

Silicon Graphics® DMediaPro™ DM5
Graphics-to-Video-Out User's Guide

007-4515-001

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Cover Design By Sarah Bolles, Sarah Bolles Design, and Dany Galgani, SGI Technical Publications.

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Record of Revision

Version	Description
001	May 2002 Initial Rev

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About This Guide

This guide tells you how to set up and use your workstation with the DMediaPro DM5 serial video option. To set it up, you connect your workstation's digital video graphics outputs to the DMediaPro DM5 option board in an SGI Video Breakout Box (VBOB). This guide is primarily written for the sophisticated video user who is familiar with video standards and the operation of the applicable SGI system or workstation. Other readers may find it useful as an introduction to the capabilities of the product.

This guide includes the following chapters:

- Chapter 1, "Product Overview," describes the board assembly and its capabilities.
- Chapter 2, "DMediaPro DM5 Cabling Configurations," describes the various input and output board cabling configurations and provides examples.
- Chapter 3, "Software Configuration and Troubleshooting," explains how to configure the required software and how to troubleshoot possible problems.

This guide also explains how to perform the following activities:

- Identify the video board connectors.
- Configure the DMediaPro DM5 system cabling for different levels of functionality.
- Use the required software to configure the high-definition (HD), standard-definition (SD), and other options.
- Identify and correct minor operational system faults.

The following documents provide additional information that may be helpful when using your workstation with the DMediaPro DM5 graphics-to-video out system:

- *SGI Video Breakout Box Owner's Guide* (007-4243-00x)
- *Workstation Dual Channel Display Installation Guide* (007-4209-00x)

You can access the above documents in the SGI Technical Publications Library, at the following URL:

<http://techpubs.sgi.com/library/>

Conventions

This guide uses the following conventions:

- Document titles are in *italics*.
- References to chapters and sections within this guide are in quotation marks.
- Characters that you type on your keyboard are in **Courier bold**.
- Commands, filenames, and output are in *Courier*.
- Procedures are explained in numbered steps. When necessary, an explanation follows the step.

Product Support

SGI provides a comprehensive range of product support for its products. If you are in North America, contact the Technical Assistance Center at 1-800-800-4SGI or your authorized service provider. If you are outside North America, contact the SGI subsidiary or authorized distributor in your country.

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Product Overview

This chapter provides an overview of the DMediaPro DM5 graphics-to-video-out option for use with your SGI workstation.

Product Description

The DMediaPro DM5 graphics-to-video-out option for your SGI workstation consists of a set of components that provide either a high-definition (HD), or standard-definition (SD) video output channel. The VPro graphics board Dual Channel Display option is required to use the DM5 option with your SGI workstation.

The major DM5 hardware components are as follows:

- DVI and BNC connector cables
- DMediaPro DM5 daughterboard in a Video BreakOut Box (VBOB)
- 75-ohm terminator

The DMediaPro DM5 daughterboard provides specialized, high-resolution, digital video imagery capabilities for SGI workstations with VPro graphics and a Dual Channel Display (DCD) option. Note that not every SGI workstation with VPro graphics may be upgraded to work with DMediaPro DM5. Contact your SGI sales or service representative if you have any questions regarding workstation compatibility with the DM5 option.

Note: Your workstation must have a V12 (or higher) VPro graphics board with a Dual Channel Display option installed. The system must be running IRIX version 6.5.16 or later. Systems running 6.5.16 require a software extension (patch) to support DM5.

The Dual Channel Display DVI connector interfaces on your workstation transmit digital pixel information to the DMediaPro DM5 daughterboard, which converts this

information to SMPTE 259M standard definition (SD) or SMPTE 292M high definition (HD) video signals. Many applications may require genlock.

High-definition output formats include the following:

- 720-line progressive (720p)
- 1080-line interlaced (1080i)

Standard-definition output formats are CCIR-601 compliant and include:

- NTSC timing
- PAL timing

Two DVI cables, a BNC timing reference cable, and a 75-ohm terminator are included with the board. All configurations require use of both DVI cables.

The DVI-to-HD15 monitor cable (included in the DCD option kit) connects the DM5 daughterboard's DVI-Out connector to the workstation monitor cable. This gives you a complete High Definition Graphics to Video Out system. With this system, you can use your workstation to convert graphics data to either high-definition or standard-definition serial digital video.

The DM5 option provides you with the following additional capabilities:

- Genlock capability for synchronized video streaming.
- A DVI loop-through connector on the DM5 for connecting the workstation monitor.

Note: The DM5 graphics-to-video-out option is initially configured and installed in the factory. Any reconfiguration should be carefully considered. On-site upgrades are done only with VBOB units that are part number 013-2746-004 (or later).

Your DMediaPro DM5 graphics-to-video-out option provides the capability to select a raster-sized image from the workstation graphics output. Note that both VPro graphics DCD outputs *must* be identically sized.

The user selects the origin and size of the region of the graphics display for excision and output to a video device. The general purpose of the DMediaPro DM5 is to select a same-size (or smaller) section of the graphics output for conversion to video. An example

might be to have the workstation graphics set to 1280x1024 and to select a 720x486-size region for conversion to NTSC video output.

Figure 1-1 shows the Dual Channel Display board assembly and its connectors. For cabling instructions, see Chapter 2. For software configuration information, see Chapter 3.

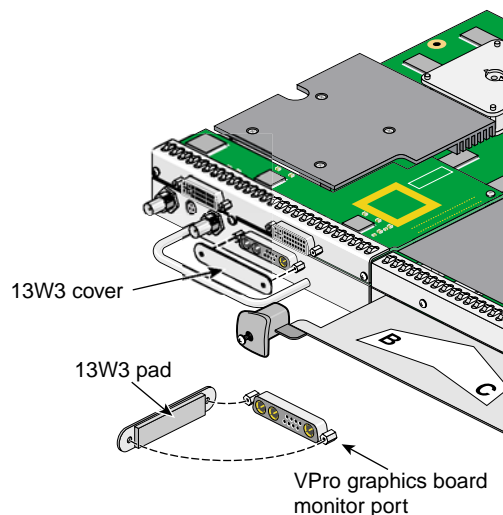


Figure 1-1 Example of VPro Dual Channel Display Board

Note: You should always cover (and not use) the original 13W3 graphics output connector on your VPro graphics board when the Dual Channel Display option is installed.

Important Notes

Note the following:

- The DVI-to-HD15 interface cable used to connect the workstation's monitor to the DMediaPro DM5 board is included with the Dual Channel Display board option kit (not with the DMediaPro DM5 option).
- Always use the 2-meter DVI cables shipped with your DM5. The DVI cables shipped with the Dual Channel Display option are *not* suitable for use with DM5.
- The Video BreakOut Box (VBOB) cannot be upgraded by the end-user. Contact your SGI support provider for any upgrades or changes to use DMediaPro DM5.

Note: Only VBOB units with part number 013-2746-004 (or later) can be upgraded at a customer site with the DM5 option. All other VBOB units must be exchanged as part of the upgrade.

- A BNC cable, BNC "T" connector, and a 75-ohm terminator are required when genlock connections are needed.

DMediaPro DM5 Cabling Configurations

This chapter explains how to connect your workstation to the DMediaPro DM5 option board in the Video BreakOut Box (VBOB). Specific connections are required for proper High Definition or Standard Definition graphics to video output and genlock synchronization.

Connecting to DMediaPro DM5

To connect the workstation to the DM5, see Figure 2-1 and use the following steps:

1. Connect one end of the 2-meter DVI cable (white cable) from **DVI (L)** on the VPro graphics Dual Channel Display (DCD) board to the DMediaPro DM5 board's **DVI IN 0** connector.
2. Connect one end of the 2-meter DVI cable (black cable) from **DVI (R)** on the Dual Channel Display board to **DVI IN 1** on the DMediaPro DM5 board.
3. When using genlock, attach the 2-meter BNC Genlock cable from the genlock port "T" connector (nearest **DVI (L)** on the Dual Channel Display) to the "Timing Out" connector on the back of the VBOB. The other side of the "T" connector is terminated with a 75-ohm device, see Figure 2-1.
4. Connect the DVI-to-HD15 cable (included with the DCD option kit) from the **DVI OUT** connection on DMediaPro DM5 to the workstation's monitor.

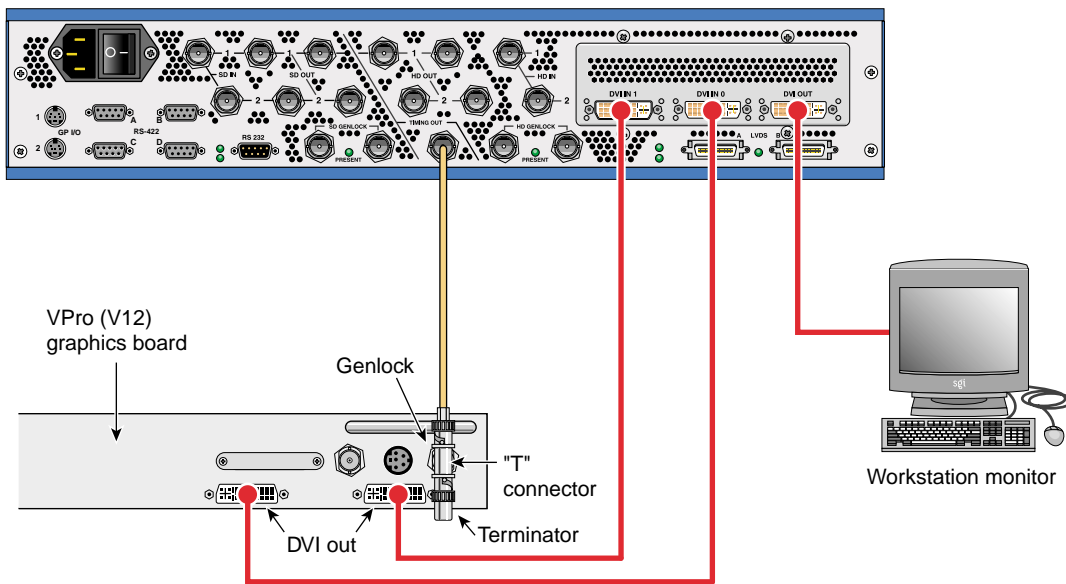


Figure 2-1 Connecting the VPro Graphics Board to DMediaPro DM5 and VBOB

Note: The VBOB uses two BNC connectors for each external HD or SD genlock. You can use either of these connectors as an input and place a 75-ohm terminator on the other.

5. After you complete the previous connections, attach the required cables from the VBOB **HD OUT** or **SD OUT** connector(s) to the desired high definition or standard definition video device(s).

If you want to lock the output serial digital signals to an external genlock signal, connect an analog sync source to the VBOB HD genlock in, or SD genlock BNC connectors (see Figure 2-2 and Figure 2-3). Attach a 75-ohm terminator to the appropriate loop-through connector.

For additional details, see your *SGI Video Breakout Box Owner's Guide* (007-4243-00x).

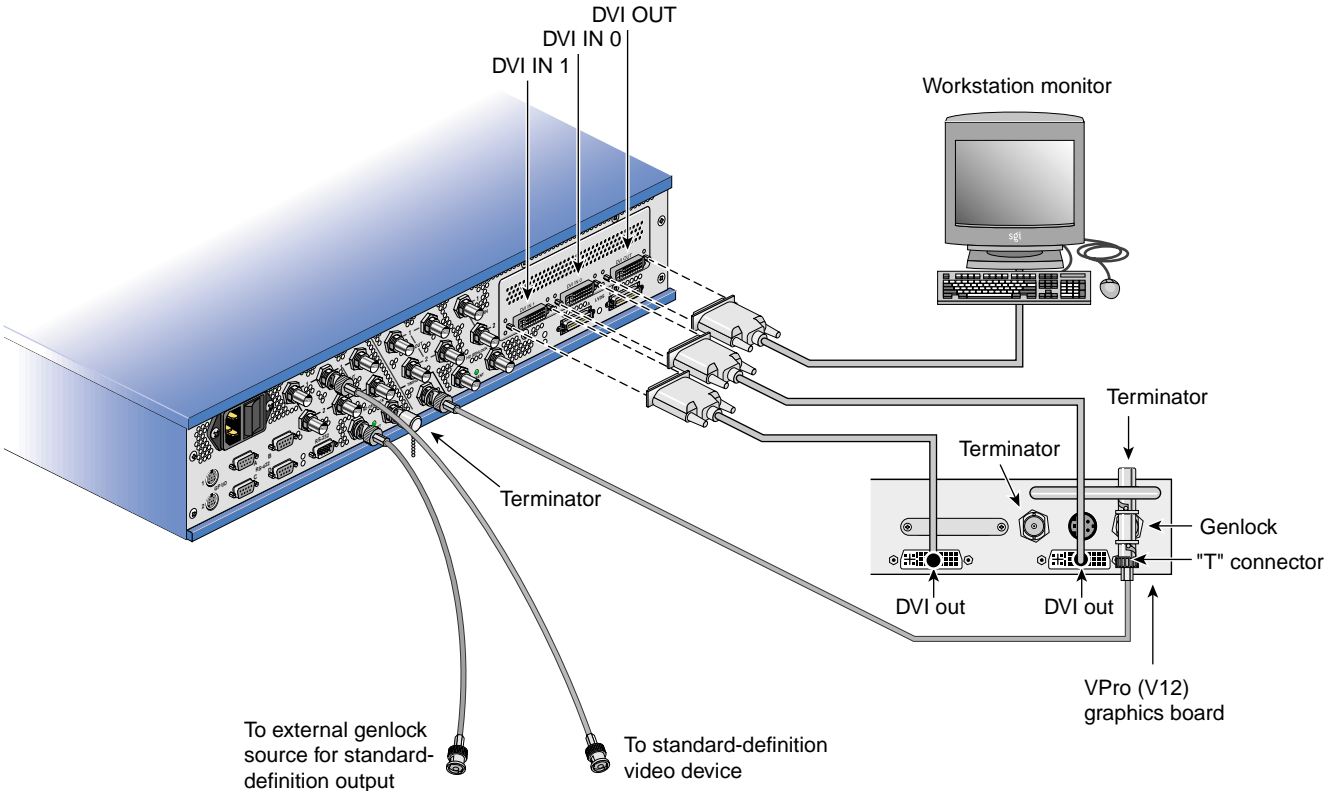


Figure 2-2 Example of Standard-definition Video and Genlock Connection

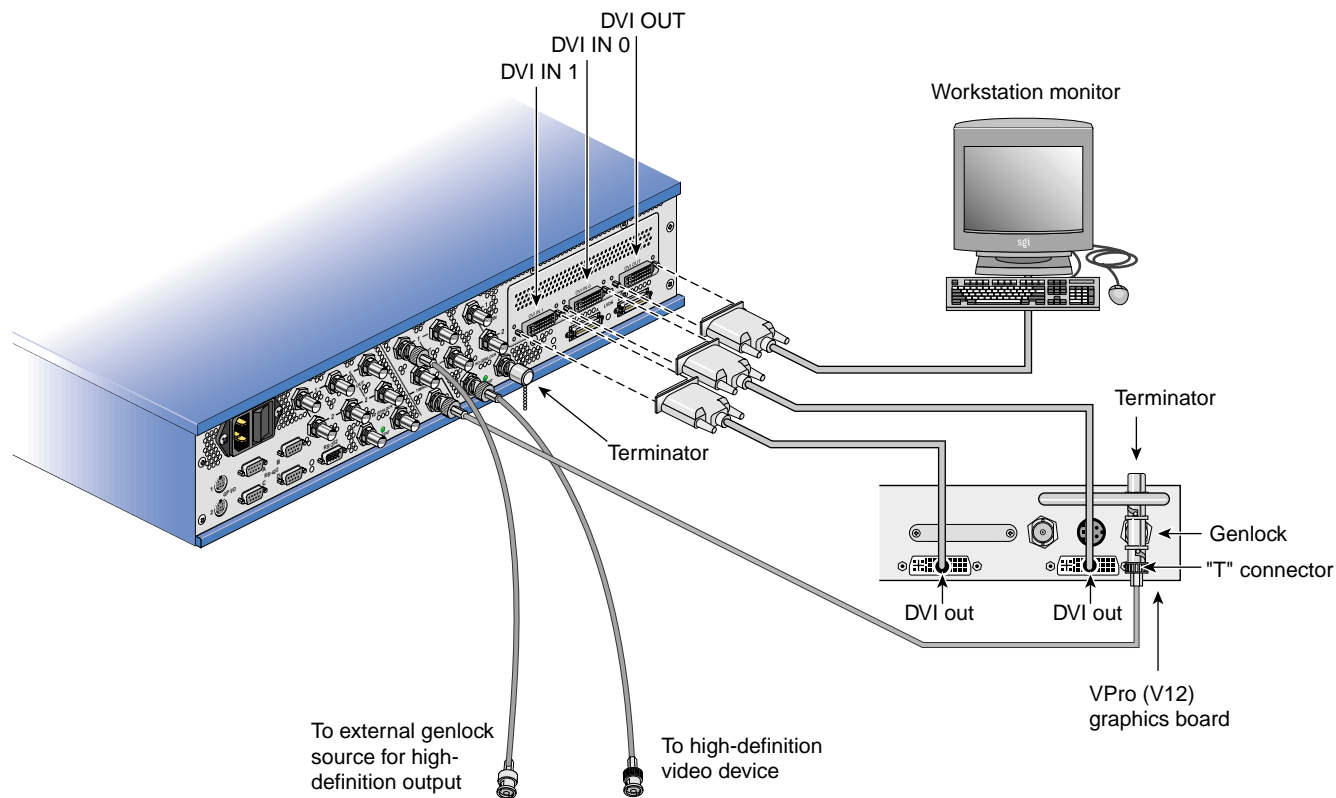


Figure 2-3 Example of High-definition Video and Genlock Connection

Software Configuration and Troubleshooting

This chapter tells you how to configure the SGI workstation and the DMediaPro DM5 board for graphics-to-video-out operation. It also shows you how to identify and resolve possible problems. The examples are generic and are not based on installations at any SGI customer site.

Note: The Video BreakOut Box (VBOB) housing your DMediaPro DM5 board must be properly connected and powered up *before* you initiate the graphics-to-video-out commands.

Starting Graphics-to-Video-Out

To send graphics to the video output in the DMediaPro DM5 board, you use the `dmconf` command together with a set of arguments to the command. Be sure to review the `dmconf(1G)` and `setmon(1G)` man pages for details on using graphics-to-video-out.

1. Open an IRIX shell on your workstation and become root (super user).
2. Enter the `dmconf` command with appropriate arguments specifying the filename, VPro format, and DM5 format. For example:

```
/usr/gfx/dmconf -destination active \  
-vpro format=1920x1154_30f \  
-dm5 format=1080I_5994
```

This example configures the system with the VPro graphics board exporting a 1920x1154 format, framelocked at 30 Hz. The DM5 is outputting a high-definition 1080-line interlaced video format at 59.94 Hz.

3. If you power-cycle the VBOB during video output, you must use the `dmconf` command to restart video output through the DM5.

Troubleshooting the DMediaPro DM5 System

If all cables are connected properly, and all devices powered up, entering the command **gfxinfo** on the workstation's command line produces the following message:

```
DM5 connected to port 0
```

Where port 0 on the Dual Channel Display graphics board interface is connected as shown in this guide.

Video Output

If the video device connected to your DMediaPro DM5 is not displaying anything, check the following:

- Is the VBOB powered on?
- Are all of the required cables connected and terminations attached as required?
- Is the video device plugged in and powered on?

Your video output device shows color bars if any of the DMediaPro DM5 cables are not connected correctly.

Make sure the VBOB is powered on before you start the workstation-to-DM5 interface. If it was not, you must reset the graphics interface on your workstation by entering **stopgfx** and then restarting the system using the **startgfx** command.

Video Quality

If the video output quality appears substandard, do the following:

- Eliminate local electromagnetic interference such as from motors, fluorescent lights, and so on.
- Check the cable lengths. Always use approved SGI 2-meter DVI cables.
- Confirm that your video output device is capable of supporting the format standards you are outputting from the VBOB.
- Confirm that the appropriate external genlock cables and terminators are installed.