XPS PRO1000 User Guide

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Contents

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WELCOME

ABOUT THIS MANUAL

This manual contains information about the XPS PRO1000 processor. Material is presented under the following chapters:

Chapters	Description
Chapter 1, “Welcome.” Chapter 2, “Product Information.”	Use this section to get to know this product manual, understand key safety measures, and learn about the key features and functionality of the XPS PRO1000.
Chapter 3, “Getting Ready to Install.” Chapter 4, “Installation Instructions.”	Use this section to learn about installing the XPS PRO1000. Included in this section are both an overview of the installation process, and detailed, step-by-step installation instructions.
Chapter 5, “About the Web-Server GUI.” Chapter 6, “Matrix Switching.”	Use this section to learn about the capabilities of the XPS PRO1000. Get detailed instructions on how to use the matrix switching feature.
Appendix A, “RS-232 and 10/100T Protocol.” Appendix B, “Upgrading Firmware.”	Use this section to refer to detailed remote control command set information, firmware upgrade information and instructions, and a glossary of key terms used in this manual.

SAFETY INFORMATION AND INSTRUCTIONS

The following safety instructions are to ensure the safety of personnel using this equipment and to protect this device and working environment from potential damage.

CAUTION!

1. **ELECTRIC SHOCK HAZARD. DO NOT OPEN.**
2. **REMOVAL OF COVER MAY RESULT IN ELECTRIC SHOCK. There are no user-serviceable parts inside. Contact Black Diamond Video for authorized repair service.**

IMPORTANT SAFETY INFORMATION:

- Read and follow all instructions – Read all safety and operating instructions before operating this equipment. Follow all operating instructions in this manual and adhere to all warnings on this equipment and in this manual.

- Keep all documentation – Retain the User Guide and accompanying safety instructions for future reference.
- Maintain proper ventilation – This equipment should be maintained in a well-ventilated room with adequate air flow. Do not obstruct the ventilation slots on the device.
- Keep away from heat – Do not place this device near a heat source. Failure to comply could result in overheating and damage to the equipment.
- Keep away from water and moisture – Do not place this equipment near areas of running water or dense condensation.
- Cleaning - Unplug the device before cleaning. The device can then be wiped with a water-dampened soft cloth.
- Proper electrical grounding - This device must be plugged into a properly grounded outlet in order to avoid electric shock. Do not bypass the grounding features of the power cable or plug. When using an extension cord, make sure the cord is designed for grounded plugs.

CUSTOMER SERVICE AND SUPPORT

For technical support and service, contact Black Diamond Video at:

Black Diamond Video

1000 Atlantic Ave, Suite 114

Alameda, California, 94501

Phone: (510) 769-2959

Fax: (510) 769-2949

Visit us on the web at www.blackdiamondvideo.com.

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PRODUCT INFORMATION

INTRODUCING THE XPS PRO1000

The XPS PRO1000 is an all-digital DVI matrix switch. When combined with Black Diamond Video's DVI converters, the XPS PRO1000 provides the same level of matrix switching for many combinations of analog or SDI sources, eliminating the need for multi-format switched and cables. SDI signal source eliminating the need for multi-format switches and cables.

The XPS PRO1000 supports DVI operation at the maximum TMDS rate of 1.65 Gb/s. The XPS PRO1000 works seamlessly with Black Diamond Video's DVI X-treme Cable Kits, allowing the transmission of DVI signals over 60 meters of copper on both the input and output sides of the processor.

Phantom-Power

The XPS PRO1000 provides phantom-power to Black Diamond Video's DVI Converters, including the standard-definition-to-DVI converter (SD-DVI), the RGB-to-DVI converter (RGB-DVI), and the SDI-to-DVI converter (SDI-DVI), as well as to DVI Xtreme Signal

Conditioners. The XPS PRO1000 system diagram (*Figure 1*), gives an example of video sources and how they can be integrated using the XPS PRO1000.

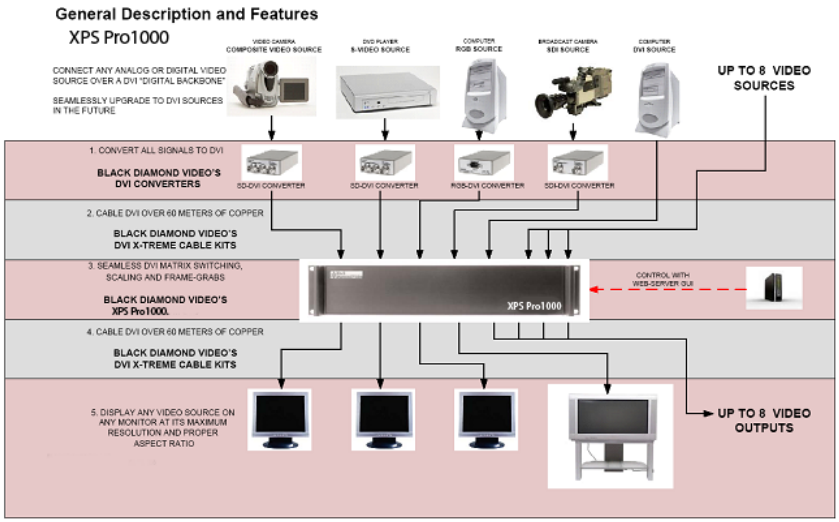

FIGURE 1. XPS PRO1000 System Diagram

Control

The XPS PRO1000 processor has three control methods. The processor has both RS-232 and 10/100T Ethernet controls. For remote applications, the XPS PRO1000 is equipped with a built-in, customizable, web-server graphical user interface (GUI).

KEY FEATURES

Features include the following:

SWITCHING

- Non-blocking 8 x 8 DVI matrix switching
- Supports single-link DVI matrix switching at the maximum TMDS rate of 1.65 Gb/s
- Input and output rates from 640 x 480 up to and including 1920 x 1200, interlaced or progressive

PHANTOM-POWER AND CONVERTER CONTROLS

- Phantom-power to Black Diamond Video's DVI X-treme Cable Kits
- Phantom-power and control for Black Diamond Video's DVI Converters

CONTROLS

- RS-232 serial
- 10/100T Ethernet
- Customizable Web-server GUI

GENERAL

- Compact size (2U high)
- Rack mountable
- Remote diagnostic capability
- Test pattern generator

OPTIONS

The following options are available for the XPS PRO1000:

- **DVI X-treme Cable Kits** are phantom-powered and allowed DVI signals to be transmitted up to 60 meters on both the input and output sides of the switch for a cumulative distance of 120 meters.
- **RGB-DVI Converters** convert any analog RGB signal to DVI. They are phantom-powered and controlled, and integrate seamlessly with the XPS PRO1000.
- **SDI-DVI Converters** convert any HD-SDI source to DVI. They are phantom-powered and controlled, and integrate seamlessly with the XPS PRO1000.
- **Front Panel Controls** are optional.

FRONT PANEL DETAIL

Figure 2 details the standard XPS PRO1000 front panel.

FIGURE 2. XPS PRO1000 Front Panel

REAR PANEL DETAIL

Figure 3 details the XPS PRO1000 rear panel.

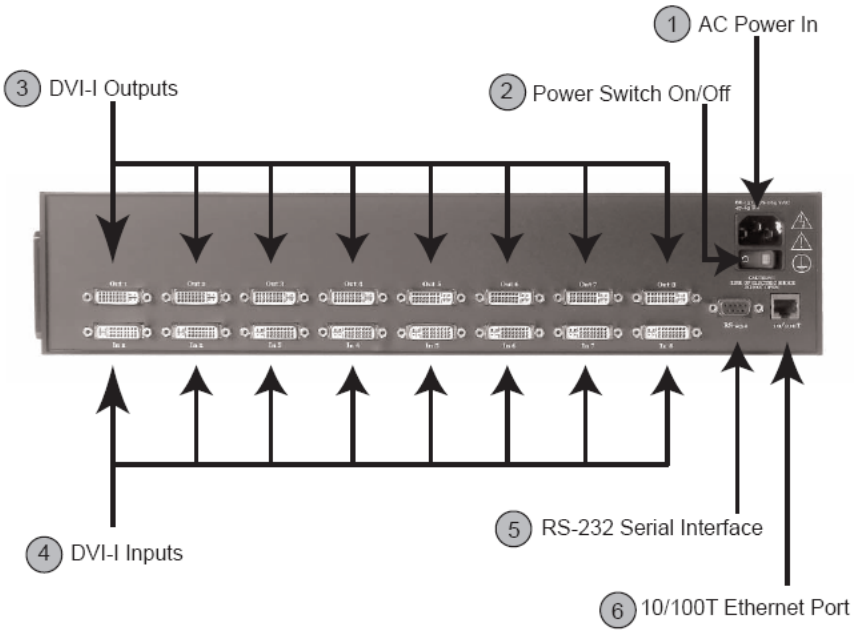

FIGURE 3. XPS PRO1000 Rear Panel

1. AC POWER IN

AC input power connection (120/240 VAC).

2. POWER SWITCH ON/OFF

The power switch is used to turn the unit on or off. The system status light on the front panel indicates when the unit is powered on.

3. DVI-I OUTPUT CONNECTIONS

The DVI-I output connectors are digital DVI outputs used to connect to a digital display device. When connecting to a display device more than 15 feet from the XPS PRO1000, a DVI X-treme Cable Kit should be used with the DVI X-treme conditioner placed on the display side of the cable.

4. DVI-I INPUT CONNECTIONS

The DVI-I input connectors are used to connect a video source to the XPS PRO1000. If the input source is a DVI source, it can be connected directly to the device. If the input source is an analog or SDI source, the signal must first be converted to DVI using a Black Diamond Video DVI converter before connecting it to the XPS PRO1000.

For cable distances greater than five meters, Black Diamond Video certified DVI cable should be used. Black Diamond Video certified DVI cable is factory tested and guaranteed for distances up to 60 meters. A DVI X-treme conditioner is not required on the input side of the XPS PRO1000.

5. RS-232 SERIAL INTERFACE

The RS-232 interface is a DCE type used to control the XPS PRO1000 by an external host over a serial-com port or alternate RS-232 controller.

6. 10/100T ETHERNET PORT

The 10/100T Ethernet port is used for controlling the XPS PRO1000 from a remote location. This port is also used for firmware upgrades in the field. The 10/100T Ethernet port can control the XPS PRO1000 through commands similar to the RS-232 port.

XPS PRO1000 PRODUCT SPECIFICATIONS

VIDEO SPECIFICATIONS

- Video Format: DVI Single-link, supports maximum TMDS rate of 1.65 Gb/s
- Video Resolution: DVI I/O rates from 640 x 480 to 1920 x 1200, interlaced or progressive, 25-165 MHz
- Connectors: DVI-I female

CONTROLS

- Serial Controls: RS-232, DB9 female connector
- Ethernet Controls: 10/100T Ethernet, Protocols: Telnet, FTP, HTTP
- GUI: Customizable web-server GUI

GENERAL

- Dimensions/Weight: 2U, 19" rack-mountable enclosure, 16.73"W x 12"D x 3.5"H, 12 pounds
- Temperature Rating: 0-55° C

- Power: 90-240 VAC, 47-63Hz, 200 Watts

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GETTING READY TO INSTALL

This chapter presents on overview of the installation process. Read this chapter to get an introduction to how to install the XPS PRO1000. Included is information about using DVI converters (required if you have video sources that are not in DVI format) and Black Diamond cable kits.

For detailed installation instructions see Chapter 4, “Installation Instructions.”

IMPORTANT!	This product must be tested with the intended equipment before being permanently installed. Failure to do so voids any warranty and limited liability. Although Black Diamond Video tests the product to its fullest extent, situations may arise giving marginal results or potential compatibility issues when used with digital video display devices that are non-compliant or incompatible.

OVERVIEW OF THE INSTALLATION PROCESS

Installing the XPS PRO1000 can be divided into two phases:

System Test Installation. Begin your installation process by performing a complete system test installation. The purpose of this phase is to establish remote control of the XPS PRO1000, and verify that all input and output channels are working. You will use a single test video input and at least one of the display devices you plan to use in your final system installation. You will verify that your test video input is properly displayed on the display device when routed through each input and output channel.

Final System Installation. Complete the installation process by doing the final system installation. In this phase, you will install the XPS PRO1000 in its final location. You will establish permanent remote control, connect all necessary input and output cabling, apply all input sources (including any DVI converters as necessary), and connect all display devices. Finally, you will verify that each video source is properly displayed on each display device.

SYSTEM TEST INSTALLATION OVERVIEW

The system test installation should be performed first to verify your equipment is working properly. It will also help you begin to plan for and organize the video sources, cabling equipment, and display devices in preparation for the final system installation.

NOTE: This is an overview of the system test installation to help inform and prepare you for the actual installation process. For detailed installation instructions, see Chapter 4, “Installation Instructions.”

The system test installation consists of four steps. These steps are described below and illustrated in *Figure 4*.

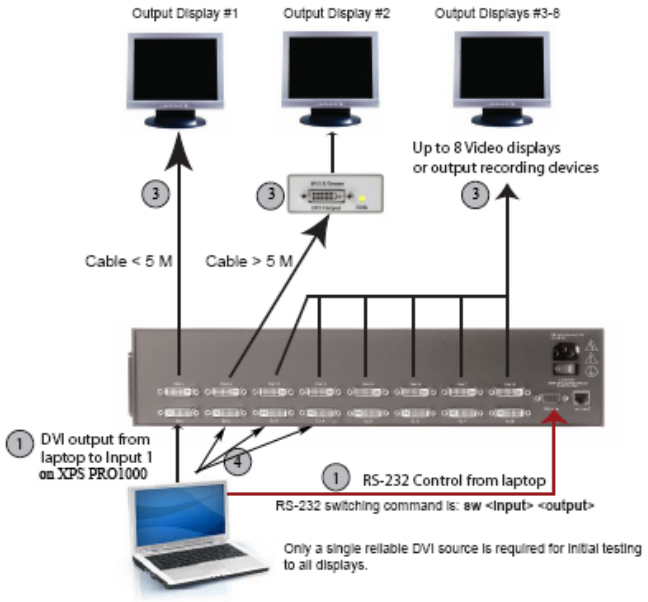

FIGURE 4. XPS PRO1000 System Test Installation Diagram

Step 1. Establish Temporary Remote Control of the XPS PRO1000

Establish temporary remote control of the XPS PRO1000 through a laptop computer or personal computer using the RS-232 serial interface. This allows control of the XPS PRO1000 so that the video signals going into and out of the processor can be tested.

Step 2. Connect a Test DVI Input Source

Connect a test DVI video source to Input 1 on the XPS PRO1000. Only a single DVI source is required for the system test installation phase. Use Black Diamond Video tested DVI cable to connect your DVI source to the XPS PRO1000.

NOTE: If the computer you used in Step 1 has a DVI output, you can use it for the test DVI video source in this step. This computer should have a built-in DVI graphics card.

Step 3. Connect one or more Display Devices and Establish Video Output

Connect a display device to Output 1 on the XPS PRO1000. Connect additional display devices as desired. Using the test DVI input connected in *Step 2*, use serial commands to switch the input to each connected display device. Verify that all video displays or output devices (such as DVD recorders, etc.) are functioning correctly.

Step 4. Test all Remaining Input Channels

Verify that all remaining input channels are functioning properly. Using the test DVI video source, connect it to each input channel on your XPS PRO1000 and then route the signal to each connected display device.

FINAL SYSTEM INSTALLATION OVERVIEW

The final system installation should be performed after you have completed the system test installation. You should have all of your video sources, cabling equipment, and display devices assembled in preparation for the final system installation.

NOTE: This is an overview of the system test installation to help inform and prepare you for the actual installation process. For detailed installation instructions, see Chapter 4, “Installation Instructions.”

The final system installation consists of four steps. These steps are described below.

Step 1. Place the XPS PRO1000 into the Rackmount or Other Permanent Location

The XPS PRO1000 can be installed in a 2U rackmount. Place your unit in its permanent location before making any other system connections. Be sure to follow the safety warnings regarding proper ventilation of the equipment.

Step 2. Connect all Video Inputs

Connect all DVI sources directly to the XPS PRO1000 input channels. All non-DVI sources must first be converted to DVI using a Black Diamond Video DVI Converter. See “Using DVI Converters” on page 14 for more information.

All cabling from the DVI Converters to the XPS PRO1000 should be done using Black Diamond Video tested DVI cable. Black Diamond Video can not guarantee the quality of cable purchased from other manufacturers. See “Using Black Diamond Cable and Cable Kits” for more information.

Step 3. Connect all Display and Output Devices

Connect all display and output devices to the XPS PRO1000 output channels. All cabling from the XPS PRO1000 to the display devices should be done using Black Diamond Video tested DVI cable. Black Diamond Video can not guarantee the quality of cable purchased from other manufacturers. See “Using Black Diamond Cable and Cable Kits” for more information.

Step 4. Establish Permanent Remote Control

Establish permanent remote control to the XPS PRO1000 using RS-232 or 10/100T Ethernet control.

Step 5. Test all Input/Output Switching Configurations

Route each input to each output in turn and verify the video displays properly on the display device. If video output option boards are installed, test the video processing functions of these boards.

USING DVI CONVERTERS

The XPS PRO1000 accepts DVI video inputs only. Black Diamond Video offers a line of DVI converters which you can use to convert your RGB, SD or S-Video (NTSC and PAL), and SDI video signals to DVI. With the appropriate DVI converter, you can use any of these video formats as a source for the XPS PRO1000.

The converter should be located as close to the video source as possible to eliminate cabling problems such as attenuation and noise.

See “Options” on page 5 for more information about the available DVI converters and the converters’ product documentation.

USING BLACK DIAMOND CABLE AND CABLE KITS

All cabling from the video source to the XPS PRO1000, and from the XPS PRO1000 to the display devices, should be done using Black Diamond Video tested DVI cable.

Signal conditioners should be applied within the last three meters of cabling before each display device. Black Diamond Video offers both single-link DVI and a dual-link DVI cable kits which include Black Diamond Video tested DVI cable and a signal conditioner.

See Chapter 2, “Product Information,” for more information about DVI converters, cable, and cable kit options.

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INSTALLATION INSTRUCTIONS

This chapter tells you how to install your XPS PRO1000 system. You should read Chapter 3, “Getting Ready to Install,” first to familiarize yourself with the installation process.

The installation of your XPS PRO1000 should be conducted in two phases:

System Test Installation. Begin your installation process by performing a complete system test installation. The purpose of this phase is to establish remote control of the XPS PRO1000, and verify that all inputs and outputs are working. You will use a single test video input and one of the display devices you plan to use in your final system installation. You will verify that your test video input is properly displayed on the display device when routed through each of the input and output channels.

Final System Installation. Complete the installation process by doing the final system installation. In this phase, you will install the XPS PRO1000 in its final location. You will connect all necessary input and output cabling, apply all input sources (including any DVI converters as necessary), connect all display devices, and establish permanent remote control.

SYSTEM TEST INSTALLATION

Complete a thorough test of your XPS PRO1000 equipment before doing the final system installation. The system test installation consists of the following series of steps:

Step 1: AC Power Connection and System Power Up

WHAT YOU WILL NEED FOR THIS STEP:

- Power cord (supplied)
- Surge protector (recommended)
- Line conditioner (recommended)

DESCRIPTION:

Begin your system test installation by connecting the XPS PRO1000 to an AC power supply and powering it up.

1. **Connect the power cord (supplied) to the AC input on the XPS PRO1000.**
2. **Plug the power cord into a surge protector (recommended).**

3 **Plug the surge protector into a conditioned AC power source.**

4 **Turn on the XPS PRO1000 using the power switch on the rear panel.**

Step 2: Establish Test Remote Control

WHAT YOU WILL NEED FOR THIS STEP

- Laptop or personal computer with a serial port
- RS-232 direct-connect type serial cable with DB9 (male) connector

DESCRIPTION

The XPS PRO1000 can be controlled over either an RS-232 or 10/100T Ethernet connection. For initial testing of this equipment, Black Diamond Video recommends temporary control of the XPS PRO1000 with a laptop computer using the RS-232 terminal. Using the RS-232 interface and commands allows for the easy set-up and rapid ability to debug any installation problems.

1 **Connect a laptop or PC to the XPS PRO1000 RS-232 serial interface using a direct-connect type cable.**

2 **Open up a serial port terminal on the laptop or PC connected to the XPS PRO1000. For Microsoft Windows-based programs access this with Start > All Programs > Accessories > Communications > Hyperterminal.**

The New Connection window appears.

3 **Enter a name for your connection and choose an icon.**

4 **Click OK.**

The Connect To window appears.

5 **In the Connect using field, select “COM1” port.**

6 **Click OK.**

The Port Settings window appears.

7 **Configure the settings as follows:**

- Baud: 9600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

8 **Click Apply.**

The RS-232 connection to the XPS PRO1000 is established and the processor can be controlled using the RS-232 command set found in Appendix A, “RS-232 and 10/100T Protocol.”

Step 3: Connect and Test a DVI Input on all Output Channels

WHAT YOU WILL NEED FOR THIS STEP

- DVI video input source. Black Diamond Video recommends that, for this DVI input source, you use the same laptop or personal computer that is being used to temporarily control the XPS PRO1000.
- Display device capable of displaying a DVI video input signal.
- DVI cable.
- (Optional) DVI signal conditioners. If the distance to the display requires more than 5 meters of DVI cable, a Black Diamond Video DVI X-treme Cable Kit should be used with the DVI X-treme II Conditioner and appropriate length of cable provided in the cable kit.
- RS-232 Commands:

SWITCH (SW)	<input>	<output>

DESCRIPTION

For the system test installation, apply a single DVI test video input signal and connect at least one of the display devices you plan to use in your final system installation. Verify that your test video input is properly displayed on the display device when routed through each input and output channel. The easiest method to ensure transmission is to connect a reliable DVI video source directly to the XPS PRO1000 input.

1 **Connect a DVI source to Input 1 of the XPS PRO1000.**

This should be done using Black Diamond Video tested DVI cable. Black Diamond Video recommends that you use the same laptop that is being used to temporarily control the XPS PRO1000 simultaneously as the DVI source.

2 **Make certain that the display being tested has been set to display a DVI digital signal.**

3 **Connect Output 1 of the XPS PRO1000 to the display device using Black Diamond Video tested DVI cable.**

NOTE: If the distance to the display device requires more than 5 meters of DVI cable, a Black Diamond Video DVI X-treme Cable Kit should be used with the DVI X-treme II Conditioner.

If a DVI X-treme Cable Kit is needed, do the following:

a Connect the long length of cable from Output 1 of the XPS PRO1000 to the input of the DVI X-treme II Conditioner.

b Connect the output of the DVI Xtreme II Conditioner using the short length of DVI cable to the display. The red indicator light on the DVI X-treme II Conditioner indicates a good DVI signal is being transmitted to the display.

4 **Within the serial port terminal, type in the command: `sw 1 1`.**

Input 1 is switched to display to Output 1. Video should now be displayed on your test output device.

5 **Move the output cable from Output 1 to Output 2 so that Output 2 is now connected to the display device.**

6 **Within the serial port terminal type in the command: `sw 1 2`.**

Input 1 is switched to display to Output 2. Video should again appear on the test output device.

7 **Repeat steps *Step 5* and *Step 6*, moving the output cable to each of the remaining output channels in turn. Use the `SWITCH` command to route the video through the connected channel. Verify the video displays properly through each output channel.**

8 **Move the input cable from Input 1 to Input 2 so that Input 2 is now connected to the DVI test signal.**

9 **Within the serial port terminal, type in the command: `sw 1 [output #]`, where `[output #]` is the output channel which is currently connected to your test display device.**

10 **Repeat *Step 8* and *Step 9*, moving the input cable to each of the remaining input channels in turn. Use the `SWITCH` command to route the video from the connected channel. Verify the video displays properly coming from each input channel.**

This completes the system test installation.

FINAL SYSTEM INSTALLATION

Once you have completed a thorough test of your XPS PRO1000 equipment you are ready to do the final system installation. *Figure 5* illustrates an installation with multiple video sources, both DVI format, as well as analog format using Black Diamond Video DVI Converters.

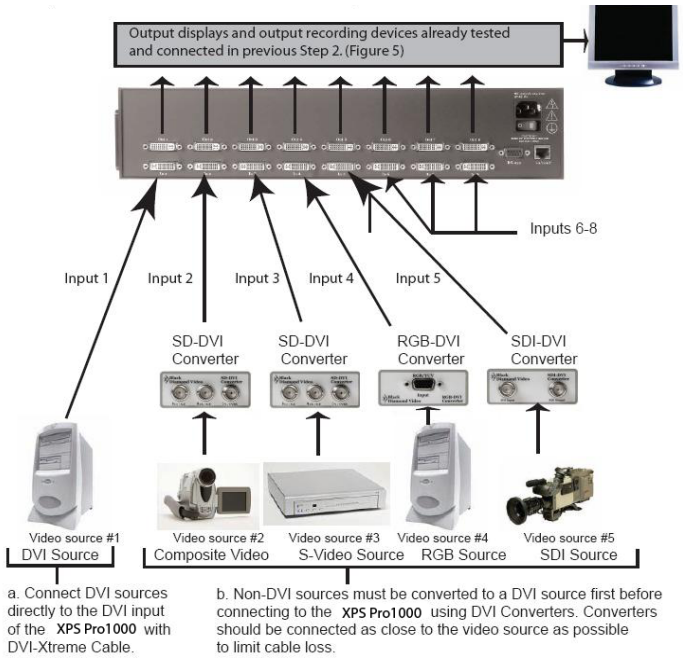

FIGURE 5. System Installation Illustration

The final system installation consists of the following series of steps:

Step 1: AC Power Connection

WHAT YOU WILL NEED FOR THIS STEP

- Power cord (supplied)
- Surge protector (recommended)
- Line conditioner (recommended)

DESCRIPTION

Begin your final system installation by connecting the XPS PRO1000 to an AC power supply and powering it up.

1 **Connect the power cord (supplied) to the AC input on the XPS PRO1000.**

2 **Plug the power cord into a surge protector (recommended).**

3 **Plug the surge protector into a conditioned AC power source.**

4 **Turn on the XPS PRO1000 using the power switch on the rear panel.**

Step 2: Connect All DVI Inputs

WHAT YOU WILL NEED FOR THIS STEP

- All DVI video input sources you want to display through the XPS PRO1000
- All non-DVI video sources you want to display through the XPS PRO1000
- DVI converters for the non-DVI video sources
- DVI cable

DESCRIPTION

Connect all DVI sources directly to the XPS PRO1000 input channels. All non-DVI sources must first be converted to a DVI signal before they connecting them to the XPS PRO1000. See Figure 5, “System Installation Illustration,” on page 21 for an example of a typical XPS PRO1000 installation.

1 **Connect any DVI signals directly to XPS PRO1000 input channels.**

2 **Apply DVI converters to any non-DVI signals and connect the output of the converters to input connectors on the XPS PRO1000.**

Step 3: Connect XPS PRO1000 Outputs to All Displays

WHAT YOU WILL NEED FOR THIS STEP

- All DVI-capable display devices you want to use in your installation
- DVI cable
- (Optional) DVI signal conditioners. If the distance to the display requires more than 5 meters of DVI cable, a Black Diamond Video DVI X-treme Cable Kit should be used with the DVI X-treme II Conditioner and appropriate length of cable provided in the cable kit.

DESCRIPTION

Connect all DVI-capable displays to the XPS PRO1000 output channels. See *Figure 6*, “System Installation Overview Diagram”, for an illustration of a typical XPS PRO1000 system diagram.

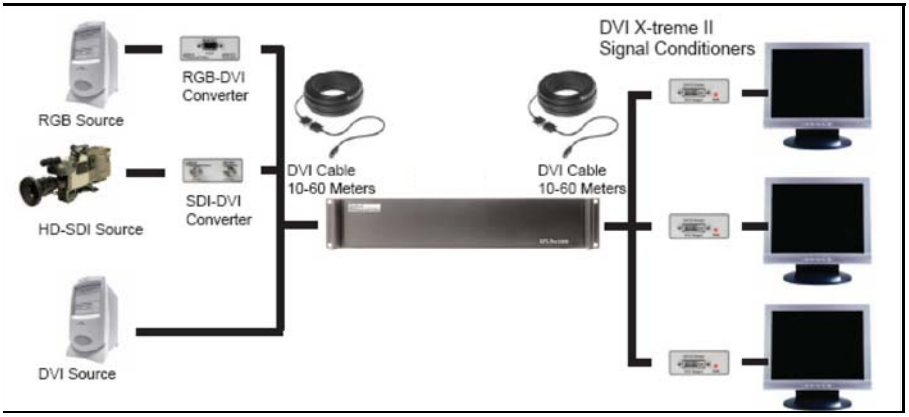

FIGURE 6. System Installation Overview Diagram

1. **Connect DVI cable to Output 1 of the XPS PRO1000.**
2. **Connect the other end of the DVI cable as follows:**
   a. If the cable is more than five meters in length, connect it to the input of the DVI X-treme II Conditioner. Connect a second DVI cable, no more than five meters in length, to the DVI display device.
   b. If the cable is less than five meters in length, connect it directly to the DVI display device.
3. **Repeat *Step 1* and *Step 2* for all other output channels to be used in your installation.**

Step 4: Establish Permanent Remote Control

WHAT YOU WILL NEED FOR THIS STEP

- Laptop or personal computer
- For RS-232 control: RS-232 direct-connect type serial cable with DB9 (male) connector
- For Ethernet control: Ethernet cable. If you are connecting your control computer *directly* to the XPS PRO1000, then you will need a crossover cable.

- RS-232 and Telnet Commands:

SHOWNET		
ipaddr	<ipaddr>	
telnet	<ipaddr>	8998

DESCRIPTION

When all video sources going into the XPS PRO1000 and all video outputs going to the displays or recording devices have been shown to function correctly, permanent control of the XPS PRO1000 can be established using the RS-232 serial interface or the 10/100T Ethernet controls, or the web-server GUI. Black Diamond Video recommends that you read this section carefully before establishing permanent controls.

IMPORTANT!	When connecting a control computer to the RS-232 connector on the XPS PRO1000, you must use a **direct-connect type cable**. When connecting a control computer directly to the Ethernet connector you must use a **crossover cable**. Both the control computer and the XPS PRO1000 must then use a static IP address.

Whether the XPS PRO1000 is controlled through an RS-232 terminal or through a 10/100T Ethernet port using Telnet commands, or the web-server GUI, all control begins with the RS-232 terminal. The RS-232 terminal is used to check and assign an IP address for the XPS PRO1000.

Details of the serial control commands and telnet protocols are in Appendix A, “RS-232 and 10/100T Protocol.”

An introduction to the web-server GUI is in Chapter 5, “About the Web-Server GUI.” Details of the web-server GUI controls are in Chapter 6, “Matrix Switching.”Control of the XPS PRO1000 can be accomplished using any one of the following five methods:

- **RS-232 Only—**This method is used when only RS-232 control is desired. Controls are managed using the Command Set (Appendix A).
- **10/100 T Ethernet and RS-232—**This method is used when 10/100T Ethernet control of the XPS PRO1000 is desired and the control computer is a client on a larger network which uses DHCP (dynamic host configuration protocol) to assign IP addresses. This is the default setting for 10/100T Ethernet control of the XPS PRO1000. RS-232 control is used to determine the dynamic IP address of the XPS PRO1000.
- **10/100 T Ethernet Only—**This is a simpler method than control by 10/100 T Ethernet and RS-232, but it requires that a static IP address be assigned to the XPS PRO1000 and to the control computer. A static IP address is where a computer uses the same address every time a user logs on to a network. By default, the XPS PRO1000 is configured with a dynamic IP address.

The type of IP address for the control computer depends upon whether the computer is connected directly to the XPS PRO1000 Ethernet connector, or if it is connected via a network:

Connection Route	IP Address Type
Direct to XPS PRO1000	Static only
Through a network	Dynamic or Static

If the computer controlling the XPS PRO1000 is a client assigned to a larger network, the network administrator will need to assign the static IP address to the control computer and XPS PRO1000. If the static IP address of the XPS PRO1000 is unknown, it can be accessed using the RS-232 `SHOWNET` command. The RS-232 controls must be used for initial set-up of the XPS PRO1000 IP address, and thereafter will no longer be required.

- **Web-Server GUI and RS-232 Control—** This method uses a web-server GUI rather than Telnet commands to control the XPS PRO1000 over a network. In this instance, the control computer is a client on a larger network which uses DHCP to assign IP addresses. The web-server GUI within the XPS PRO1000 is invoked by opening a web-browser on the control computer (Black Diamond Video recommends Mozilla Firefox) and entering the IP address of the XPS PRO1000 into the address bar of the browser.
- **Web-Server GUI without RS-232 Control—** With this method, a "static" IP address is assigned to the XPS PRO1000 and the control computer. A web-browser (Black Diamond Video recommends Mozilla Firefox) is opened and the static IP address of the XPS PRO1000 is entered into the address bar of the browser. This is the easiest method of controlling the XPS PRO1000.

RS-232 ONLY

1. **Connect the control computer to the RS-232 connector on the XPS PRO1000 using an RS-232 direct-connect type cable.**
2. **Open up a serial port terminal on the control computer connected to the XPS PRO1000.**

   On Microsoft Windows, you can use HyperTerminal for serial communications.
3. **Configure the port settings as follows:**
   - Baud: 9600
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None

The RS-232 connection to the XPS PRO 1000 User Guide is established and the processor can be controlled using the RS-232 command set found in Appendix A, “RS-232 and 10/100T Protocol.”

NOTE: To avoid recreating the connection parameters each time you reestablish RS-232 connection to the XPS PRO1000, you can save the connection for subsequent control sessions.

10/100T ETHERNET AND RS-232

1. **Connect the XPS PRO1000 to your network using the Ethernet connector.**
2. **Connect the RS-232 control computer to the XPS PRO1000 with an RS-232 direct-connect type cable.**

NOTE: The RS-232 control computer and the Ethernet control computer can be the same machine or two different machines.

3. **From the RS-232 control computer, determine the XPS PRO1000 IP address:**
   a. Establish RS-232 control of the XPS PRO1000 as described in “RS-232 Only” on page 25.
   b. Enter the command: `SHOWNET` (see Appendix A, “RS-232 and 10/100T Protocol,” for details).

   The XPS PRO1000 IP address is returned.
4. **From the Ethernet control computer, which must be connected to the same network as the XPS PRO1000, open All Programs > Accessories > Command Prompt and enter the command `telnet <IP address> 8998` using the IP address obtained in *Step 3*.**

   The Telnet session is initiated.

   Telnet control is established. See Appendix A, “RS-232 and 10/100T Protocol,” for a list of key commands and how they are used to control the XPS PRO1000

   To exit the network connection, enter the command `exit`.

NOTE: If the XPS PRO1000 is powered off for several days, when the equipment is powered back on, the DHCP server within the network may issue a new IP address. If this happens, 10/100T Ethernet control can only be restarted by beginning at *Step 3* and determining the new IP address using the RS-232 SHOWNET command again.

10/100T ETHERNET ONLY

1. **Connect the control computer directly to the XPS PRO1000 with an RS-232 direct-connect type cable and a 10/100T Ethernet crossover cable.**

2 **Set the static IP address of the XPS PRO1000:**

a Establish RS-232 control of the XPS PRO1000 as described in “RS-232 Only” on page 25.

b Issue the `IPADDR` command. For example:

```
IPADDR 192.168.1.103
```

The XPS PRO1000 is assigned the static IP address 192.168.1.103.

3 **Set the static IP address of the control computer. If you are using Microsoft Windows, follow these steps:**

a Click Start > All Programs > Accessories > Communications > Network Connections.

The Network Connections window appears.

b Right-click on Local Area Connection and select Properties.

The Local Area Connection Properties window appears.

c Click on Internet Protocol (TCP/IP) to highlight it and click Properties.

The Internet Protocol (TCP/IP) Properties window appears.

d Select Use the following IP address and enter an address in the IP address field.

For example, enter `192.168.1.10`.

e Click on Subnet mask and the number `255.255.255.0` should appear.

f Enter the static IP address in the Default gateway field.

For example, enter `192.168.1.1`.

g Click OK.

The static IP address of the control computer is set.

4 **Click Start and navigate to All Programs > Accessories > Command Prompt.**

The Command Prompt window appears.

5 **Enter the command `telnet <IP address> 8998` using the IP address assigned to the XPS PRO1000 in *Step 2* above.**

Telnet control is established. See Appendix A, “RS-232 and 10/100T Protocol,” for a list of commands and how they are used to control the XPS PRO1000.

Because the XPS PRO1000 now has a static IP address, the RS-232 interface is no longer required. If the IP address of the XPS PRO1000 is misplaced, simply reconnect the RS-232 controls and use the `SHOWNET` command to retrieve the IP address.

The final system installation process is complete.

WEB-SERVER GUI AND RS-232

1 **Download Java software onto the RS-232 control computer:**

   a Open your web browser and go to www.java.com

   b For Windows operations systems, download the Windows Offline version.

2 **(Recommended) Download and install the Mozilla Firefox web browser onto the control computer from www.mozilla.com/firefox/.**

3 **Connect the control computer directly to the XPS PRO1000 with an RS-232 direct-connect type cable and a 10/100T Ethernet crossover cable.**

4 **From the RS-232 control computer, determine the XPS PRO1000 IP address:**

   a Establish RS-232 control of the XPS PRO1000 as described in “RS-232 Only” on page 25.

   b Enter the command: `SHOWNET` (see Appendix A, “RS-232 and 10/100T Protocol,” for details).

   The XPS PRO1000 IP address is returned.

5 **Open the Firefox web browser on the control computer and enter the IP address obtained in *Step 4* into the browser address bar.**

   The GUI is initiated and control of the XPS PRO1000 is now done through the GUI.

   Details of the web-server GUI controls are in Chapter 6, “Matrix Switching.”

NOTE: If the XPS PRO1000 is powered off for several days, when the equipment is powered back on, the DHCP server within the network may issue a new IP address. If this happens, web-server GUI control can only be restarted by beginning at *Step 3* and determining the new IP address using the RS-232 SHOWNET command again.

WEB-SERVER GUI ONLY

1 **Download Java software onto the RS-232 control computer:**

   a Open your web browser and go to www.java.com. For Windows operations systems, download the Windows Offline version.

2 **(Recommended) Download and install the Mozilla Firefox web browser onto the control computer from www.mozilla.com/firefox/.**

3 **Connect the control computer directly to the XPS PRO1000 with an RS-232 direct-connect type cable and a 10/100T Ethernet crossover cable.**

NOTE: The RS-232 control computer and the Ethernet control computer can be the same machine or two different machines.

4 **Set the static IP address of the XPS PRO1000:**

a Establish RS-232 control of the XPS PRO1000 as described in “RS-232 Only” on page 25.

b Issue the `IPADDR` command. For example:

```
IPADDR 192.168.1.103
```

The XPS PRO1000 is assigned the static IP address 192.168.1.103.

5 Set the static IP address of the control computer. If you are using Microsoft Windows, follow these steps:

a Click Start > All Programs > Accessories > Communications > Network Connections.

The Network Connections window appears.

b Right-click on Local Area Connection and select Properties.

The Local Area Connection Properties window appears.

c Click on Internet Protocol (TCP/IP) to highlight it and click Properties.

The Internet Protocol (TCP/IP) Properties window appears.

d Select Use the following IP address and enter an address in the IP address field.

For example, enter `192.168.1.10`.

e Click on Subnet mask and the number `255.255.255.0` should appear.

f Enter the static IP address in the Default gateway field.

For example, enter `192.168.1.1`.

g Click OK.

The static IP address of the control computer is set.

6 Open the Mozilla Firefox web-browser and type the XPS PRO1000 IP address set in *Step 4* into the address bar of the browser and press Enter.

The GUI will be invoked and control of the XPS PRO1000 is now done through the GUI. Details of the web-server GUI controls are in Chapter 6, “Matrix Switching.”

Because the XPS PRO1000 now has a static IP address, the RS-232 interface is no longer required. If the IP address of the XPS PRO1000 is misplaced, simply reconnect the RS-232 controls and use the `SHOWNET` command to retrieve the IP address.

STARTUP MACRO

The Startup Macro feature allows the user to set up a list of commands that will be executed automatically by the XPS PRO1000 after it is powered on, or after a power cycle or

interruption. This feature is available beginning with firmware version 3.01.00. There are four commands related to the Startup Macro: CSM, DSM, RSM, and VSM.

These Startup Macro commands are detailed below.

Create Startup Macro

The CSM command creates the Startup Macro. To create the startup Macro:

1. **Issue the command: CSM.**
2. **Enter the commands you would like stored in the Macro, up to 500 characters.**
   a. Editing the Macro commands is difficult to do in the terminal program as it is not a text editor. Therefore, it is suggested that a real text editor be used to create or edit the macro. The commands may then be copied and pasted into the command prompt.
3. **Press Esc.**
4. **Press carriage return.**

Delete Startup Macro

The DSM command deletes the Startup Macro. To delete the Startup Macro, issue the command: DSM.

Run Startup Macro

The RSM command runs the Startup Macro manually. After powering the system on, the Startup Macro will run automatically. To run the Startup Macro manually, issue the command: RSM.

View Startup Macro

The VSM command allows the user to view the commands in the Startup Macro. To view the commands in the Startup Macro, issue the command: VSM.

5

About the Web-Server GUI

The most common XPS PRO1000 functions can be handled using the web-server GUI (*Figure 7*). This chapter introduces the GUI appearance and function, and describes how to customize the labelling of the application buttons.

Appearance and Functions of the GUI

The GUI is divided into three sections:

- **I/O Switching Selection**—this section indicates the channel status and allows you to switch between input sources and output displays using a mouse or touch-panel. The indicator on each input and output button is green if a valid input signal is present or a display device is connected to the output. The indicator is red if there is no input signal or connected display device.

- **Inputs/Outputs**—this section identifies which inputs are going to which displays. In the grid example in *Figure 7*, input 1 is going to outputs 1, 2, 3, 4, 6, and 8. Input 2 is routed to Outputs 5 and 7.

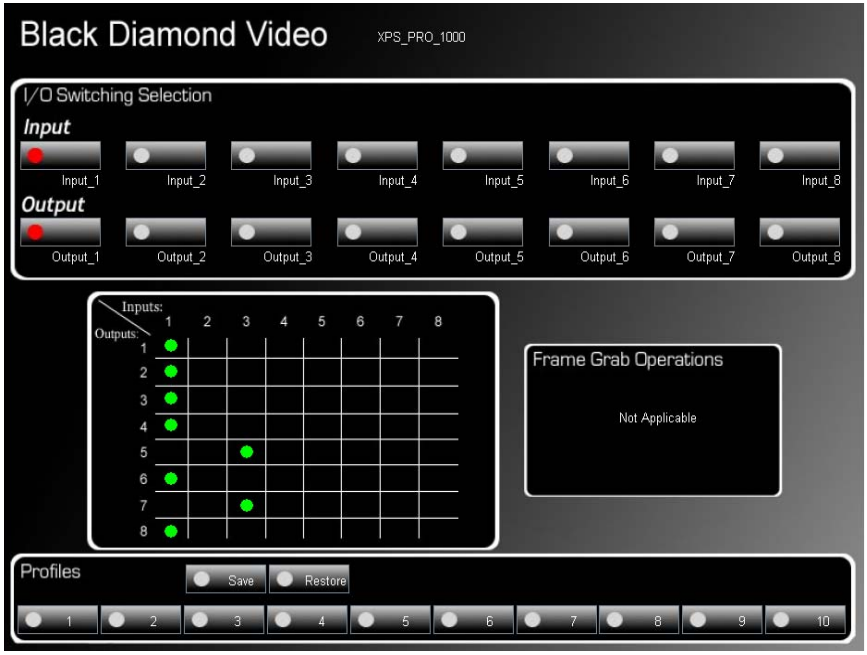

FIGURE 7. XPS PRO1000 Web-Server GUI

- **Frame Grab Operations**— Unavailable with the XPS PRO1000.
- **Profiles-** this section allows you to save switching assignments to a preset profile button.

CUSTOM LABELLING OF INPUT/OUTPUT BUTTONS

You can customize the labels of the Input and Output buttons in the I/O Switching Selection section of the GUI. The input and output labels are limited to a maximum of eight characters.

Defaults: Input buttons are labeled Input_#. Output buttons are labeled Output_#.

To rename an input button

- **Enter the RS-232 or Telnet command `inlbl <input> <label>` where `<input>` is the input # on the GUI and `<label>` is the new name for the button.**

EXAMPLE

To rename the GUI label for Input 2 to “Camera”, issue the command:
`inlbl 2 Camera`.

To rename an output button

- **Enter the RS-232 or Telnet command `outlbl <output> <label>` where `<output>` is the output # on the GUI and `<label>` is the new name for the button.**

EXAMPLE

To rename the GUI label for Output 5 to “Remote”, issue the command:
`outlbl 5 Remote`.

6

MATRIX SWITCHING

This chapter explores the matrix switching capabilities of the XPS PRO1000.

ABOUT MATRIX SWITCHING

The XPS PRO1000 provides 8 x 836 x 36 DVI matrix switching and is controlled with the web-server GUI or by using RS-232 or Telnet commands. Any connected input can be switched to any output channel.

For information about setting up remote control of your device, see “Step 4: Establish Permanent Remote Control” on page 23.

MATRIX SWITCHING CONTROL- GUI

The GUI I/O Switching Selection buttons let you quickly and easily set up and modify matrix switching assignments. The Input/Output grid provides a dynamic visual representation of the current routing pattern.

Figure 8 shows an example of the XPS PRO1000 GUI being used to control the matrix switching assignments.

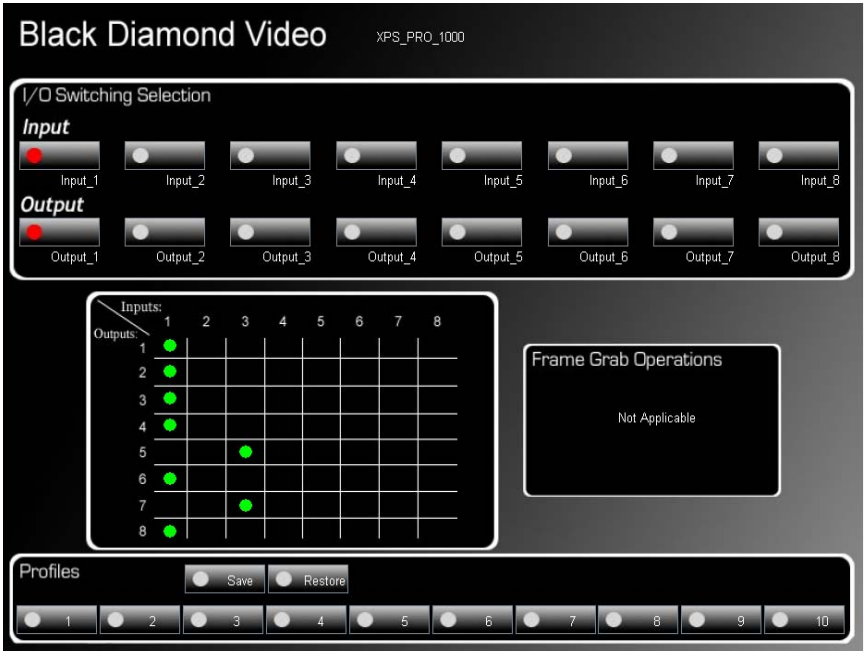

FIGURE 8. Matrix Switching -- XPS PRO1000 Web-Server GUI Example

To switch an input to an output

1. **In the I/O Switching Selection of the GUI, click the input button for the input you want to switch.**

   The button indicator blinks to indicate that the input is selected. You have 10 seconds to complete the net step.

2. **Click the Output button for the output to which you want to route the selected input.**

3. **The selected input is routed to the chosen output channel and the new assignment is reflected on the Inputs/Outputs grid.**

NOTE A red indicator on an input button means that there is no valid input signal present on that channel. When a valid signal is present, the status indicator is green.

EXAMPLE

As illustrated in *Figure 8*, to route Input_1 to display at Output_1, you first click the Input_1 button, and then click the Output_1 button. The Inputs/Outputs grid updates to reflect the new matrix switching assignment, with an indicator in column 1 on row 1.

MATRIX SWITCHING CONTROL- RS-232/ 10/100T

For matrix switching control, there are two commands: `SWITCH` and `OSTAT`. With these commands you can switch any input to display on any output channel and you can check which input is currently set to display on any output.

By default, the first single link DVI input is routed to all single link outputs and the first dual link DVI input is routed to all dual link outputs. Single-link DVI inputs can be displayed on any output channel, but dual-link DVI inputs can only be displayed on the output channels of the boards in odd-numbered slots.

For a complete list of serial control commands, see Appendix A, “RS-232 and 10/100T Protocol.”

NOTE RS-232 commands and Telnet protocol are identical.

Switch Command

The `SWITCH` command is used to route any input to display on any output channel. The command is:

```
SW <input #> <output #>
```

An input can be routed to multiple outputs, which lets you display the same input image on multiple displays.

EXAMPLE

In *Figure 9*, the switch command is used to route a DVI video source connected to Input 3 to three different output channels. If all three commands are issued in succession, the result is that Input 3 would appear on all three output devices.

Command	Action
`SW 1 1`	**Example A—**routes Input 1 to Output 1
`SW 1 3`	**Example B—**routes Input 1 to Output 3
`SW 1 5`	**Example C—**routes Input 1 to Output 5

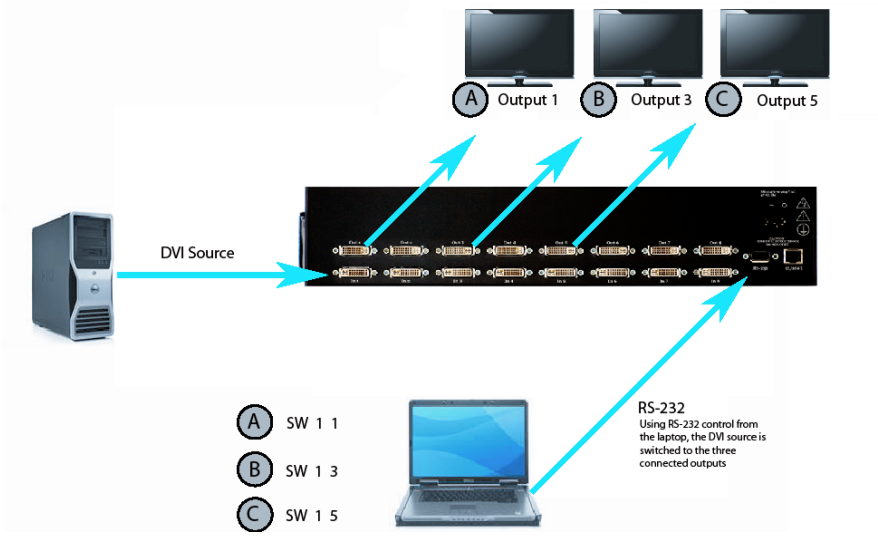

FIGURE 9. Matrix Switching Example

Output Status Command

The `OSTAT` command is used to determine which input is connected to a particular output. The command is:

`OSTAT <output #>`

EXAMPLE

Referring to *Figure 9*, the `OSTAT` command would be used as follows:

Command	Action
`OSTAT 1`	**Example A—**checks the input channel routed to Output 1. Returns `input: 1`.

A

RS-232 AND 10/100T PROTOCOL

XPS PRO1000 COMMAND SET

The XPS PRO1000 is controlled by using RS-232 or Ethernet connection using telnet protocol. Commonly used commands are presented and defined in the following tables covering switching and general system commands.

SWITCHING COMMANDS

Command	Syntax	Action
BRIGHTNESS	BRI <input #> <bright>	Adjusts the brightness of the input signal. RGB and SD inputs only. <bright> is a value from -100 to 100.
CONTRAST	CONT <input #> <contrast>	Adjusts the contrast of the input signal. RGB and SD inputs only. <contrast> is a value from 0 to 200.
HUE	HUE <input #> <hue>	Adjusts the hue of the input signal. SD inputs only. <hue> is a value from -180 to 180.
SATURATION	SAT <input #> <sat>	Adjusts the saturation of the input signal. SD inputs only. <sat> is a value from 0 to 200.
CREATEINPUTHOST	CINHOST <slot #> <name> <hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> <hfreq> <sync> <phase> <vpol> <hpol> <interlace>	Creates an input host timing in the designated slot number, with the specified parameters. <name> is limited to 16 characters. <hfreq> in Hz. <sync> is 3,4, or 5 wire. <vpol> is vertical sync polarity; 1 = positive, 0 = negative. <hpol> is horizontal sync polarity. <interlace> is 1 = interlaced, 0 = non-interlaced.

SWITCHING COMMANDS

Command	Syntax	Action
CREATEOUTPUTHOST	COUTHOST <slot #> <name> <hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> <hfreq> <sync> <phase> <vpol> <hpol> <interlace>	Creates an output host timing in the designated slot number, with the specified parameters. <slot#> is a value from 501 to 540. <name> is limited to 16 characters. <hfreq> in Hz. <sync> is 3,4, or 5 wire. <vpol> is vertical sync polarity; 1 = positive, 0 = negative. <hpol> is horizontal sync polarity. <interlace> is 1 = interlaced, 0 = non-interlaced.
HOSTLIST	HLIST	Lists the host timing table.
HOSTMATCH	HM <input #>	Lists the default hosts that match the input timing. RGB inputs only.
INPUTFORMAT	INFMT <input #> <format>	Changes the input format of the selected channel. <format> can be composite, s-video, or component.
INPUTLABEL	INLBL <input #> <label>	Adds a label to the specified input. Default = Input_#.
INPUTLIST	INLIST	Lists the user timing table.
INPUTLISTDEL	INLISTDEL <user slot #>	Deletes the timing in the user timing table at the selected slot.
INPUTMODULUS	INMOD <input #>	Adjusts the modulus of the input signal. RGB inputs only.
INPUTNAME	INN <input #> <name>	Creates a name for the input signal. RGB inputs only.
INPUTPHASE	INPH <input #>	Adjusts the phase of the input signal. RGB inputs only.
INPUTPOSITION	INPOS <input #>	Adjusts the position of the input signal. RGB inputs only.
INPUTSAVE	INS <input #> <user slot #>	Saves the input timing to the user timing table. RGB inputs only.
INSTATUS	INSTATUS <input #>	Verifies whether there is a valid signal applied to the input. 1 indicates a valid signal. 0 indicates there is no signal on the input.
INPUTTIMING	INT <input #>	Shows the input timing.
OUTPUTLIST	OUTLIST	Lists the output custom host timing table.
OUTPUTLISTDEL	OUTLISTDEL <slot #>	Deletes the output custom host timing at the specified slot.

SWITCHING COMMANDS

Command	Syntax	Action
OUTPUTLABEL	OUTLBL <output #> <label>	Adds a label to the specified output. Default = Output_#.
OUTPUTSTATUS	OSTAT <output #>	Returns the input number connected to the output.
OUTPUTSTATUSALL	OSTATALL	Returns all of the input/output switching assignments.
OUTT	OUTT <output #>	Displays the output timing of the selected output channel.
PROFILEDELETE	PROFILEDELETE <profile #>	Deletes a profile.
PROFILERECALL	PROFILERECALL <profile #>	Sets up the input/output configuration from a stored profile.
PROFILESAVE	PROFILESAVE <profile #>	Allows the user to save the current input/output configuration as a profile.
SETINPUTTIMING	SETIT <input #> <host>	Assigns a default host timing to the input. The Vtotal, Hperiod, and interlace mode of the host must match the input source. <host> is a number which refers to the built in host table. Use the command HOSTLIST to display the host table
SETOUTPUTTIMING	SETOT <output #> <host>	Assigns a default host timing to the output. <host> is a number which refers to the built in host table. To display the host table, use the HOSTLIST command.
SWITCH	SW <input #> <output #>	Routes the input to the output. An input can be routed to more than one output.
VIDEOFORMAT	VFMT <input #>	Returns the video format of the specified input channel.

SYSTEM COMMANDS

Command	Syntax	Action
BLANKOUTPUT	BO <output #>	Blanks the selected output channel.
COPYEDID	CPEDID <output #> <input #>	Copies the EDID from the display device to the input. NOTE: Before issuing this command, disconnect the input from the source.
CSM	CSM	Creates the startup macro. Issue this command, then issue every command you would like stored in the macro. When finished, press Esc and then carriage return to end the session.

SYSTEM COMMANDS

Command	Syntax	Action
CUSTOMEDID	CEDID <input #> <hsize> <vsize>	Sets the EDID timing from the host table. <hsize> and <vsize> values are compared to the resolution of the hosts in the host table. When the first match is found, the timing of that host is used to calculate the EDID value, which is then programmed to the input channel. **NOTE:** Before issuing this command, disconnect the input from the source.
DSM	DSM	Deletes the startup macro.
FORCEOUTPUT	FOUT <output #> <ON|OFF>	Forces the specified output channel to send out a signal even when the XPS PRO1000 cannot detect a connected display device. **NOTE:** If a monitor is connected to the XPS PRO1000 via a fiber cable, there will be no hot plug, and thus the output will be undetected by the XPS PRO1000. To combat this issue, use the FOUT command to force output detection.
GET8051	G8051 <input #>	Reads back the RGB to DVI converter timing of the selected input channel.
GETEDID	GEDID <output #>	Returns the EDID data from the display device connected to the selected output channel.
GETEXTREME	GEX <output #>	Reads back the ID of the Extreme Cable Conditioner at the selected output channel.
HELP	H	Lists all user commands.
HOSTLIST	HLIST	Lists the host timing table.
ID	ID	Returns system information.
INPUTAUTOSENSE	INAS [on/off]	Turns the SD input auto sensing on or off. When autosense is ON, the unit attempts to automatically identify the format of the input signal (component, svideo, or composite). When autosense is OFF, the format of the input signal must be set using the INPUTFORMAT command. Default = ON.

SYSTEM COMMANDS

Command	Syntax	Action
INPUTTESTPATTERN	INTP <host> <pattern>	Turns on the test pattern <pattern> with host <host> from the input RGB converter. The converter generates an RGB host signal internally. To turn the test pattern generator off, issue the command intp F <host>. Although it is required, the <host> setting is ignored. Test patterns <pattern>: 0 color bars 1 grey ramp 2 red ramp 3 green ramp 4 blue ramp 5 grey 64 steps 6 red 64 steps 7 green 64 steps 8 blue 64 steps 9 Auto Calibration F Turns the test pattern generator off Output modes <host>: 0 800x600 1 1024x768 2 1280x1024 3 1600x1200 4 1920x1080 5 1920x1200
IPADDRESS	IPADDR <ip address>	Sets the static IP address for network use.
IPGATEWAY	IPGW <ip gateway>	Sets the network gateway.
IPNETMASK	IPNM <net mask>	Sets the network mask.
NEWEDID	NEDID <INPUT #> <hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> <hfreq> <sync> <phase> <vpol> <hpol> <interlace>	Creates a special EDID timing for the designated input, with the specified parameters. <hfreq> in Hz. <sync> is 3,4, or 5 wire. <vpol> is vertical sync polarity; 1 = positive, 0 = negative. <hpol> is horizontal sync polarity. <interlace> is 1 = interlaced, 0 = non-interlaced.
PROGEDID	PROGEDID <input #>	Programs the default dual link or single link EDID value to the selected input channel. NOTE: Before issuing this command, disconnect the input from the source.
RESET	RESET	Initiates a system reset of the XPS PRO1000.
RESETNETPASSWORD	RSTNPW	Resets the network password to default. Default = blackdiamond **IMPORTANT:** This command requires assistance from Black Diamond Video technical support.

SYSTEM COMMANDS

Command	Syntax	Action
RESETOUTPUTTIMING	RSTOT <output #>	Resets the output timing according to the EID information from the display device. If no EDID information is available, host #4 is used.
RESTOREDEFAULT	RFD	Restores the factory defaults for user parameters
RSM	RSM	Runs the startup macro manually. After the Phantom 800 is powered on, the macro will run automatically.
SHOWNETWORK	SHOWNET	Shows the network setup parameters.
SOFTDEINTERLACER	SDI <output #> <ON|OFF>	Turns the soft deinterlacer ON or OFF for the specified output channel. Default = ON.
UNBLANKOUTPUT	UBO <output #>	Unblanks the selected output channel.
UPDATEFIRMWARE	UFW	Initiates a firmware update.
VERSION	VER	Returns the firmware version of the system.
VSM	VSM	Shows the content of the startup macro.

RS-232 PINOUT

The RS-232 connector on the XPS PRO1000 uses the pinout configuration as shown in *Figure 1*.

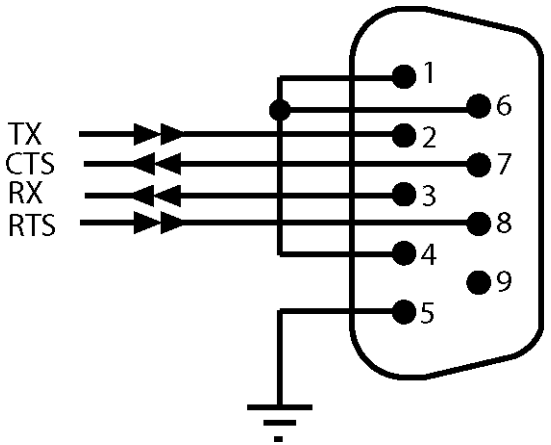

FIGURE 1. XPS PRO1000 RS-232 Pinout

B

UPGRADING FIRMWARE

As a hardware device, the XPS PRO1000 contains firmware. Firmware is embedded software that provides the necessary machine instructions for how the device operates. From time to time, Black Diamond Video publishes firmware updates. These updates may add functionality to or improve the operational efficiency of the XPS PRO1000.

Firmware updates, as they become available, are accessible from the Support page of the Black Diamond Video web site (www.blackdiamond.video.com). You may also receive a firmware upgrade on a CD.

Firmware upgrades are performed using a 10/100T Ethernet connection, and, optionally, RS-232 control.

Download or Copy Firmware Upgrade to the Control Computer

The first step in performing a firmware upgrade for your XPS PRO1000 is to acquire the update file and store it to a location on the Ethernet control computer. Firmware updates may be downloaded from the Black Diamond Video web site or provided to you on a CD.

1 **On the Ethernet control computer, create a folder to store the firmware upgrade.**

For this example, we'll create the folder on the Local Disk (C:) and name it `upgrade`.

> **NOTE:** You may save the upgrade file to any drive you wish and use any folder name you like.

2 **Download the firmware upgrade file from a CD or from the Black Diamond Video web-site into the folder created in *Step 1*.**

The file name is **`bdvimg.bin`.xxx**, where **.xxx** is the firmware version number. You are now ready to upgrade the firmware of the XPS PRO1000.

Upgrade the XPS PRO1000 Firmware

The upgrade can be accomplished entirely through Ethernet control, or you can use RS-232 control to issue the final upgrade command.

1 **Open the Command Prompt on the Ethernet control computer. For Windows, navigate to Start > Programs > Accessories > Command Prompt.**

The Command Prompt window opens.

2 **Change the directory to the directory (folder) into which the firmware upgrade was downloaded from the task "Download or Copy Firmware Upgrade to the Control Computer." In our example this is done by entering the command: `cd\upgrade`.**

The new command prompt is `C:\upgrade>`.

3 **Open the 10/100T Network Connection between the control computer and the FTP Server within the XPS PRO1000 by typing in the commands:**

```
ftp <ip address>

User: bdv

Password: blackdiamond
```

A prompt sign appears: >

NOTE: If the IP address is not known, establish RS-232 control of the XPS PRO1000 and issue the `SHOWNET` command. This returns the IP address of the device.

4 **Type the command: `bin`**

A command prompt appears again: >

5 **Type the command: `put <filename>`, where the file name is the name of the file you downloaded in *Step 2* of "Download or Copy Firmware Upgrade to the Control Computer."**

In our example, the command is: `put bdvimg.bin.xxx`

6 **Close the connection to the XPS PRO1000 ftp server by typing the command: `quit`**

The connection to the XPS PRO1000 ftp server is closed.

7 **Open a Telnet session with the XPS PRO1000 by typing the command: `telnet <ipaddr> 8998`**

The Telnet session is initiated.

8 **Enter the network password.**

The default password is "blackdiamond".

9 **Issue the upgrade firmware command in one of two ways:**

a From the serial port terminal issue the RS-232 command: `ufw`

Progress information about the upgrade process appears on the terminal.

b From the Ethernet connection Command Prompt, type in the command: `ufw`

10 **The upgrade process takes approximately 2 - 3 minutes. When the upgrade is done, you are instructed to power cycle the XPS PRO1000.**

Once the power cycle operation is complete, your firmware upgrade is complete.