



Digitra Xenia PVA-100T

DTVPC CARD

User's Guide
Release 1.0

Digitra Systems Inc.

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Document # 0001

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

Note : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Preface

This document is the User's Guide for the Xenia PVA-100T Board. It describes procedures for installation, operation, and troubleshooting the Xenia PVA-100T Board.

Audience

This document is intended for persons intending to install and operate the Xenia PVA-100T Board. Basic knowledge of PC hardware and Microsoft Windows operating systems is assumed.

Document Overview

The Xenia PVA-100T DTVPC Reference Board User's Guide contains the following chapters:

- Chapter 1, System Requirements, lists system and software requirements for use with the Xenia PVA-100T Board.
- Chapter 2, Hardware Installation, describes Xenia PVA-100T Board connectors, cable connections, and the hardware installation procedure.
- Chapter 3, Software Installation, describes how to install the WDM device driver and Digitra TV application.
- Chapter 4, Digitra TV Application, describes each of the features and options provided by the Digitra TV application.

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Chapter 1 System Requirements

In order to achieve optimum performance of your Xenia PVA-100T Board, your PC requires a minimum configuration. This chapter provides the system requirements and also provides additional information on receiving broadcast channels. This chapter contains the following sections:

- Section 1.1, “PC Platform Requirements”
- Section 1.2, “Supported Graphics Cards”
- Section 1.3, “ATSC Broadcast Reception”

1.1 PC Platform Requirements

The minimum requirements for your PC platform are listed below:

CPU	Pentium-II 333 MHz or faster
DRAM	64 Megabytes
Graphics Bus	AGP or PCI
System Bus	PCI
Disk	2.0 GB minimum (8 GB recommended)
Operating System	Windows 98, Windows 98 Second Edition
Other Software	DirectX Media 6.0 runtime.August 1999 Release 1.0 1-2

1.2 Supported Graphics Cards

See the Release Note for the latest compatibility listing.

1.3 ATSC Broadcast Reception

Note that ATSC broadcast channels may not be available in all areas. Thus you may experience problems receiving channels with your Xenia PVA-100T Board. We recommend that you verify the ATSC antenna signal integrity with a known working ATSC broadcast receiver before using it with the Xenia PVA-100T Reference Board. An updated list of DTV stations in operation in the USA can be obtained at the National Association of Broadcasters website, <http://www.nab.org//pressrel/dtvstations.asp>. If you have questions or problems receiving broadcast channels with your Xenia PVA-100T Board, please contact Digitra for assistance.

Chapter 2 Hardware Installation

This chapter describes how to install the Xenia PVA-100T Board in your PC and connect the reference board connectors. It also shows various cabling configurations that are supported.

Software installation is covered in Chapter 3. For best results, we recommend that you install the Xenia PVA-100T Board in a newly formatted PC with a minimum of adapters installed.

Also, before you continue to the installation, we recommend that you take a moment to review the release note document, “Release Note.pdf”, included on the Xenia PVA-100T Software Install CD-ROM. This document contains the most current information on known bugs, common problems and/or solutions, troubleshooting tips, and hardware compatibility data.

Knowing of the potential problems ahead of time is the best way to avoid them. Most importantly, if you have any questions or problems concerning this product, please do not hesitate to contact your local Digitra sales representative for assistance, or send e-mail to: @digitra.com.

This chapter contains the following sections:

- Section 2.1, “Installing the Xenia PVA-100T Board”
- Section 2.2, “Xenia PVA-100T Board Connectors”
- Section 2.3, “Xenia PVA-100T Cable Configurations”

2.1 Installing the Xenia PVA-100T Board

<Warning> Static Sensitive Components

To avoid possible damage to your Xenia PVA-100T Board and/or other system components from static discharge, always discharge your body’s static electricity prior to handling the Xenia PVA-100T board or other system components. Discharging can be done either by using a properly grounded anti-static wrist strap or by simply touching the chassis of a grounded (plugged-in) computer. In addition, always handle the card by its edges whenever possible, to avoid mechanical damage to delicate components on the board.

To install your Xenia PVA-100T card, follow the steps listed below:

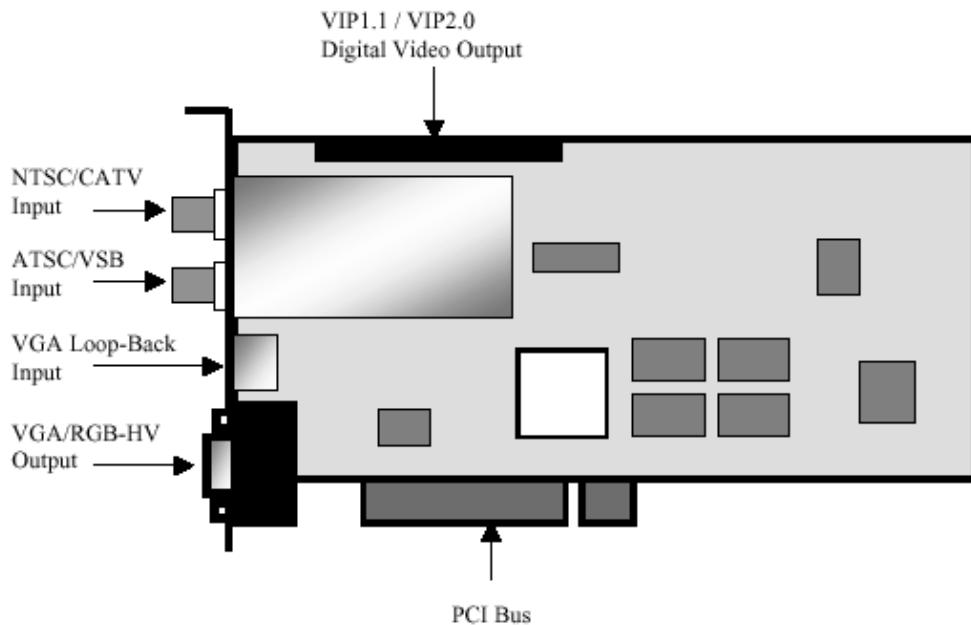
1. With the power off, remove your computer cover and locate an available PCI slot.
2. Remove the screw attached to the bracket cover and remove the bracket plate.
3. Before handling the Xenia PVA-100T DTVPC card, ground yourself by touching the power supply box inside your computer.
4. Position your card directly above the PCI slot and insert the card firmly into the slot. Care should be taken to press it evenly and snugly into its slot.

5. Once your Xenia PVA-100T DTVPC card is installed properly in its slot, secure it to the computer frame with the screw you removed in step 2.
6. Connect the cables as described in Section 2.3, “Xenia PVA-100T Cable Configurations,” below.
7. Secure your computer cover and power on your computer.
8. Install the Xenia PVA-100T device driver and Xenia PVA-100TTV application software as described in Chapter 3.

2.2 Xenia PVA-100T Board Connectors

Figure illustrates the Xenia PVA-100T Board connector functions. On the mounting bracket, the Xenia PVA-100T board connectors are (from top): NTSC Antenna / CATV Input (F-Type, female), ATSC/VSB Antenna Input (F-Type, female), VGA Loop-Back Input (8-pin mini-DIN, female), and the VGA/HD Monitor Output (15-pin DIN). On the top edge of the board is the VIP1.1/VIP2.0 connector, which is a 50-pin dual-pin-row header, male, with shroud, 100-mil pin spacing). Pins Y14 and Z14 are removed from this header to allow connection of a VIP 1.1-compatible 26-pin ribbon cable, which is included with the Xenia PVA-100T board. For detailed specifications on any of these connectors, refer to the Xenia PVA-100T DTVPC Reference Board Hardware Manual

Figure 2.1: Xenia PVA-100T Board Connectors



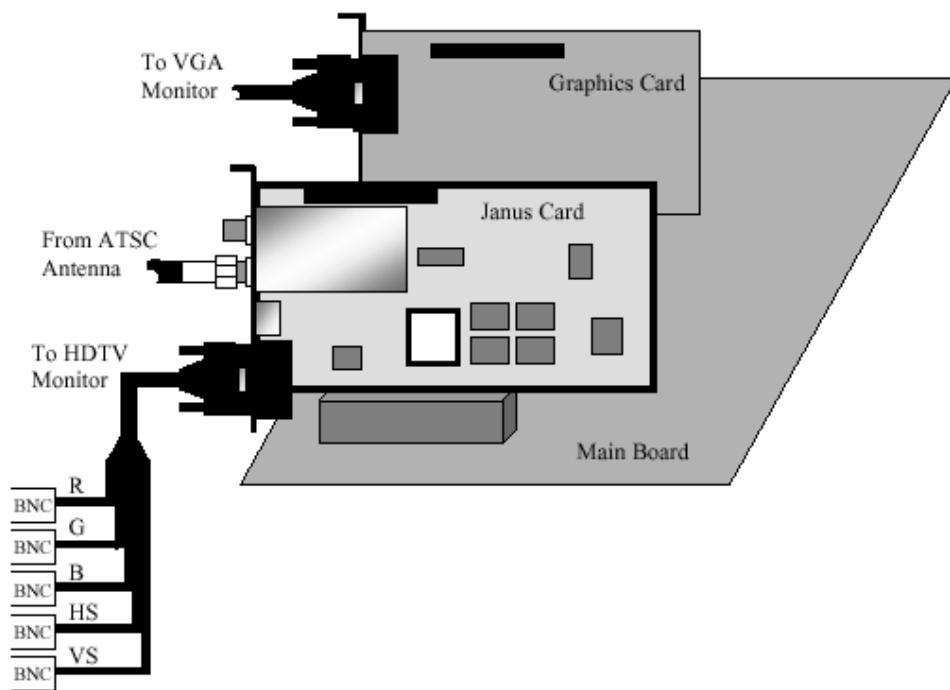
2.3 Xenia PVA-100T Cable Configurations

There are three basic cable configurations for the Xenia PVA-100T Board. These are Dual Monitor, VIP sideport, and VGA Loop-back. The following subsections describe each operating configuration and their cabling connections.

2.3.1 Dual-Monitor Configuration

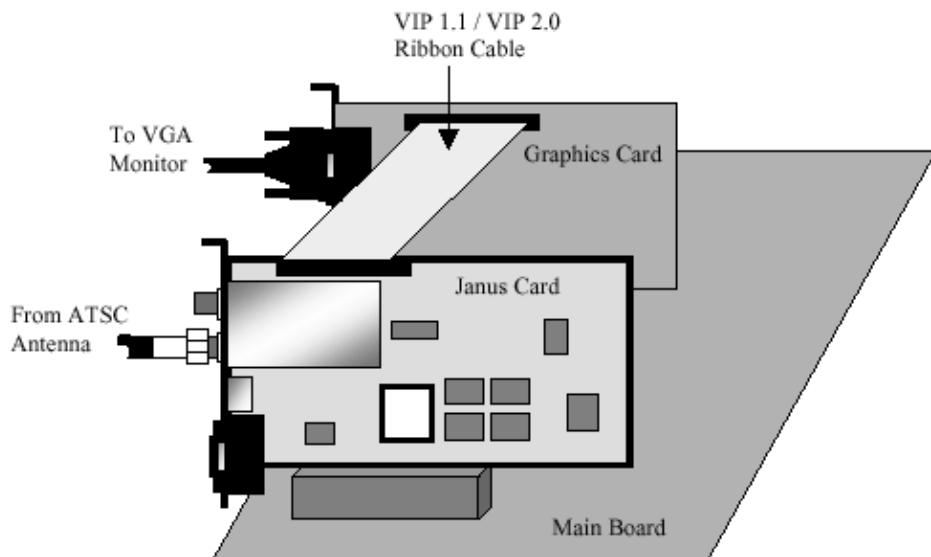
Figure 2.2 shows the dual-monitor configuration. Video output from the Xenia PVA-100T Board is displayed on a separate HDTV or VGA monitor, without being mixed with VGA graphics. This configuration is best in terms of compatibility with systems and graphics boards. Use this configuration to validate and/or circumvent problems attaching to various VGA cards. The video display monitor used should be capable of receiving R-G-B-H-V type input at resolutions of 1920 pixels by 1080 lines, interlaced.

Figure 2.2: Dual-Monitor Configuration



2.3.2 VIP Sideport Configuration

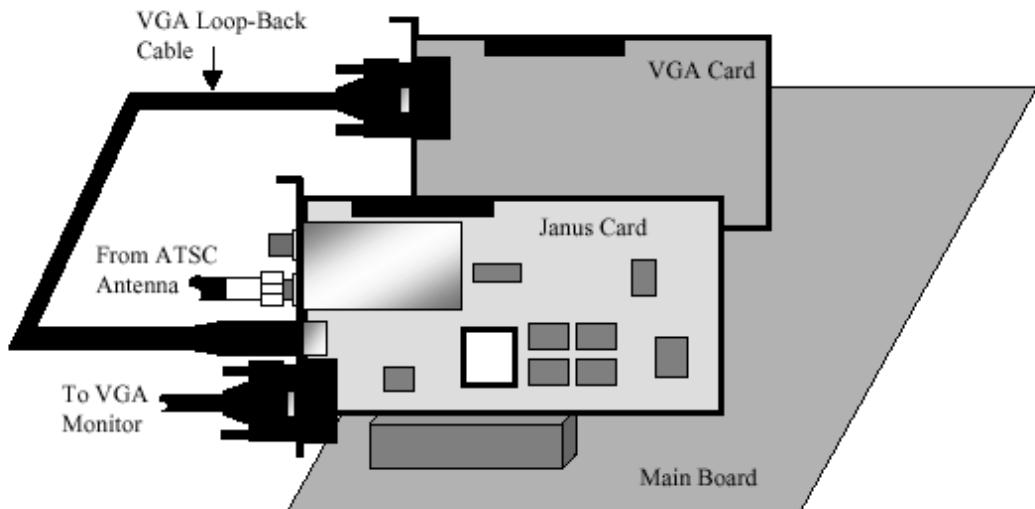
The VIP Sideport configuration is used to display video output from the Xenia PVA-100T Board within a scalable window on the Windows desktop. Figure shows the cable connections. In this configuration, video output from the Xenia PVA-100T board is routed through the VIP1.1 or VIP2.0 ribbon cable to the graphics card. The graphics chip inputs the video data from the VIP sideport, resizes the video, and finally overlays it within a scalable window on the desktop. This configuration requires a graphics board that supports the VESA Video Interface Port (VIP) specification. See the release note for more compatibility information. Further information on VIP can be obtained from the VESA website, <http://www.vesa.org>.



2.3.3 VGA Loop-Back Configuration

This configuration allows you to share a single monitor to display either VGA graphics or RGB video output by means of an analog switch. Figure 2.3 illustrates the cable connections used in this configuration. The VGA card display output is looped back into the Xenia PVA-100T Board via its VGA loop-back input. An analog switch on the Xenia PVA-100T Board switches between the VGA loop-back input (default) and the Xenia PVA-100T HD video output. To display video, the switch is thrown such that Xenia PVA-100T video output appears on the VGA monitor. The VGA display, at that point, is not visible. To return to VGA display, the application software waits for the user to strike a key, at which point the display is switched back to VGA.

Figure 2.3: VGA Loop-Back Configuration



Chapter 3 Software Installation

This chapter provides software installation instructions for your Xenia PVA-100T Board. It contains the following sections:

- Section 3.1, “Windows 98 Device Driver Installation”
- Section 3.2, “MGI AC-3 Audio Decoder Software Installation”
- Section 3.3, “Digitra TV Application Installation”

3.1 Windows 98 Device Driver Installation

For this part of the installation, you will need two CD-ROMs:

- The CD labeled “Xenia PVA-100T Software Installation”, from the Xenia PVA-100T CD set.
- Your Windows98 Second Edition Installation CD-ROM, (or a copy of the CD on hard disk)

Important Note: It is recommended you copy the contents of the Xenia PVA-100T Software Installation CD to your hard disk and then install the software from the hard disk. This avoids a problem in Windows98 Second Edition operating system related to swapping CD-ROMs during software installation. If you have space available on your hard drive, we recommend that you copy both CD-ROMs to your hard drive. This results in the fastest, most reliable installation and updates of the Xenia PVA-100T software. Upon powering on your PC for the first time after installing your Xenia PVA-100T Board, the system will prompt you to supply a device driver for the Xenia PVA-100T board. Alternately you can select Start-->Settings-->Control Panel-->Add New Hardware to load the device driver for the Xenia PVA-100T board. When prompted for a device driver, specify the path “X:\<copy of Xenia PVA-100T CD-ROM>\Driver\”, where ‘X’ is the letter of the hard drive containing the copy of your Xenia PVA-100T CD-ROM.

Restart your computer and continue loading the Digitra TV application as described in the next section.

3.2 MGI AC-3 Audio Decoder Software Installation

The MGI AC-3 Audio Decoder Software must be installed on your system in order to hear audio when using the DigitraTV application. To install the MGI audio software on your system, run the ‘setup.exe’ program in the MGI subdirectory of your Xenia PVA-100T install CD. If you have copied the contents of this directory to hard disk, then install from there.

During the software installation, you will be asked several questions. Answer “yes” to all of these. At the end of installation, you will be asked to restart your system.

Important Note: In order to complete the MGI software installation, you must manually copy three files following the automated installation process. From Windows explorer, select the “View/FolderOptions” menu. From this menu, click the “View” tab and check “Show All Files.” Next, copy the three files from the \MGI\Audio\ folder of the Xenia PVA-100T install disk to c:\Program files\Zoran\SoftDVD2\. These files are named Cce_utl.dll, ZAudFlt.ax, and Zdvd.dll. Failing to copy these files results in an error message, “Audio packet needs to be taken care of”, upon running the DigitraTV application.

3.3 Digitra TV Application Installation

The DigitraTV Application controls the Xenia PVA-100T Board. To install the DigitraTV application software on your system, run the “setup.exe” program in the DigitraTV subdirectory of your Xenia PVA-100T install CD. If you have copied the contents of this directory to hard disk, then install from there. During the software installation, you will be asked several questions. Answer “yes” to all of these. At the end of the installation, you will be asked to restart your system.

Chapter 4 Using the Digitra TV Application

This chapter describes the functions of the Digitra TV application program. This program controls the Xenia PVD 100-T Board, providing a graphical user interface (GUI) on the PC desktop. This chapter contains the following sections:

- Section 4.1, “The Digitra TV Application Window”
- Section 4.2, The Digitra TV Setup Menu
- Section 4.3, “Pop-up Controls” Menu

4.1 The Digitra TV Application Window

When the DigitraTV.exe application is launched, the television controls are displayed in the DigitraTV.exe application program window, or “console”. The console window will appear in one of three forms specific to playback from FILE, TUNER, or LINE IN sources, as shown in the figures below. At first run, SOURCE is set to ‘FILE’ by default. At subsequent runs, SOURCE will be set to whatever it was the last time the application was closed. If no file is selected, the Digitra TV application defaults to “TUNER” input, as shown in Figure 4.2.

Figure 4.1: Digitra TV Application Window, File Play Mode (SOURCE = FILE)



Figure 4.2: DigitraTV Application Window, Input from Tuner (SOURCE = TUNER).



Figure 4.3: Digitra TV Application Window, External Tuner Input (SOURCE = LINE IN)



Table 4.1 describes buttons and functions common to all SOURCE types. Tables 4.2 and 4.3 describe buttons and functions available only when SOURCE=TUNER and SOURCE=FILE, respectively.

Table 4.1: DigitraTV console functions common to all SOURCE types

Symbol	Name	Function
	Exit	Terminates the DigitraTV application
	Minimize	Minimizes the DigitraTV application window
	About	Displays the 'About DigitraTV' splash screen
	HDTV	Toggles between Video Overlay and HD modes. (Requires a VGA loopback connector.) Pressing any key or mouse button while in HD mode reverts to VGA Overlay mode.
	Volume Control	Audio output level slider.
	Select Source	Click to select from FILE, TUNER, and LINE IN input sources.
	Source Menu	The source menu pops up following a left or right mouse click on SOURCE button. Move mouse pointer to highlight the desired selection. Click on a list item to select.
	Setup Menu	Opens the 'DigitraTV Setup' menu pages

Table 4.2: Digitra TV application window buttons and functions available only when SOURCE=TUNER

Symbol	Name	Function
TUNER	Input Source	Indicates that the selected bistream source is TUNER.
	Tuner Band	Highlighted button indicates tuner band currently selected. A mouse click anywhere in this region toggles from ATSC-to-NTSC, and vice-versa..
12	Channel Tuned	Displays selected tuner channel. Users can enter new channels by key-ing the new channel number into this field followed by <enter>.
	Channel Up	Each click increments by 1 the channel number displayed
	Channel Down	Each click decrements by 1 the channel number being displayed

Table 4.3: DigitraTV application window buttons and functions available only when SOURCE=FILE.

Symbol	Name	Function
FILE	Input Source	Indicates that the selected bistream source is TUNER.
FILE:	Load File	Launches a standard “file open” dialog box. If no file name appears to the right of ‘FILE:’ then the blue triangle will be flashing, indicating
FILE: TW_LDV.MPG	File Loaded	This shows the name of the bitstream file currently open for play.

4.2 The DigitraTV Setup Panel

The DigitraTV setup panel is used to configure playback and display options. It contains five tabs: General Options, HDTV Setup Options, VGA Setup, Input Setup, and Program Options. These five tabs are described in the following subsections.

4.2.1 General Options Tab

Figure 4.4 shows the General Options tab. This tab allows the user to select (check) or deselect (uncheck) between the options listed in Table 4.4.

Figure 4.4: Digitra TV Setup, General Setup Options Tab



Table 4.4: General Options

Option	Description
Show VGA Window	Enables overlay video window on VGA display (via the VIP1.1 video sideport). This feature requires use of the 26-pin VIP feature connector, and a VGA card which supports VIP video input. See the Release Notes for compatibility listings.
Using Loop-back Cable	Check this box when the Xenia PVA-100T board is connected in the VGA loop-back cable configuration, as shown in Figure 2.3.
Decoder Audio	Enables decode and playback of audio using the software AC-3 decoder.
Show ToolTips	Enables/disables display of standard windows ToolTips.

4.2.2 HDTV Setup Options Tab

Figure 4.5 shows the HDTV Setup Options tab for the Stream Setup menu. Table 4.5 lists the available options.

Figure 4.5: Digitra TV Setup Dialog, HDTV Setup Options Tab

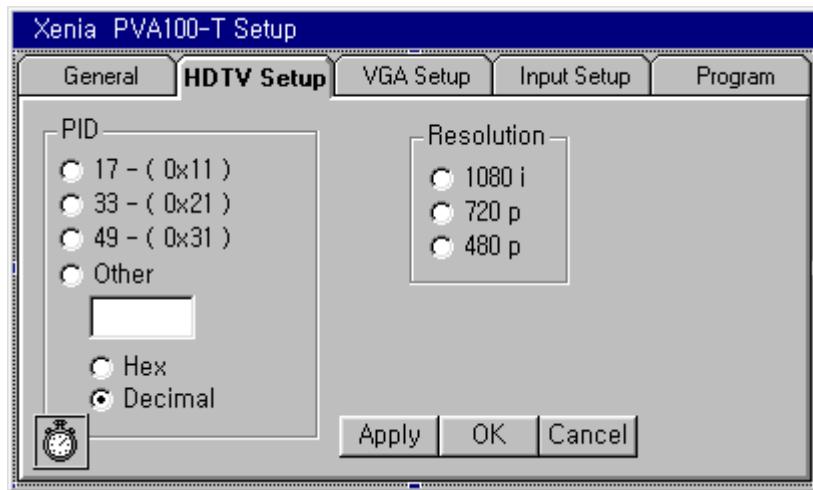


Table 4.5: HDTV Setup Options

Option	Description
'PID' radio buttons	Selects between one of three hard-coded PIDs: 17, 33, or 49. Alternately a user-specified PID can be entered.
'Resolution' radio buttons	Selects the output display resolution of the Xenia PVA-100T board's primary video output port, either 1080i, 720p, or 480p.

4.2.3 VGA Setup Options Tab

The VGA Options tab of the setup menu, shown in Figure 4.6, allows the user to configure VGA overlay display options when the Xenia PVA-100T Board is used in the VIP video sideport configuration shown in Figure . Options are described in Table 4.6.

Figure 4.6: Digitra TV Setup, VGA Setup Options Tab



Table 4.6: VGA Setup Options

Option	Description
Window Size	Select from a set of preset overlay window sizes. The overlay window is not dynamically resizable using the mouse pointer. The available window sizes depend on the setting of the Windows Aspect Ratio below in Table 4.7. Supported window sizes are listed in Table 4.7.
Window Aspect Ratio	Selects between 4:3, 3:2, 16:9, and 1:1 (Square Pixel).
HD Mode	Selects whether to use RGB or Ypbpr output. In order to use External HDTV output, it is recommended to use Ypbpr format, whereas, to use in PC monitor, it is recommended to use RGB display output format.
Keep Video on Top	Prevents occlusion of the overlay window by other windows.
Use Native Res	Overrides 'Window Size' and 'Window Aspect Ratio', and sizes the overlay window to match the input stream resolution.

Table 4.7: Supported Window Sizes for Aspect Ratios

Windows Aspect Ratio	Supported Window Size Options
4:3	320x240, 640x480, 800x600, 1024x1280
3:2	360x240, 720x480, 900x600
16:9	427x240, 853x480
Square Pixel (1:1)	240x240, 480x480, 600x600, 768x768.

4.2.4 Input Setup Tab

The Input Setup Options tab of the setup menu, shown in Figure 4.7.

Figure 4.7 : Digitra TV Setup Dialog, Input Setup Options Tab

The Input Setup Options tab of the setup menu allows the user to configure External Input setup options, such as installation of antenna or particular external video source. The picture on top shows the layout of Input ports. Options are described in Table 4.7.

Table 4.7 : Input Setup Options

Option	Description
ATSC Input	Selects Input ports of External ATSC source
NTSC Input	Selects Input ports of External NTSC source
Input 1	Selects whether the input port1 is connected to antenna or cable.
Input 2	Selects whether the input port2 is connected to antenna or cable.

4.2.5 Program Tab

The Program tab of the setup menu, shown in Figure 4.8, allows the user to search for available channels. This function supports the TV source of both ATSC and NTSC type. Options are described in Table 4.8.

Figure 4.8 : DigitraTV Setup Dialog, Input Setup Options Tab



Table 4.8 : Input Setup Options

Option	Description
'Auto Program' button	Scans for channels that currently available.
'Clear' button	Clear the previously scanned channel list
Add/Remove Channels	Manually add/remove particular channel.

4.3 Pop-up Controls

An alternate “pop-up” control interface is available when playing video in a VGA window. The pop-up controls are accessed by a right-click of the mouse when pointing inside the video overlay window. The pop-up menu is illustrated in Figure 4.7. The menu selections are described in Table 4.8.

Digitra TV Setup, VGA Setup Options Tab, Digitra TV Setup, VGA Setup Options Tab

Figure 4.9: Pop-Up Menus

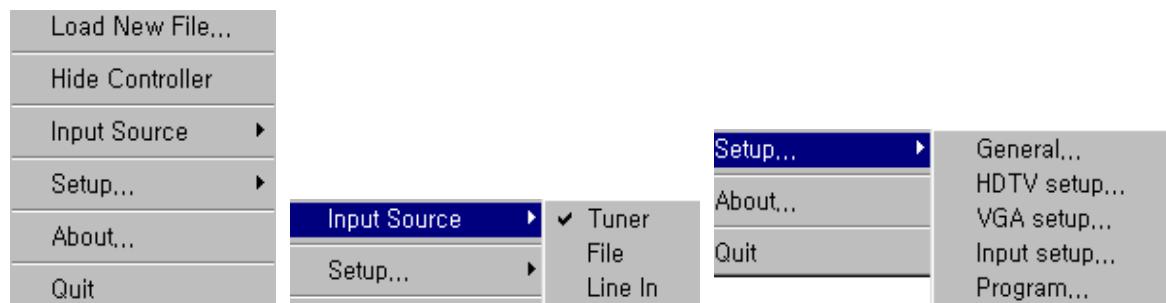


Table 4.9: Pop-Up Controls

Pop-up Control Button	Button Function
Load New File	Brings up the ‘File Open’ dialog box (see Figure 4.8 below).
Hide Controller	Minimizes or restores Digitra TV console.
Source	Selects FILE, TUNER, or LINE IN.
Setup	Brings up one of the three Stream Setup menu pages.
About	Displays the Digitra TV About box (see Figure 4.9 below).
Quit	Terminates Digitra TV Application..

Figure 4.10: File Open Dialog

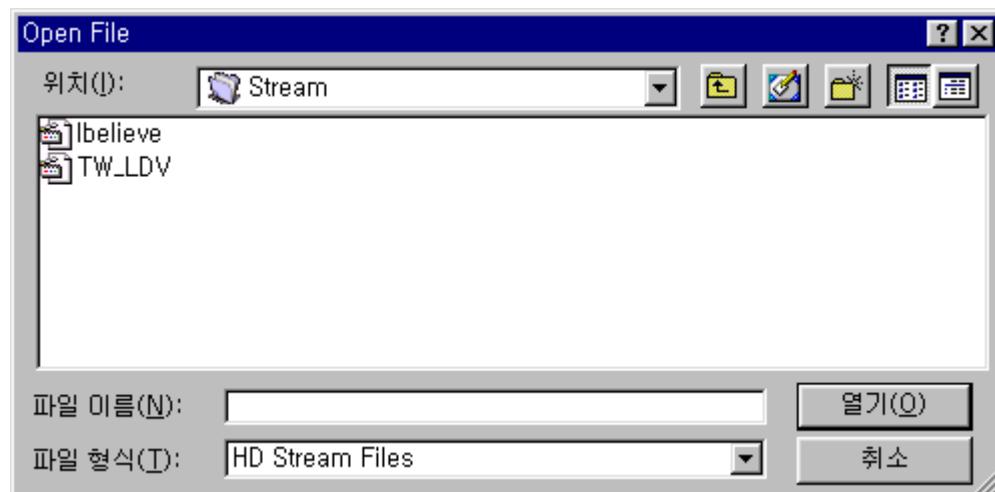


Figure 4.10: About Dialog.



XENIA PVA-100T SPECIFICATION

항 목		제품규격	비고
System Capacity	STANDARD	ATSC	
Tuner	Input frequency range	50 ~ 860 MHz	
	Input impedance	75 ohm	
	ATSC input connector	IEC169-24	
	NTSC input connector	IEC169-24	
Demodulator	Demodulation	VSB	
	Symbol rate	10.76 Msymbol/s	
	Payload date rate	19.39 Mbps	
	FEC coding	Reed-solomon, t=10(207,208)	
Demultiplexing	Standard	ISO13818-1	
Memory Capacity	SDRAM	16 Mbytes	
Video Decoding	Standard	ISO13818-2	
	Compression	MP@HL	
	Frame rate	24Hz/30Hz/60Hz	
	Aspect ratio	4:3 / 16:9	
	format	1080I/ 760P/480I/480P	
Audio Decoding	Standard	Dolby digital AC3	
	Sound mode	Stereo	
	Decoder	Software	
Display Format	VGA output format	1280x1024,1024x768,800x600 ,640x480	
	Graphics sub-system	VIP1.1	
	VIDEO output signal	RGB/YPbPr	
Connector	VGA loop-back input	9 Pin Mini-Din	
	VIDEO output	15 Pin D-sub	