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XPress

User Manual

July 2001

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XPress
Introduction

Thank you for purchasing XPress, a full-featured PCI bus mastering wavelet video compression board. This chapter introduces you to your XPress board and offers the following information:

- An overview of the XPress family
- A discussion of how XPress operates

Again, thank you for choosing an XPress wavelet video compression board.

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XPress Family Overview

XPress is a PCI bus mastering wavelet video compression, decompression, and capture board. The XPress family contains three products—XPress Pro, XPress Plus, and XPress Lite—each offering different video input types, camera control, and I/O control capabilities. XPress Pro offers 16 video inputs and one video output with OSD. XPress Plus offers eight video inputs and one video output (see Figure 1). XPress Lite offers four video inputs (see Figure 2). XPress Pro offers 16 alarm inputs and one alarm output. XPress Plus and XPress Lite both offer eight alarm inputs and one alarm output.

Figure 1

This is how XPress Plus integrates into a typical system.

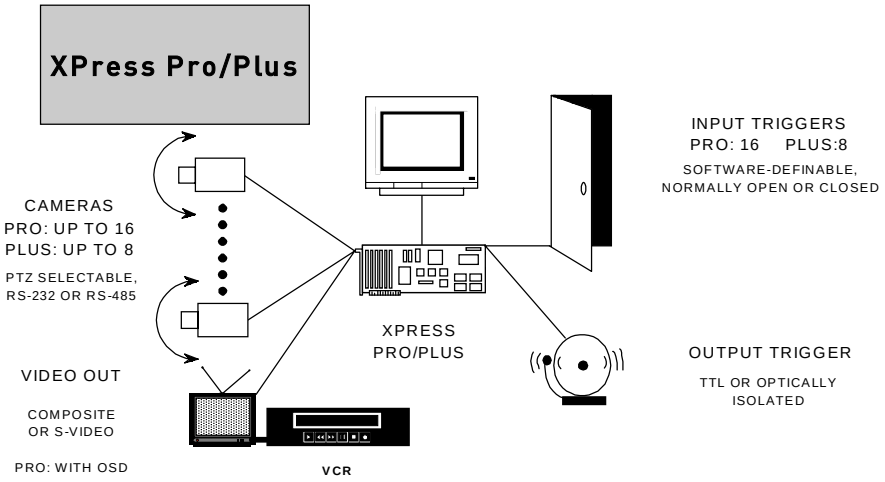
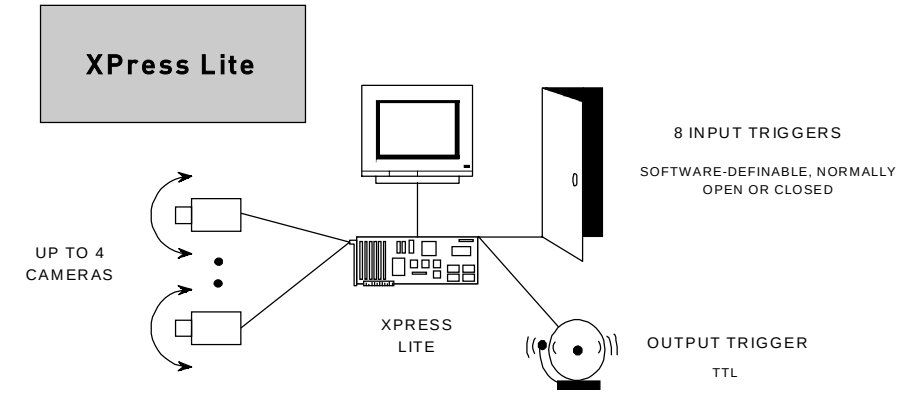


Figure 2

This is how XPress Lite integrates into a typical system.



XPress uses its bus mastering technology to capture, store, and display video in the following ways:

- **Real-time preview—**With the use of bus mastering technology, XPress can send full-resolution, uncompressed video to a system's display card for real-time preview. Images are digitized and transferred over the PCI bus to the local memory of the system's display card (see Figure 3).

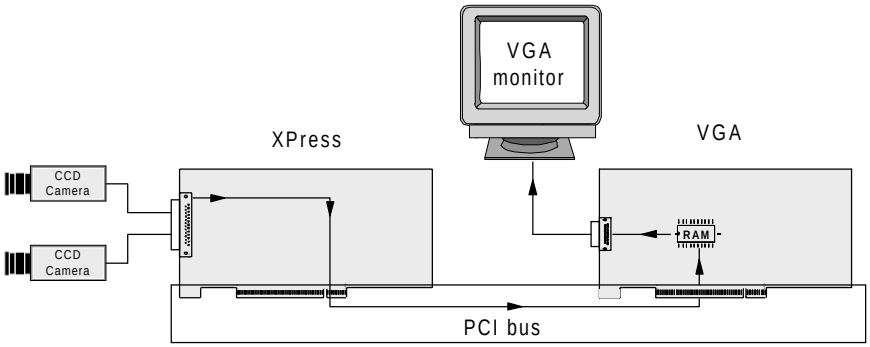


Figure 3

With onscreen capture, video is transferred directly to display memory.

- **Record with real-time preview—**In addition to its bus mastering capability, XPress uses on-board wavelet compression/decompression (CODEC) for efficient capture and storage of images to a hard drive. Digitized video can be simultaneously transferred to the system's display card local memory for display and the on-board CODEC for compression (see Figure 4). The compressed video is then transferred to the system's hard drive for storage.

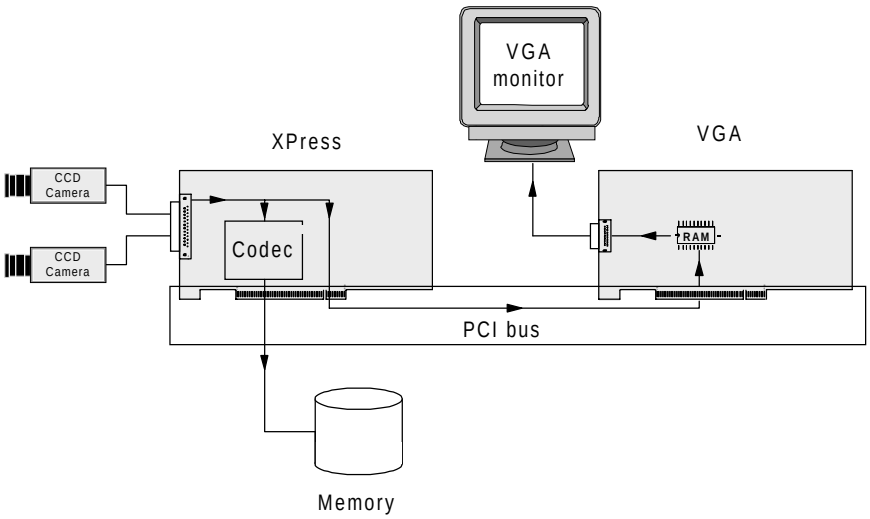


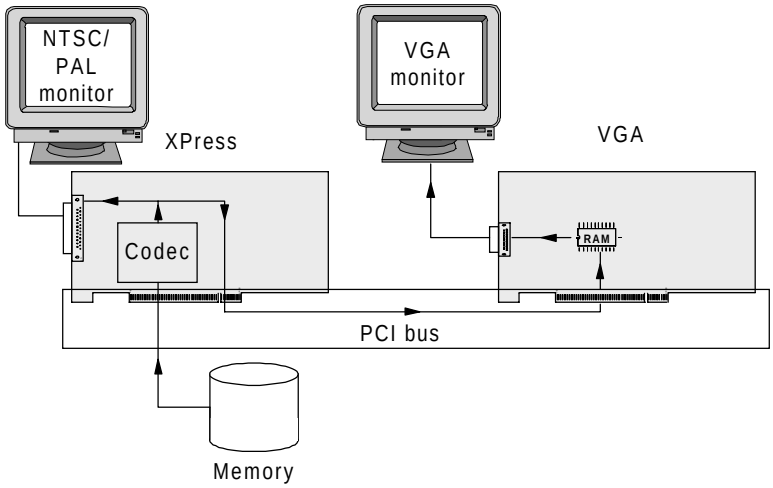
Figure 4

With XPress, digitized video can be simultaneously compressed and displayed.

- **Playback—**Playback of stored images is accomplished by transferring video files from the hard drive to the CODEC for decompression. After the images are decompressed, they can then be transferred to the system's display card for viewing on a system monitor and through an on-board video encoder for viewing on a NTSC or PAL video monitor (see Figure 4). This allows the stored images to be recorded to VHS tape.

Figure 5

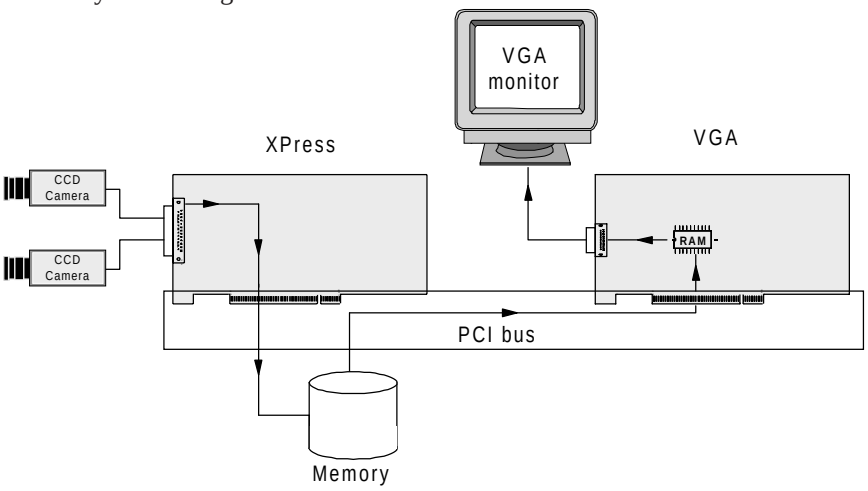
After stored images are decompressed, they can be displayed on the system monitor and an external NTSC/PAL monitor.



- **Offscreen capture—**This allows the transfer of images to system memory. With offscreen capture, video is first transferred to system memory and then sent to the system's display memory (see Figure 5). The refresh rate depends on the display card used, the size of the capture window, and color depth. This produces video frame rates between 5 and 15 frames per second, depending on system configuration.

Figure 6

With offscreen capture, video is first transferred to system memory and then sent to the VGA display memory.



XPress Pro Overview

The XPress Pro board is a high-quality PCI bus mastering frame grabber with real-time wavelet video compression and decompression designed for security applications. Because of its bus mastering capability, XPress Pro can transfer live or captured images directly into system memory or display memory in real time. It can quickly switch between sixteen composite inputs in either NTSC or PAL formats. Any combination of color or monochrome cameras can be configured.

XPress Pro provides sixteen input triggers and one output trigger for alarm or event verification. The sixteen input triggers, individually defined as normally open or normally closed, can be used to control the capture and compression of video and activation of external events. The output trigger can be configured as TTL or opto-isolated flash trigger to provide activation of audio or visual alarms. XPress Pro includes a serial port with both RS-485 and RS-232 interfaces for PTZ and camera control.

Processing control and activity detection is performed by an on-board DSP, allowing for real-time performance of event trigger detection, compression management, and video switching. XPress Pro also includes a video encoder to allow viewing of a composite video output with onscreen display (OSD). This selectable output can consist of either decompressed wavelet images or switched video from any of the video inputs.

See the “Specifications, Jumpers, and Pinouts” chapter for a complete list of the XPress Pro board’s features.

XPress Plus Overview

XPress Plus differs from XPress Pro in that it has eight composite inputs that can be configured as four S-Video inputs, a single decoder, and eight input triggers. With the single decoder, XPress Plus cannot show the single-camera 30fps live preview window that is available on XPress Pro, and the recording rate cannot be increased above the 12 fps for NTSC and 10 fps for PAL.

See the “Specifications, Jumpers, and Pinouts” chapter for a complete list of the XPress Plus board’s features.

XPress Lite Overview

XPress Lite is a feature-reduced member of the XPress family that was designed for the lower-cost security application. XPress Lite contains four video inputs, allowing four composite video sources or two S-Video sources. XPress Lite does not contain the video encoder for video output applications or the serial communication port that XPress Pro and Plus do.

See the “Specifications, Jumpers, and Pinouts” chapter for a complete list of the XPress Lite board’s features.

XPress
Installation

This chapter contains information about the installation of the XPress board. The following specific topics are covered:

- Installing the XPress hardware
- Installing the XPress software

Also in this chapter is a listing of system requirements for XPress.

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System Requirements

Following are the system requirements for using an XPress video board:

- An Intel-compatible computer with PCI Bus and 166MHz or faster Pentium Processor using the Intel® Triton or faster chip-set. This type of system is necessary to achieve full functionality and throughput .
- An available PCI 32-bit bus master expansion slot.
- At least 16MB of RAM. Ideally, you should have 32MB or more.
- A DirectDraw-compatible PCI or AGP VGA card (most current cards are compatible). See the compatibility section for more information.
- For software playback, you must have MMX.

Hardware Installation

To install XPress, complete the following steps:

1. If necessary, set the jumper switches. (See the "Specifications and Jumper Settings" chapter for more information).

2. Turn off your computer and disconnect all attached equipment and the power cord. Remove the computer cover.

3. Make sure there is a VGA card or built-in VGA chip installed in the computer. If an Integral Technologies FlashBus MV frame grabber is installed, remove it from the system.

4. Firmly insert the XPress board into an empty expansion slot inside your computer. Screw its bracket to the inside of the back of the computer.

5. Reassemble the computer. The XPress board's connector(s) should be accessible through the back of the computer.

6. Turn on the computer to begin the software installation.

Software Installation

To install the XPress software, put the XPress Setup disk in a floppy drive and run SETUP. You will be guided through the installation of all the software components.

XPress Applications

XPress comes with two applications that use the XPress board's wide range of features. Information about the following applications is incluced in this chapter:

- XPG
- XVCR

Also included with the XPress software package are Microsoft Windows 95, 98, NT, 2000, and ME drivers.

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XVCR

The XVCR application employs video switching, compression (recording), and decompression (playback) for up to eight sources of video. The eight buttons on the bottom of the main screen are standard VCR controls, along with a loop button (far right) that continuously replays a stored video clip until manually stopped.

With XVCR, you can perform two types of image capture:

- **To record a video segment,** simply click the record button, and then enter a file name and location and then click Save. When you are finished recording, click the stop button. To play back the file, choose Open from the File menu and then find and open the appropriate file.

- **To grab an individual image,** simply click the Grab menu and select Save from the File menu. Then select a file name and image format and click Save. You must open the image with an application other than XVCR.

The XVCR main window (see Figure 7) contains four menus, as described in the following sections.

Figure 7

XVCR's main window contains four menus and standard VCR controls.



File

This menu contains standard windows file managements options, including Open (for .XPV files only), Save, and Print. When you click Save, you have the option to save a grabbed image in one of four image formats: bitmap (.BMP), JPEG (.JPG), TIFF (.TIF), or YUV (.YUV).

Edit

This menu lets you copy an image as a bitmap for pasting in other applications.

Tools

This menu allows you to configure XVCR's video capture parameters. When you click on Settings..., the XVCR Configuration panel appears (see Figure 8). This panel includes the following options:

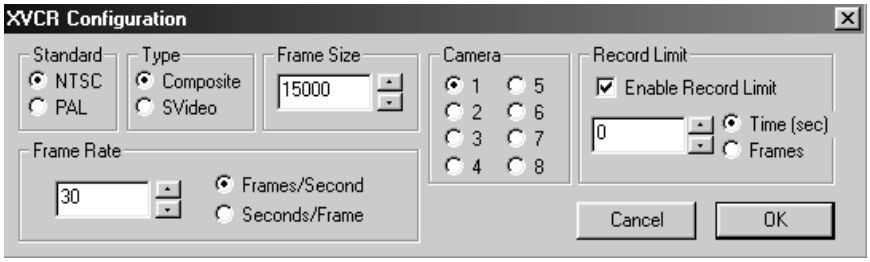


Figure 8

The XVCR Configuration window allows you to configure XVCR's video capture parameters.

- **Standard—**choose between the NTSC and PAL video standards. NTSC is generally used in the Western Hemisphere and Japan, and PAL is used almost everywhere else.
- **Type—**choose between the S-Video and composite video types.
- **Frame Size—**adjust the compression of the grabbed image to any value between 0 and 50 bytes (15000 is the default). If you choose a high value, image quality and required storage space increase.
- **Camera—**choose the camera source to capture video from.
- **Record Limit—**choose the amount of video to capture. You can either capture a certain number of frames or set an exact length of time in seconds.
- **Frame Rate—**Set the number of frames captured per second or the number of seconds between captured frames. The default is 30fps.

Grab

This grabs the current image and allows you to save it to disk.

XPG

The XPG application (see Figure 9) is used to load and save individual images or video segments to various file formats. To grab an individual image, simply click the Grab menu and select Save from the File menu. For more information on grabbing individual images or a series of images, see the discussion of XPG's six menus in the following sections.

Figure 9

XPG's main window contains six menus.



File

This menu allows you to save current settings, save or load images, save a (series file), and print images. Following are the notable options on the File menu.

Save Settings

This saves the current XPG configuration for the next time you open the application. To return FPG to default values, click Reset on each appropriate panel (as described in the following sections) and choose Save Settings again.

Save Image...

This saves an image in BMP, TGA, JPEG, or TIFF file format.

Load Image...

This retrieves saved images for viewing on the FPG window.

Series File...

This saves a series of images. First, enable a series capture (as described in the following discussion about the Tools menu). Then choose Series File... and type a filename, and the series capture begins. Each individual image file is given the name you entered, appended with a number that increases by one as the series progresses. For example, if you name the series file, the first frame is called file001, the second file002, and so on.

Edit

This menu allows you to copy the displayed image as a bitmap for pasting in other applications.

Tools

This menu contains important choices pertaining to the XPG video window, remote video captures, image series captures, and more. The six options are described in the following sections.



Figure 10

XPG's primary Configure panel controls the size and field aspects of the XPG video screen.

Configuration...

When you click Configuration..., a Configure panel appears (see Figure 10). This panel includes the following options:

- **Scale Video—**resizes live video to fit within the FPG window. If you do not select this, only a portion of the video might appear in the window.
- **Keep Aspect—**maintainsthe video's proportion even if the window is resized. If you do not select this, video is squeezed horizontally or vertically to fit in the window.
- **Field Rep—**eliminates uneven flash illumination on images. Live video consists of two rapidly alternating fields—one that displays video on odd-numbered lines and one that displays video on even-numbered lines. With a flash grab, one field is often illuminated more than the other. When you select Field Rep, the even field is copied over the odd field to even out the flash illumination.
- **One Field—**resizes video to less than or equal to 240 lines. this is small enough that only one field is required.
- **Mono Comp—**turns off color for capture of RS-170 video.
- **OffScreen—**sends video directly to the VGA display adapter.
- **Offscrn 8—**captures 8-bit monochrome video in offscreen mode.
- **X Center—**adjusts the horizontal position of the video in the view screen to cover any black lines on the right or left sides.
- **Y Center—**adjusts the vertical position of the video in the view screen to cover any black lines on the top or bottom.
- **JPEG Q—**changes the size of files that you save as JPEGs. Increasing the value creates higher quality JPEGs but requires greater storage space.
- **Source—**changes the camera displayed on the video screen.

Advanced Configuration...

When you click Advanced Configuration..., another Configure panel appears (see Figure 11). This panel includes the following options:

- **Serial address—**not used with XPress.
- **Remote Grab—**allows you to use a remote trigger for a flash grab with a compatible cable.
- **Series Delay—**sets the delay between each capture in a series. For example, setting this to 10 causes XPG to capture a frame every 10 seconds. Under the Series Delay setting are the following options:
  - **Series Off—**disables the Series Delay (default).
  - **Timed Series—**enables the Series Delay.
  - **Manual Series—**allows you to capture an irregular frequency of frames as part of a series.
- **LTE Max Frames—**This is inapplicable for XPress.

Set Key...

This sets the video key color on the current image, allowing live video to be displayed over that color on an image loaded in the frame buffer.

Clear Key

This clears the key color information.

Blend Key

This blends the transition between the stored image and the key color for smooth edges.

Reverse Image

This displays a negative of the image currently loaded in the frame buffer.

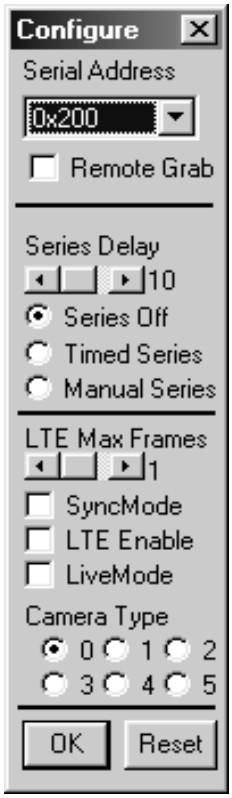


Figure 11

XPG's advanced Configure panel controls series captures and long-term exposures.

Setup

This menu contains the options for configuring video and image capture adjustments. The two options are described in the following sections.

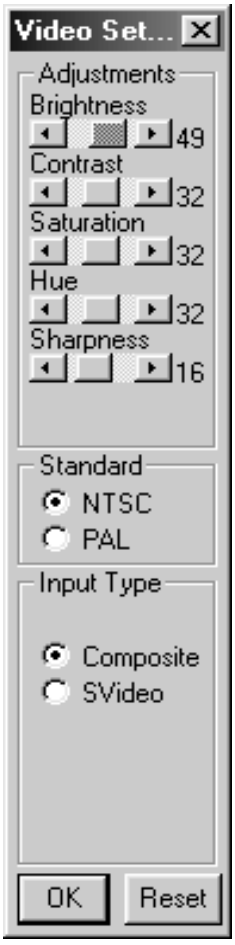


Figure 12

XPG's Video Setup panel controls the appearance of live video and the video input type and standard.

Video...

Clicking on Video... opens the Video Setup panel (see Figure 12), which contains the following settings for live video in XPG:

- **Brightness—**changes the brightness of the live video.
- **Contrast—**changes the contrast of the live video.
- **Saturation—**changes the saturation of the live video.
- **Hue—**changes the hue of the live video.
- **Sharpness—**changes the sharpness of the live video.
- **Standard—**allows you to select either the NTSC (default) or PAL video standard.
- **Input Type—**allows you to select the type of video input—composite or S-Video—depending on the type of camera (consult the camera's documentation).

Grab...

Clicking on Grab... opens the Grab Setup panel (see Figure 13), which contains the following settings for flash grabs and grabbed images:

- **Brightness—**changes the brightness of a captured frame.
- **Contrast—**changes the contrast of a captured frame.
- **Field Delay—**indicates the number of fields to wait between a flash and a capture. This number is typically anywhere from 0 to 3.
- **Line—**indicates the number of lines to wait between a flash and a capture. This rarely needs to be changed from the default of 0.
- **Align—**indicates which field should be grabbed first. Any (default) is usually sufficient, although Even or Odd is better when using a flash grab (try both Even and Odd to determine which one is correct for the situation).
- **Type—**indicates the type of camera and flash unit used (consult the camera's documentation).

Video Out

This menu allows you to select an input to be directed through the XPress Pro or XPress Plus board's video output.

Grab

This grabs the current frame and allows you to save it to disk.



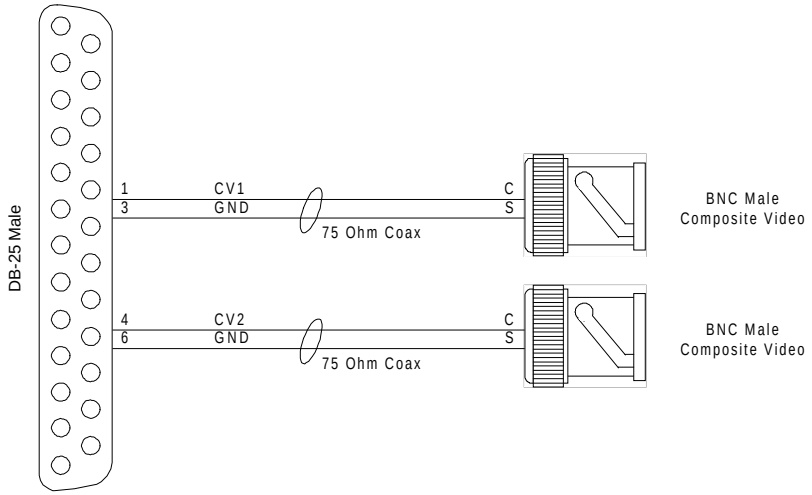
Figure 13

The Grab Setup panel controls the appearance of captured images and flash parameters.

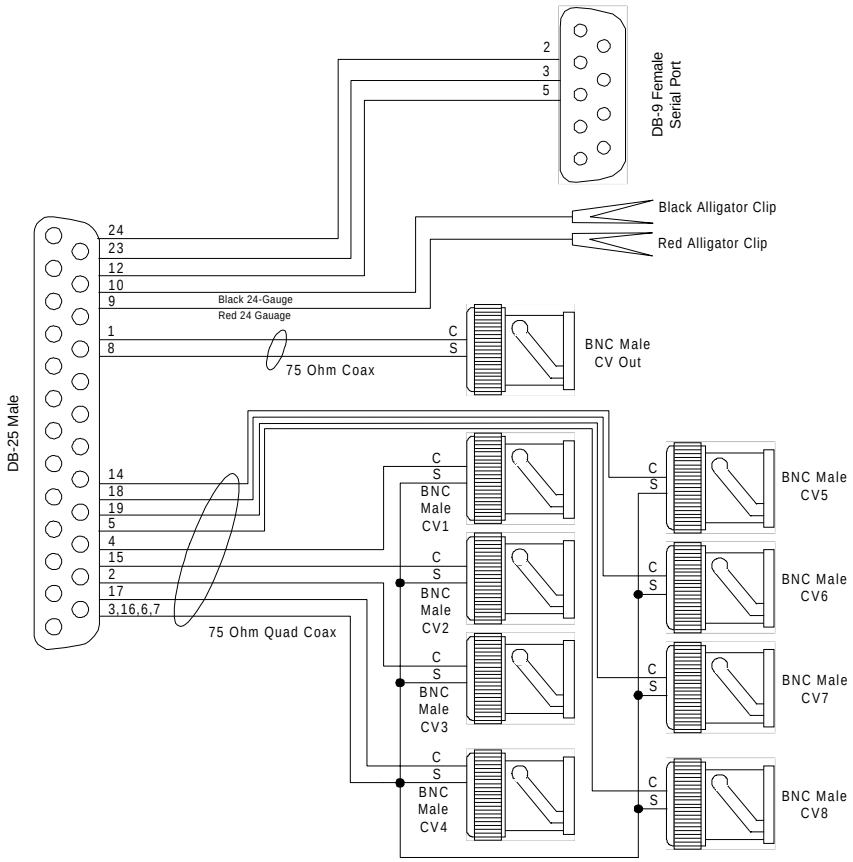
XPress
Cable Guide

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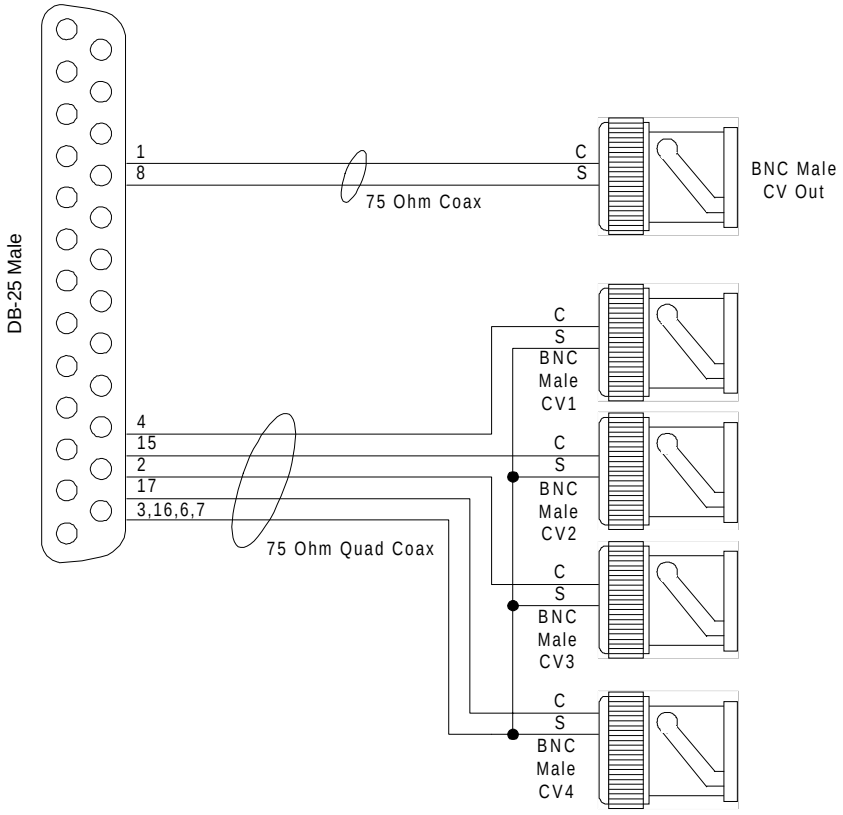
Dual Composite Cable—#3625



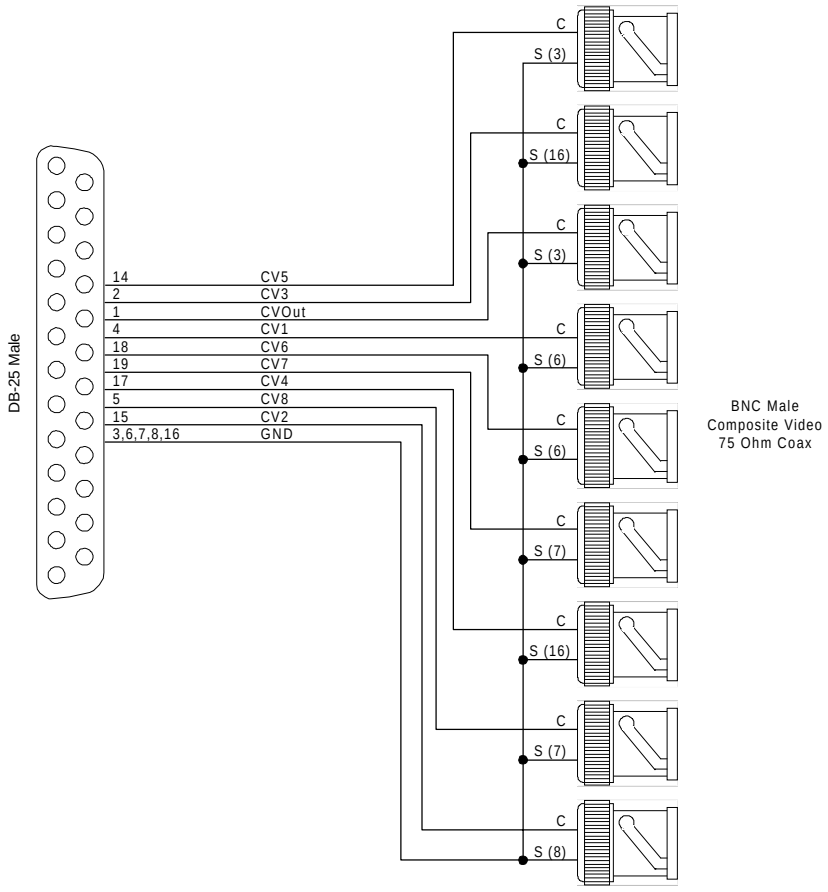
XPress Developer Cable—#3675



4-Input Cable—#3680

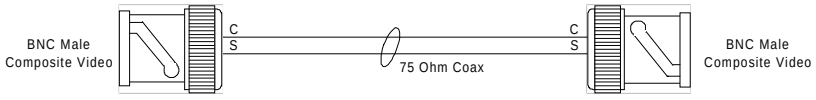


8-Input Cable—#3682



Composite Cable—#3651 and #3654

The cable comes in two lengths—6 feet (#3651) and 12 feet (#3654).



XPress

Specifications, Jumpers and Pinouts

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XPress Pro Specifications

Video Input

16 composite inputs, selectable through software multiplexer
NTSC or PAL, software selectable
CCIR 601 digitizing resolution
Color or monochrome
Genlocks to any NTSC/PAL video source
Software control of brightness, contrast, hue, and saturation
24/16/15 bpp RGB or YUV 4:2:2 color digitization

Video Output

1 composite output
Real-time video decompression and playback
NTSC or PAL, software selectable

I/O Triggers and Controls

16 input triggers, software definable combination of normally open or normally closed
1 optically isolated output trigger (TTL or opto)
1 asynchronous serial port with RS-232 and RS-485 interface for PTZ and camera control

Video Compression and Playback

Wavelet compression ratios from 8:1 to 200:1 and higher
Software-selectable compression ratios and frame rate for each input
Full 30 fps video capture at full frame size from a single input source
Two video channel digitization for 30 fps live preview during recording
Dual channel recording of 20 fps NTSC (17 fps PAL)
Single channel recording of 12 fps NTSC (10 fps PAL)
Variable compression ratio change for specific video inputs based on triggered events
Software playback of video even during simultaneous recording of compressed video
Live preview of video input during compression
Video can be displayed full screen on analog video monitor and in resizable video window on VGA monitor
Fast random access to recorded video
Variable video playback rates (including forward and backward)
Supports any digital storage media

Processing Control and Activity Detection

On-board Digital Signal Processor (DSP)
Control of video inputs, compression ratios, and activity detection

Software

Microsoft Windows 95/98/NT/ME/2000 drivers
XPG video capture and I/O control application
XVCR digital video compression application
VB-VCR digital VCR application (Visual Basic)

Software Developers Kit (optional, part #3340)

Windows 95/98/NT/ME/2000 DLLs
Extensive sample applications and source code
Source code for XPG, XVCR, and VB-VCR

Physical and Environmental Parameters

Small form factor: 181mm × 107mm
Low power consumption: 9.7W–120mA (5V), 300mA (12V)
Operating temperature: 0–70°C
CE- and FCC-approved

XPress Plus Specifications

Video Input

8 composite or 4 S-Video inputs, selectable through software multiplexer
NTSC or PAL, software selectable
CCIR 601 digitizing resolution
Color or monochrome
Genlocks to any NTSC/PAL video source
Software control of brightness, contrast, hue, and saturation
24/16/15 bpp RGB or YUV 4:2:2 color digitization

Video Output

1 composite or S-Video output
Real-time video decompression and playback
NTSC or PAL, software selectable

I/O Triggers and Controls

8 input triggers, software definable combination of normally open or normally closed
1 optically isolated output trigger (TTL or opto)
1 asynchronous serial port with RS-232 and RS-485 interface for PTZ and camera control

Video Compression and Playback

Wavelet compression ratios from 8:1 to 200:1 and higher
Software-selectable compression ratios and frame rate for each input
Full 30-fps video capture at full frame size from a sigle input source
Variable compression ratio change for specific video inputs based on triggered events
Software playback of video even during simultaneous recording of compressed video
Live preview of video input during compression
Video can be displayed full screen on analog video monitor and in resizable video window on VGA monitor
Fast random access to recorded video
Variable video playback rates (including forward and backward)
Supports any digital storage media

Processing Control and Activity Detection

On-board Digital Signal Processor (DSP)
Control of video inputs, compression ratios, and activity detection

Software

Microsoft Windows 95/98/NT/ME/2000 drivers
XPG video capture and I/O control application
XVCR digital video compression application
VB-VCR digital VCR application (Visual Basic)

Software Developers Kit (optional, part #3340)

Windows 95/98/NT/ ME/2000 DLLs
Extensive sample applications and source code
Source code for XPG, XVCR, and VB-VCR

Physical and Environmental Parameters

Small form factor: 181mm × 107mm
Low power consumption: 8.6W–720mA (5V), 420mA (12V)
Operating temperature: 0–70°C
CE- and FCC-approved

XPress Lite Specifications

Video Input

4 composite or 2 S-Video inputs, selectable through software multiplexer
NTSC or PAL, software selectable
CCIR 601 digitizing resolution
Color or monochrome
Genlocks to any NTSC/PAL video source
Software control of brightness, contrast, hue, and saturation
YUV 4:2:2 color digitization

I/O Triggers and Controls

8 input triggers, software definable combination of normally open or normally closed
1 TTL output trigger

Video Compression and Playback

Wavelet compression ratios from 8:1 to 200:1 and higher
Software-selectable compression ratios and frame rate for each input
Full 30-fps video capture at full frame size from a sigle input source
Variable compression ratio change for specific video inputs based on triggered events
Software playback of video even during simultaneous recording of compressed video
Live preview of video input during compression
Video displayed in resizable video window on VGA monitor
Fast random access to recorded video
Variable video playback rates (including forward and backward)
Supports any digital storage media

Processing Control and Activity Detection

On-board Digital Signal Processor (DSP)
Control of video inputs, compression ratios, and activity detection

Software

Microsoft Windows 95/98/NT/ME/2000 drivers
XPG video capture and I/O control application
XVCR digital video compression application
VB-VCR digital VCR application (Visual Basic)

Software Developers Kit (optional, part #3340)

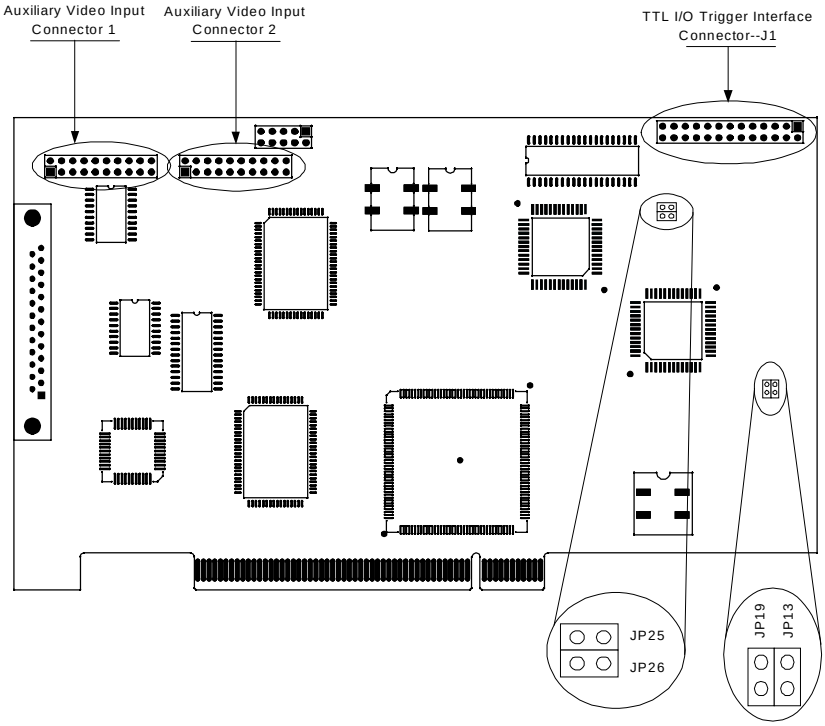
Windows 95/98/NT/ ME/2000 DLLs
Extensive sample applications and source code
Source code for XPG, XVCR, and VB-VCR

Physical and Environmental Parameters

Small form factor: 181mm × 107mm
Low power consumption: 8.6W–720mA (5V), 420mA (12V)
Operating temperature: 0–70°C
CE- and FCC-approved

XPress Pro Layout and Jumper Settings

The XPress Pro board has two sets of jumper pairs: JP25 and JP26, and JP19 and JP13. These jumpers are always controlled in pairs. JP19 and JP13 (see table) are used to select whether the communications port on XPress Pro is set up as RS-232 or RS-485. JP25 and JP26 (see table) are used to select the output trigger format—TTL or contact closure.

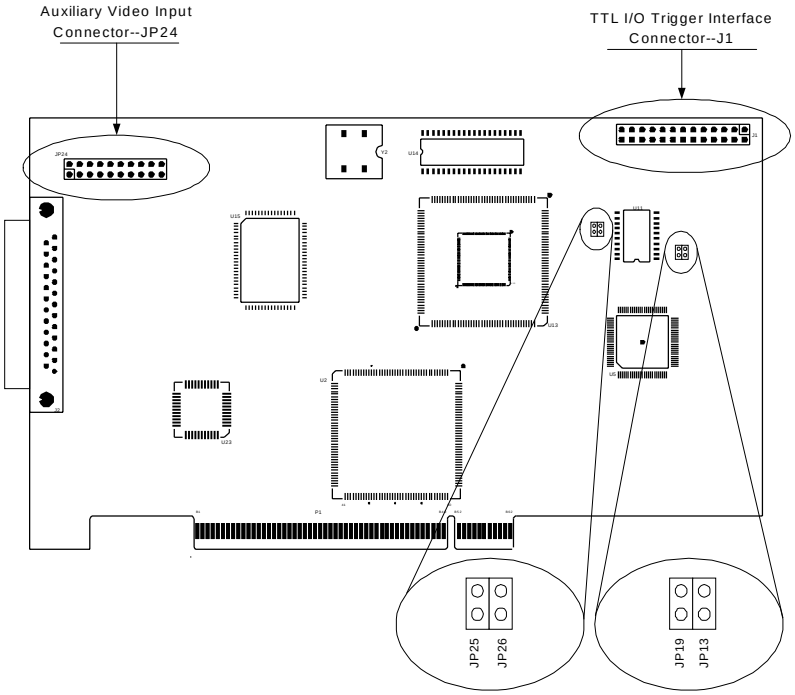


Serial port standard	JP13	JP19
RS-232	Closed	Open
RS-485	Open	Closed

Output trigger format	JP25	JP26
TTL output	Closed	Open
Optically isolated contact closure	Open	Closed

XPress Plus Layout and Jumper Settings

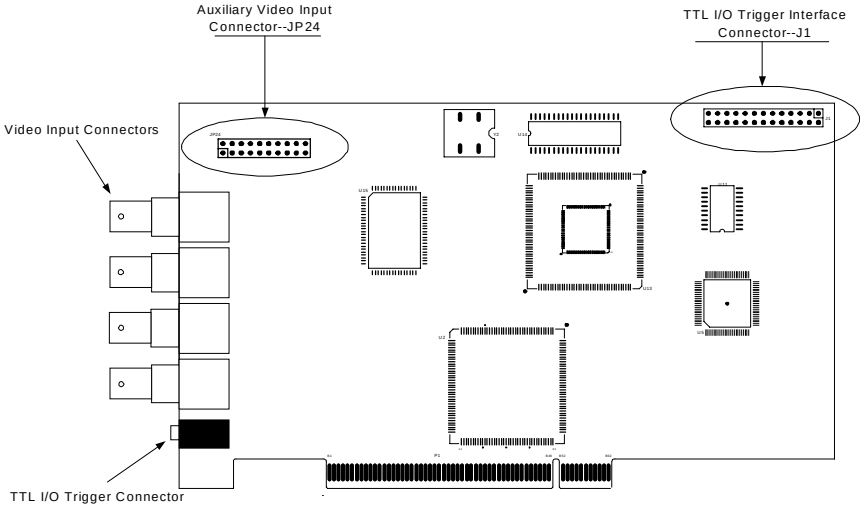
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Serial port standard	JP13	JP19
RS-232	Closed	Open
RS-485	Open	Closed

Output trigger format	JP25	JP26
TTL output	Closed	Open
Optically isolated contact closure	Open	Closed

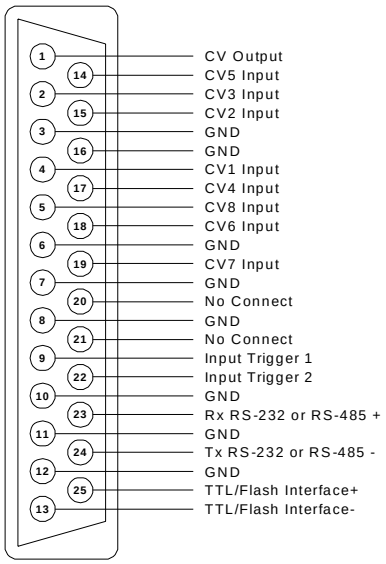
XPress Lite Layout



XPress Pro Connectors

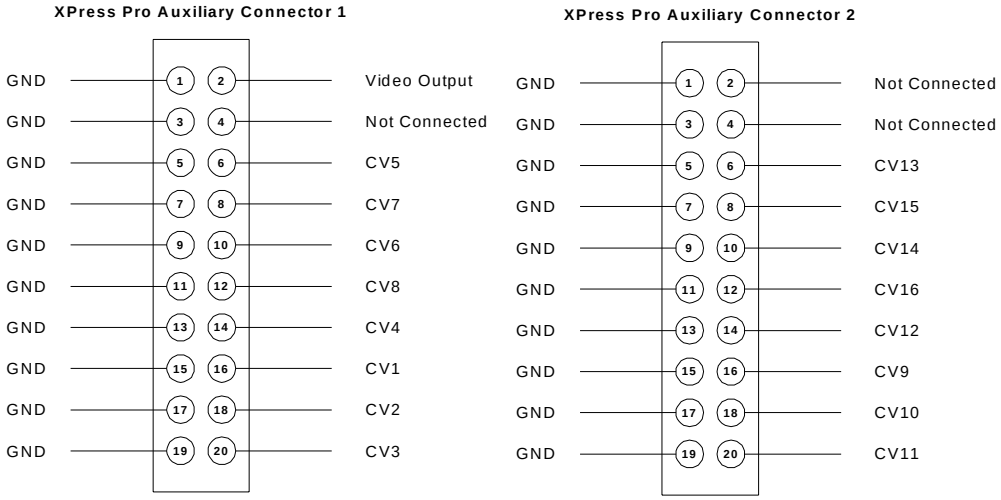
Standard DB-25 I/O Connector

The XPress Pro PC bracket is equipped with a standard DB-25 connector to link to external cameras and I/O devices. The pinout of the DB-25 connector conforms to the Integral Technologies cable pinout.



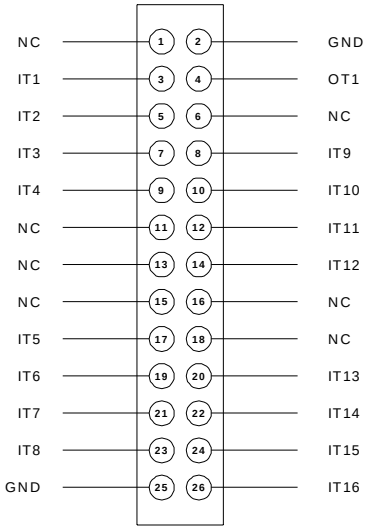
Auxiliary Connectors

The 16 video inputs and one video output on XPress Pro are also available via two auxiliary 20-pin headers.



TTL Input/Output Trigger Interface Connector

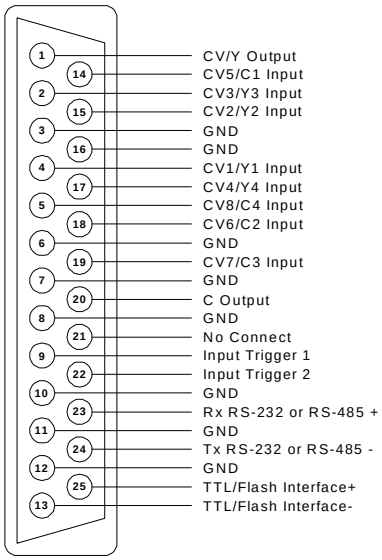
The sixteen TTL input triggers and one TTL output trigger on the XPress Pro are available via a secondary DB-25 connector that uses an additional slot of the PC. This connector plugs onto a standard 26-pin header via ribbon cable.



XPress Plus Connectors

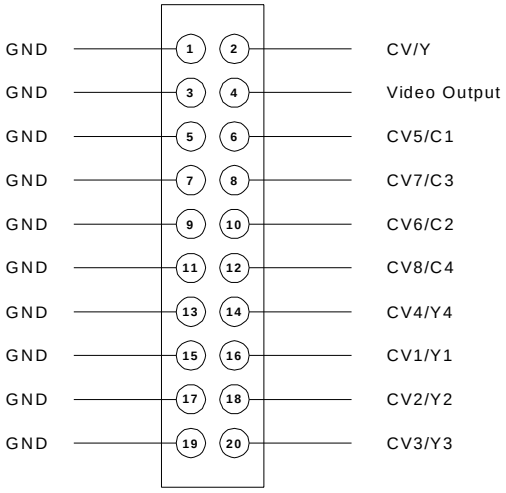
Standard DB-25 I/O Connector

The XPress Plus PC bracket is equipped with a standard DB-25 connector to link to external cameras and I/O devices. The pinout of the DB-25 connector conforms to the Integral Technologies cable pinout.



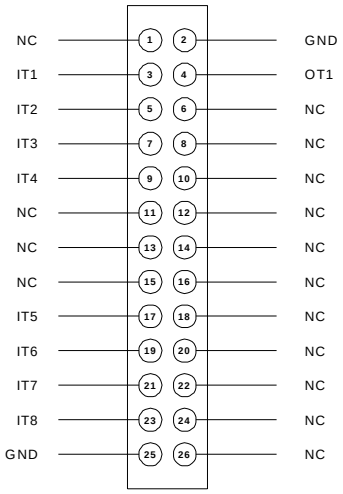
Auxiliary Connector

The eight video inputs and one video output on XPress Plus are also available via an auxiliary 20-pin header.



TTL Input/Output Trigger Interface Connector

The eight TTL input triggers and one TTL output trigger on XPress Plus are available via a secondary DB-25 connector that uses an additional slot of the PC. This connector plugs onto a standard 26-pin header via ribbon cable.



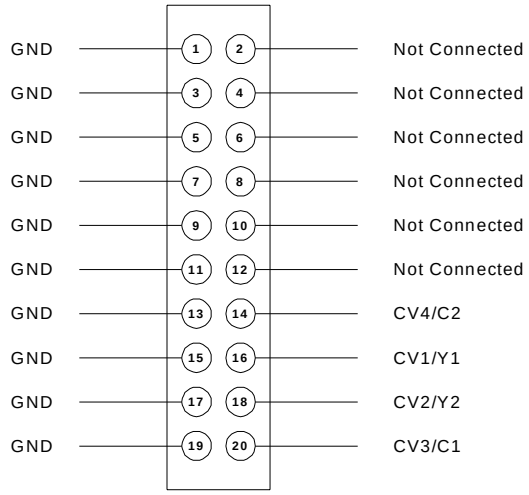
XPress Lite Connectors

I/O Connectors

The XPress Lite PC bracket is equipped with four female BNC connectors for the video inputs and one female mini phono stereo jack for the I/O triggers. The additional I/O triggers can be accessed via the 26-pin I/O trigger interface header (see the XPress Plus TTL I/O trigger interface connector for pinout).

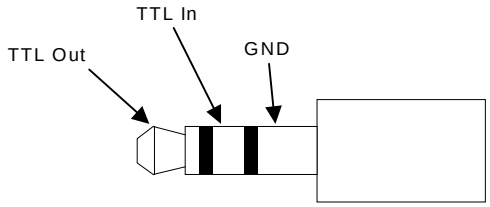
Auxiliary Connector

The four video inputs on XPress Lite are also available via an auxiliary 20-pin header.



Trigger Connector

The I/O trigger connector is a 3.5-mm female mini phono stereo jack that combines the input and outputs triggers into one connection. The following figure shows the mating end (male) of the trigger connector and the signal names as applicable to the functions of XPress Lite. When specifying a cable, the mating end should be a three-conductor plug.



XPress

Technical Support and Warranty Information

INTEGRAL TECHNOLOGIES, INC.

Technical Support

Integral Technologies is committed to providing you with superior technical and engineering support. If you need help with your XPress hardware or software, please have the following information available:

- A complete description of the problem, including any error messages and instructions for recreating the error.
- Your computer configuration, including brand, processor, speed, and memory.
- Peripheral equipment you use with XPress, including cameras, cables, and so on.
- Environment (Windows 95/98/NT/2000/ME).
- Compiler brand and version.
- Sample code whenever possible and applicable.

Send the report to:

Integral Technologies, Inc.
9855 Crosspoint Blvd., Suite 126
Indianapolis, IN 46256-3336

Phone:	(317) 845-9242
Fax:	(317) 845-9275
Internet:	support@integraltech.com
World Wide Web:	http://www.integraltech.com

Operating Hours (Eastern Standard Time all year):

Monday–Friday:	9:00 a.m.–5:00 p.m.
Saturday–Sunday:	Closed
Holidays:	Closed

Federal Communications Commission (FCC) Radio Frequency Interference Statement

The First Line XPress video board contains incidental radio frequency-generating circuitry and, if not installed and used properly, may cause interference to radio and television reception. This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of the Federal Communications Commission (FCC) Rules. These limits are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference to radio and television reception, in which case users will be required to correct the interference at their own expense. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by one or more of the following measures: Re-orient the television or radio receiving antenna, and/or relocate the XPress board and the radio or TV with respect to each other. If necessary, users should consult the manufacturer or an experienced radio/television technician for additional suggestions. Users may find helpful the following booklet prepared by the Federal Communications Commission: "How to Identify and Resolve Radio-TV Interference Problems," which is available from the Government Printing Office, Washington DC, 20402 (stock # 004-000-00345-4).

CE Notice

Marking by the symbol CE indicates compliance of this device to the EMC directive of the European Community. Such marking is indicative that this device meets or exceeds the following technical standards:

- EN55022: Conducted Emissions, Class B
- EN55022: Radiated Emissions, Class B
- IEC801-2: Electrostatic Discharge (ESD) 8kV Air, 4kV Contact
- IEC801-3: Radiated Immunity @3V/m, 27-1000MHZ, 80% modulated
- IEC801-4: Electrical Fast Transients (EFT) 1kV supply

Integral Technologies One-Year Limited Warranty

What Does This Warranty Cover?

Integral Technologies, Inc. (the “Company”) warrants to the Original Purchaser that the Company’s hardware is free from defects in workmanship or material under normal use and service. This warranty commences on the date of delivery of the hardware to the Original Purchaser.

What are the Company’s Obligations Under This Warranty?

During the warranty period, the Company agrees to repair or replace, at its sole option, without charge to Original Purchaser, any defective component part of the hardware. To obtain service, Original Purchaser must return the hardware to the Company in an adequate container for shipping. All defective products must be returned to the Company within thirty (30) days of failure. Products must be returned with a description of the failure and Return Merchandise Authorization (RMA) number supplied by the Company. To receive a RMA number and obtain assistance on where to deliver the hardware, call (317) 845-9242. The postage, shipping, and insurance charges incurred in shipping to the Company will be paid by Original Purchaser, and all risk for the hardware shall remain with the Original Purchaser until such time as Company takes receipt of the hardware. Upon receipt, the Company will promptly repair or replace the defective unit, and then return said unit to Original Purchaser, postage and shipping prepaid. The Company may use reconditioned or like-new parts or units, at its sole option, when repairing any hardware. Repaired products shall carry the same amount of outstanding warranty as from original purchase, or ninety (90) days, whichever is greater. Any claim under the warranty must include dated proof of purchase or invoice. In any event, the Company’s liability for defective hardware is limited to repairing or replacing the hardware.

What Does This Warranty Not Cover?

This warranty is contingent upon proper use of the hardware by Original Purchaser and does not cover: if damage is due to accident; unusual physical, electrical, or electromechanical stress; modification; neglect; misuse; failure of electric power, air conditioning, or humidity control; transportation; operation with media not approved by the Company; or tampering with or altering of the hardware.

What is the Length of the Warranty?

The warranties given herein, together with any implied warranties covering the hardware, including any warranties of merchantability or fitness for a particular purpose, are limited in duration to one year from the date of delivery to Original Purchaser. Jurisdictions vary with regard to the enforceability of warranty limitations, and you should check the provisions of your local jurisdiction to find out whether the above limitation applies to you.

What are the Limits on the Company's Liability?

The Company shall not be liable to you for loss of data, loss of profits, lost savings, special, incidental, consequential, indirect, or other similar damages arising from breach of warranty, breach of contract, negligence, or other legal action even if the Company or its agent has been advised of the possibility of such damages, or for any claim brought against you by another party. Jurisdictions vary with regard to the enforceability of provisions excluding or limiting liability for incidental or consequential damages. You should check the provisions of your local jurisdiction to find out whether the above exclusion applies to you.

This warranty allocates risks of product failure between Original Purchaser and the Company. The Company's hardware pricing reflects this allocation of risk and the limitations of liability contained in this warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors, and dealers of the Company are not authorized to make modifications to this warranty, or additional warranties binding on the Company. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by the Company and should not be relied upon.

This warranty gives you specific legal rights. You may also have other rights which vary from one jurisdiction to another.

Integral Technologies, Inc.
9855 Crosspoint Blvd., Suite 126
Indianapolis, Indiana 46256 U.S.A.

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