AUTODESK®
EFFECTS and EDITING
2007

SGI® ONYX® 350 and ONYX 3200 WORKSTATIONS

Hardware Setup Guide

Autodesk®

Autodesk® Inferno® 2007, Autodesk® Fire® 2007, Autodesk® Flame® 2007, Autodesk® Flint® 2007, Autodesk® Smoke® 2007, Autodesk® Backdraft® Conform 2007

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Summary

About This Guide

This guide describes how to set up the SGI® Onyx® 350 and SGI Onyx 3200 workstations for your Autodesk® Effects or Editing 2007 application.

To install and configure the hardware and software components of your Effects or Editing products, use this guide in conjunction with the *Software Installation Guide for IRIX Workstations*, the *Configuration File Reference Guide for IRIX Workstations*, the *Autodesk Stone Direct Configuration Guide*, and the *Autodesk Stone and Wire Filesystem and Networking Guide*.

NOTE: In most cases, both hardware setup and application installation is done on delivery by an authorized technician, so you may not need to perform some of the procedures in these guides.

The latest versions of all guides are available in PDF format from the Web at *www.autodesk.com/discreet-documentation*. Use XPDF or Adobe® Acrobat® Reader™ to view and print these files.

Related Documentation

The following tables list the documentation associated with the current release. For details on each of these documents, as well as for help obtaining them, refer to your application's release notes.

User and Reference Guides	Description
User's Guide	Detailed instructions on using the software
What's New	A complete list of the new features for this release
Online Help	All of the information in the User's Guide along with powerful search functionality
Hot Keys Reference Guide	A complete list of hot keys for commonly used functions
Hot Keys Card	A list of the most frequently used hot keys
Release Notes	A complete list of documentation and information on late-breaking features
Fixed and Known Bug List	A complete list of fixed and known bugs for this release

Installation and Configuration Guides	Description
Hardware Setup Guide (for your workstation)	Information on how to set up your workstation's video I/O components and other peripherals
Installation and Configuration Guide (for your operating system)	Information on how to install and configure the Linux® or IRIX® operating system on your workstation should you require to do so
*Stone and Wire Filesystem and Networking Guide (*for this release)	Procedures for configuring your Autodesk Stone® filesystem, Wire® networking, and Wiretap™ services
*Stone Direct Configuration Guide (*for this release)	Detailed connectivity diagrams and configuration procedures for your Stone storage arrays
Software Installation Guide (for Linux or IRIX workstations)	Information about installing and licensing your Autodesk Editing or Effects software and installing and configuring Autodesk Cleaner® XL
Configuration File Reference Guide (for Linux or IRIX workstations)	Information on how to modify the initialization and project configuration files associated with your Autodesk application

Other Product Reference Guides	Description
Autodesk Cleaner XL User's Guide	Information on how to use Cleaner XL
Autodesk Cleaner XL Troubleshooting Guide	Troubleshooting information for Cleaner XL
Autodesk Burn Installation and User's Guide	Information on how to install, set up, and use Autodesk Burn™

Other Product Reference Guides	Description
Autodesk Backburner Installation and User's Guide	Information on how to install, set up, and use Autodesk Backburner™
Autodesk Wiretap Web Installation and User's Guide	Information on how to install, set up, and use Autodesk Wiretap™ Web

Consult the Autodesk Web site at *www.autodesk.com/discreet-documentation* for the latest version of all documents.

Workflow for Hardware Setup and Application Installation

The following procedure provides the general workflow for installing an Effects or Editing product on an SGI Onyx 350 or SGI Onyx 3200 workstation.

To install an Effects or Editing application on an Onyx 350 or Onyx 3200 workstation:

1. Review the guidelines for working with hardware components. See "Hardware Configuration Guidelines" on page 3.
2. Connect the mouse, keyboard, and monitor to your workstation, and connect all other peripherals (Wacom® tablet, ADAT converter, VTR, and so on) either directly to the workstation or to a terminal server connected to the workstation. Also connect your workstation to Autodesk Stone® Direct storage. See Chapter 2, "Connecting Peripherals," on page 7.
3. Connect a VTR and a broadcast monitor to your workstation. See Chapter 3, "Setting Up Video Hardware," on page 15.
4. Set up the audio hardware. See Chapter 4, "Setting Up Audio Hardware," on page 37.
5. If your configuration includes a JLCooper MCS-3800™ or Yamaha® O2R audio console, set up that audio console. See Chapter 5, "Setting Up External Audio Consoles," on page 45.
6. Perform the procedures in the *Software Installation Guide for IRIX Workstations* to install and license your Effects or Editing application, and to install Cleaner XL (if required).

Hardware Configuration Guidelines

In most cases, hardware integration and application installation is done on delivery by an authorized technician, and some of the procedures in this guide may not be necessary. Still, it is a good idea to read through all chapters to familiarize yourself with the configuration procedures for the following reasons:

- Many suspected problems with your system may be due to loosened connections or improperly configured devices. This guide helps you troubleshoot problems by providing information about properly configured systems.
- If you need to call Customer Support, familiarity with this guide puts you in a better position to provide diagnostic information.
- If you want to move your system at any time, or upgrade certain hardware components, information in this guide is crucial.

Although this guide, in conjunction with the *Autodesk Stone Direct 2007 Configuration Guide*, provides complete information regarding configuring hardware components, hardware configuration should only be performed by an experienced hardware integrator familiar with the IRIX operating system, Onyx 350 and Onyx 3200 workstations, and peripherals associated with professional high-performance video and post production of film.

Your Autodesk system consists of high-performance hardware that must be configured in an environment suited to its operational needs. Other considerations include minimizing the risk of damage due to static discharge and ensuring all components are properly grounded.

Memory Requirements

The amount of memory required for your Effects or Editing system depends on the resolution of your projects, the type of work you perform and, in some cases, the platform on which you are running the application. Refer to the *Software Installation Guide* for your operating system to determine the memory requirements for your Effects or Editing application.

Ensuring Proper Environmental Conditions

You should consider the following environmental guidelines for all hardware configurations:

- Make sure the rack in which hardware components are installed is open or ventilated. Follow the ventilation specifications that apply to your system.
- Place all components in an air-conditioned environment. All hardware components generate heat and must be kept cool. Follow the air-conditioning specifications that apply to your system.
- Keep all hardware components in a clean, dust-free location.
- Minimize vibration and humidity.
- Do not block the vents on the component housing.
- Do not drape anything, such as a jacket or a blanket, over hardware components.
- Make sure the power requirements of the system are met by your electrical installation.
- Minimize electromagnetic noise by separating digital data and power cables from analog audio cables and running them in different cable ducts.

Avoiding Damage from Static Electricity

When installing any hardware equipment, take the following precautions to prevent damage to sensitive components from static discharge:

- Make sure power is turned off on the component you are working on. It is a good idea to unplug components until all other connections are configured.
- Always wear a grounded static wrist strap. Attach the strap's alligator clip to any grounded metal surface on the component's chassis that you are working on. Place the wristband around your wrist.
- Do not handle any components unnecessarily, particularly boards and cards that slide in and out of slots on their parent hardware components.

Grounding Audio Hardware Components

It is important to properly ground your audio components. Otherwise, you may have ground loops, or humming in the system. To ensure audio components are properly grounded, use the XLR-3 cables shipped with your system. Using any other cables may cause humming in the system.

Receiving Your Shipment

When you receive your shipment, check all the boxes for dents or other markings that may indicate damage during transport. If you suspect a component is damaged, carefully inspect it before setting up the system. If you receive a damaged component, call Customer Support.

Use the enclosed packing checklist to ensure you received all parts.

Notation Conventions

A number of style conventions are used throughout this guide. These conventions and examples of their use are shown as follows.

Convention	Example
Text that you enter in a command line or shell appears in Courier bold. You must press the **ENTER** key after each command.	**`hinv -v`**
Variable names appear in Courier, enclosed in angle brackets. No spaces are allowed in variable names.	`<variable_name>`
Variables that appear enclosed in square brackets are optional.	`[<filename>]`
Feedback from the command line or shell appears in Courier.	`limit coredumpsize`
Directory names, filenames, URLs, and command line utilities appear in italics.	*`/usr/discreet`*

Contacting Customer Support

You can contact Autodesk Media and Entertainment Customer Support at *www.autodesk.com/support* or in one of the following ways.

Location:	Contact Information:
Within the Americas:	Hotline (North America): 1-800-925-6442 Direct dial: 415-507-5256 (Country code = 1) 8 AM to 8 PM EST Monday to Friday, excluding holidays *me.support@autodesk.com*
Within Europe, Middle-East and Africa:	Hotline (from London, UK): +44-207-851-8080 9 AM to 5:30 PM (local time) Monday to Friday, excluding holidays *me.emea.support@autodesk.com*
Within Asia Pacific: (Excluding India, China, Australia, New Zealand and Japan)	Hotline (from Singapore): +65-6555-0399 9 AM to 6 PM (local time) Monday to Friday, excluding holidays *me.support.singapore@autodesk.com*
Within India:	Hotline (from Mumbai): +91-22-6695-2244 9:30 AM to 6:30 PM (local time) Monday to Friday, excluding holidays *me.support.india@autodesk.com*
Within Japan:	Hotline (from Tokyo): 0120-107-290 Direct dial: +81-3-6221-1810 10 AM to 6 PM (local time) Monday to Friday, excluding holidays *me-sys-support@autodesk.jp*
Within China:	Direct dial: +86-10-6505-6848 9 AM to 6 PM (local time) Monday to Friday, excluding holidays *me.support.china@autodesk.com*
Within Australia and New Zealand:	Hotline (from Melbourne): +1-300-36-8355 Direct dial: +61-3-9876-8355 8 AM to 6 PM AEST Monday to Friday, excluding holidays *me.support.anz@autodesk.com*

Customer support is also available through your Autodesk reseller. To find a reseller near you, consult the reseller look-up database on the Autodesk web site at *www.autodesk.com/resellers*.

2 Connecting Peripherals

Summary

Setting Up the Keyboard, Mouse, and Monitor

The keyboard, mouse, and monitor connect to ports directly on the back of the SGI. Refer to the hardware configuration documentation provided by SGI for information on connecting these devices.

The Onyx 350 uses standard PS/2-style mouse and keyboard input devices. If you are installing the system in a machine room environment, you can use any number of PS/2 mouse/keyboard extender products to increase the distance between the system and these input devices.

The Onyx 3200 uses SGI-specific USB mouse and keyboard input devices. A USB extender is provided with the system. You can increase the length of the CAT-5 cable used to link the two sections of the USB extender up to 100 metres to place these input devices further away from the Onyx 3200.

Setting the Monitor Refresh Rate and Resolution

When you install IRIX and power up your SGI for the first time, the default graphics display is set to 1280 x 1024. Use the *setmon* command to set a new default resolution that takes advantage of your monitor's wide screen. In this section, review the refresh rates and resolutions supported by the 24-inch CRT monitor or the 23-inch LCD monitor and learn how to use them with the application.

NOTE: If your system is configured with a 21-inch monitor, work at the system default monitor resolution of 1280 x 1024.

Effects and Editing 2007 applications on the Onyx 350 and Onyx 3200 support the following refresh rates for widescreen 23-inch LCD and 24-inch CRT monitors.

Project	Refresh Rate (LCD Monitor)	Refresh Rate (CRT Monitor)
Film projects	48 Hz	72 Hz
Free-running PAL, NTSC, and DTV projects	50 Hz and 60 Hz	50 Hz and 60 Hz
Genlocked PAL, NTSC, and DTV projects	50 Hz and 59.94 Hz	50 Hz and 59.94 Hz
24p/psf and 23.976 p/psf projects	48 Hz and 47.98	48 Hz and 47.98

Effects and Editing 2007 applications on the Onyx 350 and Onyx 3200 support the following screen resolutions.

Resolution:	Recommended for use with:
1920 x 1200	SD and HD projects
2048 x 1120	2K film projects with entire frame width displayed

NOTE: The broadcast monitor cannot display a 2048 x 1120 resolution.

When you launch your Effects or Editing 2007 application, the monitor automatically switches to the refresh rate specified by the Hires keyword in the project configuration file. Refer to the *Configuration File Reference Guide for IRIX Workstations* for an explanation of the Hires keyword.

Monitor resolution, however, is not affected by application initialisation:

- To run the application at a resolution other than your system's default resolution, use the *setmon* command to set the monitor resolution and refresh rate and then restart graphics.
- To restore the previous monitor resolution after your application session, use the *setmon* command again and then restart graphics.

The following procedure provides more information on using the *setmon* command.

HINT: By setting your default resolution to the resolution that you want to work with in the application, you should only have to set the monitor's resolution once.

To use the *setmon* command to change the monitor resolution and refresh rate:

1. Log in as root.
2. In a UNIX shell, type:

   `/usr/gfx/setmon -x` `<display format>`

   where `<display format>` is one of the following:

   - **`1920x1200_60`**
   - **`2048x1120_60`**

3. Restart graphics by pressing **CTRL+SHIFT+F12+NUM/**

   Graphics now run at the specified resolution and a refresh rate of 60 Hz. When you start the application, the refresh rate switches to the rate defined by the Hires keyword in the project configuration file.

   NOTE: Playback of some video or graphic objects may show tearing and/or ghosting on an LCD monitor. This is a limitation of LCD technology and does not indicate a problem with the monitor.

MultiSample Rendering Support with Widescreen Monitors

The MultiSample rendering option with a 23-inch or 24-inch widescreen monitor is only supported provided you have the proper raster manager board configuration to work with your graphics hardware.

Graphics	Raster Manager Board Requirements
IR2	2 x RM9 raster manager boards
IR3	2 x RM10 raster manager boards
IR4	1 x RM11 raster manager board

If you have a single raster manager board, the MultiSample button is disabled throughout the software because two boards are required for the MultiSample rendering option. Furthermore, rendering with multiple samples (motion blur or anti-aliasing) is slower. To verify the number and type of raster manager boards in your Onyx 350 or Onyx 3200 configuration, type **`/usr/gfx/gfxinfo`** in a UNIX shell.

Setting Up the Tablet and Security Dongle

Connect the tablet to a serial port on either the workstation or a SCSI terminal server. Use the TabletDriver keyword of the software initialisation configuration file to specify the driver for the tablet. Refer to the *Configuration File Reference Guide for IRIX Workstations* for help understanding the TabletDriver keyword.

Effects and Editing 2007 applications do not require a security dongle. If you are upgrading from a previous version that used a security dongle, you can either remove the dongle or leave it attached to the workstation. The presence or absence of the dongle has no effect on the functioning of your Effects or Editing 2007 application. If you leave the dongle connected, and you connect the tablet and dongle to the same serial port, you must specify the *dlwacom* tablet driver provided by Autodesk in the TabletDriver keyword.

Setting Up Storage

Refer to the *Autodesk Stone Direct 2007 Configuration Guide* for information on connecting Stone Direct disk arrays to your SGI workstation. You can find this PDF file in the Documentation Library on the Autodesk Web site, *www.autodesk.com/discreet-documentation*.

Setting Up Peripherals

Many peripherals, including VTRs, tablet, and dongle, are connected to serial ports.

Because the Onyx 3200 does not have enough serial ports for the peripherals that you need to connect, use the SCSI Terminal Server (STS) to provide up to eight additional serial ports.

If you have an Onyx 350, there are enough serial ports for the recommended configuration. However, if you have a SCSI Terminal Server (STS), you can configure it and use its serial ports to connect additional devices. This section provides information on connecting devices to the SGI and to an STS.

About Serial Ports

If your system is fully configured and operational, you can determine the number of serial ports at any time by listing the contents of all *ttyd* files in the */dev* directory.

To determine the number of serial ports on the SGI:

1. Open a UNIX shell.
2. Type:

   ```
   ls -l /dev/ttyd*
   ```

   All available serial ports are listed.

Serial ports on the Onyx 3200 and Onyx 350 support the RS422 and RS232 interfaces. STS serial ports support only the RS232 interface. Unless you use an RS422-to-RS232 converter, you

cannot connect RS422 devices to serial ports on the STS. The following devices can be connected to these serial ports.

Peripheral Device	Connects Directly to Serial Port	Connects to STS Port
VTR	Yes	No
HSDL device	Yes	No
VTR Emulation device (Autodesk Fire® only)	Yes	No
ADAT converter	Yes	No
Tablet	Yes	Yes
Colourimeter	Yes	Yes
JLCooper MCS-3800	Yes (with the RS422 option)	Yes (with the RS232 option)
Yamaha O2R	Yes	No

NOTE: The ADAT converter is used with Discreet Native Audio. A serial port connection is necessary only in cases where you want use the application to control the ADAT converter. See "Audio Hardware Components" on page 38.

Connecting Peripherals to Serial Ports on the SGI

Connect any of the devices listed in the previous section to the serial ports on the SGI. Serial port 1 can be assigned to the console or to another device during installation when you edit the software initialisation configuration file. If you connect any device to serial port 1, the console must be disabled in the */etc/inittab* file. During application installation you are prompted to make port 1 available for the application; if you select Yes, the console is disabled in the */etc/inittab* file. If you need to disable the console after application installation, you can do so manually by editing the */etc/inittab* file.

To disable the console manually:

1. Log in as root.
2. Open the */etc/inittab* file in a text editor. In a UNIX shell, type:

   ```
   nedit /etc/inittab
   ```

3. Search for lines that begin with `t1:23`.

   The search should bring you to a line that looks like this:

   ```
   t1:23:respawn:/sbin/suattr[...]
   ```

4. If this line says "respawn", change it to:

   ```
   t1:23:off:/sbin/suattr[...]
   ```

5. Save and close the file.

6. Enable the modification. Type:

```
telinit q
```

Connecting Peripherals to Serial Ports on a SCSI Terminal Server

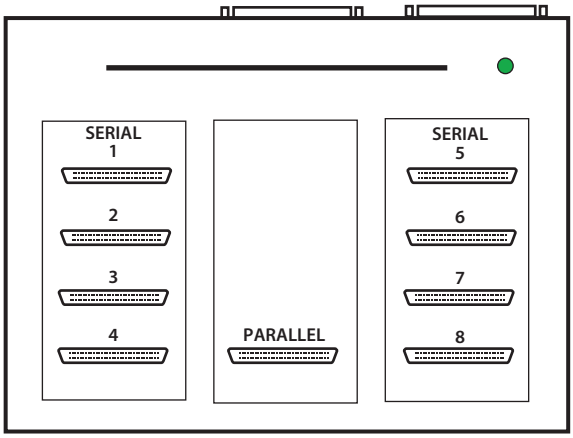
Instead of using serial ports on the SGI workstation, you can use a SCSI terminal server (STS).

NOTE: The diagrams and instructions in this section apply to the eight-port ST1008 STS that uses DB25-to-DB9 connections. If you have the four-port ST1400, this device uses RJ45-to-DB9 connections.

About the SCSI Terminal Server

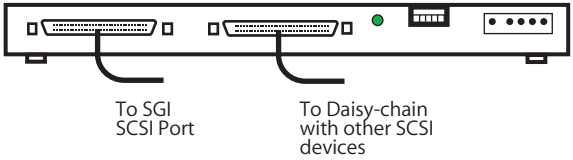
The top of the STS has up to eight DB25 serial ports labelled 1 through 8. However, the SGI identifies these serial ports as ports 0 through 7, respectively. The SGI serial port IDs are the numbers you use when indicating serial port IDs in configuration file keywords.

SCSI Terminal Server (Top View)



The rear panel of the STS has two SCSI ports.

SCSI Terminal Server (Back View)



Connecting the STS to the SGI

First, install the STS drivers. Next, connect the STS to the SCSI port on the SGI. Finally, connect peripheral devices to the SCSI and serial ports on the STS.

To install the STS drivers:

Refer to the documentation provided with the STS. A CD packaged with the STS provides the required software driver, so you must connect a CD-ROM drive to the SGI and mount it. For help mounting a CD-ROM drive, refer to the *Software Installation Guide for IRIX Workstations*.

To connect the STS to the SGI:

1. Select a SCSI ID on the back of the STS, making sure it does not conflict with the SCSI ID of any other daisy-chained device.
2. Use one of the wide-to-narrow SCSI cables to connect the STS to the SCSI port on the back of the SGI.
3. If you have other external devices, such as a CD-ROM drive, you can daisy-chain them on the STS using the second SCSI connector. A second wide-to-narrow SCSI cable is provided for this purpose.

   NOTE: Use short SCSI cables when daisy-chaining devices to avoid SCSI errors.

4. To connect the tablet (DB9) and dongle (DB9) to an STS serial port (DB25), use DB9 male-to-DB25 male adapters.

   NOTE: If you are configuring the ST1400, use DB9-to-RJ45 cables.

5. Connect any other devices to the STS with the appropriate cables and adapters.

Setting Configuration File Keywords for Serial Port Connections

When you connect devices to a serial port on the SGI, configuration file keywords that are associated with these devices point to the serial port with a `ttyd*` string. For example, if you connect a JLCooper MCS-3800 audio console to serial port 2, you must specify port `/dev/ttyd2` in the MidiDevice configuration file keyword:

```
MidiDevice myMidiDevice, midi_JLC_MCS3800,/dev/ttyd2,
direct_RS422, 38400, ODD
```

If a device is connected to a serial port on an STS, the string that identifies the serial port is different. First, use the string `ttyd0`. Next, append the SCSI ID of the STS. Finally, append the number of the serial port on the STS.

To determine the serial port number, remember that the STS ports labelled 1 through 8 are identified by the SGI as ports 0 through 7, respectively. For example, a JLCooper MCS-3800 audio console connected to an STS with SCSI ID 4 on STS serial port 3 (identified as port 2 by the SGI) requires the port `/dev/ttyd042` be specified in MidiDevice configuration file keyword:

```
MidiDevice myMidiDevice, midi_JLC_MCS3800,/dev/ttyd042,
direct_RS422, 38400, ODD
```

The software initialisation configuration file must be updated to ensure that keywords associated with hardware components are pointing to the proper serial port. Refer to the *Configuration File Reference Guide for IRIX Workstations* for an explanation of each keyword.

To configure a:	**Use the keyword:**
Tablet	TabletDriver
JLCooper Console	MidiDevice
Yamaha O2R	MidiDevice
ADAT Converter	MidiDevice
VTR	Vtr
HSDL device	Vtr
VTR emulation devices (Fire only)	Emulator
Colourimeter	MoncalDevice

3 Setting Up Video Hardware

Summary

Configuring Video Hardware

In this chapter, review the video hardware components that correspond to your configuration and then follow the wiring instructions to connect the components. Wiring diagrams are provided for each configuration. Once you have connected the hardware, perform the procedures in this chapter to ensure the video board and its drivers are properly installed.

Configuring video hardware involves setting up video I/O and graphics-to-video paths:

- Video I/O enables the input and output of video using a VTR. The DMediaPro™ DM3 board is the vital hardware component in this process.
- Graphics-to-video enables output from the graphics display to be converted to a video signal and displayed using a broadcast monitor. Configuring a graphics-to-video path enables the preview of clips as they appear when delivered via broadcast.

Graphics-to-video is enabled via an explicit hardware link that uses either the DG5-2-GVO (SD) (Onyx 3200 only) or DG5-2-TVO (SD and HD) display generator board. Configuring the graphics-to-video path entails connecting the workstation, a broadcast monitor, sync

generator, and VTR to a video breakout box (VBOB) that serves as a hub for signal input, output, and conversion.

NOTE: You can also use the video I/O path to support High Speed Data Link (HSDL) and VTR emulation features (Fire only) on certain platforms. You can use these features to collaborate with other workstations on the network, and improve the efficiency of your facility's workflow. Basic knowledge of UNIX and computer hardware in a professional video/film production environment is assumed throughout this chapter.

Onyx 350 and Onyx 3200 —Video Hardware Components

Both the Onyx 350 and the Onyx 3200 include the DMediaPro DM3 video board. The Onyx 350 also includes the DG5-2-TVO (for SD and HD monitoring) board. The Onyx 3200 includes either the DG5-2-TVO or the DG5-2-GVO. This section describes these boards and the video breakout box (VBOB) that is used in conjunction with them. Components that apply to only the Onyx 350 or the Onyx 3200 are specified.

DG5-2-GVO (Onyx 3200) — Display generator board that is located in the right-most slot of the G-brick on the Onyx 3200 in certain configurations. This board supports SD (601) monitoring and genlocking. The DG5-2-GVO board supports SMPTE-259M SDI in single link and dual link configurations. It also supports analog RGB monitoring for HD resolutions using the second analog RGB output channel.

DG5-2-TVO — Display generator board located in the right-most slot of the G-brick on the Onyx 350 (all configurations) and Onyx 3200 (in certain configurations). This board supports SD and HD monitoring. The DG5-2-TVO board supports SMPTE-259M SDI and SMPTE-292M HD SDI, in single link and dual link configurations. The term *HDGVO* is used when referring to the DG5-2-TVO and the VBOB at the same time.

DMediaPro DM3 — Video board located in one of the XIO slots of the X-brick on the Onyx 3200 and in the upper-middle of the Expansion Compute module on the Onyx 350. This board supports both SD and HD video formats. A VBOB must be connected and the DMediaPro DM3 drivers and subsystems must be installed for the DM3 to function properly. Refer to your *SGI DMediaPro DM2/DM3 Board Owner's Guide*.

Video Breakout Box (VBOB) — A box that converts between serial digital video signals and the LVDS format used by the DMediaPro DM3, as well as the DVI/TMDS format used by the DG5-2-TVO.

Visit *techpubs.sgi.com* for further technical and installation information on the DG5-2-GVO and DG5-2-TVO display generator boards, the DMediaPro DM3 video board, and the VBOB.

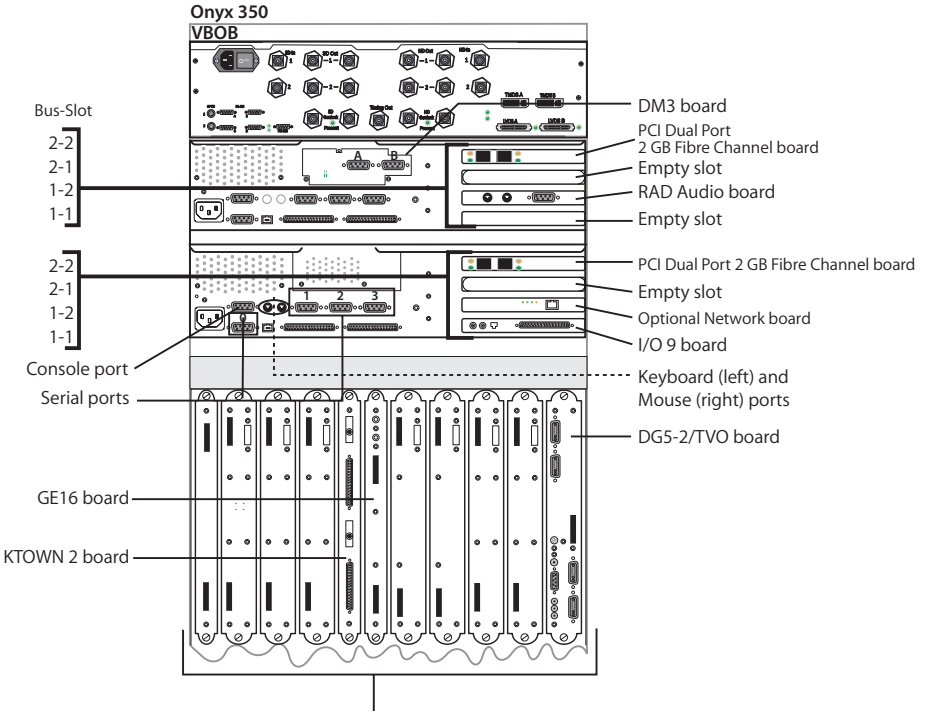
RS-422 Cable — A cable that allows an Onyx to control a VTR through a serial port. For Fire, you create this cable yourself using the pinouts shown in the diagram "Standard VTR Control Cable" in "VTR and HSDL Emulation RS-422 Control Cables" on page 31. For Autodesk Inferno®, you create this cable yourself using the following custom pinouts.

RS-422	RS-422 (VTR)
2 RxD-	2 TxD-
3 TxD-	8 RxD-
4 TxD+	3 RxD+
6 RxD+	7 TxD+
5 GND	1 GND 4 GND 6 TxC 9 RxC

Onyx 350 Slot Configuration

The following illustration shows the supported Onyx 350 slot configuration with bus and slot numbers. Boards which are optional are labelled as such. The order of the boards ensures a balanced load on each bus. Only Onyx 350 configurations that comply with the illustrated guidelines are supported.

Onyx 350

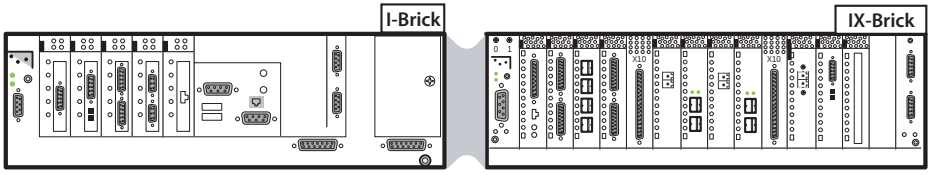


Onyx 3200— I-Brick or IX-Brick

If you are running the application on an Onyx 3200, your workstation has either an I-brick or an IX-brick. Most of the information in this chapter is the same for either type of brick, although certain differences are noted. The main difference between the I- and IX-bricks is that the IX-brick contains more PCI slots than the I-brick.

The increased number of PCI slots on the IX-brick means that a greater number of optional boards is supported. The IX-brick contains six PCI-X buses with two slots per bus for a total of 12 PCI slots. The I-brick contains 2 PCI buses and a total of 5 PCI slots. The contents of these slots will vary depending on the specific needs of your organization.

I-Brick and IX-Brick Comparison



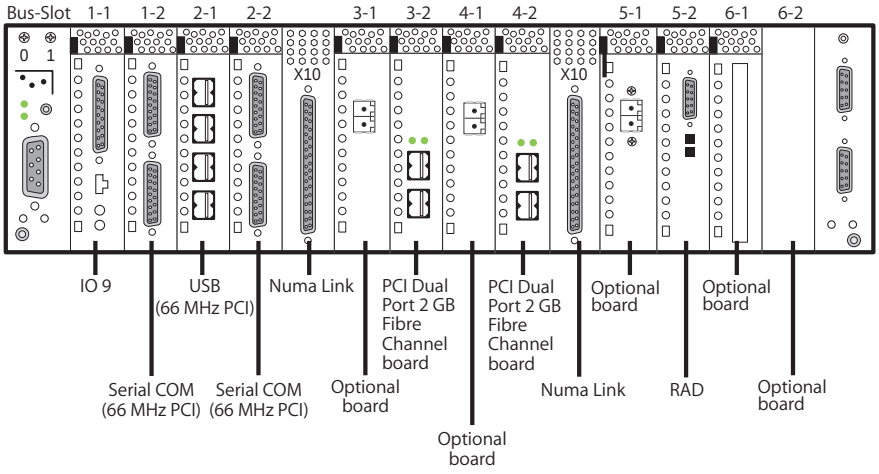
Balancing the Load for the IX-Brick

When determining the contents of the slots that you can fill with optional boards on the IX-brick, ensure that you maintain a balanced load on each bus. All the boards on a given bus must have the same rate of data transmission. If the rates differ between boards, all boards will operate at the slowest rate of transmission. For example, if you have two boards on a bus and one board has a transmission rate of 33 MHz and another has a rate of 133 MHz, both boards will operate at 33 MHz.

NOTE: Configurations that differ from the recommended slot assignments may lead to performance problems. Only the recommended configurations are supported.

The following illustration shows the order of the IX-brick slots and buses.

IX-Brick Slot and Bus Configuration



Onyx 350—Wiring for SD and HD

Configure video hardware on the Onyx 350 using the DG5-2-TVO (HDGVO option). The HDGVO graphics-to-video option provides real-time SD and HD graphics-to-video output to a broadcast monitor. Any video-sized region displayed on the graphics monitor is simultaneously displayed on the SD or HD broadcast monitor, depending on the current setting.

When you create projects on an Onyx 350, you must do the following.

• Select project templates that use keywords defined for this configuration.

• Ensure that the correct VideoPreviewDevice tokens are uncommented in the *init.cfg* file.

For help understanding project templates, keywords, and the *init.cfg* file, refer to the *Configuration File Reference Guide for IRIX Workstations*.

Follow these instructions in conjunction with the wiring diagram on page 22 to connect your VBOB, sync generator, broadcast monitor, and VTR to your Onyx 350 for SD or HD work.

To configure the Onyx 350 with the HDGVO option:

1. First power down and unplug the Onyx 350. Then power down and unplug the Video Breakout Box (VBOB) and other peripheral devices.
2. On the Onyx 350, connect LVDS A and B on the DM3 to LVDS A and B on the VBOB using LVDS cables. The LVDS cables are provided with the DM3 board.
3. Connect the Genlock IN on the DG5-2-TVO board on the Onyx 350 to Timing OUT on the VBOB using a BNC cable.
4. Connect a 75 BNC terminator to the Genlock Loop Through connector on the DG5-2-TVO.
5. Connect TMDS A and B on the DG5-2-TVO board on the Onyx 350 to TMDS A and B on the VBOB using TMDS cables. The TMDS cables are provided with the HDGVO hardware.
6. Connect an SD OUT 1 on the VBOB to the IN 1 port on your SD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.
7. To enable an SD 4:4:4 signal transfer or HSDL I/O, also connect an SD OUT 2 on the VBOB to the IN 2 port on your SD 4:4:4-capable recorder using a BNC cable.
8. Connect the SD IN 1 on the VBOB to the OUT 1 port on your SD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.
9. To enable an SD 4:4:4 signal transfer or HSDL I/O, connect the SD IN 2 on the VBOB to the OUT 2 port on your SD 4:4:4-capable player using a BNC cable.

10. Connect an HD OUT 1 on the VBOB to the IN 1 port on your HD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.

11. To enable an HD 4:4:4 signal transfer or HSDL I/O, connect an HD OUT 2 on the VBOB to the IN 2 port on your HD 4:4:4-capable recorder using a BNC cable.

12. Connect the HD IN 1 on the VBOB to the OUT 1 port on your HD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.

13. To enable an HD 4:4:4 signal transfer or HSDL I/O, connect the HD IN 2 on the VBOB to the OUT 2 port on your HD 4:4:4-capable player using a BNC cable.

14. Connect the VTR control serial port on the Onyx 350 to the RS-422 machine control port on either the SD or HD Video Player/Recorder with an RS-422 cable.

15. Your sync connection depends on the format you are working in:

- For NTSC and PAL formats, connect the left SD Genlock on the VBOB to the NTSC/PAL Sync Genlock OUT on your NTSC/PAL Sync Generator using a BNC cable. Also, connect a 75 BNC terminator to the right SD Genlock on the VBOB.
- For all HD formats, connect the left HD Genlock to the Sync Genlock OUT on the NTSC/PAL or HD Tri-Level Sync Generator using a BNC cable. Also connect a 75 BNC terminator to the right HD Genlock on the VBOB.

16. Connect the HD OUT 1 on the VBOB to the IN port on your HD monitor using a BNC cable.

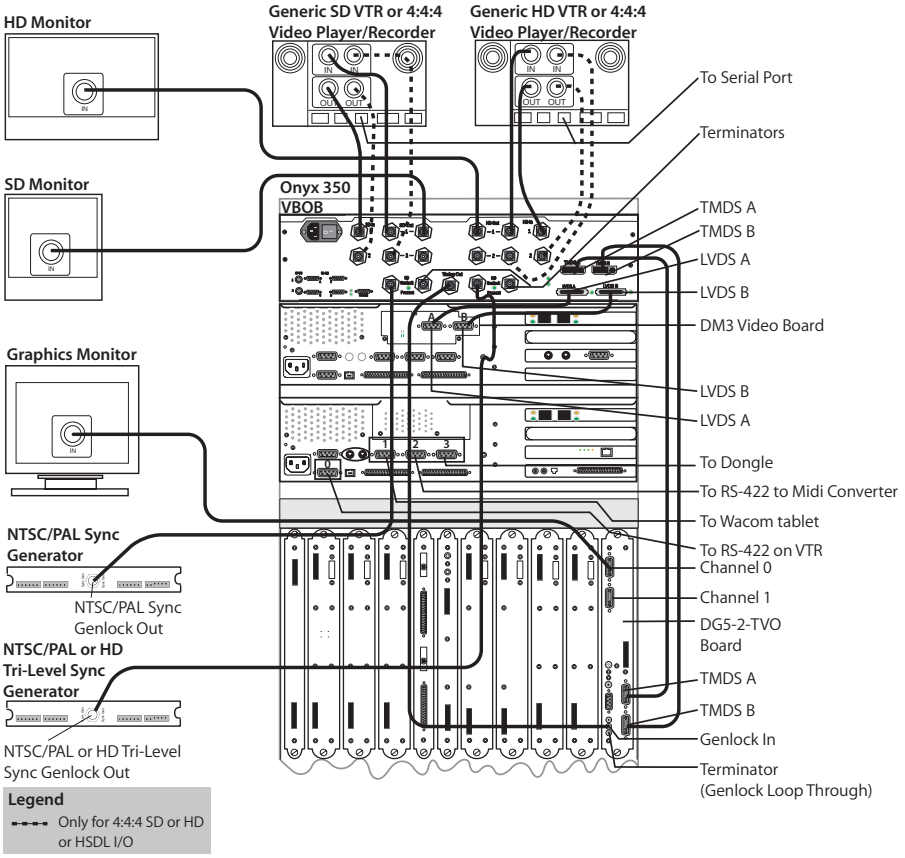
17. Connect the SD OUT 1 on the VBOB to the IN port on your SD monitor using a BNC cable.

18. Connect Channel 0 on the DG5-2-TVO board to your graphics monitor by doing the following:

- Connect one end of a 5BNC to 5BNC cable to the R, G, and B component video outputs from the Onyx workstation.
- Connect the other end of the cable to the R, G, and B component video inputs of a CRT monitor, or to the analog VGA input of a CRT or LCD monitor using a 5BNC to DSub15 VGA adapter.

19. Proceed with "Verifying Video I/O Installation" on page 35.

Onyx 350 with the HDGVO Option



Onyx 3200—Wiring for SD and HD

Whether your Onyx 3200 has an I-brick or an IX-brick, the two available video options are the same. The option that applies to your system depends on whether your Onyx 3200 has the DG5-2-GVO (GVO option) or the DG5-2-TVO (HDGVO option) display generator board. Both the GVO and HDGVO options provide a real-time graphics-to-video path for SD and HD video formats.

Wiring instructions and diagrams are provided here for both options.

Configuring the GVO Option

The GVO option provides real-time SD graphics-to-video output to a broadcast monitor. Any NTSC or PAL image displayed on the graphics monitor is simultaneously displayed on the broadcast monitor.

Follow these instructions in conjunction with the wiring diagram on page 25 to connect your VBOB, sync generator, broadcast monitor, and VTR to your Onyx 3200 for SD work.

To configure the Onyx 3200 with the GVO option:

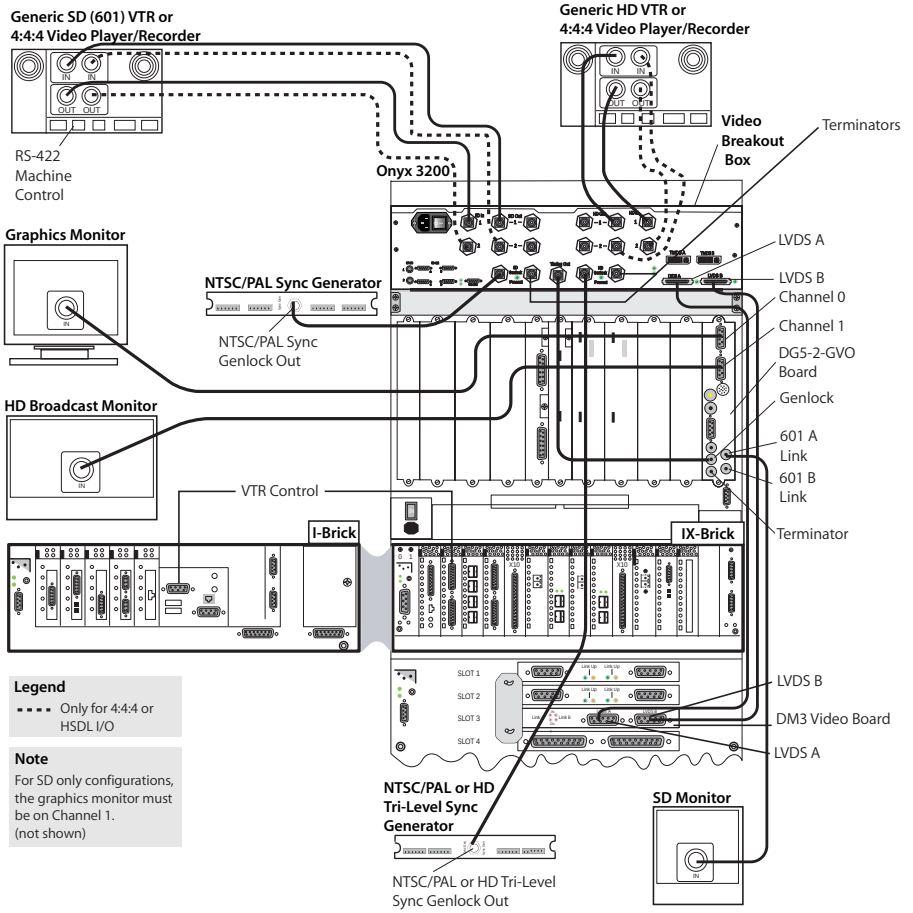
1. First power down and unplug the Onyx 3200. Then power down and unplug the VBOB and other peripheral devices. Finally, unplug the arrays.
2. Connect LVDS A on the DM3 of the Onyx 3200 to LVDS A on the VBOB using an LVDS cable. Connect LVDS B on the DM3 of the Onyx 3200 to the LVDS B on the VBOB using an LVDS cable. The LVDS cables are provided with the DM3 board.
3. Connect the Genlock IN on the DG5-2-GVO board on the Onyx 3200 to Timing OUT on the VBOB using a BNC cable.
4. Connect a 75 BNC terminator to the Genlock Loop Through on the DG5-2-GVO board.
5. Connect an SD OUT 1 on the VBOB to the IN 1 port on your SD (601)VTR using a BNC cable.
6. To enable an SD 4:4:4 signal transfer or HSDL I/O, connect an SD OUT 2 on the VBOB to the IN 2 port on your SD 4:4:4-capable recorder using a BNC cable.
7. Connect the SD IN 1 on the VBOB to the OUT 1 port on your SD (601) VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.
8. To enable an SD 4:4:4 signal transfer or HSDL I/O, connect the SD IN 2 on the VBOB to the OUT 2 port on your SD 4:4:4-capable player using a BNC cable.
9. For HD configurations, connect an HD OUT 1 on the VBOB to the IN 1 port on your HD VTR using a BNC cable.

10. For HD configurations with HD 4:4:4 signal transfer or HSDL I/O enabled, connect an HD OUT 2 on the VBOB to the IN 2 port on your HD 4:4:4-capable recorder using a BNC cable.
11. For HD configurations, connect the HD IN 1 on the VBOB to the OUT 1 port on your HD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.
12. For HD configurations with HD 4:4:4 signal transfer or HSDL I/O enabled, connect the HD IN 2 on the VBOB to the OUT 2 port on your HD 4:4:4-capable player using a BNC cable.
13. Connect the left SD Genlock on the VBOB to the NTSC/PAL Sync Genlock OUT on your NTSC/PAL Sync Generator using a BNC cable.
14. Connect the left HD Genlock on the VBOB to the NTSC/PAL or HD Tri-Level Sync Genlock OUT on your NTSC/PAL or HD Tri-Level Sync Generator using a BNC cable.
15. Connect the 601A link output on the DG5-2-GVO board to the IN port on your SD(601) monitor using a BNC cable.
16. For SD only configurations, connect Channel 1 on the DG5-2-GVO board to the graphics monitor.
17. For HD configurations, connect Channel 0 on the DG5-2-GVO board to the graphics monitor. Ensure that your VideoPreviewDevice keyword in the *init.cfg* file is set to channel 0. Refer to the *Configuration File Reference Guide for IRIX Workstations*.
18. For HD configurations, connect Channel 1 on the DG5-2-GVO board to the HD broadcast monitor. Ensure that your HiresChannel keyword in the *init.cfg* file is set to channel 1. Refer to the *Configuration File Reference Guide for IRIX Workstations*.
19. Connect the VTR control serial port on the Onyx 3200 to the RS-422 machine control port on either the SD or HD Video Player/Recorder with an RS-422 cable.

    NOTE: The location of the VTR control serial port on the Onyx 3200 varies between the Onyx 3200 with the I-brick and the Onyx 3200 with the IX-brick. See page 25.

20. Proceed with "Verifying Video I/O Installation" on page 35.

Onyx 3200 with the GVO Option



Wiring the HDGVO Option

The HDGVO graphics-to-video option provides real-time SD and HD graphics-to-video output to a broadcast monitor. Any video-sized region displayed on the graphics monitor is simultaneously displayed on the SD or HD broadcast monitor, depending on the current setting.

When you create projects on an Onyx 3200 with the HDGVO option, you must do the following.

• Select project templates that use keywords defined for this configuration.

• Ensure that the correct VideoPreviewDevice tokens are uncommented in the *init.cfg* file.

For help understanding project templates, keywords, and the *init.cfg* file, refer to the *Configuration File Reference Guide for IRIX Workstations*.

Follow these instructions in conjunction with the wiring diagram on page 28 to connect your VBOB, sync generator, broadcast monitor, and VTR to your Onyx 3200 for SD or HD work.

To configure the Onyx 3200 with the HDGVO option:

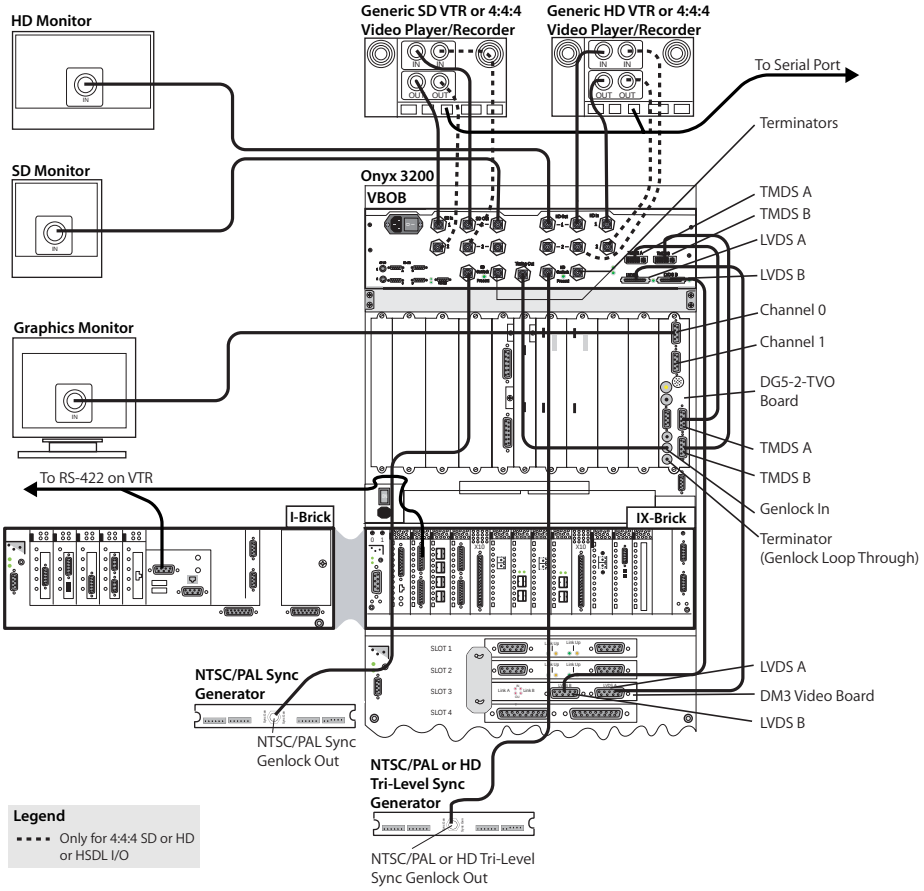
1. First power down and unplug the Onyx 3200. Then power down and unplug the Video Breakout Box (VBOB) and other peripheral devices.
2. On the Onyx 3200, connect LVDS A on the DM3 to LVDS A on the VBOB using an LVDS cable. Connect LVDS B on the DM3 of the Onyx 3200 to LVDS B on the VBOB using an LVDS cable. The LVDS cables are provided with the DM3 board.
3. Connect the Genlock IN on the DG5-2-TVO board on the Onyx 3200 to Timing OUT on the VBOB using a BNC cable.
4. Connect a 75 BNC terminator to the Genlock Loop Through connector on the DG5-2-TVO.
5. Connect TMDS A on the DG5-2-TVO board on the Onyx 3200 to TMDS A on the VBOB using a TMDS cable. Connect TMDS B on the DG5-2-TVO board to TMDS B on the VBOB using a TMDS cable. The TMDS cables are provided with the HDGVO hardware.
6. Connect an SD OUT 1 on the VBOB to the IN 1 port on your SD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.
7. To enable an SD 4:4:4 signal transfer or HSDL I/O, also connect an SD OUT 2 on the VBOB to the IN 2 port on your SD 4:4:4-capable recorder using a BNC cable.
8. Connect the SD IN 1 on the VBOB to the OUT 1 port on your SD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.

9. To enable an HD 4:4:4 signal transfer or HSDL I/O, connect an HD OUT 2 on the VBOB to the IN 2 port on your HD 4:4:4-capable recorder using a BNC cable.
10. Connect the HD IN 1 on the VBOB to the OUT 1 port on your HD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.
11. To enable an HD 4:4:4 signal transfer or HSDL I/O, connect the HD IN 2 on the VBOB to the OUT 2 port on your HD 4:4:4-capable player using a BNC cable.
12. Connect the VTR control serial port on the Onyx 3200 to the RS-422 machine control port on either the SD or HD Video Player/Recorder with an RS-422 cable.

    NOTE: The location of the VTR control serial port on the Onyx 3200 varies between the Onyx 3200 with the I-brick and the Onyx 3200 with the IX-brick. See page 28.

13. Your sync connection depends on the format you are working in:
    - For NTSC and PAL formats, connect the left SD Genlock on the VBOB to the NTSC/PAL Sync Genlock OUT on your NTSC/PAL Sync Generator using a BNC cable. Also, connect a 75 BNC terminator to the right SD Genlock on the VBOB.
    - For all HD formats, connect the left HD Genlock to the Sync Genlock OUT on the NTSC/PAL or HD Tri-Level Sync Generator using a BNC cable. Also connect a 75 BNC terminator to the right HD Genlock on the VBOB.
14. Connect the HD OUT 1 on the VBOB to the IN port on your HD monitor using a BNC cable.
15. To enable an SD 4:4:4 signal transfer or HSDL I/O, connect the SD IN 2 on the VBOB to the OUT 2 port on your SD 4:4:4-capable player using a BNC cable.
16. Connect an HD OUT 1 on the VBOB to the IN 1 port on your HD VTR (or 4:4:4 Video Player/Recorder) using a BNC cable.
17. Connect the SD OUT 1 on the VBOB to the IN port on your SD monitor using a BNC cable.
18. Connect Channel 0 on the DG5-2-TVO board to the IN port on your graphics monitor.
19. Proceed with "Verifying Video I/O Installation" on page 35.

Onyx 3200 with the HDGVO Option



Wiring Your Video Hardware for HSDL

Configure your workstation to use the HSDL (High Speed Data Link) system for video I/O. HSDL is a software-based video I/O system that allows 2K film frames to be sent as an SMTPE-292 HD-SDI signal. Using HSDL allows you to work on 2K frames in the application in collaboration with users on other HSDL-compliant workstations.

HSDL is supported only on Onyx 350 and Onyx 3200 workstations that use the DM3 board.

HSDL devices utilize the existing HD infrastructure in your facility. Use the following procedure to set up your SGI workstation for HSDL I/O.

To set up an SGI workstation for HSDL I/O:

1. Configure the VTR keyword in the software application configuration file (*init.cfg*) for your application to enable HSDL I/O. Refer to the *Configuration File Reference Guide for IRIX Workstations* for help modifying the software configuration file and for help setting the VTR keyword.
2. Connect the workstation to the HSDL device using the wiring diagram for serial dual RGB 4:4:4 video I/O in this chapter.
3. Connect an RS-422 cable between the serial port on the SGI workstation defined in the *init.cfg* file and the HSDL device to allow communication and control between the devices.

Setting Up VTR Emulation (Fire Only)

Configure Fire to emulate a VTR or an HSDL device for both input and output in real time. You control the emulator from the application or device that sees Fire as a VTR.

Supported VTR and HSDL Emulators

The following Sony™ VTR emulators are supported:

- NTSC
- PAL
- 1920x1035@5994i
- 1920x1080@60i
- 1920x1080@5994i
- 1920x1080@50i
- 1920x1080@25p
- 1920x1080@25sf
- 1920x1080@24p
- 1920x1080@24sf
- 1920x1080@2398p
- 1920x1080@2398sf
- 1280x720@60p
- 1280x720@5994p

The following Sony HSDL emulators are also supported:

- 2048x1556@1915sf
- 2048x1556@1913sf
- 2048x1556@15sf
- 2048x1556@1499sf

Hardware Configuration Procedure

The following procedure shows the general workflow required to configure hardware for VTR or HSDL emulation.

To configure hardware for VTR or HSDL emulation:

1. Connect the video I/O cables between the devices involved in the emulation process (out-to-in/in-to-out) using the video wiring diagrams for your workstation in this chapter. Make sure the connections support the video standard you want to work with.

   NOTE: VTR emulation requires a workstation with a video board. The Video keyword for the corresponding device must also be uncommented in the *init.cfg* file.

2. Connect the audio I/O cables between the devices involved in the emulation process (out-to-in/in-to-out) using the audio wiring diagrams for your workstation in Chapter 4, "Setting Up Audio Hardware," on page 37.

3. If the inputs of the Onyx 350 or Onyx 3200 workstation are not connected to the outputs of the other workstation, and you intend to use the emulator workstation as a Player, do the following to ensure the Player is stable and correctly synced:

   - Connect one black or colour bar SDI signal to the video input of the machine serving as the VTR emulator.
   - Connect an external AES signal such as a tone to the audio input of the machine serving as the VTR emulator.

4. Connect an RS-422 control cable to the serial ports between the devices in the emulation process. Make sure the serial ports correspond to those defined by the Emulator keywords in the software initialisation configuration file. Refer to the *Configuration File Reference Guide for IRIX Workstations* for help understanding and setting the Emulator keyword.

   NOTE: The RS-422 cables used for VTR or HSDL emulation require custom pinouts. See "VTR and HSDL Emulation RS-422 Control Cables" on page 31.

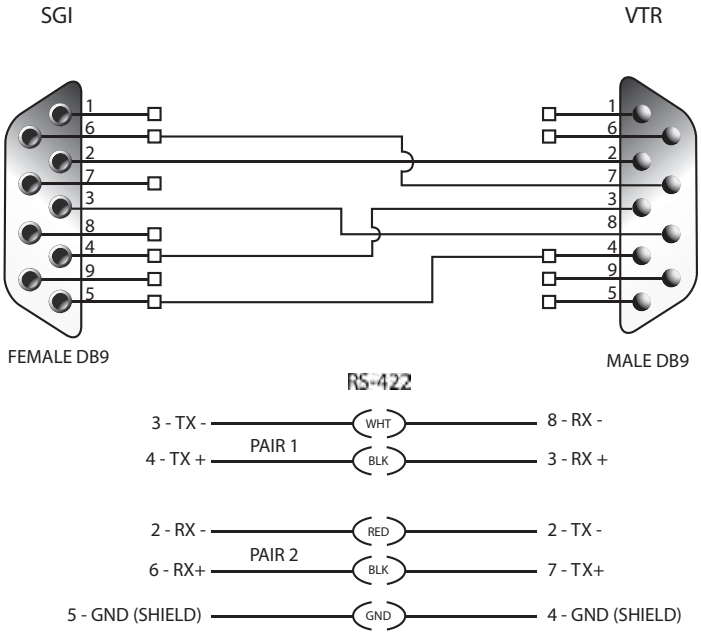
5. Ensure all devices are synced to the appropriate video and audio sync sources.

VTR and HSDL Emulation RS-422 Control Cables

Custom cables are required to control the VTR or HSDL emulator. The pinouts required by the cable depend on the workstations and devices involved in the emulation process. The following diagrams depict the control cable pinouts for the standard VTR control cables (for reference purposes) followed by those required for the most common VTR emulation setups.

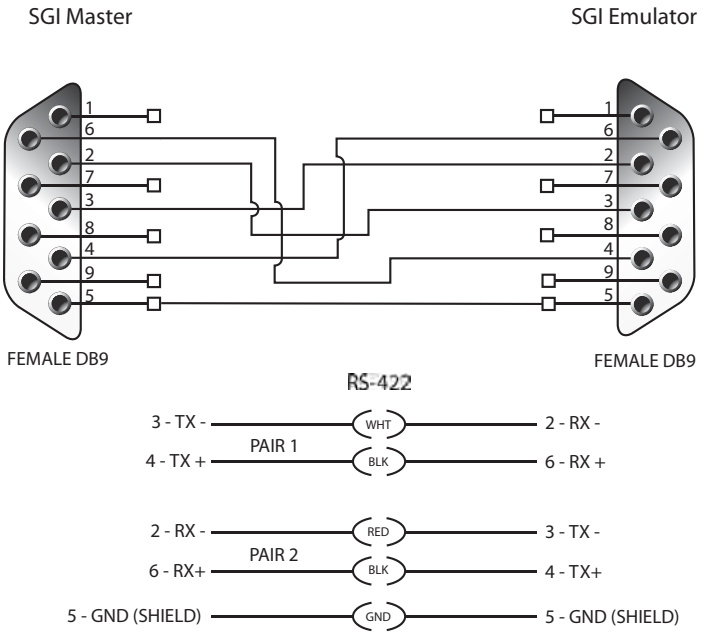
Standard VTR Control Cable:

SGI Controlling VTR (Normal Video I/O Control Cable



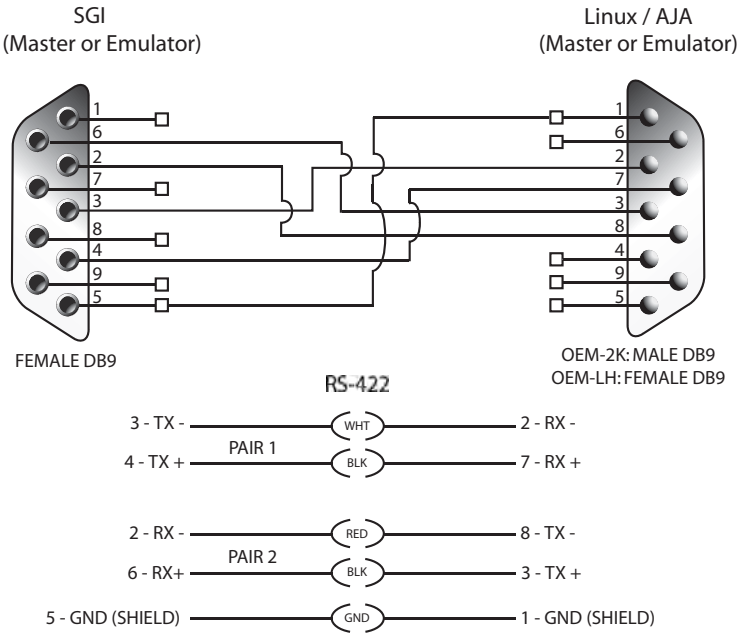
VTR-Emulation Control Cable:

SGI Master Controlling SGI Emulator



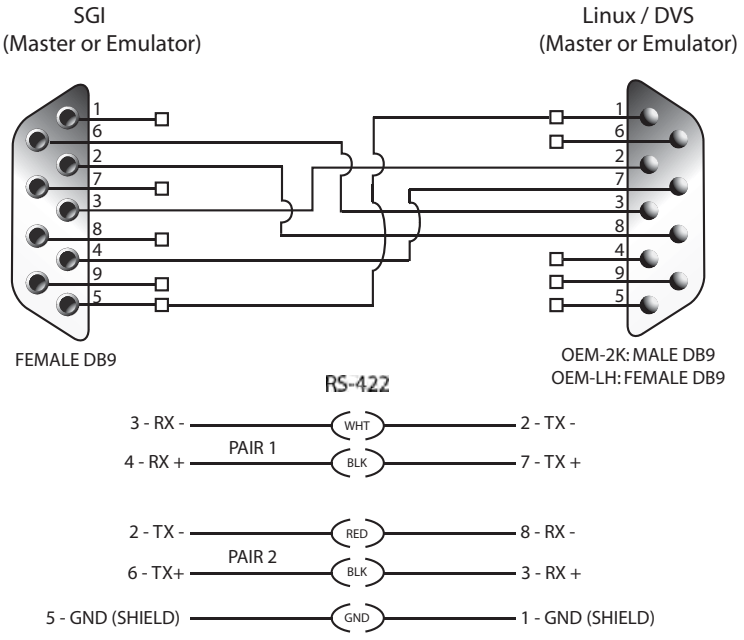
VTR-Emulation Control Cable:

SGI Master Controlling Emulator on Linux with AJA device
Linux/AJA Master Controlling SGI Emulator

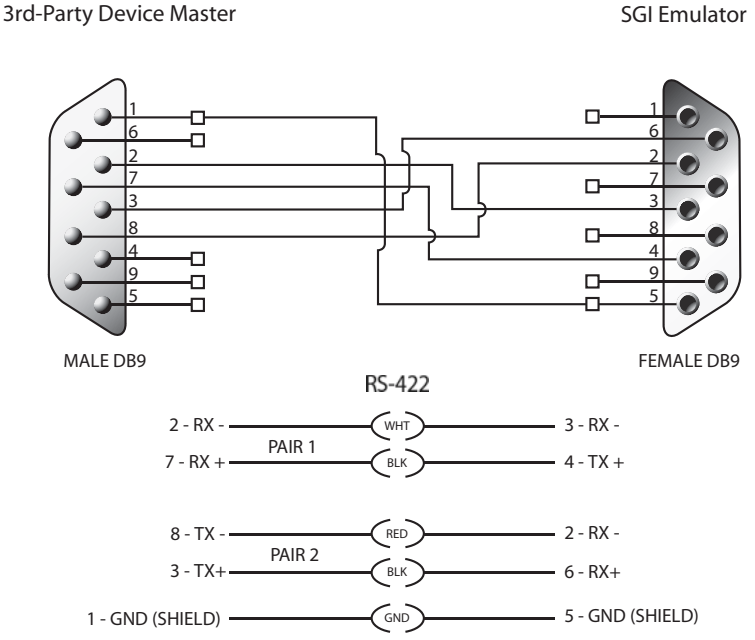


VTR-Emulation Control Cable:

SGI Master Controlling Emulator on Linux with DVS device
Linux/DVS Master Controlling SGI Emulator



VTR-Emulation Control Cable:
3rd-Party Device Master Controlling SGI Emulator



Verifying Video I/O Installation

Test the DM3 board and its drivers to ensure video I/O hardware is properly installed.

Verifying the DM3 Video Board Connection

The following procedure provides feedback indicating whether or not the workstation recognizes the DM3 video board.

To verify that the workstation recognizes the DM3 board:

1. Log in to the system.
2. In a UNIX shell, type:

   ```
   hinv -c video
   ```

   You should receive the following feedback:

   ```
   XT-DIGVID Multi-standard Digital Video: controller 0, unit 0,
   version 0x0
   ```

This line confirms that the workstation sees the DM3.

Troubleshooting

If you do not receive the feedback shown in step 2, check that the DM3 software drivers are correctly installed. See "Verifying the Installation of the DM3 Software Drivers" on page 36.

If problems persist, contact Customer Support.

Verifying the Installation of the DM3 Software Drivers

Use the following procedure to determine whether the DM3 software drivers are installed correctly.

To verify that the DM3 software drivers are installed correctly:

1. Log in to the system.
2. Use the *versions* command to check that all drivers are installed correctly. Type:

   ```
   versions -nb ml vbob ml_xtdigvid
   ```

   A listing of all DM3 software drivers appears. If the information returned is not similar to the following example, refer to your *SGI DMediaPro DM2/DM3 Board Owner's Guide*.

   This procedure should provide the following feedback:

   ```
   I = Installed, R = Removed

      Name        Version      Description
   I  ml          1278479220   ML 1.1 for IRIX 6.5, based on OpenML
                               Media Library 1.0
   I  ml_xtdigvi  1279090920   DMediaPro DM2/DM3 ML Execution
      d                        Environment, 1.1.3ml for IRIX 6.5
   I  vbob        1278620520   VBOB Execution Environment, 1.3.2
                               for IRIX 6.5
   ```

   NOTE: Version numbers appearing in this sample feedback may not match those on your system.

4 Setting Up Audio Hardware

Summary

About Discreet Native Audio

Discreet Native Audio is an audio subsystem integrated with the application. On IRIX platforms, Discreet Native Audio is based on the SGI RAD. Through the external Lucid ADAT converter (ADA 8824), shipped with your system, Discreet Native Audio offers up to two (Inferno) or eight (Fire) I/O audio channels with 24-bit audio resolution. You can play up to two (Inferno) or 32 (Fire) audio tracks in real time, including HD with the appropriate workstation configuration. Additionally, you can store the audio captured from a VTR or from an imported file at 32 bits on the framestore, including HD. Discreet Native Audio also supports 32-bit audio playback with 10-bit video provided the drives are not 9 GB or 18 GB. In Fire, it also supports 16-bit audio clips from previous versions without converting the data.

For a workstation configured to run both Fire and Inferno, Discreet Native Audio is supported by both applications. However, only two channels of audio I/O are enabled in Inferno.

Installing Discreet Native Audio is the final stage in the hardware integration process. Review the audio hardware components and then refer to the wiring diagrams provided for each configuration. Configure audio hardware only after having configured all SGI and video hardware components.

NOTE: Effects and Editing 2007 applications support only Discreet Native Audio. The Discreet Audio subsystem (also known as Stream) is not supported.

Audio Hardware Components

The Discreet Native Audio hardware components are described as follows.

SGI RAD Audio — Used in conjunction with an external ADAT converter, SGI RAD audio provides two (Inferno) or eight (Fire) tracks of digital audio I/O and analog audio I/O. SGI RAD audio provides the following connections:

- Optical In/Out connections to which you connect the ADAT converter.
- A breakout cable for video reference (house sync) input, genlock output (feeding blackburst to the Genlock-to-Word Clock converter for analog I/O), and AES I/O connections for a direct digital audio source (two-channel I/O only).

ADAT converter — Converts signals between the SGI and all digital audio I/O devices. The ADAT converter provides:

- AES/EBU and analog connections for audio I/O devices (up to eight audio I/O channels in Fire).
- Optical In/Out connections to which you connect the SGI for eight-channel audio I/O in Fire.
- Serial (RS-232) connection to enable remote control of the ADAT converter through the application.
- Word Clock In (a required connection for analog I/O).

NOTE: If you are wiring forI remote control of the ADAT converter, the audio wiring diagrams in this chapter show the connection between the serial (RS-232) port on the workstation and the ADAT converter via a straight (pin-to-pin) serial cable. If you are using an earlier ADAT converter model that has a MIDI port (rather than RS-232 port), refer to one of the following installation guides: for audio wiring diagrams using a MIDI interface cable, refer to the *Fire 6.0 Installation Guide*.; for audio wiring diagrams using an RS-422-to-MIDI converter, refer to the *Fire 5.1.2/5.2 Installation Guide*.

Genlock-to-Word Clock Converter (Fire) — For analog audio I/O, a Genlock-to-Word Clock converter (not included with your system) is also required. The following converters are recommended:

- Lucid SSG 192. For more information, visit *http://www.lucidaudio.com.*
- Graham-Patten VRG1. For more information, visit *http://www.gpsys.com.*

Sync Source (Fire) — Sync generation hardware is not provided with your workstation. For Onyx 3200 and Onyx 350 workstations, the recommended hardware configuration for setting up sync involves the following connections:

- Send house sync to the black Video Ref In connector of the breakout cable on the SGI RAD audio card.

- For analog I/O, you must also connect the green Video Ref Loop Out connector of the breakout cable to the Blackburst In on a Genlock-to-Word Clock converter, and then send Word Clock Out on the converter to the Word Clock In on the ADAT converter.

SCSI Terminal Server (Fire) — Because the Onyx 3200 does not have enough serial ports for the devices that you have to connect, you can use a SCSI terminal server (STS) to provide additional serial ports. You can also daisy-chain SCSI devices such as a CD-ROM drive to the SCSI port on the STS.

For information on connecting and configuring an STS, see "Connecting Peripherals to Serial Ports on a SCSI Terminal Server" on page 12.

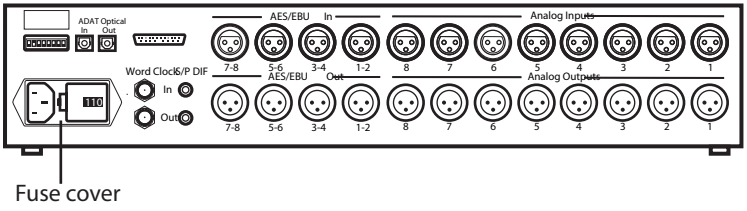
Setting the Voltage of the ADAT Converter

Make sure the ADAT converter is set to work with your site's voltage (110 or 220 volts). To change the voltage of the ADAT converter, you must first remove the fuse cover on the back of the adapter. A voltage key is located behind the fuse cover. The current voltage setting is visible through a small window in the cover.

To change the voltage:

1. Make sure the ADAT converter is unplugged.
2. Remove the fuse cover on the back of the adapter.

ADAT Converter—Rear View



3. Remove the small grey voltage key from the adapter. The voltage key has a voltage setting on its front and back.
4. Turn the voltage key until you see the correct voltage setting.
5. With the correct voltage setting facing up and towards you, slide the voltage key back into the converter.

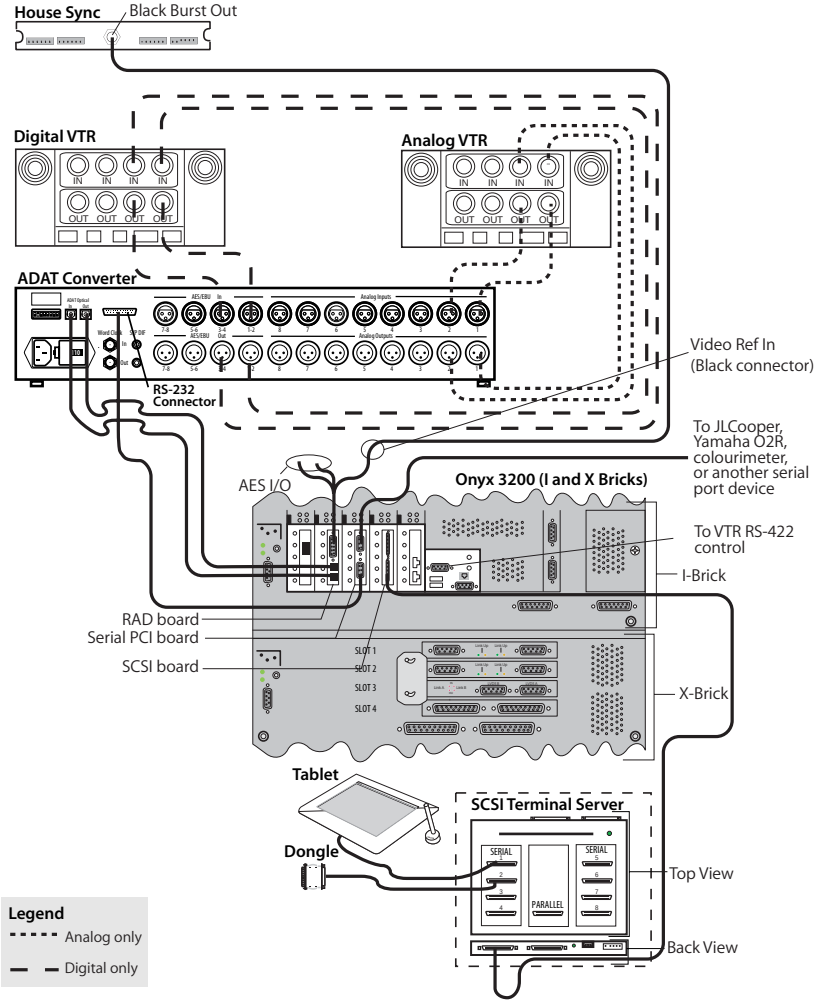
   The fuse clicks when it is properly seated.
6. Replace the fuse cover.

Onyx 3200—Wiring the Audio Hardware

The recommended configuration for setting up Discreet Native Audio with the Onyx 3200 routes the house sync directly to the Video Ref input of the RAD card. This configuration can be used with digital and analog audio.

Refer to the following wiring diagram to configure Discreet Native Audio hardware with an Onyx 3200.

Onyx 3200 Discreet Native Audio Setup (Digital and/or Analog)

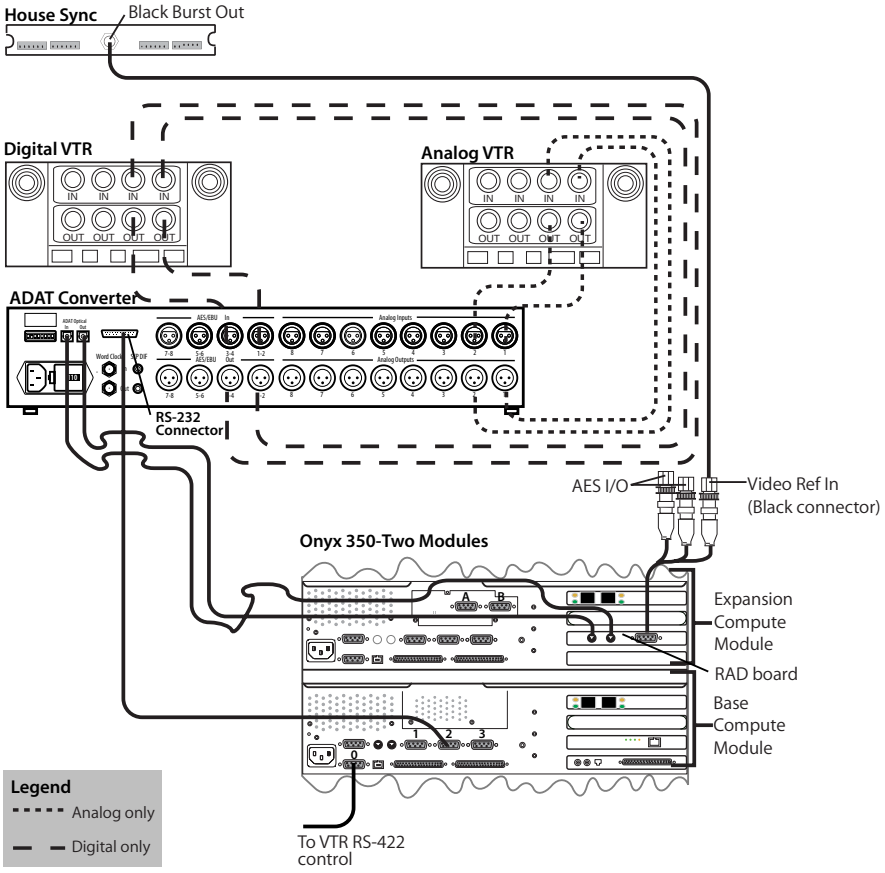


Onyx 350—Wiring the Audio Hardware

The recommended configuration for setting up Discreet Native Audio with the Onyx 350 routes the house sync directly to the Video Ref input of the RAD card. This configuration can be used with digital and analog audio.

Refer to the following wiring diagram to configure Discreet Native Audio hardware with an Onyx 350.

Onyx 350 Discreet Native Audio Setup (Digital and/or Analog)



Updating the Software Initialisation Configuration File

To use Discreet Native Audio, you must make sure the relevant keywords are uncommented and edited in the software initialisation file (by default, *init.cfg*). The keywords associated with Discreet Native Audio are described as follows:

- The Audiodevice keyword must be set to enable Discreet Native Audio.
- The MidiDevice keyword must identify the ADAT converter to enable remote control of this device from the application.

NOTE: *For additional information on these keywords, refer to the Configuration File Reference Guide for IRIX workstations.*

To update the *init.cfg* file:

1. Log in to the account for your application and open a UNIX shell.
2. Type:

   `dlcfg`

   The *init.cfg* file opens.
3. Search for the Audiodevice keyword.
4. Uncomment the following line:

   `Audiodevice sgi`
5. Search for the MidiDevice keyword.
6. Uncomment the line for your ADAT converter configuration. For example, uncomment the following line to use the Lucid ADAT 8824 with a serial connection.

   ```
   MidiDevice myMidiDevice, midi_LUCID_ADA8824_A232,
   /dev/ttyd<x>, direct_RS232, 9600, NOPARITY
   ```

   where <x> is the serial port number.

   HINT: Use the UNIX **`hinv`** command to determine the serial port number of your system configuration.
7. If you are also using an external audio console, uncomment the `midi_JLC_MCS3800` or `midi_YAMAHA_O2R` lines to use these MIDI devices.

Using the ADAT Converter Locally

If you do not have enough serial ports, or for troubleshooting purposes, you can use the ADAT converter locally by doing the following:

• Comment out the MidiDevice keyword option for the ADAT converter.

• Operate the ADAT converter locally using its DIP switches.

Commenting out the MidiDevice keyword option for the ADAT converter disables remote control of the device through the application. Audio I/O is otherwise unaffected. You can even disconnect the ADAT converter from the serial port on the workstation without affecting audio I/O.

To control the ADAT locally, set the first DIP switch to Local (up-position). The other DIP switch settings depend on whether you want to perform digital or analog audio I/O. Consult the following sections for recommended settings for digital and analog I/O.

Setting up the ADAT Converter for Local Digital Audio I/O

Set the following DIP switches on the ADAT converter for digital audio I/O.

DIP Switch	Controls	Required Setting	Position
1	Local/Remote	Local	Up
2	Input Sync Source	AES 1-2	Down
3			Down
4			Up
5	Analog Output Source	ADAT	Down
6	AES/EBU Output Source	ADAT	Down
7	Optical Output Source	AES	Up
8	Meter Select	Output	Up
		Input	Down

Setting up the ADAT Converter for Local Analog Audio I/O

Set the following DIP switches on the ADAT converter for analog audio I/O.

DIP Switch	Controls	Required Setting	Position
1	Local/Remote	Local	Up
2	Input Sync Source	Word Clock	Up
3			Down
4			Down
5	Analog Output Source	ADAT	Down
6	AES/EBU Output Source	ADAT	Down
7	Optical Output Source	Analog	Down
8	Meter Select	Output	Up
		Input	Down

Customizing the ADAT Converter Settings

Use the DIP switches to specify your clock settings and the audio source. The following tables show how to set the DIP switches to define your input and output source and meters.

Use the following DIP switch settings to define your output source.

	Switch Number	**1** Local/ Remote	**2**	**3**	**4**	**5** Analog Output Source	**6** AES/EBU Output Source	**7** Optical Output Source	**8** Meter Select
Position									
Up		Local	(See the following table)			AES	Analog	AES	Output
Down		Remote				ADAT	ADAT	Analog	Input

Use the following DIP switch settings to define your input sync source.

	Switch Position		
Input Sync Source	**2**	**3**	**4**
ADAT Optical	Down	Down	Down
Word Clock Input	Up	Down	Down
Internal 44.1kHz clock	Down	Up	Down
Internal 48 kHz clock	Up	Up	Down
AES Input 1	Down	Down	Up
AES Input 2	Up	Down	Up
AES Input 3	Down	Up	Up
S/PDIF Input	Up	Up	Up

5 Setting Up External Audio Consoles

Summary

Using External Audio Consoles

This chapter provides information on connecting and configuring the JLCooper MCS-3800 and the Yamaha O2R audio consoles.

These devices provide hot key assignments for audio settings as well as other menus in the application. An extensive set of default hot key assignments is provided with the default user. Refer to the *Hot Keys Reference Guide* for your application.

NOTE: The JLCooper MCS-3800 and Yamaha O2R are not sold or distributed by Autodesk. To obtain these devices, you must purchase them from an independent distributor. These devices are also not supported by Autodesk Media and Entertainment Customer Support. However, significant resources and development have been dedicated to incorporate these devices with the application and to ensure their full compatibility and operation.

WARNING: Connecting a JLCooper MCS-3800 or Yamaha O2R requires non-standard wiring that you may have to configure yourself. The procedures described in this chapter should only be performed by an experienced hardware integrator.

Connecting a JLCooper MCS-3800

If your workstation has a free serial port, connect the JLCooper MCS-3800 to your system using the free serial port. This configuration requires the RS-422 card for the JLCooper MCS-3800.

If you do not have a free serial port on the Onyx 3200 but you do have the SCSI terminal server (STS), you can connect the JLCooper MCS-3800 to one of the RS-232 serial ports on the STS. This configuration requires the RS-232 card for the JLCooper MCS-3800.

This section provides information for both configurations.

Connecting a JLCooper MCS-3800 Directly to a Serial Port

If you have a free serial port on your workstation, you can connect the JLCooper MCS-3800 directly. This configuration requires:

- The JLCooper MCS-3800
- An RS-422 card for the JLCooper MCS-3800
- An RS-422 cable with the following custom pinout

RS-422 (JLCooper MCS-3800)	RS-422 (workstation)
2 TxD-	2 RxD-
3 RxD+	4 TxD+
4 GND	5 GND
7 TxD+	6 RxD+
8 RxD-	3 TxD-

To connect a JLCooper MCS-3800 directly to a serial port:

Provided the JLCooper MCS-3800 has the RS-422 card, connect the JLCooper MCS-3800 to the workstation using the custom RS-422 cable.

NOTE: By default, serial port 1 is reserved for the console. If you want to connect any device to serial port 1 for use with the application, you must first disable the console. You can disable the console either during installation or by manually editing the */etc/inittab* file after installing the application. For help editing the */etc/inittab* file, see "Connecting Peripherals to Serial Ports on the SGI" on page 11.

Onyx 3200—Connecting a JLCooper MCS-3800 to a SCSI Terminal Server

If all serial ports on the workstation are used by other devices but you have an STS, you can connect the JLCooper MCS-3800 to one of the serial ports on the STS. This configuration requires:

- The JLCooper MCS-3800
- An STS
- If you have the ST1008 model STS, a standard DB-25 to DB-9 cable
- If you have the ST1400 model STS, a custom RJ-45 to DB-9 cable with the following pinouts

RJ-45 (STS)	DB-9 (JLCooper MCS-3800)
1 RTS	7 RTS
2 DSR	6 DSR
3 DCD	1 DCD
4 RxD	2 RxD
5 TxD	3 TxD
6 GND	5 GND
7 DTR	4 DTR
8 CTS	8 CTS

To connect a JLCooper MCS-3800 to a SCSI terminal server:

Connect the JLCooper MCS-3800 to a serial port on the STS using the appropriate cable.

For information on connecting an STS, see "Connecting Peripherals to Serial Ports on a SCSI Terminal Server" on page 12.

Operating a JLCooper MCS-3800 with Discreet Native Audio

On systems using Discreet Native Audio with an ADAT converter, the ADAT converter is normally connected to a serial port on the SGI workstation through a serial connection. This connection enables remote control of the ADAT converter through the application.

If you want to operate a JLCooper MCS-3800 on a system using Discreet Native Audio but do not have enough free serial ports, you have these options:

- If your JLCooper MCS-3800 has the RS422 card, disconnect the ADAT converter from the serial port on the SGI workstation and connect the JLCooper MCS-3800 to the serial port instead. Disconnecting the ADAT converter does not affect audio I/O; it simply disables

remote control of this device through the application. See "Using the ADAT Converter Locally" on page 42.

- If you have an STS, leave the JLCooper MCS-3800 connected to the STS and the ADAT converter connected to the serial port.

Connecting a Yamaha O2R

The Yamaha O2R must be connected to an RS-422 serial port directly on the workstation. Configuring a Yamaha O2R requires:

- The Yamaha O2R device
- An RS-422-to-MIDI converter
- Two MIDI cables
- An RS-422 cable with the following custom pin-outs

RS-422 (RS-422-to-MIDI converter)	RS-422 (workstation)
2 TxD-	2 RxD-
3 RxD+	4 TxD+
4 GND	5 GND
7 TxD+	6 RxD+
8 RxD-	3 TxD-

To connect a Yamaha O2R to a workstation:

1. Connect the MIDI OUT on the Yamaha O2R to the MIDI IN on the RS-422-to-MIDI converter using a MIDI cable.
2. Connect the MIDI IN on the Yamaha O2R to the MIDI OUT on the RS-422-to-MIDI converter using a MIDI cable.
3. Connect the RS-422-to-MIDI converter to a serial port on the workstation using the custom RS-422 cable.

Operating a Yamaha O2R with Discreet Native Audio

On systems using Discreet Native Audio with an ADAT converter, the ADAT converter is normally connected to a serial port on the SGI workstation through a serial connection. This connection enables remote control of the ADAT converter through the application.

The Yamaha O2R must be connected to an RS-422 serial port directly on the Onyx 3200/ Onyx350 (and not to an RS-232 serial port on an STS). If you want to operate this audio console on a system using Discreet Native Audio but do not have enough free ports, disconnect the

ADAT converter from the port. Connect the Yamaha O2R to the serial port via the RS-422-to-MIDI converter instead. Disconnecting the ADAT converter does not affect audio I/O; it simply disables remote control of this device through the application. See "Using the ADAT Converter Locally" on page 42.

Configuring the Application to Initialise an External Audio Console

The JLCooper MCS-3800 and Yamaha O2R external audio consoles are MIDI devices. To operate a MIDI device in the application, you must uncomment and edit the appropriate line under the MidiDevice keyword heading in the software initialisation configuration file. For an explanation of this keyword, refer to the *Configuration File Reference Guide for IRIX Workstations*.

If connecting an external audio console requires changing the serial port connections of other devices, other configuration keywords may require modification. For example, you may need to change the VTR, Emulator (Fire only), TabletDriver, Security, or MoncalDevice keyword.

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