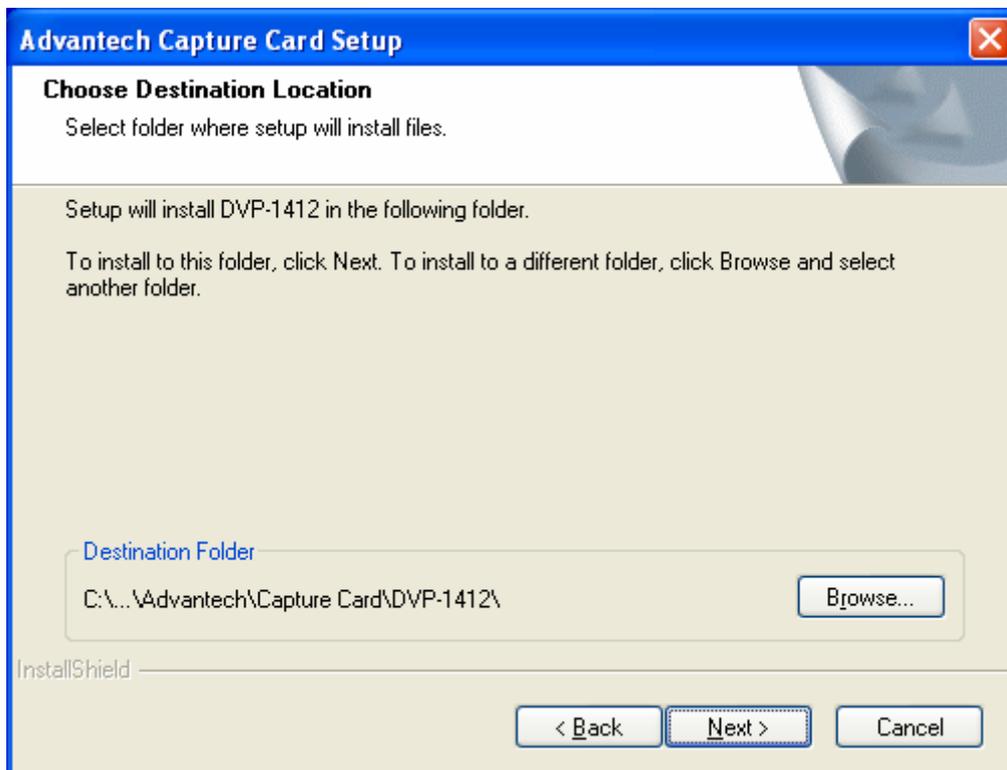
- Click "Next" when you see the following message.



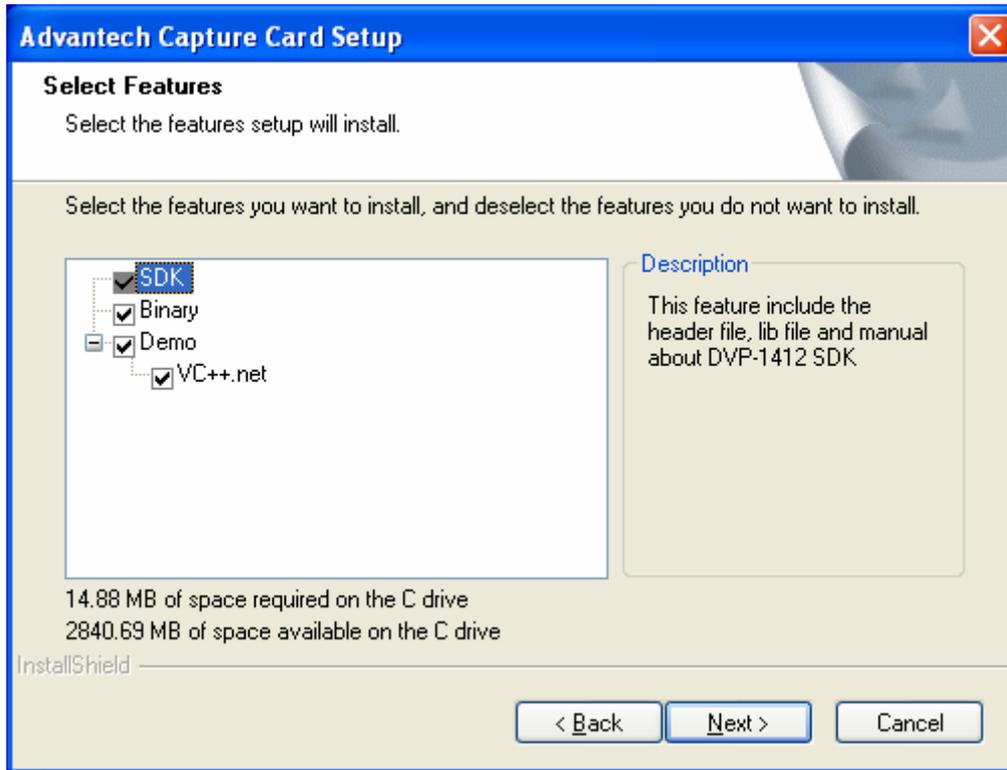
7. There're 3 kind of installation (Typical / Compact / Custom) can be selected. Choose "Typical" or "Compact" and click next then follow the step 11. Choose "Custom" and click next then follow the step 9.



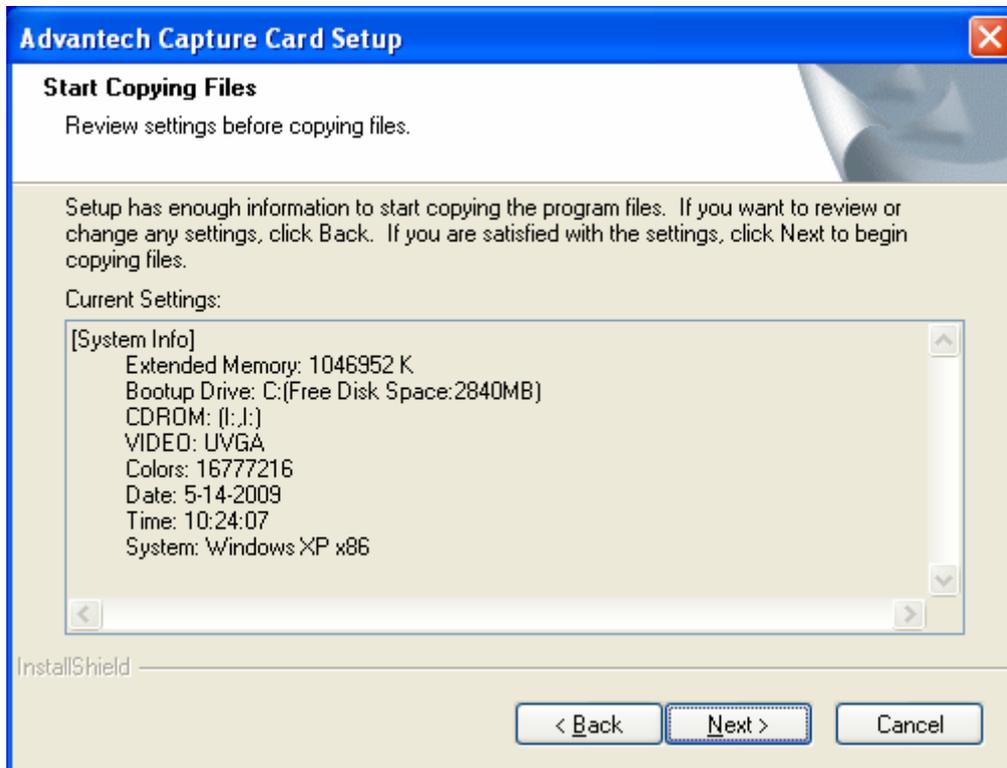
8. Please choose the destination folder and click "Next".



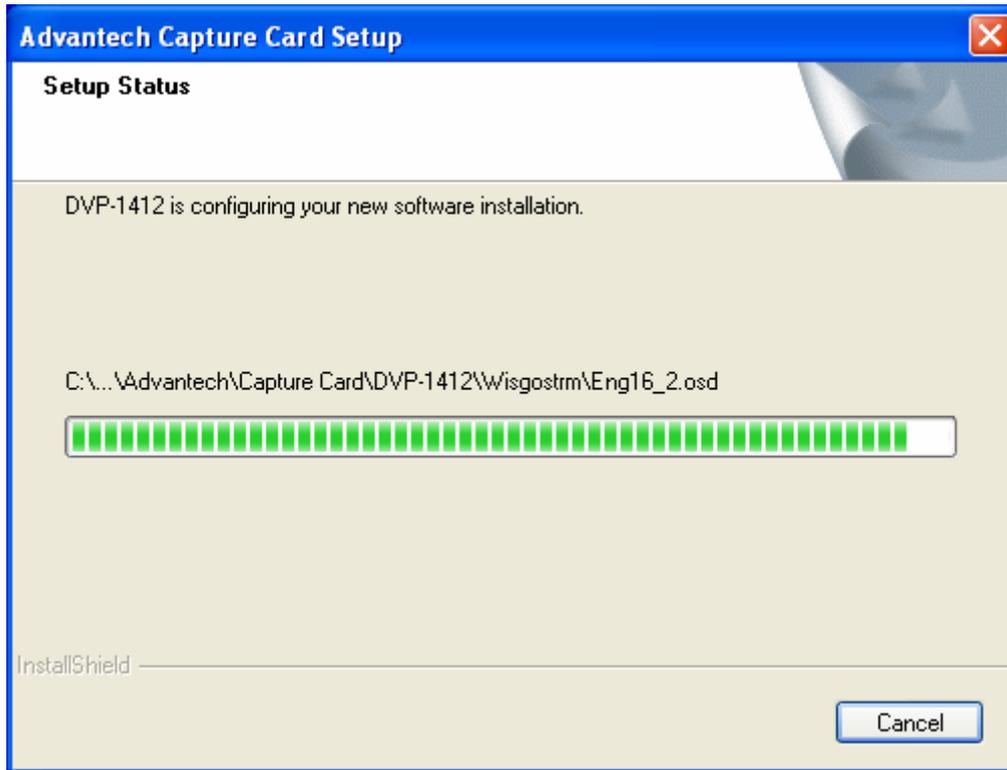
9. Please choose the items you want to install, and click “Next” after that.



10. Start copying file, please click “Next”



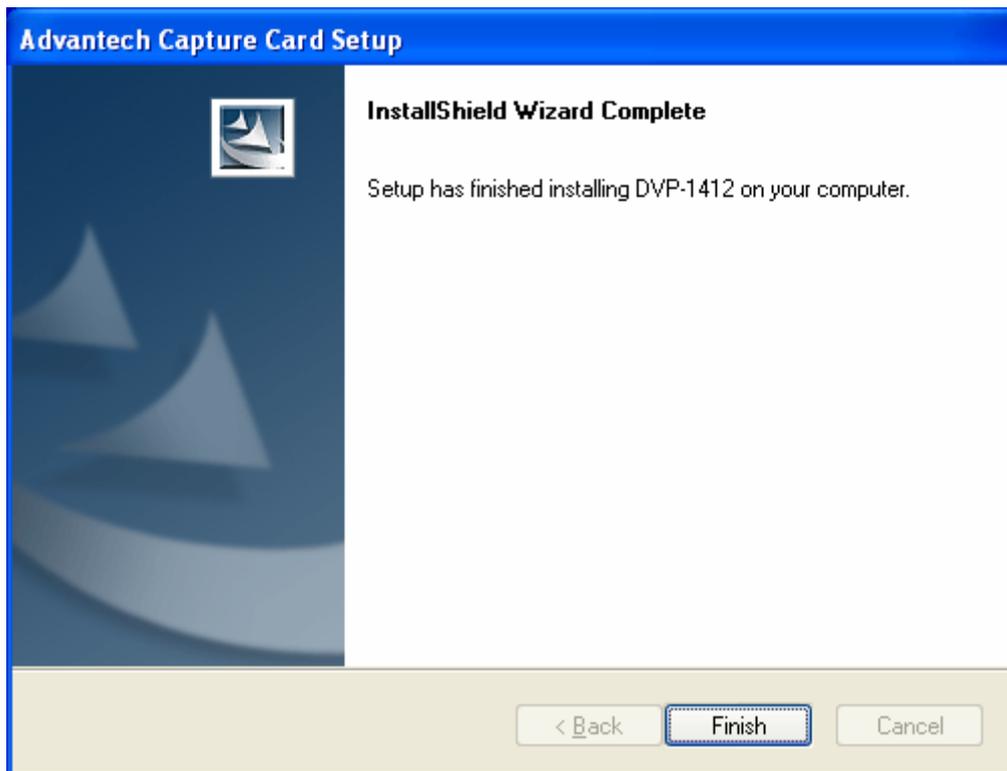
11. Following message shows that it's copying file to your computer.



12. When installing driver, there will be a windows pops up. Please click "Continue Anyway" to install driver



13. Click “Finish” to complete the driver installation.



1.10 Demo Program Functionality

Below is the demo program window. The left side panels are the preview windows of video inputs. The right side panels are the function parameter settings.

1.10.1 Device

Each device is representative of one Conexant Fusion 878A video capture chip. User can set different parameters to different 878A chip.

The image shows a software configuration window with two main sections: 'Device' and 'Encoder'. The 'Device' section includes a dropdown for 'Device' (set to 'Device_0'), a list for 'Switch Channels' (with 'Device_0' selected), a dropdown for 'Resolution' (set to 'Device_0'), a dropdown for 'Frame Rate' (set to '30'), a dropdown for 'Video Mux' (set to '0'), and a dropdown for 'Video Standard' (set to 'NTSC'). Below these are buttons for 'Start', 'Snap Buffer', 'Sensor Ctrl', 'Micro Ctrl', and 'GPIO Ctrl'. The 'Encoder' section includes a dropdown for 'Frame Rate' (set to '30'), a text field for 'Key Interval' (set to '100'), a text field for 'Quant' (set to '4'), a checked 'Save' checkbox, and buttons for 'Encode', 'Playback', and 'Exit'.

Section	Parameter	Value
Device	Device	Device_0
	Switch Channels	Device_0
	Resolution	Device_0
	Frame Rate	30
	Video Mux	0
	Video Standard	NTSC
Encoder	Frame Rate	30
	Key Interval	100
	Quant	4
	Save	<input checked="" type="checkbox"/>
	Buttons	Start, Snap Buffer, Sensor Ctrl, Micro Ctrl, GPIO Ctrl, Encode, Playback, Exit

1.10.2 Switch Channels

Set the “Switch Channels” to decide how many input for each 878A video chip. Each 878A chip can switch to 4 channel video inputs to share 30/25 frame per second. For more information, please refer to “Chapter 2.5.17 AdvDVP_SetVideoInput”.

The image shows a software configuration window with two main sections: "Device" and "Encoder".

Device Section:

- Device: Device_0 (dropdown)
- Switch Channels: 1 (dropdown)
- Resolution: 1 (dropdown menu is open, showing options 1, 2, 3, 4)
- Frame Rate: (dropdown menu is open, showing options 3, 4)
- Video Mux: 0 (dropdown)
- Video Standard: NTSC (dropdown)

Buttons in the Device section: Start, Snap Buffer, Sensor Ctrl, Micro Ctrl, GPIO Ctrl.

Encoder Section:

- Frame Rate: 30 (dropdown)
- Key Interval: 100 (text input)
- Quant: 4 (text input)
- Save (checkbox)

Buttons in the Encoder section: Encode, Playback.

Exit button is located at the bottom center of the window.

1.10.3 Resolution

Set the video capturing resolution. Please refer to “Chapter 2.5.15 AdvDVP_SetResolution”.

Notice: *For the resolution of VGA or D1, the capture video will have the interlace effect on the video image. In other words, there will be lines in the capture image especially when the targeted image is moving. To eliminate this effect, user might need to set the resolution down to 640x240 and use specific algorithms to compensate the image interlace between the scanning even field image and odd field image. For CIF/320x240 resolution, there will be no interlace effect.*

Device

Device	Device_0
Switch Channels	1
Resolution	QVGA
Frame Rate	FULL PAL
Video Mux	D1
Video Standard	VGA
	QVGA
	SUBQVGA

4

Start Snap Buffer

Sensor Ctrl Micro Ctrl

GPIO Ctrl

Encoder

Frame Rate	30
Key Interval	100
Quant	4
	<input checked="" type="checkbox"/> Save

Encode

Playback

Exit

1.10.4 Frame Rate

Set the frame rate for video capturing for specific channel. Please refer to “Chapter 2.5.13 AdvDVP_SetFrameRate”

The image shows a software interface with two main sections: "Device" and "Encoder".

Device Section:

- Device: Device_0 (dropdown)
- Switch Channels: 1 (dropdown)
- Resolution: QVGA (dropdown)
- Frame Rate: 30 (dropdown)
- Video Mux: 26 (list box, 26 is selected)
- Video Standard: 27, 28, 29, 30 (list box)

Buttons in Device Section: Start, Snap Buffer, Sensor Ctrl, Micro Ctrl, GPIO Ctrl.

Encoder Section:

- Frame Rate: 30 (dropdown)
- Key Interval: 100 (text box)
- Quant: 4 (text box)
- Save (checkbox)

Buttons in Encoder Section: Encode, Playback.

Global Button: Exit.

1.10.5 Video Mux

Set the “Video Mux” to specify the video input channel for setting parameter. Please refer to “Chapter 2.5.16 AdvDVP_GetVideoInput”.

The image shows a software configuration window with two main sections: "Device" and "Encoder".

Device Section:

- Device: Device_0 (dropdown)
- Switch Channels: 1 (dropdown)
- Resolution: QVGA (dropdown)
- Frame Rate: 30 (dropdown)
- Video Mux: 0 (dropdown)
- Video Standard: 0 (dropdown menu is open, showing options 0, 1, 2, 3)

Buttons in the Device section: Start, Snap Buffer, Sensor Ctrl, Micro Ctrl, GPIO Ctrl.

Encoder Section:

- Frame Rate: 30 (dropdown)
- Key Interval: 100 (text input)
- Quant: 4 (text input)
- Save (checkbox)

Buttons in the Encoder section: Encode, Playback.

Exit button is located at the bottom center of the window.

1.10.6 Video Standard

Set the video standard of your cameras. Please refer to “Chapter 2.5.10 AdvDVP_GetVideoFormat”.

The image shows a software configuration window with two main sections: "Device" and "Encoder".

Device Section:

- Device: Device_0 (dropdown)
- Switch Channels: 1 (dropdown)
- Resolution: QVGA (dropdown)
- Frame Rate: 30 (dropdown)
- Video Mux: 0 (dropdown)
- Video Standard: NTSC (dropdown menu is open, showing NTSC and PAL options)

Buttons in Device Section: Start, Snap Buffer, Sensor Ctrl, Micro Ctrl, GPIO Ctrl.

Encoder Section:

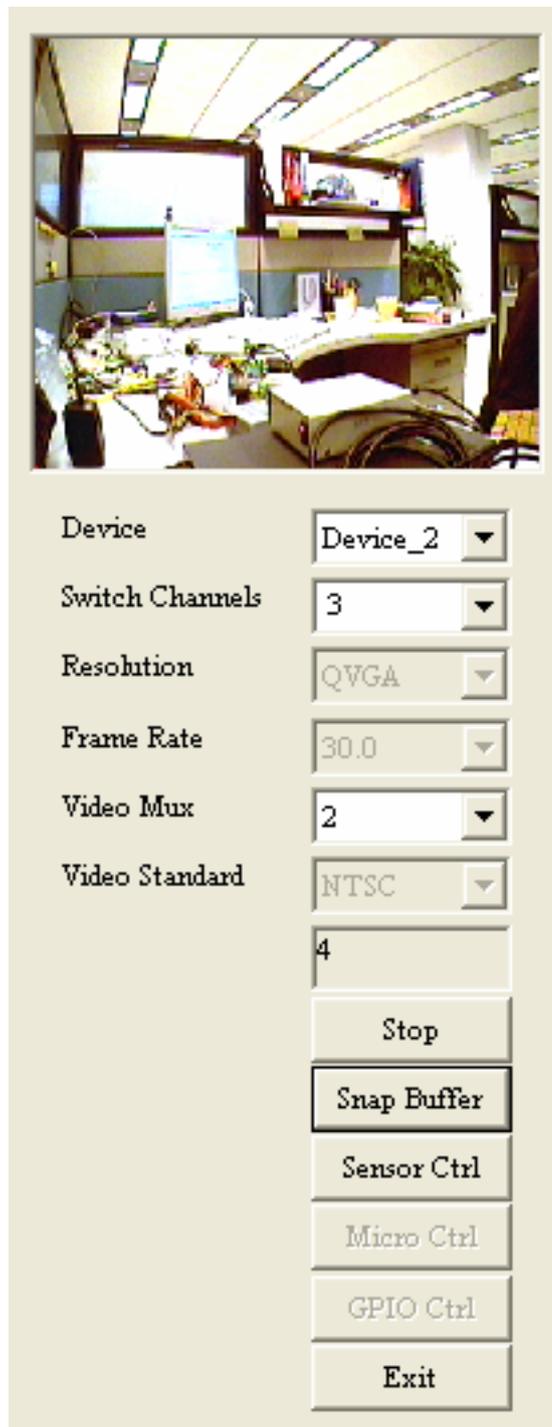
- Frame Rate: 30 (dropdown)
- Key Interval: 100 (text input)
- Quant: 4 (text input)
- Save (checkbox)

Buttons in Encoder Section: Encode, Playback.

Global Button: Exit.

1.10.7 Snap Buffer

Press the “Snap Buffer” to get the image data of specific channel video input. The snap image will be show on the up panel.



1.10.8 Sensor Control

To set the brightness, contrast, hue and saturation of specific channel. Please refer to chapter

2.5.18 AdvDVP_SetBrightness

2.5.18 AdvDVP_GetContrast

2.5.18 AdvDVP_SetContrast

2.5.18 AdvDVP_GetHue

2.5.18 AdvDVP_SetHue

2.5.18 AdvDVP_GetSaturation

2.5.18 AdvDVP_SetSaturation

1.10.9 GPIO control

To get a specified DI value or to set a specified DO value.

