HARRIS®
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HARRIS MULTIVIEWER

Installation, Configuration,
and Operation Manual

Edition E
175-000400-00

Harris Multiviewer

Installation, Configuration, and Operation Manual

Edition E
December 2009

Copyright Information

Warranty Information

The Limited Warranty Policy provides a complete description of your warranty coverage, limitations, and exclusions, as well as procedures for obtaining warranty service. To view the complete warranty, visit our website.

This publication is provided “as is” without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement.

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Preface

Manual Information

Purpose

This manual provides information on the features and applications for the Harris multiviewer.

Audience

This manual is written for engineers, technicians, and operators responsible for installation, setup, maintenance, and/or operation of the product, and is useful to operations personnel for purposes of daily operation and reference.

Revision History

Table P-1. Revision History of Manual

Edition	Date	Comments
A	February 2008	Initial release
B	January 2009	Coincides with software release 3.4
C	March 2009	Coincides with software release 3.5
D	July 2009	Coincides with software release 3.6
E	December 2009	Coincides with software release 3.7

Writing Conventions

To enhance your understanding, the authors of this manual have adhered to the following text conventions:

Table P-2. Writing Conventions

Term or Convention	Description
Bold	Indicates dialog boxes, property sheets, fields, buttons, check boxes, list boxes, combo boxes, menus, submenus, windows, lists, and selection names
Italics	Indicates email addresses, the names of books or publications, and the first instances of new terms and specialized words that need emphasis
CAPS	Indicates a specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, or DELETE
Code	Indicates variables or command-line entries, such as a DOS entry or something you type into a field
>	Indicates the direction of navigation through a hierarchy of menus and windows
hyperlink	Indicates a jump to another location within the electronic document or elsewhere
Internet address	Indicates a jump to a website or URL
 Note	Indicates important information that helps to avoid and troubleshoot problems

Obtaining Documents

Technical documents can be viewed or downloaded from our website. Alternatively, contact your Customer Service representative to request a document.

Unpacking/Shipping Information

Unpacking a Product

All products have been carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Check the equipment for any visible damage that may have occurred during transit.
2. Confirm that you have received all items listed on the packing list.
3. Contact your dealer if any item on the packing list is missing.
4. Contact the carrier if any item is damaged.
5. Remove all packaging material from the product and its associated components before you install the unit.

Returning a Product

In the unlikely event that a product fails to operate properly, please contact our Customer Service Department to obtain a Return Authorization (RA) number, then send the unit back for servicing.

Keep at least one set of original packaging in the event that a product needs to be returned for service. If the original package is not available, you can supply your own packaging as long as it meets the following criteria:

- The packaging must be able to withstand the product's weight.
- The product must be held rigid within the packaging.
- There must be at least 2 in. (5 cm) of space between the product and the container.
- The corners of the product must be protected.

If the product is still within the warranty period, we will return it to you by prepaid ground shipment after servicing.

Standards

There are three sets of standards used in the development of the Harris Multiviewer product line: product standards, compliance standards, and safety standards.

Product Standards

The following product standards apply to the Harris Multiviewer output module. Please reference the pertinent standard for more information.

Professional Video

SMPTE 259M
SMPTE Standard for Television - 10-Bit 4:2:2 Component and 4fsc Composite Digital Signals - Serial Digital Interface

SMPTE 292M
SMPTE Standard for Television - Bit-Serial Digital Interface for High Definition Television Systems

SMPTE-170M
For Analog Video Signal quality

FCC 73.699
U.S. Federal guidelines for NTSC analog composite video

ITU-R.BT 470
Guidelines for PAL analog composite video

ITU-R BT601-4
For Serial Digital Video

SMPTE 296M
SMPTE Standard for Television - 1280x720 Progress Image Sample Structure - Analog and Digital Representation and Analog Interface

SMPTE 274M
SMPTE Standard for Television - 1920x1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates.

SMPTE 424M
SMPTE Standard for Television - 3 Gb/s Signal/Data Serial Interface

DVI 1.0
Digital Visual Interface 1.0, Digital Display Working Group (DDWG) (www.ddwg.org).

SMPTE 12M
SMPTE Standard for Television - Audio and Film - Time and Control Code

Digital Audio

AES3-2003
AES Recommended Practice for Digital Audio Engineering - Serial Transmission Format for Two-Channel Linearly Represented Digital Audio Data

AES3id-2001
AES Information Document for Digital Audio Engineering -Transmission of AES3 Formatted Data by Unbalanced Coaxial Cable

SMPTE 276M-1995
SMPTE Standard for Television - Transmission of AES-EBU Digital Audio Signals Over Coaxial Cable

PT-PS Power Supply

Safety
TUV approved to latest revision of UL 60950-1 and CSA 22.2 complete with CB Report with all country deviations[1]

CE Mark
EMC Compliance tested under EN 55103-1, 2 as a Class A Device in an E4 environment

Other Interfaces

IEEE 802.1 (Ethernet)
CSMA/CD Access Method

USB 2.0
Universal Serial Bus 2.0 (www.usb.org)

RS-232 (TIA-232-F)
Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange

ANSI/TIA/EIA-422-B
TIA-422 Electrical Characteristics of Balanced Voltage Differential Interface Circuits

Compliance Standards

EMC Compliance Standards

The following EMC compliance standards apply:

- EN 50081-1
- EN 55022
- EN 50082-1
- IEC 1000-4-2 1995-01

1. A total of 8 PT-PS power supplies can be used in the Platinum frame. TUV will test for frame leakage currents using all 8 power supplies operating simultaneously to determine the total frame leakage current. This total frame leakage current value must meet EN60950 and CSA 22.2.

- IEC 801-3 1984
- IEC 1000-4-4 1995-01
- Part 15 of the FCC Rules
- ICES-003 of the Canadian Department of Communications

Restriction on Hazardous Substances (RoHS) Compliance

Directive 2002/95/EC—commonly known as the European Union (EU) Restriction on Hazardous Substances (RoHS)—sets limits on the use of certain substances found in electrical and electronic equipment. The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling. The Directive, which took effect on July 1, 2006, refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-V1)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

In accordance with this EU Directive, all products sold in the European Union will be fully RoHS-compliant and “lead-free.” (See our website for more information.) Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation. Equipment that complies with the EU directive will be marked with a RoHS-compliant emblem, as shown in Figure P-1.

Figure P-1. RoHS Compliance Emblem

Waste from Electrical and Electronic Equipment (WEEE) Compliance

The European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE) deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. Effective August 13, 2005, producers or users will be required to recycle electrical and electronic equipment at end of its useful life, and may not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled. (See our website for more information.) Contact your local sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant emblem, as shown in Figure P-2.

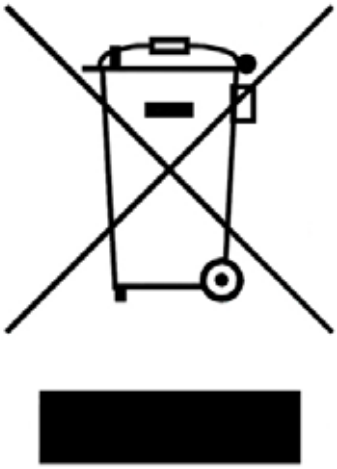


Figure P-2. WEEE Compliance Emblem

Safety Standards

The following safety standards apply:

- IEC-950
- UL 60950-1
- EN60950: 1992 + A1: 1993 + A2: 1993 +A3: 1995 A4: 1997 +A11: 1997 EMKO-TSE (74-SEC) 207/94
- UL1419
- CSA C22.2 No. 1

Safety

Carefully review all safety precautions to avoid injury and prevent damage to this product or any products connected to it. Any user-serviceable components (such as fuses or batteries) are only replaceable by those components listed in the manual.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual

WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.

CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Chapter 1

Introduction

Installing and Connecting Overview

Multiviewer output modules are installed in the output section of Platinum router frames. Each output module occupies four output slots in the router frame. Since the multiviewer output module is shipped as a complete “solid-state” unit, you do not need to install individual components.

Warning

Potentially lethal voltages are present within the Platinum frame during normal operation. Disconnect all power cords from the frame before you remove the top panel. Do not apply power to the frame while the top is open unless the unit is being serviced by properly trained personnel.

Multiviewer output modules are hot-swappable, and they do not need to be installed next to each other. However, keep in mind that the slots you select to install the multiviewer may affect how efficiently of how you can populate other output slots in the router.

Caution

We recommend that you test your system before placing it in its final installation. Make sure that you verify its configuration, cabling, and proper system operation. Observe proper anti-static and grounding procedures while handling loose boards and servicing equipment.

The Harris multiviewer output module occupies four slots in the output section of a Platinum router. With the multiviewer fully-integrated into your routing network, it can display any of the Platinum router input sources. These can be selected from a wide variety of input modules: auto-detecting 1080p/HD/SD video with embedded audio, analog video, and graphics input as well as discrete analog or AES audio.

The Harris multiviewer supports all critical display resolutions up to 1900×1200 dpi, and the DVI outputs can be set for any of the supported resolutions. You can select between two output display modes as well as select either portrait or landscape orientation so that you best utilize your output display devices. The Harris multiviewer allows custom resolutions, for example 1080×1100.

In addition to the multiviewer's outputs, connectors are provided for two Ethernet connections, a linear timecode input, four USB ports, and AES outputs for audio monitoring.

You can use the Layout Designer software that comes with your multiviewer to monitor all audio and video signal characteristics through integrated alarms, audio metering, and other test and measurement tools. With Layout Designer, you can also select preset layouts and create custom layouts. When connected to a CCS network, your Harris multiviewer can be controlled by CCS control applications such as CCS Navigator and NUCLEUS network control panel. For more information about Layout Designer features, see "Layout Designer" on page 4.

Main Features

Audio and Video/Graphic Inputs

- Up to 512 input video sources
- System scalability that allows you to put multiple output modules in a 9RU, 15RU, or 28RU Platinum frame
- Auto-detection and support of 3Gbps-SDI, HD-SDI, and SD-SDI including embedded audio
- Using specific Platinum input modules, auto-detection and support of analog video inputs, discrete analog audio, and discrete AES audio
- Support for the following video standards:
  - 486i@59.94 fps (SMPTE 125M)
  - 576i@50 fps (ITU-R BT.656)
  - 720p@59.94 fps (SMPTE 292M, SMPTE 296M)
  - 720p@50 fps (SMPTE 292M, SMPTE 296M)
  - 1080i@59.94 fps (SMPTE 292M, SMPTE 274)
  - 1080i@50 fps (SMPTE 292M, SMPTE 296M)
  - 1080psf@23.98 fps
  - 1080p@24, 25, and 30 fps
  - 3Gbps 1080p@50 and 60 fps
- Input for an external linear code signal for on-screen clock time reference source

Communication

- Serial connection provides connection to a serial breakout provides two RS-232 and two ports that can be configured as RS-232, RS-422, or RS-485
- Four type A USB ports on the back module and two type A USB ports on the front module can be used for general purposes such as computer mouse and keyboard connections (for Heads-Up operations)
- Two 10/100/1000 Ethernet ports for communication with Layout Designer, other CCS-networked devices, JLCooper eBOX, and GPIO devices

Monitoring and Control

- Standard multiviewer system audio and video alarms such as signal presence, freeze detection, black detection, audio overshoot, and silence detection
- On-Screen application to manipulate the multiviewer right on the display, eliminating the need for an external computer to make adjustments to layouts

- Waveform monitor and vectorscope capabilities to monitor the video quality control of one video source at a time, to ensure it complies with the required standards
- The Rules Editor to program the multiviewer to respond to video, audio, system or facility alarms. These can range from sending out alarm notifications into a network by E-mail, to switching layouts on the multiviewer or switching sources on a Platinum router
- The Triggers Configuration Window for programming the multiviewer to perform specific tasks at different times.

Output Display

- Outputs up to 64 HD-SDI displays or up to 32 DVI displays from a single 28RU Platinum frame with up to 16 multiviewer output modules. There are 32 addressable inputs, to a maximum of 64 PiP (picture-in-pictures) windows per multiviewer, shared across all displays.
- Provides three user-selectable output modes for DVI and SDI outputs:
  - **Independent mode**—One layout per display (dual or quad display)
  - **Spanning mode**—More than one display per layout
  - **Redundant mode**—two copies of the same layout
- AES audio monitoring using external monitoring devices

Layout Designer

Layout Designer is the primary configuration and control application for multiviewer systems. You can connect a multiviewer to a PC that is running Layout Designer by using one of the Ethernet connections on the back module. In addition to multiviewer configuration and control, Layout Designer provides signal monitoring, alarm feedback, and layout creation and design capabilities. Layout Designer features include, but are not limited to, the following:

- Standard and customized layout templates, Picture-in-Picture (PiP), borders, and labels
- On-screen clocks and counters that can be locked to an external timecode reference source
- User-definable rules generator and manager
- Standard and custom UMD/Tally indicators
- Audio meters and video signal analysis/monitoring
- On-screen audio and video alarms.

For more information about using Layout Designer with your multiviewer system, see “About Layout Designer” on page 14 or your Layout Designer Software Application User Guide.

You can also use the on-screen control application for limited control of your multiviewer system without external software or other CCS network control devices. For more information, see “Multiviewer Configuration and Control” on page 13.

CCS Control with Navigator and NUCLEUS

Using CCS Navigator and NUCLEUS, you can do the following.

- Select layouts that are stored on the multiviewer hardware for display
- Monitor multiviewers for audio and video signal alarms as well as alarms for system diagnostics

Applications

Harris multiviewer systems can be used for, but are not limited to, the monitoring and control of the following broadcast facility environments.

- Network master control operations
- Satellite uplink stations
- Fixed sporting installations

Non-broadcast applications of Layout Designer include

- Government installations
- Data monitoring facilities
- Security monitoring and surveillance for highways, public transportation systems, casinos, sports stadiums, etc.

Output Module

Caution

Only qualified service technicians should attempt to service the output module.

The output module is a self-contained unit that performs all of the system video input and output processing. It occupies four slots in the output section of any Platinum routing frame. The multiviewer receives up to 32 baseband 3.0 Gbps video signals or 24 scaled video channels from the frame's crosspoint matrix module. A series of fans maintains optimal operating temperature inside the output module. (Temperatures can be monitored using CCS Navigator.)

The multiviewer's back module, which is connected to the back of the Platinum frame, provides all of the connectors for output video signals, communication devices, and external devices. Each output module can output two DVI and four SDI video output signals that drive the multiviewer output displays.

For information about the back module connectors, see "Back Module Connectors" on page 9.

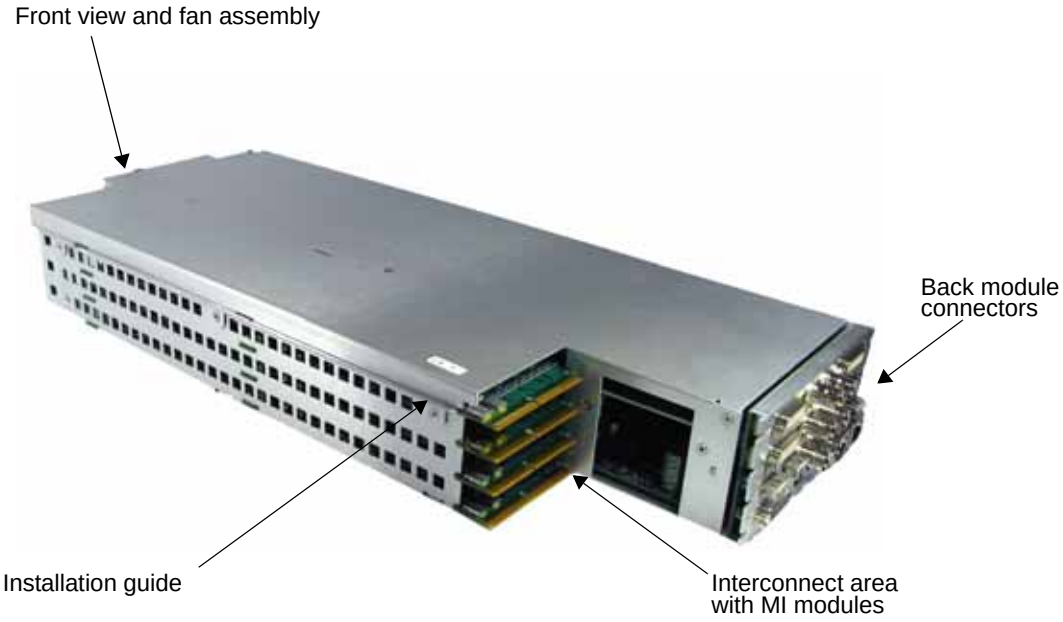


Figure 1-1. Multiviewer Hardware Output Module

The multiviewer's main components are:

Front view	The output module front has the ejector/locking mechanism and provides access to the multiviewer's serviceable components (see "Front View and Fan Assembly" on page 7).
Installation guides	Installation guides on both sides of the output module guide the unit when it is installed in a Platinum frame. For information about installing the module, see "Installing Overview" on page 16.
Interconnect area	This area provides connectivity to the Platinum frame's MI module. Input signals from the router's crosspoint modules are routed to the output module through this connection.
Back module connector	The back module provides all the connectors for external device connections (see "Back Module Connectors" on page 9).

Front View and Fan Assembly

The module's front view provides access to the output module's LEDs and alarm indicators. The output module's fan assembly ensures that the enclosed hardware is operating at optimal temperature.

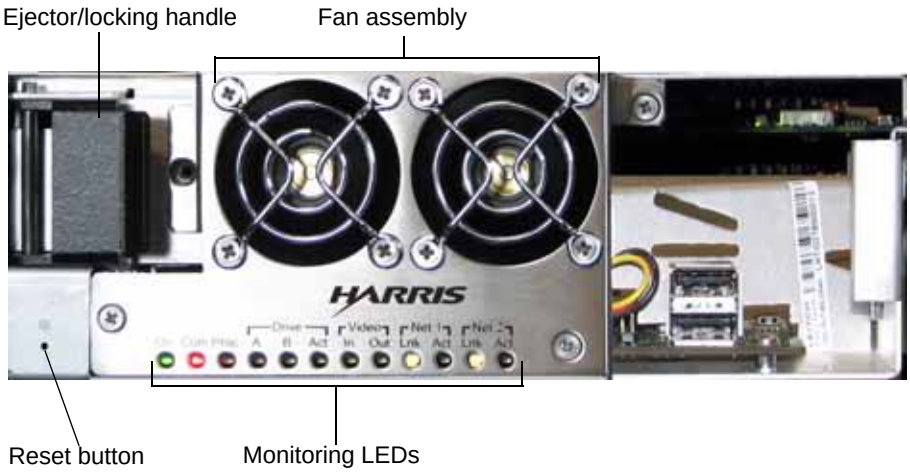


Figure 1-2. Output Module Front View

Reset Button The Reset button restarts the output module without power cycling the unit. Use the Reset button if starting the unit from Layout Designer or the Multiviewer Control Panel failed when a multiviewer needs to be restarted while the rest of the Platinum frame remains powered up.

USB Connector Use the USB connector for attaching a USB memory stick for firmware upgrading or installing new applications.

Monitoring LEDs Monitoring LEDs are located on the front of the output module. Table 1-1 on page 8 describes the meaning of each LED.

Table 1-1. LED Status Indicators

LED	Color Indication	Description
On	Solid green	The output module is fully powered up.
COM	Flashing, green	Not currently implemented.
	Solid, red	
Proc	Flashing, green	The output module's Central Processing Unit (CPU) and Graphic Processing Unit (GPU) are working properly (heartbeat OK).
	Solid, green or red	The CPU is not working properly (heartbeat error).
	Flashing, red	The GPU is not working properly (heartbeat error).
Drive A	Solid, green	Internal drive A is working properly.
	Solid, red	There is an error on internal drive A.
Drive B	Solid, green	Internal drive B is working properly (Drive B is reserved for future use and is normally off).
	Solid, red	There is an error on internal drive B.
Act	Flashing, green	There is activity on internal drive A or B.
Video In	Solid, green	Not currently implemented.
Video Out	Solid, green	
Net 1 Link	Solid, yellow	A valid connection is present on Ethernet connection 1.
Net 1 Act	Flashing, green	There is network activity on Ethernet connection 1.
Net 2 Lnk	Solid, yellow	A valid connection is present on Ethernet connection 2.
Net 2 Act	Flashing, green	There is network activity on Ethernet connection 2.

Back Module Connectors

The output module back connectors provide all of the connectors for network and RS-232/422/485 communication, external device inputs, and the output video signals.

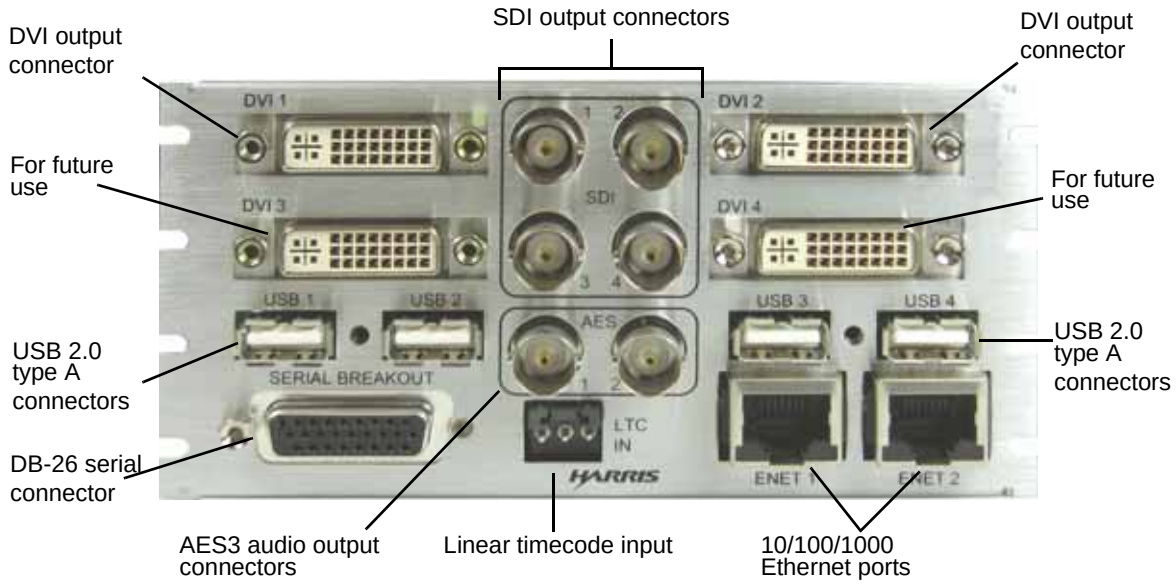


Figure 1-3. Output Module Back Connectors

SDI outputs The four SDI outputs are capable of driving HD-SDI display devices. The SDI outputs cannot be used in combination with the DVI outputs. For information about connecting SDI outputs, see “Connecting Output Display Devices” on page 63 and “Connecting HDTV Display Devices to the Multiviewer” on page 65.

DVI outputs The two DVI outputs are capable of displaying a number of video standards and resolutions. The signals are primary RGB. The DVI outputs cannot be used in combination with the SDI outputs. For information about connecting DVI outputs, see “Connecting Output Display Devices” on page 63 and “Connecting HDTV Display Devices to the Multiviewer” on page 65.

USB type A These four USB ports can be used for various purposes. You can use the USB ports to attach a mouse and keyboard to navigate and control the Multiviewer’s on-screen tools.

DB-26 connector This the connector for a breakout cable. The breakout cable has four DB9 ends to provide four Serial ports. Serial ports 1 and 2 are configured in the software to be RS-232, RS-422, or RS-485. Serial ports 3 and 4 are fixed RS-232. These serial ports can be used to connect the multiviewr to Under Monitor Display (UMD) generators, production switchers, or other routers. For more information, see “Serial Breakout Cable” on page 11.

AES3 audio output Two AES discrete audio outputs are provided for monitoring purposes with external audio monitoring devices. See “Connecting Output Audio Monitoring Devices” on page 24.

10/100/1000 Ethernet Two Ethernet ports provide connectivity with Layout Designer and CCS control systems, such as CCS Navigator and NUCLEUS network control panel. In addition, the Gbps Ethernet connections can be used to connect the multiviewer to an external GPI hardware interface such as the JLCooper eBOX (a 10/100Base-T to Quad RS-232/422 (9-Pin) and GPI hardware interface. For more information, see “Network Connections” on page 20.

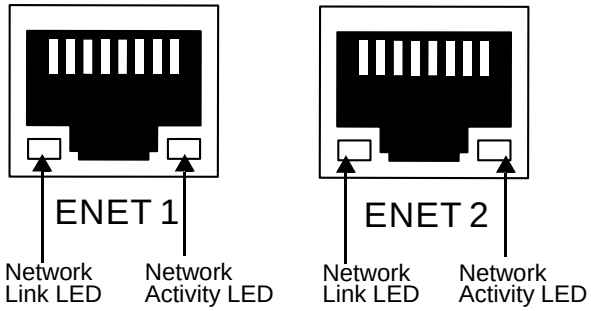


Figure 1-4. Ethernet Port LEDs

Table 1-2. Ethernet Ports LED Status Indicators

LED	Color Indication	Description
ENET 1 Network Link LED	Solid, green	A valid connection is present on Ethernet port 1.
ENET 1 Network Activity LED	Flashing, yellow	There is network activity on Ethernet port 1.
ENET 2 Network Link LED	Solid, green	A valid connection is present on Ethernet port 2.
ENET 2 Network Activity LED	Flashing, yellow	There is network activity on Ethernet port 2.

External Hardware Components

Back connectors can accommodate external hardware components that provide additional system connections. Each external hardware component is described in the following sections.

Serial Breakout Cable

The serial breakout cable expands the back module's serial port from one DB-26 connector into four separate DB-9 pin connectors. Ports 1 and 2 can be configured for either RS-232, 422, or 485. Ports 3 and 4 support RS-232 only.

Figure 1-5 illustrates the serial breakout cable.

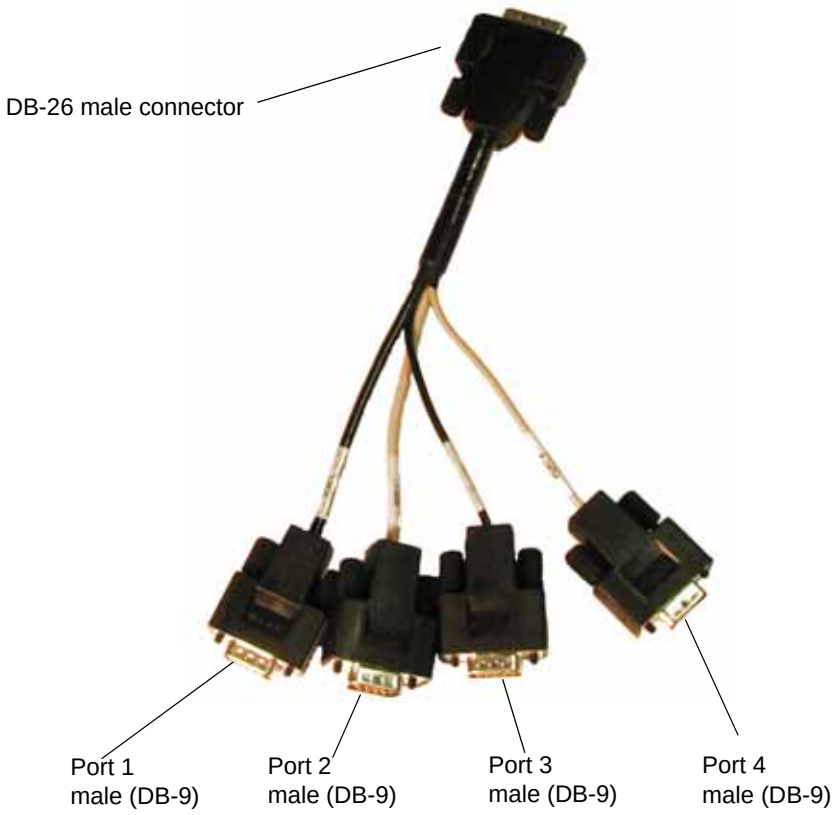


Figure 1-5. Serial Breakout Cable

For information about setting the type of serial connection, pinouts, and making serial connections, see “Connecting Devices to the Serial Connection” on page 24.

Third-Party GPI Hardware Interface

Your Harris Multiviewer is compatible with the JLCooper eBOX. The JLCooper eBOX provides access to up to 24 GPI inputs and outputs. When the multiviewer is attached to the same TCP/IP network using its own Ethernet connector, it can access the JLCooper eBOX.

For information about configuring your e-BOX, see your JLCooper eBOX documentation. See “Configuring JLCooper eBOX in Layout Designer” on page 49 and “Connecting JLCooper eBOX Devices” on page 68.

Chapter 2

Configuration and Operation

Multiviewer Configuration and Control

There are a number of configuration, control, and monitoring options that you can use with your multiviewer. All multiviewer control, test, and monitoring capabilities can be accessed remotely using Layout Designer or through CCS network control options such as CCS Navigator and NUCLEUS Network Control Panel. Figure 3-1 illustrates a typical control and monitoring scenario.

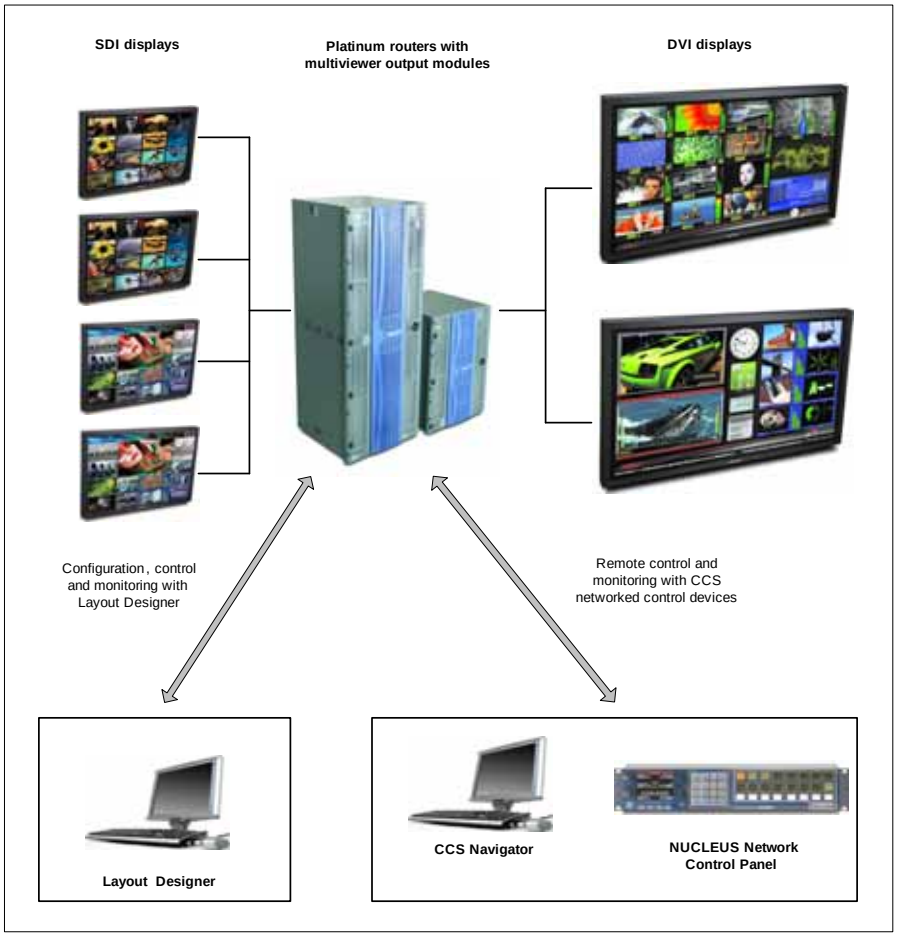


Figure 2-1. Harris Multiviewer Configurations and Control

All control and monitoring communication with the multiviewer occurs through the output module's Ethernet port. With the exception of adding the multiviewer to a router system database, no control of the multiviewer is possible from the Platinum frame Ethernet connections. You cannot add a multiviewer to a router system database from Platinum, but you can add it through a PC connected via Ethernet to a Platinum router.

For information about making network connections, see "Network Connections" on page 62.

Required and Recommended Software

To configure and operate your multiviewer system, you need to have the following software installed on your local PC:

- Layout Designer (see "About Layout Designer" on page 14)
- CCS Navigator (see "About CCS Navigator" on page 14)

To control and operate your multiviewer system using remote control options, we recommend that you have CCS Navigator installed on your local PC . CCS Navigator uses either its CCS-P protocol or SNMP to communicate with the multiviewer. You can also control and monitor the multiviewer using an SNMP third-party control system (see "About Remote Control Systems" on page 15).

About Layout Designer

Layout Designer provides an integrated computer interface for the control and configuration of one or more multiviewer display systems over a LAN (local area network). These configuration options include:

- Changing the multiviewer's IP address and Network Mask
- Setting output display mode
- Calibrating output display devices

Use Layout Designer to select layouts for display, select and change PiP input sources, and modify layouts and layout objects. Layout Designer also provides the tools to create and design new layouts and configure monitoring tools such as audio meters, tally indicators, and audio and video alarms. See your *Layout Designer Software Application User Guide*. See also "Discovering Output Modules Using Layout Designer" on page 29.

About CCS Navigator

Use CCS Navigator to create a database that describes a routing system that includes your output module. This includes selecting the routing input sources that are to be available for routing to your output module for display.

See Volume 6 of your *Navigator User Manual* for detailed descriptions of its installation and features. See also "Adding Multiviewers to a Router Database" on page 20.

About Remote Control Systems

The Harris multiviewer is fully compatible with CCS network control systems such as CCS Navigator and NUCLEUS Network Control Panel. With an optional license key upgrade, you can control and monitor the multiviewer using third-party SNMP software. You can remotely perform the following operations:

- Select and change layouts for display
- Select and change PiP input sources
- Select audio channels for monitoring on the multiviewer's AES outputs
- Monitor the multiviewer as well as audio and video signal alarms
- Set audio and video alarm threshold values
- Change the output module's IP Address and Subnet Mask

For more information about controlling the multiviewer using CCS control, see "Controlling Your Multiviewer on a CCS Network" on page 33. For detailed information about using NUCLEUS to control and monitor your multiviewer, see your *NUCLEUS CENTRIO Control Option Configuration and Operation Manual*. For information on controlling the multiviewer using SNMP software, see "Controlling the Multiviewer Through SNMP" on page 35.

Updating Software and Firmware

Your multiviewer comes with all the software and firmware already installed. However, you may occasionally need to update some or all software or firmware components.

The following sections outline individual components that can be updated:

- “Updating the Multiviewer Core Application” on page 19
- “Updating Layout Designer Software” on page 19

You may also need to update the following non-multiviewer-specific software and firmware to enable features or functionality with multiviewer:

- Platinum (PT-RES) firmware (see your *Platinum Installation, Configuration, and Operation manual* for instructions)
- CCS Navigator (see your *Navigator User Manual* for more information)

Determining Software and Firmware Versions

You may occasionally want to check software and firmware versions, to determine if updates are necessary, optional or even available. You may also want to check software and firmware versions, to ensure that updates were executed complete and correctly.

To check your software and firmware versions, follow these steps:

1. In Layout Designer, choose **Tools** > **Advanced Configuration**.
2. Select the **Version** tab.

To determine the firmware version, follow these steps:

1. Open Telnet session with the IP Address of PT-RES module.
2. Use the following to connect to the Telnet session:

   ```
   Login: leitch
   Password: leitchadmin
   Type: ~showHW
   ```

   A message similar to the following appears.

Output Cards

Slot	1	Configured:	CENTRIO-S	Version 1.2	Family 003	Product Id 057
Detected:	CENTRIO-S	Version 1.8	Family 003	Product Id 057		
Slot	2	Configured:	CENTRIO-S	Version 1.2	Family 003	Product Id 057
Detected:	CENTRIO-S	Version 1.8	Family 003	Product Id 057		
Slot	3	Configured:	CENTRIO-S	Version 1.2	Family 003	Product Id 057
Detected:	CENTRIO-S	Version 1.8	Family 003	Product Id 057		
Slot	4	Configured:	CENTRIO-M	Version 1.2	Family 003	Product Id 056
Detected:	CENTRIO-M	Version 1.8	Family 003	Product Id 056		

Note

After the firmware had been updated, the frame must be re-polled again in CCS Navigator to show the proper firmware version.

Updating Multiviewer (PIPE) Firmware

Warning

Do not update the Multiviewer PIPE firmware while the Harris Multiviewer application is running.

Note

It is very important that you upgrade the Multiviewer's XVIM PIPE firmware version to 1.8 or higher, and the PT-RES module to 3.3.b43 or higher.

1. Exit the Multiviewer application.
2. Start Navigator.
3. Select the Platinum frame, and then click **Edit**.
4. Select the **Firmware** tab.
5. Select the output module that is active in the frame (it has a little icon on the right).
6. Right-click the selected module, and then select Assign from the context menu that appears.

Note

You can select multiple Multiviewers by holding down the CTRL key and clicking on each module.

7. In the list, select all of the output modules in a zone.

   Updating will not span zones.
8. Right-click the selected module, and then select **Change Firmware** from the context menu that appears.

9. Browse to the RtrWrks/Bin32/Firmware folder and select the CENTRIO_xxxx.zip file.
10. Click **Upgrade** or **Upgrade All** and wait for a **Firmware upgrade successful** message.

Note

While the firmware is updating, the corresponding Multiviewer will restart twice.

Upgrading the Display Driver

1. Copy the install folder to USB memory stick and insert it into the output module's USB port.
2. Double-click SETUP.EXE.

Note

If the upgrade fails from USB memory stick, try again from USB or copying the folder on the multiviewer's C: drive and double-click the SETUP.EXE file.

The upgrade process may reset the display resolution. If the resolution is not restored when the Multiviewer application starts, then you may need to open the NVIDIA Control Panel and change the display resolution settings accordingly.

For 1080i: select 1920 x 1200

For 720p: select 1280 x 720

Upgrading Multiviewer Drivers and FPGA Firmware

1. Connect the USB mouse to the Multiviewer.
2. To exit the Multiviewer, right-click to open the Multiviewer Control Panel, and then click Explorer.
3. Browse to the location of the DriversFPGAs folder.
4. Double-click UpgradeAll.bat.

   Four messages appear during the installation. Click **Continue Anyway** each time to proceed.

   The H/W Upgrade dialog box appears. This upgrades XVIMs in parallel.
5. When the first Flash file is updated, click **OK** to continue with the second Flash file update.

Once completed, the process will continue to update other software components and the computer will restart automatically.

Updating the Multiviewer Core Application

You must uninstall the Multiviewer Core Application before installing an updated version. If you cancel the uninstallation process, you will not be able to install an updated version of the software.

1. Browse to the location of the Multiviewer Core Application *.msi file (if using Windos XP) or *.exe file (if using Windows Vista), and then double-click the file.

   An **Application Maintenance** dialog box opens.
2. Choose **Remove**, and then click **Next**.
3. On the **Multiviewer 3.x Uninstall** dialog box, click **Next** to continue the uninstall process.

   A progress bar appears on the screen.
4. When the uninstallation process is done, click **Finish**.
5. Return to the location of the Multiviewer Core Application *.msi file (if using Windos XP) or *.exe file (if using Windows Vista), and then double-click the file again.

   A **Welcome to the Harris Multiviewer 3.0 Installation Wizard** dialog box appears.
6. Click **Next**, and then follow the instructions that appear on the screen to install the updated version of the Multiviewer Core Application.

Updating Layout Designer Software

You must uninstall the Layout Designer software before installing an updated version. If you cancel the uninstallation process, you will not be able to install an updated version of the software.

1. Browse to the location of the Layout Designer *.msi file (if using Windows XP) or *.exe file (if using Windows Vista), and then double-click the file.

   An **Application Maintenance** dialog box opens.
2. Choose **Remove**, and then click **Next**.
3. On the **Layout Designer 3.x Uninstall** window, click **Next** to continue the uninstall process.

   A progress bar will appear on the screen.
4. When the uninstallation process is done, click **Finish**.
5. Return to the location of the Layout Designer *.msi file, and then double-click the file again.

   A **Welcome to Layout Designer 3.x Installation Wizard** window appears.
6. Click **Next**, and follow the instructions that appear on the screen to install the updated version of Layout Designer.

Creating a Backup Settings Folder

The purpose of a Backup Settings folder on a multiviewer is to store a copy of the three key XML files as a backup. If the Multiviewer application detects any corruption in an XML file, it will copy the backup file from from the BackupSettings folder to replace the main file. If the file does not exist in the BackupSetting folder, then the Multiviewer application will create a new file with the default settings.

The three XML files are in the C:\Program Files\Harris\Harris Multiviewer folder:

- Settings.xml
- Configuration.xml
- Persistence.xml

Create a BackupSettings folder in the Centrio folder. The path name will look like:

```
C:\Program Files\Harris\Harris
Multiviewer\BackupSettings
```

Once you have completed configuring your multiviewer completely, copy the three XML files to the BackupSettings folder.

Adding Multiviewers to a Router Database

After installing an output module in a Platinum router frame, you must configure a router matrix that includes your multiviewer output module. Using Navigator's routing components, you can either create a new router matrix that includes your output modules, or you can add output modules to an existing routing matrix. Adding output modules to the routing matrix defines which router inputs will be used as input source audio and video.

The information below describes the different methods by which you can add an output module to a router database. It does not go into detail about any of these methods or about other aspects of editing a router database. For more information, please refer to the Volume 6 of your *Navigator User Manual.*

Note

To complete this task, you should have a working knowledge of Navigator.

Adding Output Modules by Polling

The Poll option queries the control system for any programmable devices present in the system. Polling obtains information about the current configuration of each physical device, and compares it to the information found in the database to determine if the database information matches the actual configuration.

1. Start Navigator.

2. Right click on **Routers** in the **Navigation** pane, and then select **Create** > **Routing System** from the context menu.

   The **New Routing System Configuration** dialog box opens.

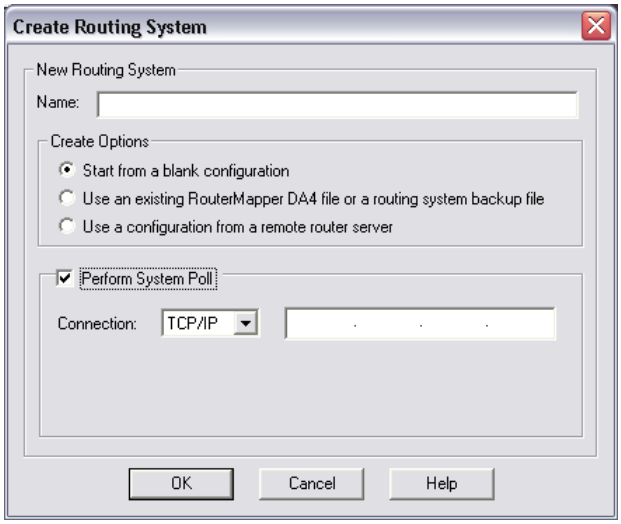


Figure 2-2. Create Routing System Dialog Box

3. In the **Name** field, enter a name for the routing system.

   This is the name that will appear in the **Navigation** window.

4. Under **Create Options**, choose **Start from a blank configuration**.

   This selection allows you to designate a new routing system, and then populate it manually or with a system poll.

5. Place a check beside **Perform System Poll**.

6. In the **Connection** field, choose **TCP/IP**, and then enter the IP address for your Platinum PT-RES module.

7. Click **OK**, and then wait while Navigator searches the network.

   When the search is complete, a series of folders appear under the name you provided in the Navigation pane.

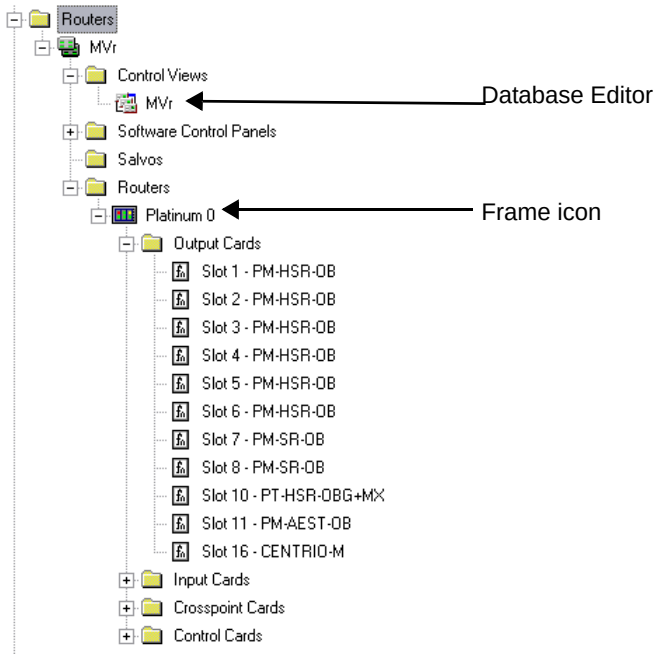


Figure 2-3. Routers Folder in the Navigation Pane

8. Right-click the **Frame** in the **Routers** folder, and then select Poll.

   Wait while Navigator polls the device.

9. When the frame poll is complete, double-click the Frame in the Routers folder.

   The **Edit Platinum Frame** dialog box appears.

10. On the **Configured Matrices** tab, click **Add**.

    The **Add WB Matrix** dialog box appears.

11. Under **Matrix Type**, select **MultiView**.

    The dialog box updates to display only multiviewer-related settings.

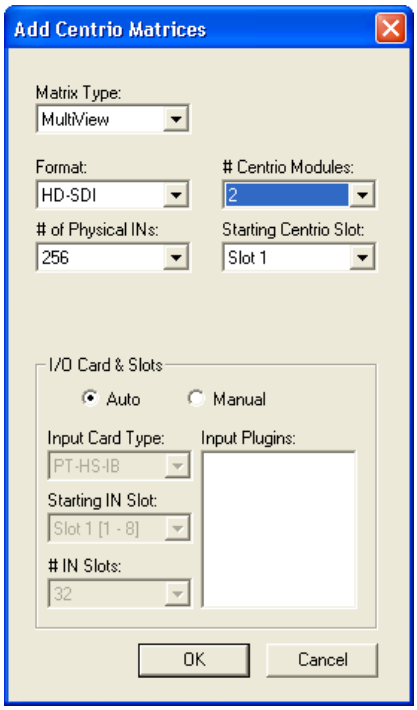


Figure 2-4. Configuring CENTRIO Matrix Settings

12. On the **Add Centrio Matrices** dialog box, do the following:
    a. Under **# Centrio Modules**, select the number of installed CENTRIO output modules.
    b. Under **Starting Centrio Slot**, select the first slot in which the top-most CENTRIO output module is installed.
    c. Under **# of Physical Ins**, select 0.
13. If required, make any changes to other settings in the dialog box, and then click **OK**.

    In the **Edit Platinum Frame** dialog box, two different types of multiviewer selections have been added: CENTRIO V for the underlying CENTRIO video matrix, and CENTRIO PIPs for the virtual CENTRIO matrix.
14. Multiviewers are placed in the graphical representation of the frame from the top down. To realign them in their correct positions, right click a CENTRIO module and select **Unassign from CENTRIO V**, and then click on the top row where the CENTRIO device should appear (Centrio modules being four slots tall), right-click again, and select **Assign to CENTRIO V**.
15. Select the range of video inputs to assign to CENTRIO, then right-click and choose Assign to CENTRIO V.

16. To add audio, right click on the audio inputs, and select Assign to CENTRIO V.
17. To configure the level and output offsets (if required), highlight CENTRIO V, and then click **Advanced**.

    The **Matrix Partition** dialog box appears. By default the output offset is equal to the size of the frame.
18. Make any necessary changes to this screen, and then click **OK**.
19. Highlight the same slots, right-click, and then select **Change Format**.

    The **Select I/O Card Type** dialog box opens.

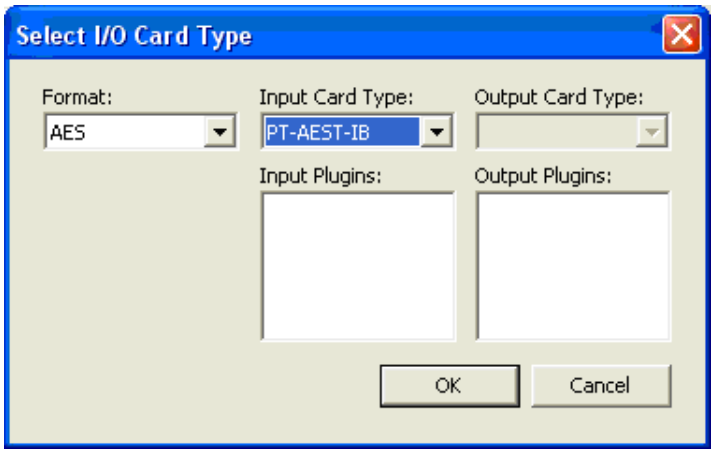


Figure 2-5. Changing Audio Input Format

20. Under **Format**, select the correct audio format, and then click **OK**.

    This creates a CENTRIO A audio matrix.
21. Highlight the slots that contain audio input modules, and then right-click and select **Assign to CENTRIO V**.

Configuring Multiviewers in Database Editor

1. To open the Router Database Editor, double-click on the item inside the routing system's **Control Views** folder.

   In this dialog box, you can make the following changes:

   - "Configuring UMD names" on page 25
   - "Configuring Discrete Audio Inputs" on page 25
   - "Creating Destinations Representing Actual PiPs" on page 26
   - "Setting Up PiPs to Follow Destinations" on page 26
2. When your changes are complete, click Save, and then close the dialog box.
3. Right-click the frame in the Routing system, and select **Download**.

   This loads the changes to the frame.

Configuring UMD names

On the Sources tab of the Database Editor dialog box, change the contents of the Name column to change the UMD names of devices on the multiviewer.

Configuring Discrete Audio Inputs

To map the video and audio in CENTRIO, do one of the following:

- To configure discrete audio inputs in Stereo Breakaway mode (default), on the Sources tab, configure the audio logical IDs as in Figure 2-6.

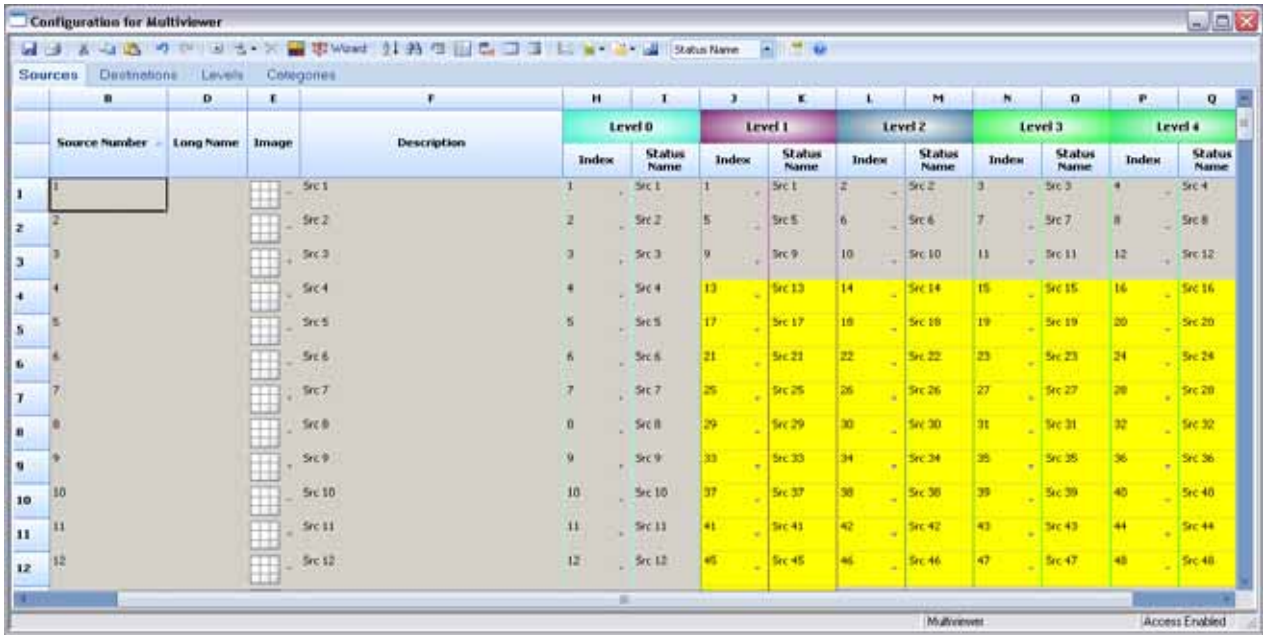


Figure 2-6. Logical ID Settings for Stereo Breakaway Mode with Discrete Audio Inputs

- To configure discrete audio inputs in RGB mode:
  a. double-click the Frame in the Routers folder.

     The **Edit Platinum Frame** dialog box appears.
  b. Select the CENTRIO A, and then click **Advanced**.
  c. Under **Partition Type** select **RGB/Stereo**.
  d. From the # of Partitions menu, choose the number of mono pairs of discrete audio per video.
  e. Assign the level of each component so that each pair is on its own level.

f. In the Database Editor screen, click the Sources tab and configure the audio logical IDs as in Figure 2-7.

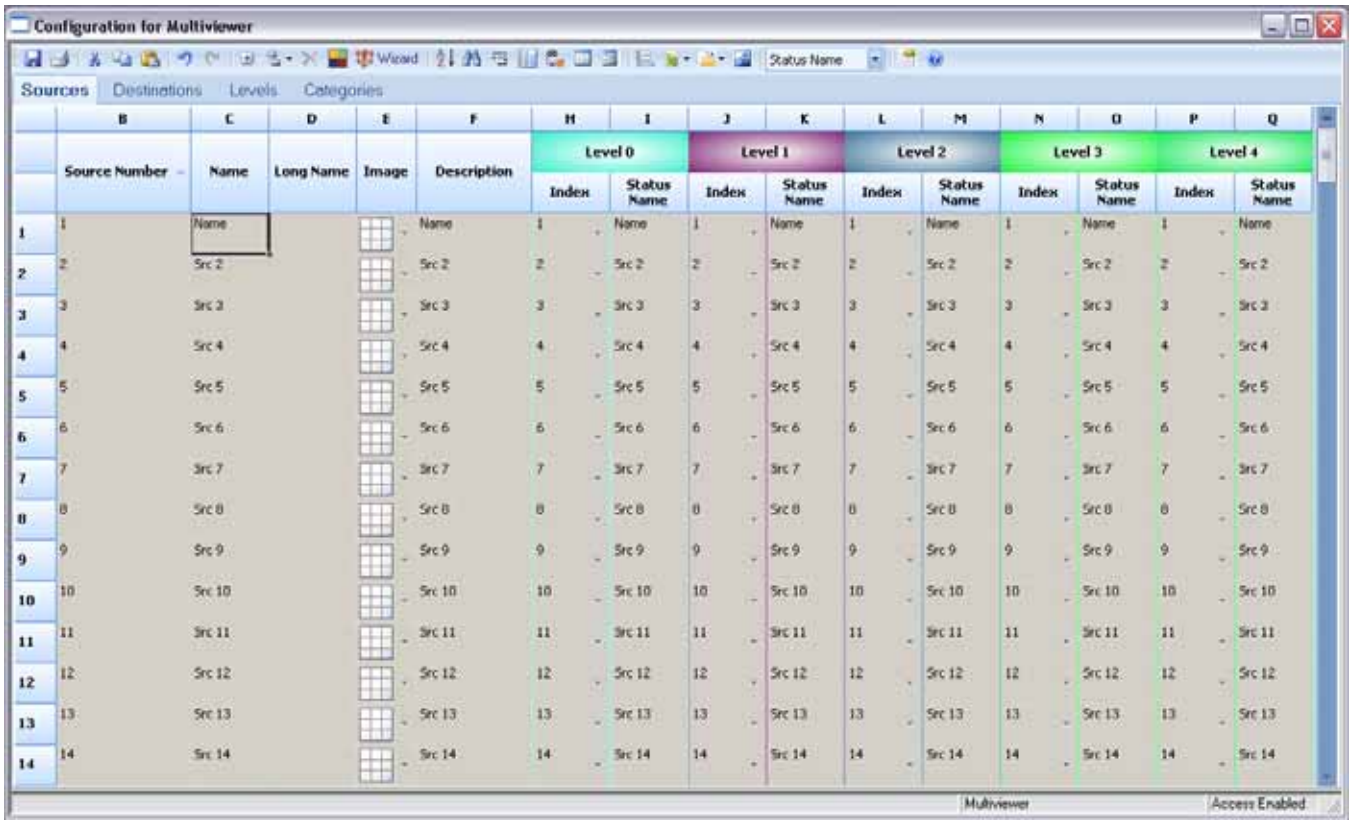


Figure 2-7. Logical ID Settings for RGB Mode with Discrete Audio Inputs

g. Click **OK**.

Creating Destinations Representing Actual PiPs

1. Select the **Sources** tab in the Database Editor.

   Make sure the CENTRIO video matrix (CENTRIO V) and virtual matrix (CENTRIO PIPs) are mapped to the same sources.

2. Edit the PiP destinations as required.

   Information on different methods of editing your PiP destinations is included in Volume 6 of your *Navigator User Manual*.

3. Ensure that the correct destination names appear (or are assigned) to the correct control device(s).

Setting Up PiPs to Follow Destinations

1. In the Database editor, click the **Levels** tab.

   The **Edit Levels** dialog box appears.

2. Beside **Destinations**, choose the number of destinations you want the PiPs to follow.

   This will be less than the default.

3. Click **OK**.
4. Double-click the Frame in the Routers folder.

   The **Edit Platinum Frame** dialog box appears.

5. Highlight the **CENTRIO PiPs** entry, and then click **Advanced**.

   The **Matrix Partition** dialog box appears.

6. Change the Output Offset entry to 0.

   Click **OK**, and then **OK** again.

7. On the Database Editor screen, click the **Destinations** tab.

   Check to make sure destinations are now mapped to Matrix 1, and to the CENTRIO PIP Matrix.

   Now, when you switch a destination, you will not only switch the output destination, but also the source displayed on the CENTRIO PiP. This changes the PiP 1 parameter available in CCS Navigator or a NUCLEUS control panel. See “PiP Parameters and Alarms” on page 40 for more information.

Configuring Multiviewers in a Local Area Network

The default IP address for your output module is 192.168.100.250. You can use this IP address to connect your output module directly to Layout Designer or add the output module to your network. Once you have added the multiviewer to your network, you can change the output module's IP address to suit your network requirements.

If you have more than one output module installed in your Platinum frame, you must go through the process of discovering and changing the IP address one output module at a time.

Note

Each multiviewer on the network must have an unique IP address.

Configuring multiviewers on a local area network includes the following steps:

I. Discovering output modules using the default IP address. This may involve first configuring the Layout Designer PC to be on the same subnet as the multiviewers. See "Adding the Multiviewer to the Layout Designer Devices List" on page 29 and "Preparing to Add Your Output Module to the Devices List" on page 29.

2. Changing output modules' IP addresses from their defaults to addresses that are within the range of the rest of your network. See "Changing the Output Module IP Address" on page 30.

3. Returning the Layout Designer PC to its original IP and subnet settings. See "Returning the Layout Designer PC to its Original IP and Subnet Settings" on page 32.

Note

You can also use CCS Navigator to change the output module Ethernet 1 IP address. For more information, see "Discovering Output Modules Using Navigator" on page 33.

Output modules have two Ethernet connections: **Ethernet 1** and **Ethernet 2**. Only **Ethernet 1** is assigned the default IP address, so ensure that this port is used to connect your output module to the Ethernet port of your local PC or network connection or hub.

Discovering Output Modules Using Layout Designer

You can discover an output module by adding its default IP address to Layout Designer's **Devices**. You can connect Layout Designer to the output module, and then change the output module's IP address.

Note

After you discover the module, change its IP address using Layout Designer. If you have not yet installed Layout Designer on your local PC, do so now. See the *Layout Designer Software Application User Manual* for more information.

When you use the Discovery tool to add output modules to the device list, Layout Designer scans the network and reports all devices with an IP address. The amount of time required for discovery depends on the number of devices you have on your network. Layout Designer may discover devices that you do not want to add to the devices list.

Preparing to Add Your Output Module to the Devices List

Before adding an output module to the Layout Designer Devices list, ensure that it is connected to the Layout Designer PC.

The PC can be directly connected to the output module using an Ethernet cross-over cable, or directly connected to the same hub or switch as the multiviewer using a normal Ethernet cable.

To connect your Layout Designer PC to an output module at its default IP address, follow these steps:

1. Make note of the IP address, subnet mask, and default gateway settings on your Layout Designer PC.
2. Change the network settings on your PC to the following:
   - IP Address: 192.168.100.100
   - Subnet Mask: 255.255.255.0
   - Default Gateway: Blank

After you have configured the output module's IP address for your network, you will need to return the PC to its original settings. See "Returning the Layout Designer PC to its Original IP and Subnet Settings" on page 32.

Adding the Multiviewer to the Layout Designer Devices List

1. Start Layout Designer.

2. From the application menu, select **File** > **New** > **Configuration**.

   The **Device Manager** dialog box appears.

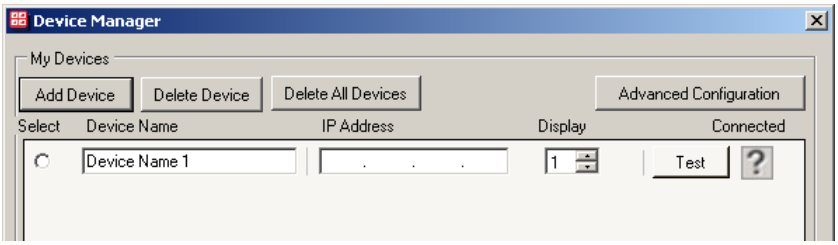


Figure 2-8. Entering the Multiviewer's Default IP Address

3. Click **Add Device**.

   A new device appears in the Device list.

4. Under **Device Name**, you can enter a new name for the output module.
5. Under **IP Address**, type 192.168.100.250, which is the output mode default IP address.
6. Under **Display**, enter the display number onto which your layouts will be published.

   In most configurations, the Display value should be set to 1. It can be set to 1 or 2 for Dual DVI and Dual SDI, and 1 to 4 for Quad SDI.

7. To connect the output module to Layout Designer, click the **Test** button.

   - If the connection is valid, the  icon is displayed under **Connected**.
   - If the connection is invalid, the  icon is displayed under **Connected**.

Note

If your connection is reported as invalid, check the default IP address you entered, the IP address of your PC, and your Ethernet connections, and then click **Test** to test the connection again.

8. After you establish a valid connection, click **Save** to save the list and connection information. You can change the IP address of your output module using Layout Designer's **Advanced Configuration** dialog box.

Changing the Output Module IP Address

Use Layout Designer's **Advanced Configuration** dialog box to change an output module's IP address. (You can also use CCS Navigator to change your output module's IP address. For information, see "Discovering Output Modules Using Navigator" on page 33.)

To change the output module IP address

1. From the Device Configuration dialog box, click **Advanced Configuration**.

   The **Advanced Configuration** dialog appears.

2. Under **Device Name**, select your new output module, and then click the **IP Settings** tab.

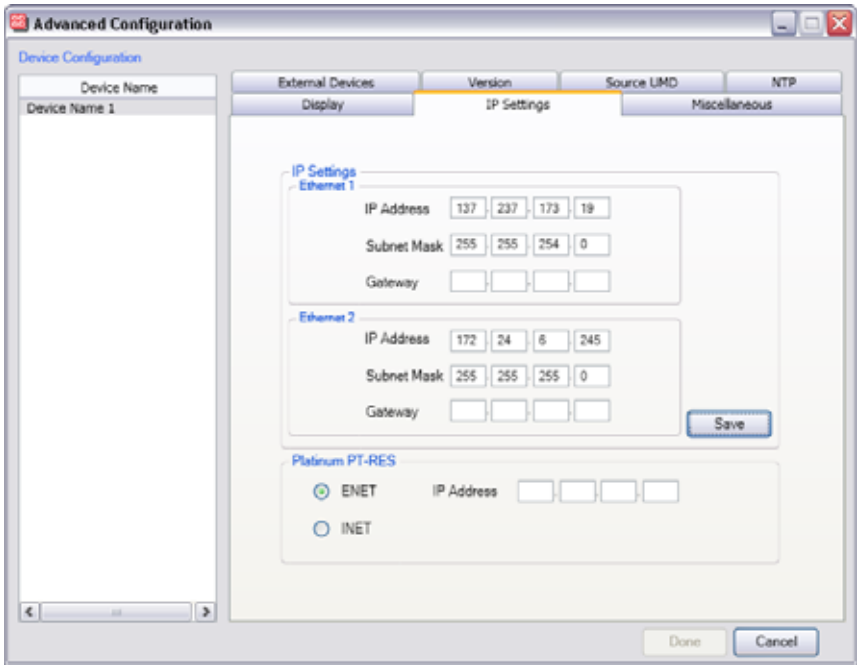


Figure 2-9. Changing the Multiviewer's Default IP Address

3. Under **Ethernet 1**, delete the information that appears in the **IP Address** and **Subnet Mask** fields, and then enter the IP Address and Subnet Mask that you want to use for the output module.

   Leave all the fields of **Ethernet 2** blank unless it is used to connect the multiviewer to devices on another LAN. If Ethernet 2 is going to be used, repeat step 3 for **Ethernet 2**, entering the different IP Address and Subnet Mask.

4. If your multiviewer communicates with the PT-RES module through external cables, click ENET, and then enter the IP address of the PT-RES module.

   INET communicates with the PT-RES through the internal bus, and does not require you to enter IP address.

5. Click **Done**.

Repeat the steps described in "Adding the Multiviewer to the Layout Designer Devices List" on page 29 and "Changing the Output Module IP Address" on page 30 for each output module that is installed in your Platinum router frame. When complete, you can use Layout Designer's device discovery tool to add each output module to the Devices List. See "Adding New Devices" on page 32.

Returning the Layout Designer PC to its Original IP and Subnet Settings

If you changed your Layout Designer PC IP address to communicate with the output module at its default IP address, and you have successfully changed the output module IP address, you can now change the Layout Designer PC IP address, subnet mask and gateway settings to the original settings that you recorded in "Preparing to Add Your Output Module to the Devices List" on page 29.

Adding New Devices

After you have assigned your output module a unique IP address, you can use Layout Designer's Discovery tool to add the output modules to the device list. Be aware that when you use the Discovery tool, Layout Designer scans the network and reports all devices with an IP address. The amount of time required for discovery depends on the number of devices you have on your network. Layout Designer may discover devices that you do not want to add to the devices list.

Note

Before attempting to discover your output module, ensure that you have returned your PC's IP Address, Subnet Mask, and Gateway Address to their original network settings (see "Returning the Layout Designer PC to its Original IP and Subnet Settings" on page 32).

To discover output modules

1. On the **Device Manager** dialog box, under **Device Discovery**, click **Discover Devices**.
2. When the discovery is complete, do either of the following:
   - To add specific devices, select the devices that you want, and then click **Add to My Devices**.
   - To add all of the discovered devices, click **Add All to My Devices**.

   The selected devices are now in the Devices list.
3. When you finish discovering and adding devices to the Devices list, click **Save**.

You can now configure your multiviewer's outputs. See "Configuring Multiviewer Outputs" on page 45 for more information.

Controlling Your Multiviewer on a CCS Network

You can use CCS Navigator and the NUCLEUS Network Control Panel to set CCS controllable parameters on your Harris multiviewer. CCS parameters allow you to select layouts, modify some layout attributes as well as monitor feedback from multiviewers. Using CCS Navigator, you can also monitor various hardware alarms, such as operating temperature alarms, as well as monitor the integrity of audio and video input signals.

Each output module, system, and associated PiP has its own set of parameters and alarms. Before you can access these parameters and alarms, you must discover the output module using CCS Navigator.

The following sections describe how to discover an output module and how to control and monitor it using CCS Navigator. For information about controlling output modules using NUCLEUS network control panels, see your *NUCLEUS CENTRIO Control Option Configuration and Operation Manual*.

Discovering Output Modules Using Navigator

You can use CCS Navigator in Build mode to discover output modules that are connected to a CCS network.

To discover a output module

1. Make sure Navigator is in Build mode by selecting **File** > **Operational Mode** > **Build**.
2. If the **Discovery Window** is not open, click **Tools** > **Discovery** in the main menu.

   The **Discovery Window** appears, most likely in the bottom left corner of the screen.
3. Click **Options**, and then click **Add**.
4. Enter the IP address of the output module you want to discover.
5. Click **OK** to close the **Add Host** dialog box, and then **OK** again to close the **Discovery Options** dialog box.
6. Click **Start**.

   Navigator runs a discovery.
7. When your discovery is complete, **Discovery Completed** is displayed in the **Discovery Window**.
8. Click **Save**.

   The contents of your discovery populate the **Discovery** folder of the **Navigation Window**.

You can now switch to Control mode by selecting **File** > **Operational Mode** > **Control** from the main menu. Depending on which output module parameter set or alarm group you want to view, double-click on the appropriate icon in the **Navigation Window** to display the system, module, or PiP controls.

Figure 2-10 illustrates a discovered output module.

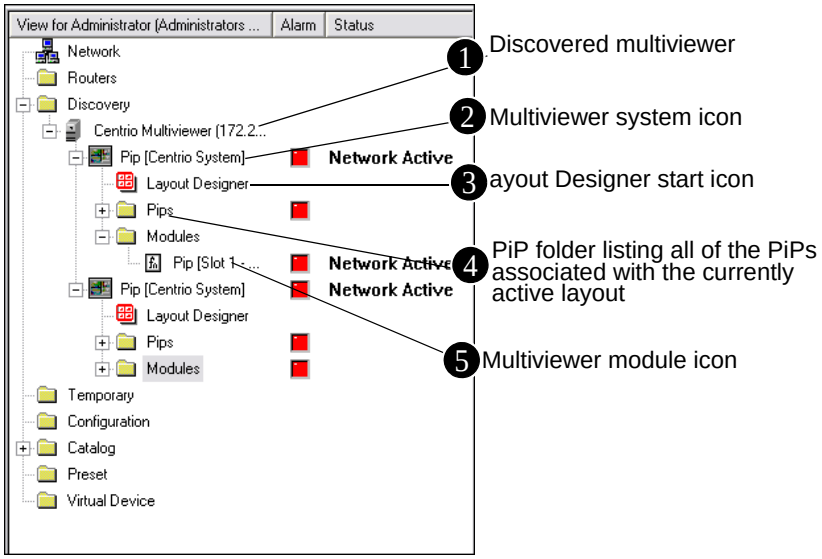


Figure 2-10. Discovering an Output Module

The following sections describe the multiviewer-related icons that appear in the Network view after you discover an output module.

1. Click this icon to expand the discovered CENTRIO multiviewer folder.
2. Double-click the CENTRIO system icon while in Control mode to display the system-related parameters and alarms in a Control window. For information about CENTRIO system parameter and alarms, see "Multiviewer System Parameters and Alarms" on page 39.
3. Double-click the Layout Designer icon to start Layout Designer. For more information, see your *Layout Designer Software Application User Guide*.
4. Click the PiP icon to expand the PiP folder to display all the PiPs associated with the currently active layout. When in Control mode, you can double-click on the individual PiP icons to access individual PiP parameters and alarms in a Control window. For more information, see "PiP Parameters and Alarms" on page 40.
5. Double-click the CENTRIO module icon to display the module related parameters and alarms in a Control dialog box. For information about module parameter and alarms, see "Multiviewer System Parameters and Alarms" on page 39.

Controlling the Multiviewer Through SNMP

Configuring a Harris Multiviewer as an SNMP Agent

You configure your multiviewer as an SNMP agent from **Control Panel** > **Administrative Tools** > **Services (Local)**.

1. Right-click on the display and select **Exit Multiviewer** to close the Multiviewer application.
2. On th Multiviewer Control Panel window, click **Command Prompt**.
3. Type the following:

   `services.msc`

   The computer management **Services** dialog box opens.

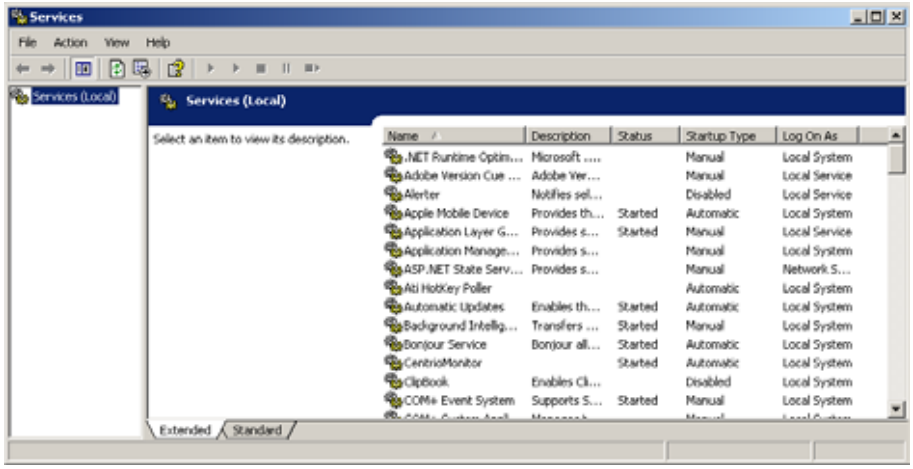


Figure 2-11. Services Dialog Box

4. Under **Services**, right-click on the **SNMP Service** and select **Properties**.
5. On the **Traps** tab, type a community name (usually **Public**).
6. Click **Add to List**.
7. Click **Add**, and then type the IP address of the SNMP Manager unit in the **Traps Destination** field.
8. Click **Add**, and then click **Apply**.
9. Click **OK**.

   In the **Computer Management Services** window, the **Status** field should display **SNMP Service Started**.

10. Click **Start Multiviewer** to restart the Multiviewer application.
11. Click **Launch Multiviewer**.

Configuring Third-Party SNMP Software Control

To set up your multiviewer with optional SNMP to communicate with SNMP MIB browsing software, follow these steps:

1. Make the required network connections between the output module(s) and your PC with installed SNMP browser/control software.
2. Ensure that your output module is configured to send traps to the computer that contains your MIB browsing software.
3. For information on configuring SNMP on the output module, see "Configuring a Harris Multiviewer as an SNMP Agent" on page 35.
4. Load the Leitch mibs (downloadable from our website) into your SNMP browser/control software:
   - leitch.mib

     This MIB sets up the basic structure for product specific MIBs. It can be found under the **Private** > **Enterprise** branch in your MIB browsing software, and sets up the **leitchProducts** and **leitchCommon** sub-branches.

     The **leitchCommon** branch is initially empty. The **leitchProducts** branch contains three initially empty sub-folders: **LeitchX75**, **NEO** and **fam6800plus**.
   - ccsAlarm.mib

     This MIB adds a **ccsAlarms** sub-branch to the **leitchCommon** folder. When it is installed, you will be able to determine what specific module or frame has triggered an alarm (trap).

   These general MIB files set up a structure to help define parameters (as SNMP objects, and alarms as SNMP traps.
5. Load the Multiviewer MIBs (downloadable from our website) into your SNMP browser/control software:
   - CENTRIOMODULE.mib

     Loads the parameters and alarms listed in "Multiviewer System Parameters and Alarms" on page 39.
   - CENTRIOSYSTEM.mib

     Loads the parameters and alarms listed in "Multiviewer System Parameters and Alarms" on page 39.
   - PIP.mib

Loads the parameters and alarms listed in “PiP Parameters and Alarms” on page 40.

The Multiviewer MIBs will appear in the CENTRIO folder under the **LeitchProject** folder.

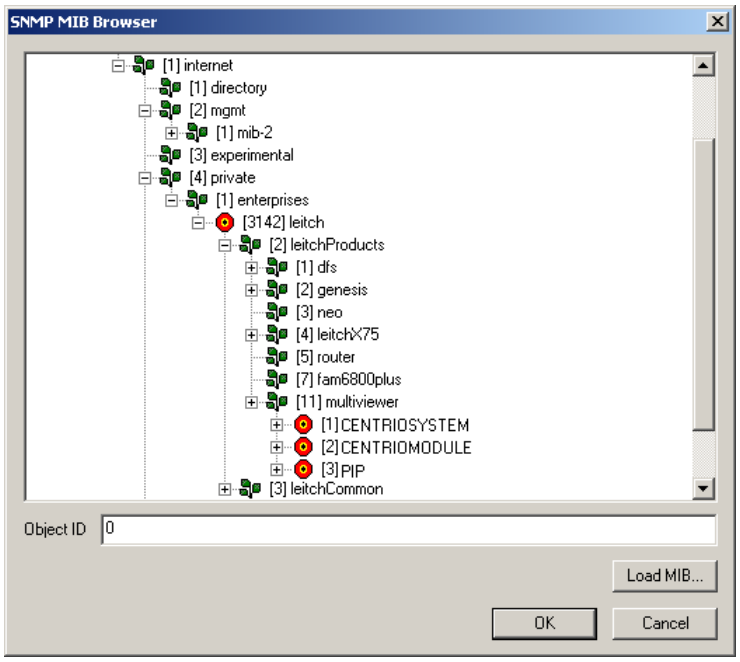


Figure 2-12. Multiviewer MIBs Loaded into NUDesign MIB Browser

6. Configure your MIB browser to connect to the output module by entering the IP address, Port (if you have changed the Port from its default in the configuration), and other standard configuration settings.

   Your browser should now connect to the SNMP agent running on the output module.

7. To receive traps, start up the trap receiver in your MIB browser software.

To verify that your configuration is correct, browse to **Private** > **Enterprises** > **Leitch** on the MIB tree, and then right click on the **Leitch** heading and choose **Walk**.

You will see all the parameters and alarms for the device. .

To facilitate monitoring more than one multiviewer, MIBs index devices by IP address. These settings will be available in your SNMP manager. See your SNMP manager’s documentation for details of how to customize its configuration.

Parameters and Alarms

Use CCS Navigator in Control mode or NUCLEUS network control panel to access CCS controllable parameters and alarms. Output modules have no card-edge controls. You must discover the output module before you can access CCS parameters and alarms (see “Discovering Output Modules Using Navigator” on page 33).

Output module alarms function in the same way other CCS device Smart Alarms operate. For information about how CCS Alarms work, see your CCS Navigator documentation. Additional audio and video alarms can be viewed on display layouts and with Layout Designer software. See your *Layout Designer User Guide* for more information about configuring and viewing on-screen audio and video alarms.

Output module parameters and alarms are divided into the following Navigator Control Window tabs.

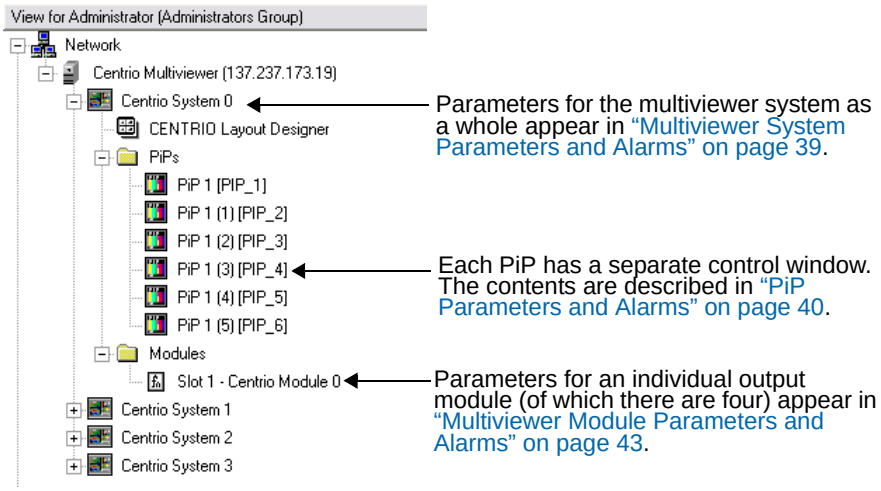


Figure 2-13. Multiviewer Devices That Launch Control Windows

Parameter Table Notes

The parameters are listed in the order that they appear in CCS Navigator.

When viewing the control parameter tables, observe the following:

- Shaded table rows indicate read-only (feedback) parameters. Some Read-only parameters can be modified using Layout Designer.
- Bold parameter options indicate the default settings for the parameter.

Multiviewer System Parameters and Alarms

If your multiviewer has been configured for Independent mode (one layout for each DVI output display) using Layout Designer, two system icons appear in the Discovery folder. Each system has its own set of parameters alarms. To access the system parameters and alarms, in the Network view, click the multiviewer's system icon, and select either the **Parameters** or **Alarms** tab.

Note

See the Multiviewers Configuration chapter in your *Layout Designer Software Application User Guide* for information on configuring for Independent mode.

Table 2-1 lists the system parameters, and Table 2-2 on page 39 lists system alarms.

Table 2-1. Multiviewer System Parameters

Parameter Name	Function	Options
Parameters		
System Name	Displays the name of the current Multiviewer system	(displayed system name)
Active Layout Name	Displays the name of the layout that is active on the selected system (lists all layouts stored on the Multiviewer module)	(name of currently active layout)
Number Displays	Shows the number of display devices currently connected to the selected Multiviewer system	(number of displays)
Initial Counter Time	Determines the start time of any counters	(**00.00.00.00**)
Lock Display	Disables on-screen controls on the output module	• **Disable** • Enable
Parameters > Virtual GPI		
Virtual GPI (1-16)	Renders the specified virtual GPI as active or inactive	• **Disable** • Enable

Table 2-2. Multiviewer System Alarms

Alarm Name	Description
System Major Summary	Active if any alarm condition is reported (priority > 7) for the system
System Minor Summary	Active if any alarm condition is reported (4 < priority < 7) for the system
System Communication Failure	Master module has lost connection to a slaved module
System LTC Failure	System lost LTC input, if configured
System GPIO Failure	System lost connection to external GPIO device, if configured

PiP Parameters and Alarms

You can access PiP parameters and alarms for each PiP that is associated with a currently active layout.

To access the PiP parameters and alarms

1. In the Network view, double-click or expand the **PiP** folder.

   Each PiP associated with the layout is listed in the Network view.

2. To access an individual PiP's parameters, click the PiP icon, and in Control mode, click the **Parameters** tab.
3. To view a consolidated list of PiP alarms, click the **Alarms** tab.

Table 2-3 lists the CCS parameters for each PiP.

Table 2-3. PiP Parameters

Parameter Name	Function	Options
Parameters		
Name	Displays the PiP name	String (always shows PiP)
Static	Displays the label text on the selected PiP	String (displayed label text)
Display	Identifies which output display device is currently displaying the selected PiP	String (display name)
Dynamic	Displays the source ID for the UMD source	String (UMD source ID)
Source Name	Selects the input source name for the PiP	Drop-down list with all sources listed
Source Number	Displays the source number for the selected PiP	Slider (1 to maximum source number)
Source ID	Displays the source ID for the selected PiP	String (source ID)
Full Screen Enable	Activates/deactivates full-screen view of the selected PiP	• Enable • **Disable**
Video Present Status	Displays the presence of a video input signal on the PiP's input source	(displays Absent or Present)
Video Standard Status	Displays the detected video standard of the PiP's input source	(displays input standard status)
Aspect Ratio	Displays the detected video aspect ratio of the PiP's input source	(displays aspect ratio)
Test and Measurement (These parameters will not appear if your hardware does not support this feature)		
Color Source	Sets the default color dislay to to **From Video** (color) or **Monochrome** (black and white)	• **From Video** • Monochrome

Table 2-3. PiP Parameters *(Continued)*

Parameter Name	Function	Options
Display Scope	Determines what type of scope is displayed	• **None** • Waveform • Waveform Parade • Line • Line Parade • Vector • Quad Display
Video Line	Select which line of the active video to evaluate	(varies depending on input resolution)
Zoom Range X Min	Determines the start of the display, if you only want to view a portion of the video line	(varies depending on input resolution)
Zoom Range X Max	Determines the end of the display, if you only want to view a portion of the video line	(varies depending on input resolution)
Field Select	Determines which video field (in interlaced formats only)	• **Even** • Odd
Audio Monitoring		
AES Output	Selects the AES output to configure for monitoring	• **AES 1** • AES 2
Channel 1	Selects which audio you want to output for audio monitoring in channel 1	1 to **16**
Channel 2	Selects which audio you want to output for audio monitoring in channel 2	1 to **16**
Stereo Pair	Selects which audio pair from the selected audio channel you want to output for audio monitoring (this control will set channel 1 and channel 2 appropriately)	• **Channel 1 & 2** • Channel 3 & 4 • Channel 5 & 6 • Channel 7 & 8 • Channel 9 & 10 • Channel 11 & 12 • Channel 13 & 14 • Channel 15 & 16
Monitor	Enables or disables audio monitoring	• **Disable** • Enable
PiP Location		
X Offset	Displays the offset value of the PiP's horizontal (x) position in the layout	(offset value)
Y Offset	Displays the offset value of the PiP's vertical (Y) position in the layout.	(offset value)

Table 2-3. PiP Parameters *(Continued)*

Parameter Name	Function	Options
X Size	Displays the value of the PiP's horizontal (X) position in the layout.	(value)
Y Size	Displays the value of the PiP's vertical (Y) position in the layout.	(value)
PiP State	Indicates if the PiP is active in the layout	• **Disabled** • Enabled

Table 2-4 lists PiP alarms.

Table 2-4. PiP Alarms

Alarm Name	Description
Global Video Summary	Active if any video alarm is reported
Global Audio Summary	Active if any audio alarm is reported
Global Tally Summary	Active if any tally alarm is reported
PiP Audio Ch 1 Missing - PiP Audio Ch16 Missing	An audio signal is not present on the PiP audio channel indicated (Ch1–Ch16).
PiP Audio Ch 1 Peak - PiP Audio Ch16 Peak	The audio level on the PiP audio channel indicated (Ch1–Ch16) is over the set peak threshold value.
PiP Audio Ch 1 Low - PiP Audio Ch16 Low	The audio level on the PiP audio channel indicated (Ch1–Ch16) is under the set low threshold value.
PiP Audio Ch 1 Silence - PiP Audio Ch16 Silence	The audio level on the PiP audio channel indicated (Ch1–Ch16) is under the set silence threshold value.
Audio Group 1 Missing - Audio Group 4 Missing	The specified audio group is not present....
Format Change	Indicates that the video input format has deviated from its defined standard
SD EDH Error	Reports recurring EDH errors in the standard definition video signal
HD CRC Error	Indicates that the internally calculated CRC value is different from the received CRC value
Loss of Video	Indicates that the multiviewer hardware can no longer detect a video signal from the video channel
CC Missing	Indicates that closed captioning (can be HD or SD) is not present in the incoming video stream
CC Not Updating	Indicates that closed captioning is not updating correctly in the incoming video stream
WSS Missing	Indicates that WSS is not present in the incoming video (should be present in SD625 only)

Table 2-4. PiP Alarms *(Continued)*

Alarm Name	Description
Video Freeze	Indicates that the input video image is frozen (static) according to user-defined frozen picture delay (duration), percent of frozen video in the frame, and amount difference between pixels percent tolerance
Video Black	Indicates that the input video image is considered a black picture according to user-defined percentage non-black picture, delay (duration), and black level threshold values
VChip Data Missing	Indicates that there is no V-chip data in the incoming video stream
VITC Missing	Indicates that there is no VITC in the incoming video stream
CC Not Valid	Indicates that the closed captioning data in the incoming video stream is not usable
Teletext Missing	Indicates that there is no teletext in the incoming video stream
Teletext Not Updating	Indicates that the teletext data in the incoming video stream is frozen
Teletext Not Valid	Indicates that the teletext data in the incoming video stream is not usable
AFD Missing	Indicates that AFD data is not present in the incoming video
AFD Format Change	Indicates that the AFD information has changed from its previous format
Audio Format Change	Indicates that the audio format has switched from Dolby D, Dolby E, or PCM, or indicates any format change
Dolby E Program Change	Indicates that the Dolby program format has deviated from the one specified
VChip Mismatch	Indicates that the V-chip data in the incoming video stream does not match the expected rating
WSS Format Change	Indicates that the WSS information has changed from its previous format

Multiviewer Module Parameters and Alarms

Multiviewer module parameters and alarms apply to the output module hardware. To access the multiviewer module parameters and alarms, in the Network view, click the CENTRIO module icon, and select either the **Parameters** or **Alarms** tab. Table 2-5 lists the output module parameters and Table 2-6 on page 44 lists the output module alarms.

Table 2-5. Output Module Parameters

Parameter Name	Function	Options
Parameters		
Module Type	Displays the module type	(displayed Master)
System Name	Displays the name of the current output module	(displayed system name)

Table 2-6. Output Module Alarms

Alarm Name	Description
Major Alarm Summary	Active if any alarm condition is reported (priority > 7) for the module.
Minor Alarm Summary	Active if any alarm condition is reported (4 < priority < 7) for the module.
CPU Over Temperature	The maximum operating temperature of the module's central processing unit has been exceeded.
GPU Over Temperature	The maximum operating temperature of the module's graphics processing unit has been exceeded.
Main Board Over Temperature	The maximum operating temperature of the module's main circuit board has been exceeded.
Storage Over Temperature	The maximum operating temperature of the module's storage device has been exceeded.
Fan Unit 1 Failure	Cooling Fan Unit #1 is not operating.
Fan Unit 2 Failure	Cooling Fan Unit #2 is not operating.

Configuring Multiviewer Outputs

Use Layout Designer to select which outputs you want to use to display layouts. You can access these options from the **Advanced Configuration** dialog box.

Use these controls to select whether to output layouts to DVI or SDI output display devices. You cannot output layouts simultaneously to both DVI and SDI outputs. You can select from the following output display options:

DVI Displays redundant, different, or spanned layouts on one or two monitors (options are displayed in Table 2-7)

SDI Displays redundant, different, or spanned layouts on up to four monitors (options are displayed in Table 2-8 on page 46)

- **Redundant mode**—Displays copies of a single layout on more than one output display device
- **Independent mode**—Displays a single layout on a output display device
- **Spanned mode**—Displays a single layout across two output display devices

  When you select spanned mode, you can also select either Horizontal or Vertical as a display orientation.

Table 2-7. DVI Output Display Configurations

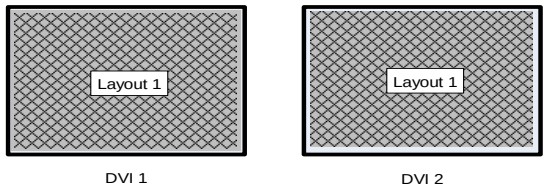
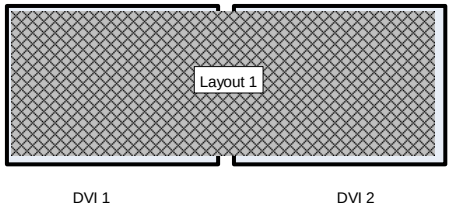
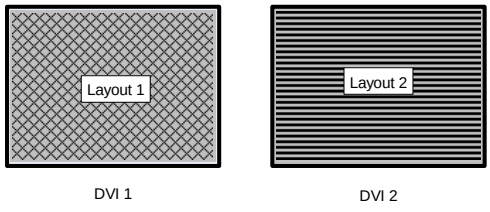
Output Video Setting	Display
Redundant DVI	
Spanned DVI	
Dual DVI	

Table 2-7. DVI Output Display Configurations *(Continued)*

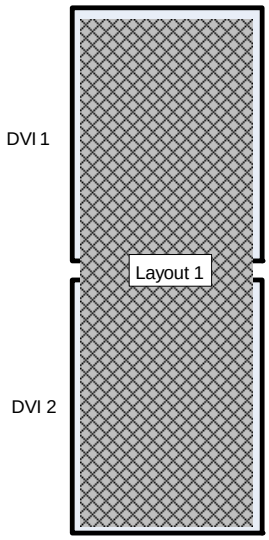
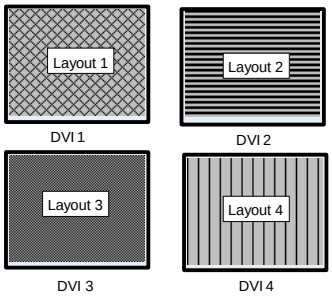
Output Video Setting	Display
Spanned DVI Vertical	
Quad DVI (requires two Matrox TripleHead2Go boxes; see page 70)	

Table 2-8. SDI Output Display Configurations

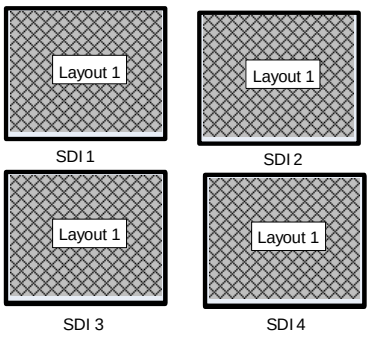
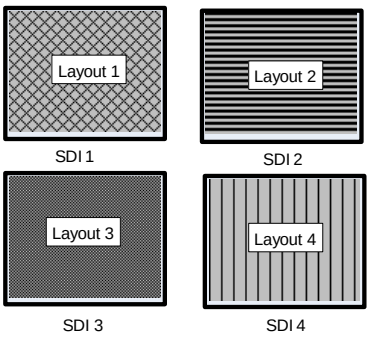
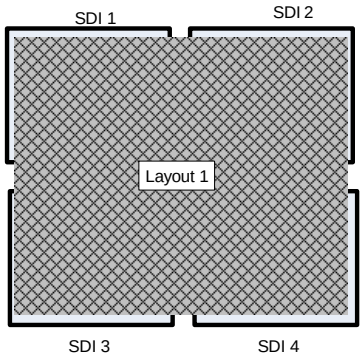
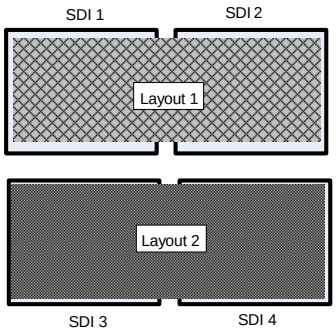
Output Video Setting	Display	Output Video Setting	Display
Redundant SDI		Quad SDI	

Table 2-8. SDI Output Display Configurations *(Continued)*

Output Video Setting	Display	Output Video Setting	Display
Spanned SDI		Dual SDI	

Configuring Outputs With Layout Designer

You can use Layout Designer to select which outputs you want to use to display layouts as well as select an Output Display mode for your output display devices.

Note

You must be familiar with the operation of your Layout Designer software application. For more information, see your Layout Designer *Software Application User Guide*.

Before using Layout Designer to configure your outputs, you must perform the following tasks:

- Install Layout Designer on a local or network PC (see your *Layout Designer Software Application User Guide*)
- Add your multiviewer to a router database (see “Adding Multiviewers to a Router Database” on page 20)
- Change the default IP address of your multiviewer (“Configuring Multiviewers in a Local Area Network” on page 28)
- Discover your multiviewer output module (see “Discovering Output Modules Using Layout Designer” on page 29)

To configure your outputs

1. Start Layout Designer.

   If a message appears telling you that Layout Designer cannot connect to your multiviewer, check your system Ethernet connection, and then rediscover your multiviewer (see “Discovering Output Modules Using Layout Designer” on page 29).

2. In the Multiviewer panel, right-click on a connected Harris multiviewer, and then select **Advanced Configuration** from the context menu.
3. From the **Advanced Configuration** dialog box, click the **Display** tab.

4. Under **Video Output**, select **SDI** or **DVI**.

   The row of options will update to reflect the monitor configurations that are available (see Table 2-14 and Table 2-15).

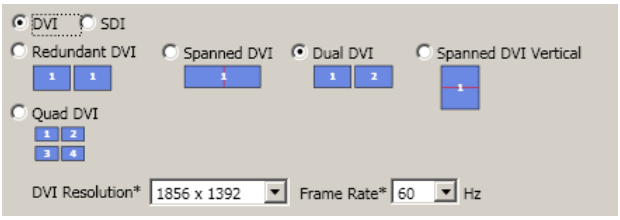


Figure 2-14. Selecting Video Output Settings for DVI

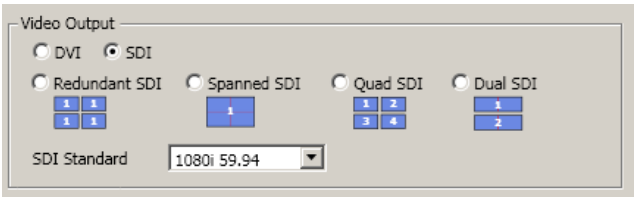


Figure 2-15. Selecting Video Output Settings for SDI

Note

You cannot output layouts simultaneously to both DVI and SDI outputs.

5. If you selected a DVI video output setting, select an output resolution from the **DVI Resolution** drop-down list. If you selected an SDI video output setting, select an output resolution from the **SDI Standard** drop-down list.
6. Click **Done**.

For information on the Test Signal and Timing options on this screen, see your *Layout Designer Software Application User Guide*.

Configuring JLCooper eBOX in Layout Designer

You can use JLCooper eBOX units to add GPIO functionality to your Harris multiviewer. For information on connecting a JLCooper eBOX, see "External Hardware Components" on page 11 and the documentation that came with the unit.

The first JLCooper eBOX that is connected to the multiviwer using Ethernet must be set up as a server, and any following eBOX devices should be configured as clients. Information on configuring clients and servers is included in your JLCooper eBOX documentation.

To configure your multiviewer to communicate with the JLCooper eBOX, follow these steps:

1. Right-click a device in the **Multiviewers** window, select **Advanced Configuration**, and then click on the **External Devices** tab.
2. (Optional) In the **Name** field, enter a name for the device.
3. Under **Type**, select **JL Cooper E-Box**.
4. Under **Port**, select **TCP/IP**.

   The right side of the dialog box may update to display IP settings.
5. Under **IP**, enter the IP address of the JLCooper eBOX.

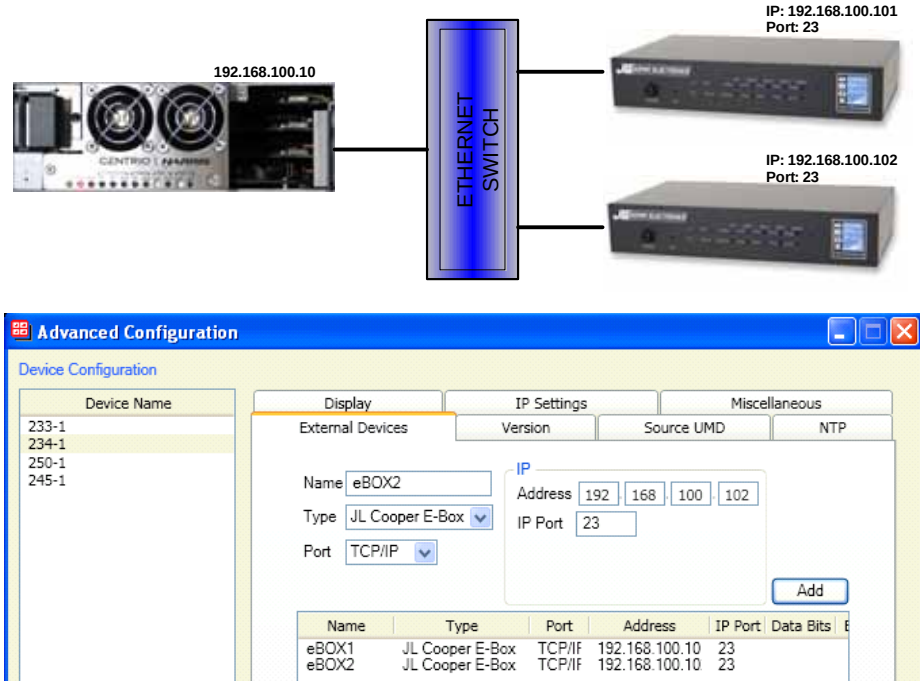
   192.168.254.102 is the default IP address. Depending on the way your eBOX is connected to the multiviewer, you may need to change this so both devices are on the same subnet. This is not necessary if they are connected directly using an Ethernet cross-over cable. See your *eBOX Users Manual* for information on changing the device's IP address.
6. Under **IP**, enter the IP Port of the JLCooper eBOX.

   The default port is 23.
7. Click **Add**.

   The JLCooper eBOX appears in the table below the **Add** button.
8. Click **Done** to close the **Advanced Configuration** dialog box.

Configuring the Multiviewer to share JLCooper eBoxes

You can connect up to four eBoxes to a multiviewer output module, providing up to 96 GPI/O triggers.



- eBOX1 = GPI/O 01~24
- eBOX2 = GPI/O 25~48

Figure 2-16. Connecting Multiple eBoxes to a Single Multiviewer

1. Configure a multiviewer to connect to multiple eBoxes, following the steps in "Configuring JLCooper eBOX in Layout Designer" on page 49.
2. Configure a second multiviewer to connect to an eBox as in Step 1, with the following changes:
   - Use the IP address of the multiviewer configured in Step 1.
   - Use IP port 49153.
3. To configure each additional multiviewer to connect to a multiviewer configured with an eBox, increment the IP port number by one each time (port 49154, 49155, and so on).

To configure eBox server port, edit the settings.xml eBoxServerPort on the multiviewer that has the eBox physically connected.

Configuring Multiple Multiviewers to Multiple JLCooper eBoxes

You can connect multiple multiviewers to up to four JLCooper eBoxes.

Note: The **EBoxServerPort** parameter in **Settings.xml** file defines the base starting port number. This parameter setting is only applicable to the master multiviewer.

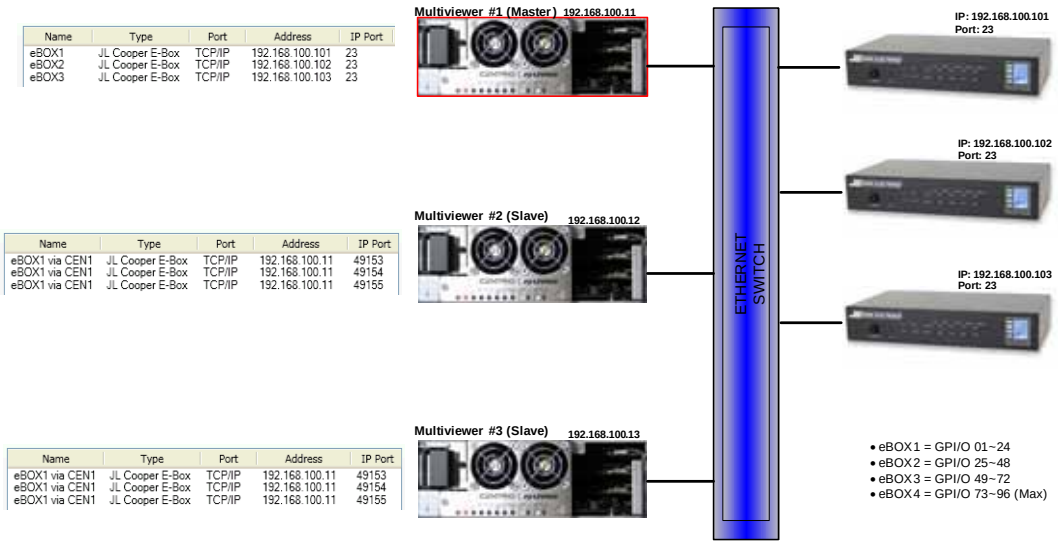


Figure 2-17. Multiple JLCooper eBoxes Connected to Multiple Multiviewer Devices

1. On the **Advanced Configuration** > **Ext. Devices Tab**, configure the master multiviewer to point to all eBOXes using the port defined in the **EBoxServerPort** parameter in the **Settings.xml** file.

   The default is 23. In Figure 2-17, the master multiviewer points to three eBoxes on port 23.

2. On the **Advanced Configuration** > **Ext. Devices Tab**, configure the slave multiviewers to point to the master multiviewer using the starting port number (port 49154, 49155, and so on).

   The slave multiviewer's port number automatically increments by one for each eBOX configured.

Using the Multiviewer Control Panel

Administrator users of the multiviewer may need to use the Multiviewer Control Panel to perform maintenance operations. To access the Multiviewer Control Panel, you must exit the multiviewer from the On-Screen menu.

Accessing the Multiviewer Control Panel

1. Select **Exit Multiviewer** from the On-Screen menu, and then click **Yes** to confirm.

   A dialog box similar to the following will appear. The **Disable** becomes **Enable**, and all the buttons in the Actions section of the screen will be unavailable.

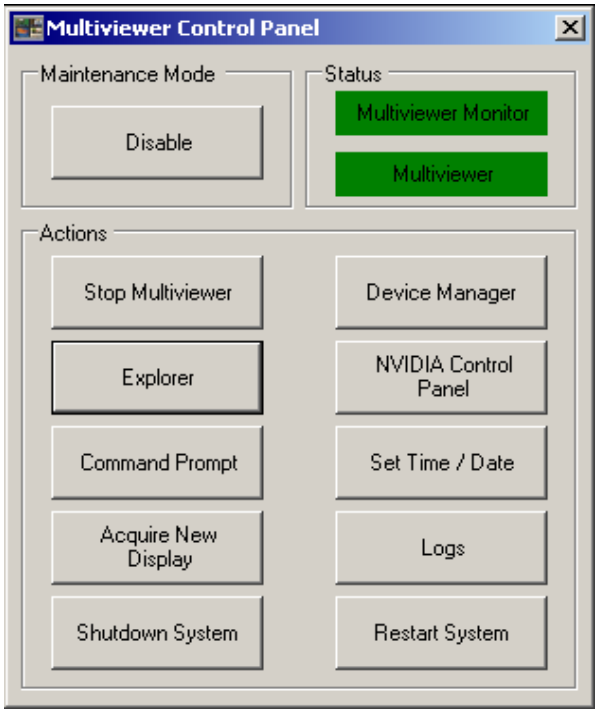


Figure 2-18. Multiviewer Control Panel

2. Click **Enable** to enter Maintenance mode.

With Maintenance mode enabled, the following actions will be available:

Table 2-9. Multiviewer Control Panel Options

Button	Function
Enable	Sets the Control Panel to maintenance mode
Disable	Sets the Control Panel to normal operation mode (from maintenance mode)
Stop/Start Multiviewer	Starts or stops the Multiviewer On-Screen Application
Explorer	Starts the file system explorer application
Command Prompt	Starts the command prompt application
Acquire New Display	Sets your multiviewer temporarily from SDI mode to DVI mode for diagnostic purpposes (a restart is required); restart the multiviewer again to return to SDI mode

Table 2-9. Multiviewer Control Panel Options *(Continued)*

Button	Function
Shutdown System	Shuts down the output module (You will need to re-insert the output module or repower the Platinum frame to restart the multiviewer)
Device Manager	Starts the device manager application
NVIDIA Control Panel	Starts the NVIDIA application to configure the NVIDIA graphics drivers settings
Set Time/Date	Opens the Date and Time Properties dialog box
Logs	Opens the Multiviewer Logs dialog box for viewing
Restart System	Shuts down and restarts the output module

Starting the Multiviewer from the Multiviewer Control Panel

You can start the multiviewer from the Multiviewer Control Panel.

1. On the Multiviewer Control Panel, click **Enable**.
2. Click **Start Multiviewer**.

   The **Configuration** dialog box appears.

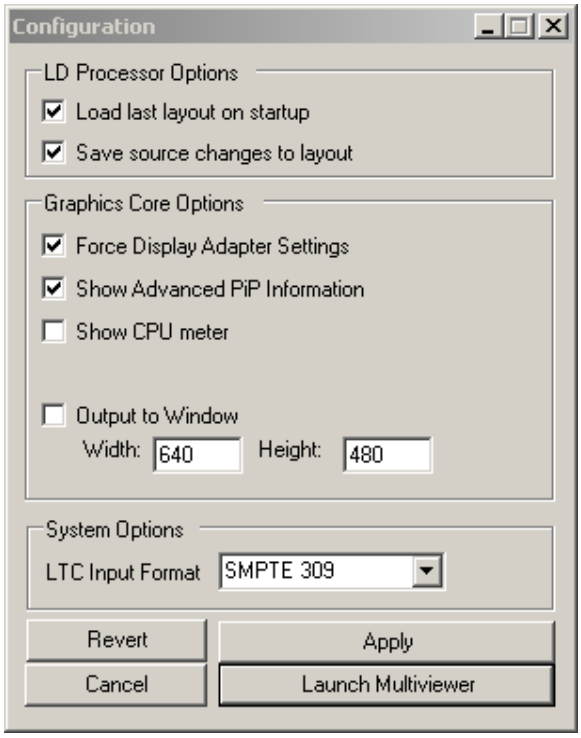


Figure 2-19. Configuration Dialog Box

Table 2-10. Configuration Dialog Box Options

Option	Function
Load last layout on startup	When this is checked and the multiviewer starts up, it will reload the layout that was displayed when you last exited
Save source changes to layout	When this is checked, after you change inputs to the PiPs (for example using CCS controls or NUCLEUS), these changes are saved to the layout, and are reloaded if the layout is loaded again. When this is not checked and you make changes to the layout, when the layout is reloaded, it will revert to its original inputs.
Force Display Adapter Settings	This option should always be checked during normal operation. When it is not checked, the display settings may not be respected by the display device.
Show Advanced PiP Information	This is normally used for diagnostic purposes, and includes the XVIM ID that PiPs are coming from, and their input source
Show CPU Meter	Shows the percentage of the CPU power that is currently in use; this option is normally not checked
Output to Window	Outputs the layout configuration to a window (as defined by the Height and Width fields) on your screen; this option is normally not checked
LTC Input Format	Used when configuring the clock reference signal; options include: • Leitch 12M • SMPTE 12M • SMPTE 309

3. Click **Launch** Multiviewer to start the Multiviewer application and its On-Screen menu.

   Click **Apply** to save your System Startup settings, **Revert** to reset the content of the **Configuration** dialog box, or **Cancel** to cancel launching the Multiviewer application.

Restarting the Multiviewer Control Panel

If you accidentally closed the Multiviewer Control Panel, you can reopen it.

1. Simultaneously press the CTRL, ALT, and DEL keys on your keyboard.

   The Windows Security dialog box opens.
2. Select **Task Manager**.
3. The Windows Task Manager dialog box opens.
4. From the application menu, select **File** > **New Task (Run)…**

   A Create New Task dialog box opens.

5. Click **Browse**, and navigate to **C:** > **Program Files** > **Harris** > **Harris Multiviewer**.
6. Double-click on **XenaShell.exe**, and then click **OK**.

The Multiviewer Control Panel appears.

Unlocking the Multiviewer Display

If you accidentally locked the Multiviewer display, you can unlock it.

1. In the **Unlock Computer** dialog box, enter the following settings:
   - **User Name**: Administrator
   - **Password**: (your Multiviewer Administrator user password)

     By default, this password is set to Centrio. Note that these fields are case sensitive.
2. Click **OK**.

Note

Changing the password is not recommended. If you change the password, you will be prompted to enter it every time the multiviewer is restarted.

Configuring Multiviewers for Router Follow

With destination router follow, you can configure a PiP to follow a particular destination within the router database.

Configuring Specific PiPs for Router Follow

1. In Layout Designer, open an existing layout, or create a new layout.
2. Select a PiP in the layout that you want to router follow.
3. Check **Follow Destination** in the **PIPs** properties tab, and then in the field to the right, enter the number of the router destination for the PIP to follow.
4. (Optional) Check the box beside **Virtual** for virtual destinations.

   Virtual outputs need to exist in the router database. See “Configuring Virtual Destinations for Router Follow in a Router Database” on page 55.

Configuring Virtual Destinations for Router Follow in a Router Database

To add virtual destinations to a router matrix, follow these steps:

1. In Navigator, double-click the Frame in the Routers folder.

   The **Edit Platinum Frame** dialog box appears.
2. On the **Configured Matrices** tab, select the matrix to add the virtual output module(s).
3. Right-click an empty output location in the frame and select **Assign to**.

You can add outputs that are not physically present in the frame, for example destinations numbered higher than the number of actual destinations in the matrix.

Tieline Support

To enable support for tielines in the Harris Multiviewer, follow these steps:

1. Open the **settings.xml** file in **C:\Program Files\Harris\Harris Multiviewer** directory.
2. Find the following line:

   ```
   <enableRemoteSources>false</enableRemoteSources>
   ```
3. Edit this line from false to true as follows:

   ```
   <enableRemoteSources>true</enableRemoteSources>
   ```
4. Save the change and restart the Harris Multiviewer.

This change will allow the Harris Multiviewer access to tieline sources from upstream routers. These sources can now be assigned to PIPs in Harris Layout Designer or in the **Select Video Source** option of the On-Screen Menu. Alternatively, PIPs can be configured for destination follow and the tieline sources assigned through an external control panel.

If there are no tielines available, the PIP will show one of the following:

- If the tieline sources are assigned to the PIP through Layout Designer or switched using the on-screen menu, then a "No Signal" message will appear on the PIP.
- If the PIP is configured for destination follow and routed to a tieline source, then the PIP will keep the signal that was present before the route request to the new tieline source.

Chapter 3

Installation

Installing and Connecting Overview

The output modules are installed in the output section of Platinum router frames. Each output module occupies four output slots in the router frame. Since the output module is shipped as a complete “solid-state” unit, you do not need to install individual components.

Warning

Potentially lethal voltages are present within the Platinum frame during normal operation. Disconnect all power cords from the frame before you remove the top panel. Do not apply power to the frame while the top is open unless the unit is being serviced by properly trained personnel.

Output modules are hot-swappable, and they do not need to be installed next to each other. However, keep in mind that the slots you select to install the multiviewer may affect how efficiently you can populate other output slots in the router.

Caution

We recommend that you test your system before its final installation. Make sure that you verify its configuration, cabling, and proper system operation. Observe proper anti-static and grounding procedures while handling loose boards and servicing equipment.

Video inputs are routed from Platinum crosspoint modules to the inputs of the output module. The number of multiviewer modules that you can install in a Platinum router is determined by the size of the router frame. Table 3-1 lists the number of supported output modules that can be installed in 9RU, 15RU, and 28RU Platinum router frames.

Note

Your sales representative can tell you whether you have sufficient power supplies installed in the frame to power the installed modules.

Table 3-1. Number of Installed Output Modules in Platinum Frames

Platinum Frame Size	Max. Number of Installed Output Modules	Number of Input Channels	Number of DVI Outputs	Number of SDI Outputs
9RU	4	128	8	16
15RU	8	256	16	32
28RU	16	512	32	64

Table 3-2 provides information about the number of embedded, discrete analog, and discrete AES audio inputs that are supported when the multiviewer is installed in 9RU, 15RU, and 28RU Platinum frames.

Table 3-2. Audio Configurations

Audio Input Type	9RU (16 Slots)	15RU (32 Slots)	28RU (64 Slots)
Embedded Channels	128 per module 2048 per frame	128 per module 4096 per frame	128 per module 8192 per frame
Discrete Analog (stereo/mono)	16/32 per module 256/512 per frame	16/32 per module 512/1024 per frame	16/32 per module 1024/2048 per frame
Discrete AES (balanced/unbalanced)	16 per module 256 per frame	16 per module 512 per frame	16 per module 1024 per frame

Figure 3-1 illustrates two output modules installed in a 15RU Platinum router frame.

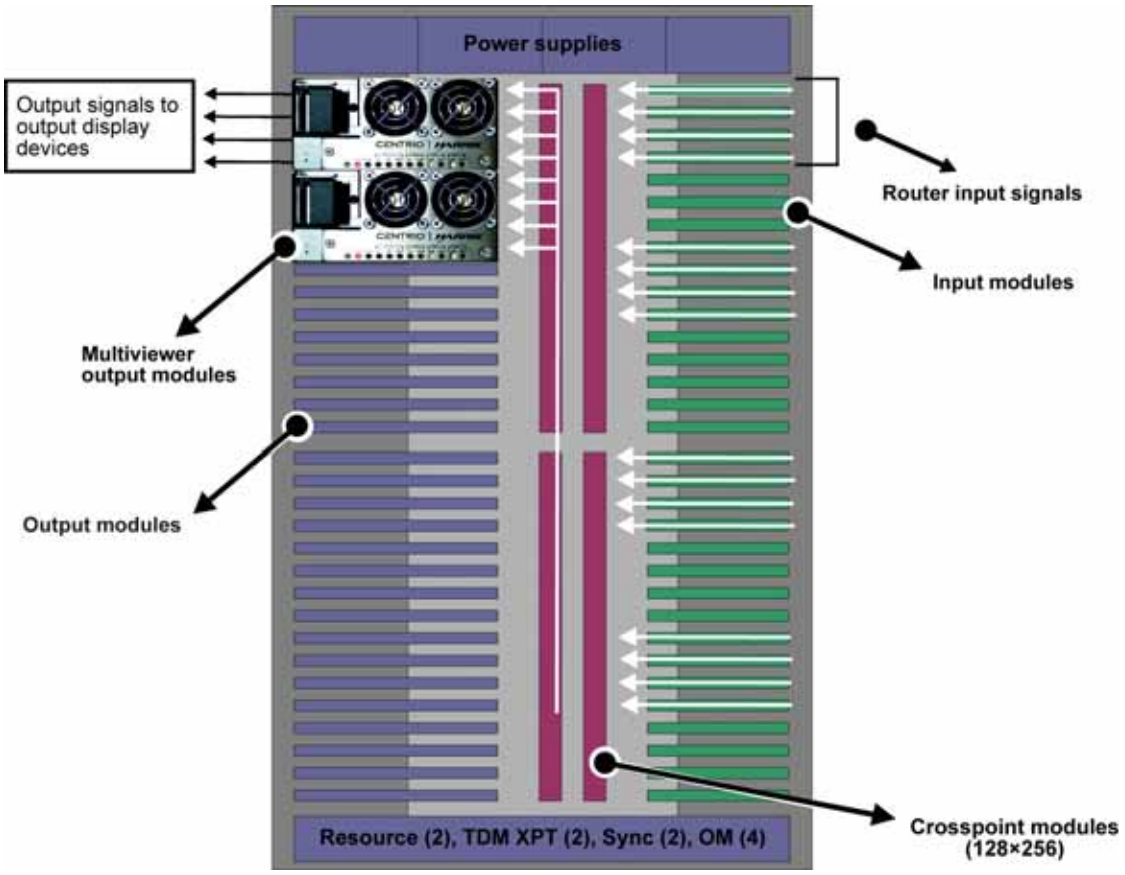


Figure 3-1. Platinum 15RU Router Frame with Output Modules

Check the release notes for your devices to determine compatibility between diffferent hardware and software versions, in particular the multiviewer module and PT-RES module versions.

Installing Multiviewer Hardware

The following sections describe how to install back modules and output modules in Platinum router frames. Output modules can be installed without powering down your Platinum router frame.

Installing the Back Module

A back module takes up four slots in the output section of your Platinum router frame.

1. Remove any currently installed Platinum output back modules from the appropriate four slots (per output module) where you want to install the back module.
2. Remove the blank covers or output module back connector of the appropriate four slots (per output module) on the rear of the Platinum frame (a #1 Phillips-head screwdriver is required).
3. Carefully align and then attach the back module over the empty slots using the captive screws. Do not discard the screws, as you will need them again.

Note

Do not tighten down the screws completely when installing the back module. First, install the output module, and then tighten the back module screws.

Installing the Output Module

Caution

Before you install the output module, ensure you properly align the module with the appropriate guide notches in the router frame. Failure to do so may damage the pin connections between the back and output modules.

1. If you have not done so already, remove any currently installed Platinum output modules from the appropriate four slots (per output module) where you want to install the output module.
2. Open the I/O Guide door.

3. Align the installation guides on the left and right sides of the back module with the guide notches of the appropriate slots in the Platinum frame (see Figure 3-2).

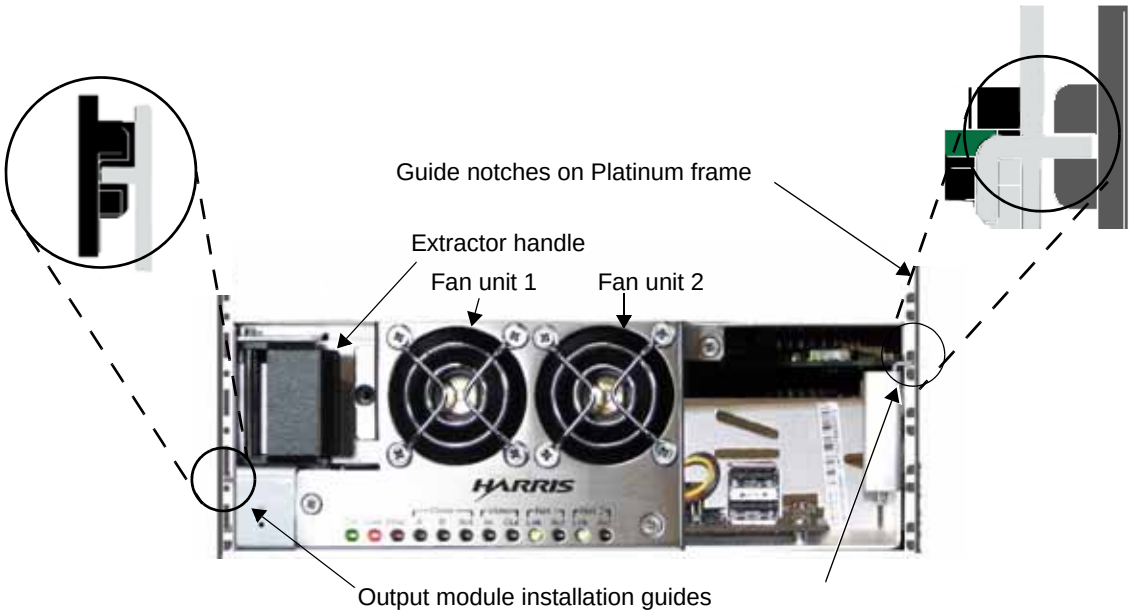


Figure 3-2. Installing the Output Module

4. Pull and hold the back module's extractor handle, and then slide the back module assembly into the frame until it is fully seated.
5. Let go of the extractor handle and push it into the locking position.
6. Close the I/O Guide door.

Making System Connections

The following sections provide information about making output module connections, including the following:

- Ethernet connections for CCS/router network and Layout Designer
- DVI and SDI output display devices
- Audio monitoring devices
- Serial breakout cable
- Ethernet connections to third-party GPI I/O hardware interface
- LTC connections

Securing Your Device Cabling

Caution

When making connections from external devices to the multiviewer, it is important to properly secure the cables to your equipment rack. Use cable ties to secure the various device cables to your equipment rack so that the rack supports the weight of the cables. Failure to do so will cause excessive weight on the back module and breakout module connections and connector pins, which may permanently damage your system.

Network Connections

Harris multiviewers have two Ethernet connections that allow you to connect directly to a local PC running Layout Designer software or to CCS network. When the multiviewer is connected to a CCS network, you can use CCS control options such as CCS Navigator and NUCLEUS.

Connecting Output Display Devices

The Multiviewer's back module provides two DVI and four HD/SD-SDI output connections. You must configure the multiviewer to display either two DVI or four SDI outputs. You cannot send layouts to the DVI and SDI outputs simultaneously.

Note

The DVI connectors labeled **DVI 3** and **DVI 4** on the back module are for future use.

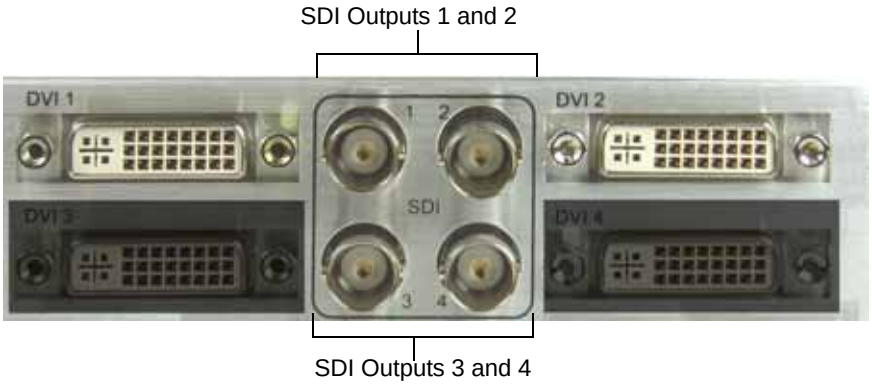


Figure 3-3. SDI Output Connectors

Table 3-3 lists the output display resolutions supported by the Harris multiviewer's DVI and HD-SDI outputs.

Table 3-3. Supported Output Resolutions

DVI Output Resolution[1]	HD-SDI and SD-SDI Output Resolution
When Redundant DVI, spanned DVI, Dual DVI, or Spanned Vertical DVI is chosen • 1024 × 768 • 1024 × 800 • 1152 × 864 • 1280 × 720 • 1280 × 768 • 1280 × 800 • 1280 × 960 • 1280 ×1024 • 1344 × 840 • 1440 × 1050 • 1440 × 900 • 1440 × 1080 • 1600 × 900 • 1600 × 1024 • 1600 × 1200 • 1680 × 1050 • 1792 × 1344 • 1856 × 1392 • 1920 × 1080 • 1920 × 1200 • 1400 × 1050 **When Quad DVI is chosen** • 1280 × 720 • 1024 × 768 • 1440 × 900 • 1280 × 1024	• 1080i @ 50 Hz • 1080i @ 59.94 Hz • 720p @ 50 Hz • 720p @ 59.94 Hz • SD 525 59.94 • SD 625 50

[1]For these resolutions, the multiviewer hardware supports both 50 Hz and 60 Hz output.

Note

Supported DVI output resolutions are subject to the capabilities of the connected DVI display. Support cannot be guaranteed for displays with non-standard timing.

Output Display Modes

You can operate the multiviewer in either Redundant, Independent, or Spanning mode. You can select the display mode for your output module using Layout Designer. See the Multiviewers Configuration chapter in your *Layout Designer Software Application User Guide*.

- **Redundant mode** - Displays the same layout on each output. By default, your output module is set to Redundant mode.
- **Independent mode** - Displays a different layout on each output. When using this mode, each output can be configured for different format, aspect ratio, and orientation.
- **Spanning Mode** - Displays (or spans) one layout across outputs. When using this mode, each output must be configured for the same format, aspect ratio, and orientation.

Connecting DVI Display Devices to the Multiviewer

Depending on your output display device and the type of DVI output you are using, use the following DVI cabling guides:

- **Standard DVI-I digital/analog cable** - Use this cable when outputting to a PC digital (DVI) and analog (VGA) video monitor. This cable has a 29-pin DVI/VGA combined receptacle connector.
- **Standard DVI-D digital-only cable** - Use this cable when outputting digital (DVI) video signals only. This cable has a 19-pin DVI-D digital-only receptacle connector (no key slot on left side of connector)
- **VGA cable with VGA-DVI adaptor, or DVI-A cable with DVI-VGA adaptor** - Use this cable when outputting analog (VGA) video signals only. This cable has a 17-pin connector that requires an appropriate adaptor and corresponding cable.

Connecting HDTV Display Devices to the Multiviewer

The multiviewer's back module provides four BNCs per IEC 169-8 for connecting to HD-SDI monitors. For specification information, see "HD-SDI Outputs" on page 73.

Connecting Output Audio Monitoring Devices

Use the back module's two digital audio monitoring outputs to connect compliant audio monitoring devices, for driving devices such as speakers or headphones, to the multiviewer. This allows audible monitoring of audio sources for any two program signals that are currently being monitored by the multiviewer. Selection of channels to monitor can be chosen from a single stereo pair, or any two mono channels associated with the specific program signal.

Standard coaxial/unbalanced output audio connectors

Figure 3-4. AES Audio Outputs (Standard Coaxial/Unbalanced)

For audible monitoring, the program signals must be routed to one of the displays associated with the multiviewer. You can use Navigator or NUCLEUS Control Panel to route these signals. See "Multiviewer System Parameters and Alarms" on page 39 or your *NUCLEUS CENTRIO Control Option Configuration and Operation Manual* for more information.

Connecting Devices to the Serial Connection

The serial breakout cable expands the back module's serial inputs from one DB-26 connector into four separate DB-9 pin connectors each representing a serial port. These serial ports can be used for applications such as the following:

- Connecting your multiviewer to external UMD devices
- Facilitating a Harris snoop application
- Providing EAS alert data from TFT and Sage boxes

Table 3-4 provides connection and configuration information about each serial port.

Table 3-4. Multiviewer Serial Breakout Cable Information

Serial Port Number	Connector	User-Configurable	Supported Protocols
1	DB 9 (male)	Yes	• RS-232 • RS-422 • RS-485
2	DB 9 (male)	Yes	• RS-232 • RS-422 • RS-485
3	DB 9 (male)	No	RS-232
4	DB 9 (male)	No	RS-232

Note

Serial Ports 1 and 2 can have a software-selectable termination enabled on each receiver's port. The termination resistor value is 120Ω. This is most often used in RS-422 point-to-point connections. In the case of RS-485, if the multiviewer unit is at the end of the RS-485 bus, this termination can be activated to terminate the bus.

Table 3-5 provides pinout information for the serial breakout cable's DB-26 and each DB-9 connector.

Table 3-5. Serial Breakout Cable Pinouts

DB-26 (Male)	Port 1 DB-9 (Male)	Port 2 DB-9 (Male)	Port 3 DB-9 (Male)	Port 4 DB-9 (Male)	Description
Pin Number	Pin Number	Pin Number	Pin Number	Pin Number	
1	1				Ground
3	2				RS-232 RX or RS-422/485 TX-
19	3				RS-232 TX or RS-422/485 RX+
4	4				Ground
5	5				Ground
6	6				Ground
2	7				RS-422/485 TX+
20	8				RS-422/485 RX-
9	9				Ground
18		1			Ground
7		2			RS-232 RX or RS-422/485 TX-

Table 3-5. Serial Breakout Cable Pinouts *(Continued)*

DB-26 (Male)	Port 1 DB-9 (Male)	Port 2 DB-9 (Male)	Port 3 DB-9 (Male)	Port 4 DB-9 (Male)	Description
Pin Number	Pin Number	Pin Number	Pin Number	Pin Number	
21		3			RS-232 TX or RS-422/485 RX+
14		4			Ground
13		5			Ground
12		6			Ground
8		7			RS-422/485 TX+
22		8			RS-422/485 RX-
11		9			Ground
23			2		RX (RS-232)
24			3		TX (RS-232)
16			5		Ground
15			9		Ground
26				2	RX (RS-232)
25				3	TX (RS-232)
17				5	Ground
10				9	Ground

Connecting JLCooper eBOX Devices

Harris multiviewer systems are designed to work with JLCooper eBOX Quad Serial to Ethernet Interface. You can control up to 24 GPI input and 24 GPI output devices per eBOX. The multiviewer communicates with eBOX through one of the output module's Ethernet connections. To connect the eBOX to an output module, both the multiviewer and JLCooper eBOX must be on the same network and able to communicate with each other. See "Configuring Multiviewers in a Local Area Network" on page 28 for more information.

Extra serial ports available:

- 4x 9-Pin D Sub Serial Connectors
- 2x 25 Pin D Sub GPI Connectors

The GPI In connector has 24 TTL/CMOS compatible inputs with internal pull-ups to +5 volts. The GPI Out connector has 24 TTL/CMOS compatible outputs. On both connectors, pin 1 is the ground reference and pins 2-25 are GPI signals 1-24. The eBOX also has an • RJ-45 Ethernet Connector for LAN, WAN or Internet Control.

The eBOX must be set as a server only, and only a single multiviewer can be connected to each eBOX link. The master/slave function allows UMD-tally data to go through the master multiviewer without external wiring.

To configure the eBOX, follow these steps:

1. Set SW8 to the ON position, and then re-power to access the Configuration Web Server for the eBOX.
2. Set SW1, SW2, and SW3 to the DOWN position, and then re-power.
3. Using an external PC (on the same sub-network), launch a Web Browser and type the IP Address of the eBOX.

Caution

Do not use Internet Explorer 7 or Firefox web browser to change he network settings on the eBOX. Internet Explorer 6 is the only authorized application for getting into the built-in Web Server to change the network settings.

The eBOX's default IP address is 192.168.254.102.

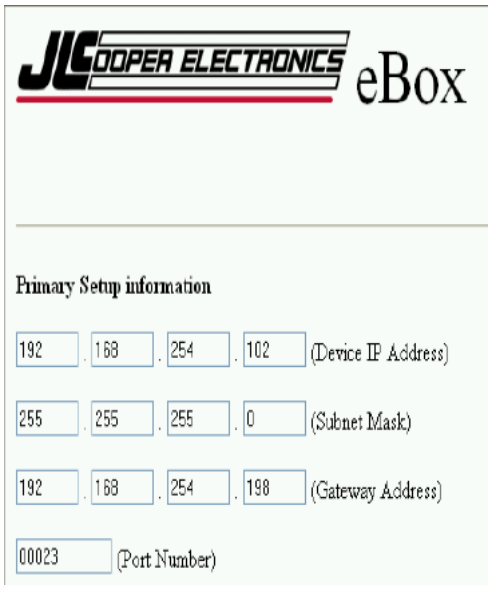


Figure 3-5. eBOX Web Interface

4. Make the necessary Network changes and setup Port # 23.
5. Remove any Password, and then press the SUBMIT button.

6. Set SW1, SW2, SW3, and SW6 to the ON position, and set SW7 and SW8 to the OFF position.

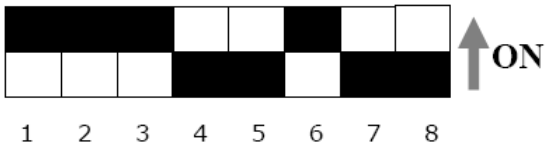


Figure 3-6. eBOX Dip Switch Settings for Operation

7. Re-power the unit.
8. Ping to confirm the new Network setting.

For information about configuring your e-BOX, see your JLCooper eBOX documentation.

Connecting a Linear Timecode Input Reference Signal

You can input balanced linear timecode (LTC) from a time reference source. The LTC input signal can be used as a time reference for on-screen clocks and counters that are displayed in multiviewer layouts. Using Layout Designer, you can also configure offsets for the LTC input signals.

Harris Multiviewer supports the following timecode formats:

- Leitch 12
- SMPTE 12M
- SMPTE 309 M

Figure 3-7 illustrates the LTC input with pin information.

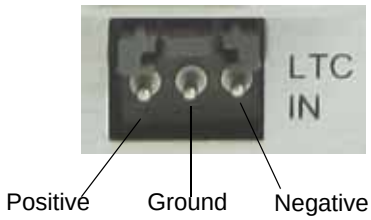


Figure 3-7. LTC Input Pin Information

Connecting Matrox TripleHead2Go For Quad DVI Mode

In order to output to four monitors at once (Quad DVI mode), you must have two Matrox TripleHead2Go devices, one connected to DVI Output 1, and the other connected to DVI Ouput 2, using a Dual link DVI-D cable.

TripleHead2Go setup information is provided in a separate document. Please contact Customer Service for complete installation instructions.

Matrox TripleHead2Go devices require the latest firmware to operate correctly with a multiviewer system. If Matrox TripleHead2Go devices are received from our factory, then they will have been updated with the latest firmware.

Note

Do not use DVI outputs 3 and 4. These outputs are reserved for future use.

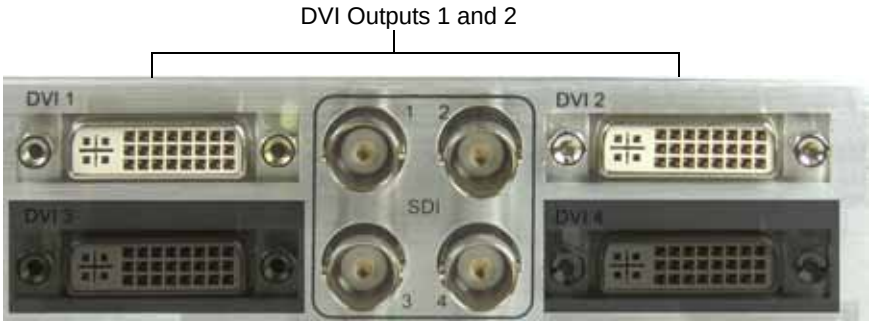


Figure 3-8. DVI Outputs 1 and 2

To connect the Matrox TripleHead2Go devices for operation with the Harris multiviewer, follow these steps:

1. Shut down the Harris multiviewer.
2. Connect the DVI and USB cables from the Matrox TripleHead2Go device to as in Figure 3-9.

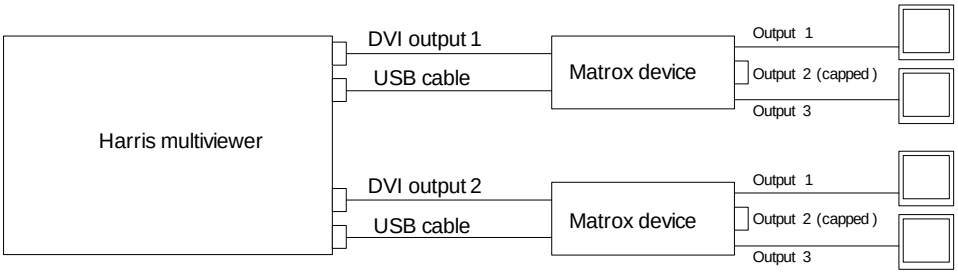


Figure 3-9. Connecting Matrox TripleHead2Go Boxes

3. Connect the monitors to the Matrox TripleHead2Go boxes to output 1 and output 3 on the TripleHead2Go device.

   Output 2 should remain capped, since this output is not used.
4. Start the multiviewer.

   The LED above the lightbulb symbol on the Matrox TripleHead2Go devices should be green when in normal operation.

Chapter 4

Specifications

Linear Time Code Input

Table 4-1. Balanced Longitudinal Time Code

Item	Specification
Standards (compatible)	• SMPTE 12M-1999 • SMPTE 266M-2002
Connector type	3-pin LTC
Impedance	Hi-Z (>30 kΩ)
Input sensitivity	100 mV pk-to-pk

HD-SDI Outputs

Table 4-2. Layout Designer HD-SDI Output Specifications

Item	Specification
Number of outputs	4
Standards (compatible)	• SMPTE 259M • SMPTE 292M • SMPTE 424M
Frame rates	• 1080i50 • 1080i59.9 • 720p50 • 720p59.9
Connector type	BNC per IEC 169-8
Impedance	75Ω
Return loss	>15 dB (typical) to 1.485 GHz
DC offset	0.0 V ± 0.5 V
Signal level	800 mV ± 10%

Table 4-2. Layout Designer HD-SDI Output Specifications

Item	Specification
Rise and fall time	<270 ps at 1.485 GHz
Overshoot	<10% of amplitude
Jitter	• Timing (<1 UI at 1.485 GHz) • Alignment (<0.2 UI at 1.485 GHz)

Supported Video Output Resolutions

Note

Supported DVI output resolutions are subject to the capabilities of the connected DVI display. Support cannot be guaranteed for displays with non-standard timing..

Table 4-3. Supported Output Resolutions

DVI Output Resolution[1]	SDI Standard
When Redundant DVI, spanned DVI, Dual DVI, or Spanned Vertical DVI is chosen • 1024 × 768 • 1024 × 800 • 1152 × 864 • 1280 × 720 • 1280 × 768 • 1280 × 800 • 1280 × 960 • 1280 ×1024 • 1344 × 840 • 1440 × 1050 • 1440 × 900 • 1440 × 1080 • 1600 × 900 • 1600 × 1024 • 1600 × 1200 • 1680 × 1050 • 1792 × 1344 • 1856 × 1392 • 1920 × 1080 • 1920 × 1200 • 1400 × 1050 **When Quad DVI is chosen** • 1280 × 720 • 1024 × 768 • 1440 × 900 • 1280 × 1024	• 1080i @ 50 Hz • 1080i @ 59.94 Hz • 720p @ 50 Hz • 720p @ 59.94 Hz • SD 525 59.94 • SD 625 50

Note

[1]For these resolutions, the multiviewer hardware supports both 50 Hz and 60 Hz output.

AES Monitoring Output

Table 4-4. Layout Designer AES Monitoring Output Specifications

Item	Specification
Standards	AES3, SMPTE 276
Type	Unbalanced, AC coupled
Connector	BNC (IEC169-8)
Impedance	75Ω
Return loss	> 25 dB, 0.1 to 6 MHz
Signal amplitude	1.0 V pk-to-pk ±10% into 75Ω load
Audio rate	48 kHz (fixed)
Jitter	±20 ns
Rise/fall time	30 ns to 44 ns (10% to 90%)
Bits	24

DVI Outputs

Table 4-5. DVI Output Specifications

Item	Specification
Standards	DVI 1.0
Type	DVI-I
Impedance	50Ω
Amplitude	400 mV ≤ Vswing ≤ 600 mV (single-ended)
Rise/fall time	75 ps ≤ Risetime/Falltime ≤ 0.4 Tbit
Jitter	0.25 Tbit

USB I/O

Table 4-6. USB I/O Specification

Item	Specification
Standard	USB 2.0
Type	A

Ethernet I/O

Table 4-7. Ethernet I/O Specification

Item	Specification
Standard	IEEE 802.1
Type	RJ45

Serial Ports

Table 4-8. Serial Ports Specification

Item	Specification
Standard	• RS-232 (TIA-232-F) • ANSI/TIA/EIA-422-B • EIA-485
Type	DB-26 to DB9 breakout cable
Ports	Ports 1 & 2 - 232/422/485 switchable
Termination	Ports 1 & 2: Optional internal termination is software-configurable Ports 3 & 4: 232

Power Consumption

Table 4-9. Layout Designer Power Consumption Specifications

Item	Specification
Input power	250 W max from Platinum frame power supply

Operating Temperature

Table 4-10. Operating Temperature Specification

Item	Specification
Operating Temperature	41° to 113°F (5° to 45°C).

Propagation Delay

Table 4-11. Propagation Delay Specification

Item	Specification
Video delay	• 2 video frames/fields for DVI outputs • 3 video frames/fields for SDI outputs
Audio delay	matching video delay

Appendix A

Frequently Asked Questions

Overview

This chapter answers frequently asked questions (FAQs) and provides troubleshooting information about your Harris multiviewer system. The FAQs are organized into the following categories:

- System FAQs answers some common questions about your multiviewer. See “System FAQs” on page 79.
- Video input and output display FAQs answer some common questions about video signals and display devices, as well as provide troubleshooting information about display devices. “Video Input/Output Signals and Display Devices FAQs” on page 80.
- CCS software FAQs answers common questions about using CCS software applications with your multiviewer.“CCS Software Applications FAQs” on page 81.

System FAQs

What are FPGA Errors?

FPGA errors indicate a power-up initialization failure. Immediately after a power-on reset, a CPLD downloads firmware into programmable logic devices (known as FPGAs).

If an initialization fails, an LED on the affected xVIM module will light up (red) to indicate that the XVIM FPGAs are not configured. If this error occurred after a firmware upgrade, try running the upgrade again.

What Is the Typical Video Delay of a Harris Multiviewer Unit?

The video delay is two frames/fields in DVI output mode, and three frames/fields in SDI output mode.

Video Input/Output Signals and Display Devices FAQs

Why Does the External Display Attached to the VGA/DVI Output Have Poor Image Quality?

Most display problems can be traced to output display scaling artifacts or poor cabling. Correcting these errors usually requires either configuration changes or higher quality VGA/DVI cables. If the picture has lots of speckles or mosquito noise, then the DVI cable is too long.

What are “Scaling Artifacts”?

Scaling errors can occur when a display device connected to a display output is forced to rescale an image by interpolating new pixels. This rescaling occurs because the display resolution generated by the output does not match the native display resolution supported by the display device. The interpolation process often introduces “scaling artifacts” that will soften or degrade the resultant displayed image.

To avoid scaling errors, check the native resolution of the display device, and wherever possible, configure the output to match the display’s native resolution.

What is “Ghosting”?

“Ghosting” refers to vertical fringing artifacts. The use of incorrectly specified VGA cable or twisted pair connections most often causes this problem. Always use high-quality, RF-screened VGA cable with individual coaxial cables for each of the red, green, and blue signals of the VGA output.

What Calibration Adjustments are Necessary on the Attached Display?

To ensure a high-quality picture, you should always properly calibrate the attached display device, particularly digital display devices such as plasma displays and LCDs.

If the Output Signal Fails, What Should Be Done?

Check the following:

- There is power to the output module and it is turned on (the On LED is green)
- One or more valid input signal(s) are connected and the chosen PiPs or tiles correspond to valid input(s)
- If you are using SDI, make sure you are connected to HD monitors
- If the VGA output is used, make sure that the VGA monitor is capable of locking to the vertical scanning rate (50 Hz in 625 or PAL, 60 Hz in 525 or NTSC); use high-quality, RFI-screened, multiple 75Ω coax
- If you are using two DVI displays, make sure they are connected to displays of the same resolution, with the same vertical scanning rates

Why Do Some Video Tiles Appear to Have an Incorrect Format?

Ensure that the output line standard is selected to be the same as the majority of the inputs.

Check to see if you have selected the correct aspect ratio setting in Layout Designer.

Why Do Moving Images Jitter in Some Video Tiles?

This occurs when the total resources required to display layouts selected on all displays exceeds the defined system limitations. Review the used layouts and ensure they are withtin the capabilities of your multiviewer configuration.

Why Does the Checker Board Test Pattern Not Look Right on a Plasma Monitor?

The checker board test pattern is used to calibrate the display for correct sampling frequency and phase.

If the multiviewer is not set to the native resolution of the plasma display and a checker board test pattern is selected, the displayed result will either be a uniform grey field or a series of vertical and or horizontal interference fringes visible across the display.

What UMD/Tally protocols are supported by Harris Multiviewers?

The Harris multiviewer supports the TSL protocol, Ross Tally, and a core subset of the Image Video protocol (not full protocol) on TCP/IP.

CCS Software Applications FAQs

Is There a Specific CCS Application Version That I Need to Install?

Navigator 4.1 or later, and NUCLEUS 1.8 or later can be used with Harris multiviewer.

Appendix B

Servicing Instructions

Overview

Caution

These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

When servicing your Harris Multiviewer system, ensure that you take precautions to prevent electrostatic discharge (ESD). See “Appendix A: Safety Precautions, Certifications, and Compliances” in your *Platinum Installation, Configuration, and Operation Manual* for more information.

These servicing instructions contain the following information:

Battery Use Warning

If you need to replace the CR2032 battery in your Multiviewer, heed this caution:

Warning

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

[FI Finland] VAROITUS: Paristo voi rajahtaa, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan valmistajan suosittelemaan tyyppun. Havita kaytetty paristo valmistajan ohjeiden mukaisesti.

[SE Sweden] VARNING: Explosionsfara vid felaktigt batteribyte. Anvand samma batterityp eller en eller en ekvivalent typ som rekommenderas av tillverkaren. Kassera anvant batteri enligt fabrikantens instruktion.

[D Denmark]

Advarsel! Lithiumbatteri. Eksplosionsfare ved fejlagtig handtering. Udskiftning ma kun ske med batteri af samme fabrikat oq type. Lever det brugte batteri tilbage till leverandoren.

[KO Korean]

경고

만약 틀린 전지로 교환했을 경우엔, 장비손상이 가능합니다.
동등한 전지와 교체하는것을 제조업자는 권장합니다.
사용된 전지는 버려 주십시요.

Changing the Battery

Your output module has a CR2032 battery that may require replacement during the product's lifetime. The battery allows the multiviewer to maintain some parameter options while it is powered down. Failure to replace the battery might lead to some parameters resetting to default factory values when the system is powered down.

To change this battery:

1. Remove the output module from the Platinum frame.
2. Using a small tool like a flathead screwdriver or pen, gently push the metallic tab on the left corner of the battery.

   An outward push on this metal tab will release the battery from its casing.
3. Remove the battery.

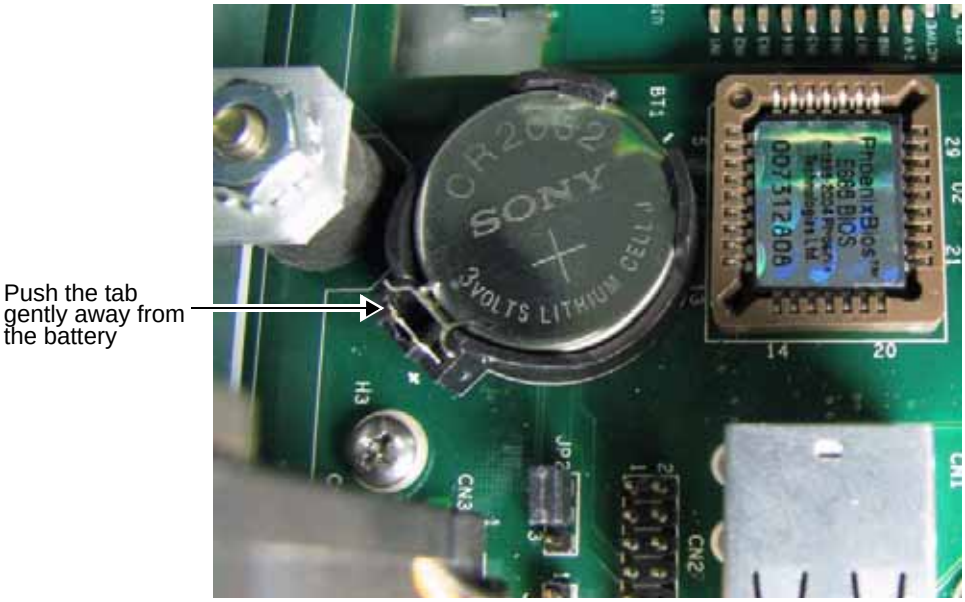


Figure B-1. Battery Location Within its Casing

4. Replace the battery sliding the replacement battery into its casing.
5. Reinstall the output module in the Platinum frame.

Discarding the Used Battery

Dispose of batteries in a safe and proper manner in accordance with local regulations. Refer to the packaging instructions that accompany your replacement battery for more information.

Appendix C

UMD/Tally Option

The Harris multiviewer offers optional under monitor display (UMD) support. This option provides a protocol interface (via RS-232, RS-422, RS-485, or TCP/IP) to different third-party UMD/tally generator systems in order to display UMD source identification and tally status information. This information automatically updates on-screen when it is changed by the tally system.

Requirements for Optional UMD Support

The following items and installations are required to implement UMD support:

- A device that can generate UMD/Tally commands, for example, a UMD generator, production switcher, or router. The Harris multiviewer supports the TSL protocol, Ross protocol (, D-Series protocol, and a core subset of the Image Video protocol (not full protocol) on TCP/IP.
- One of the following cable connection options:
  - RS-485 cable connection between a multiviewer (COM 1–4) and a UMD/tally device (see Figure C-1 on page 88 and Figure C-2 on page 89)
  - RS-422 cable connection between a multiviewer (COM 1–4) and a UMD/tally device (see Figure C-3 on page 90)
  - RS-232 cable connection between a multiviewer (COM 1–4) and a UMD/tally device (see Figure C-4 on page 90)
  - TCP/IP connection between a multiviewer and a UMD/tally device

Sample System Configurations

This section illustrates some typical multiviewer to UMD device connections.

Figure C-1 illustrates a simplified system configuration with UMD/tally support.

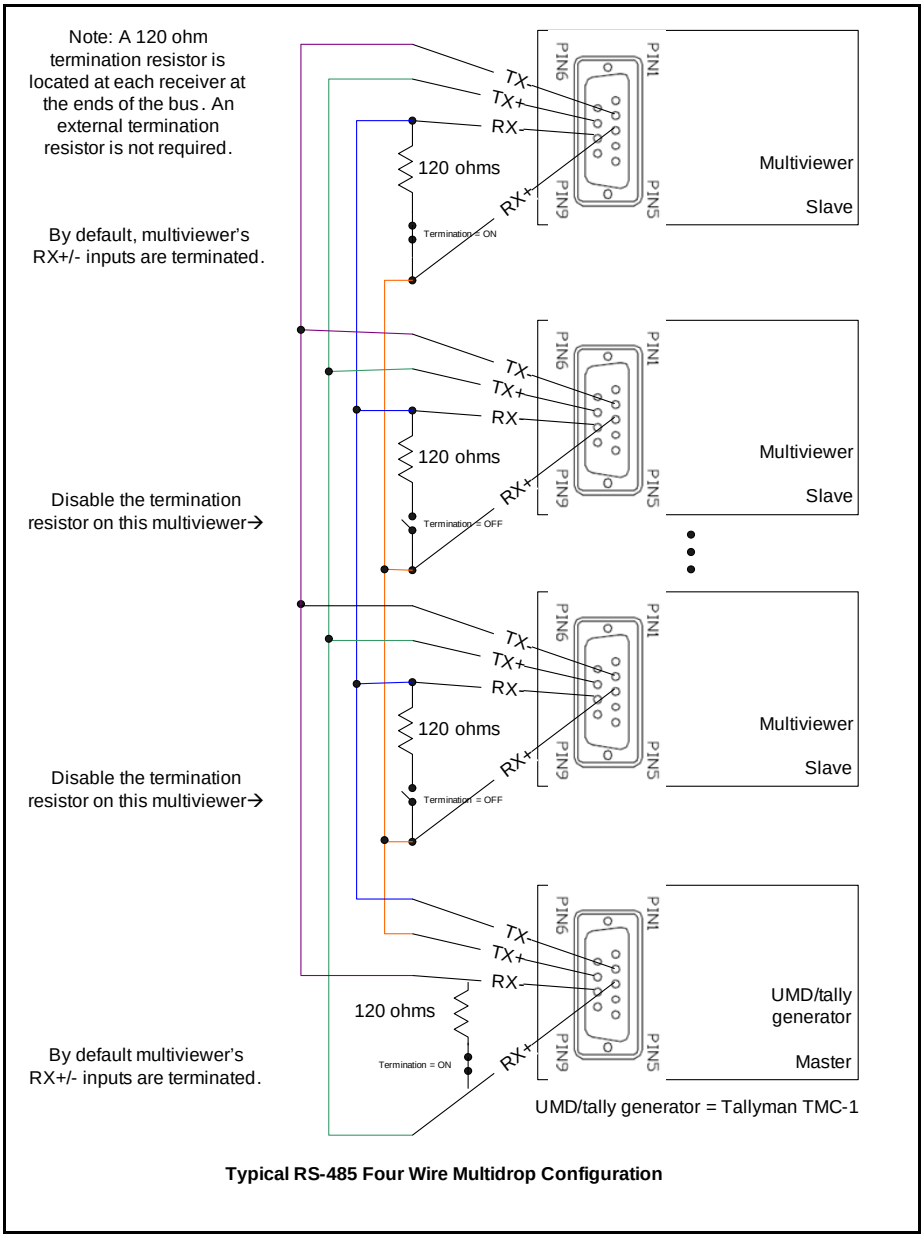


Figure C-1. Typical RS-485 Four Wire Multidrop Configuration

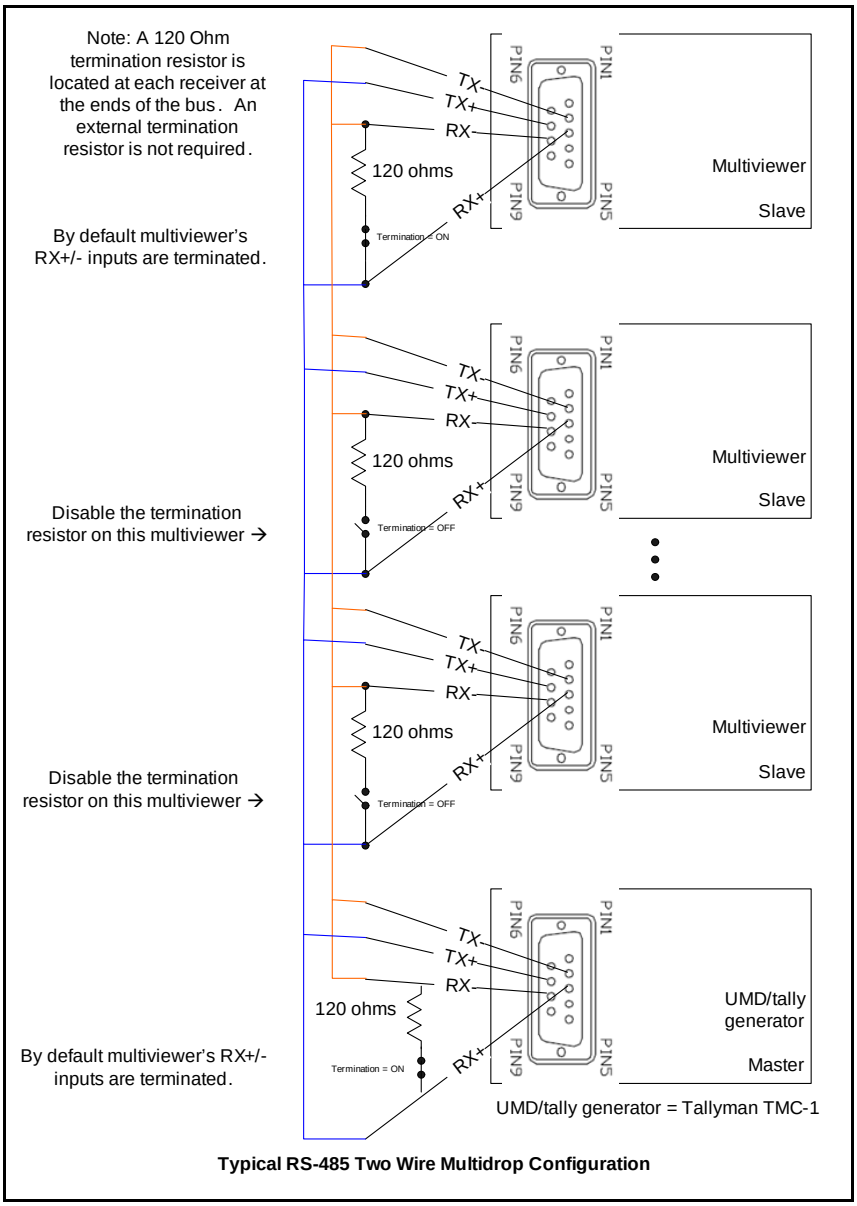


Figure C-2. Typical RS-485 Two Wire Multidrop Configuration

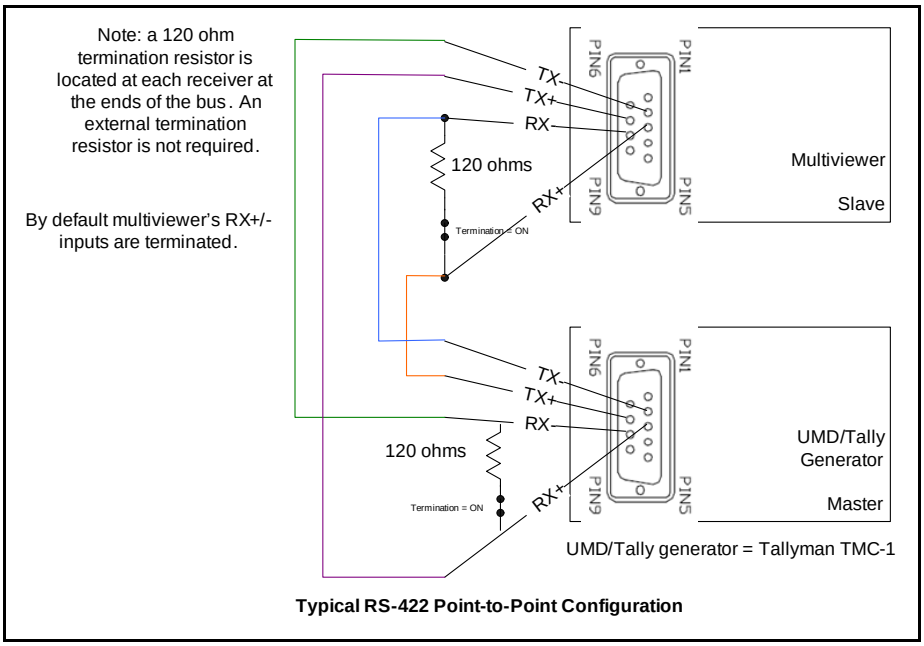


Figure C-3. Typical RS-422 Point-to-Point Configuration

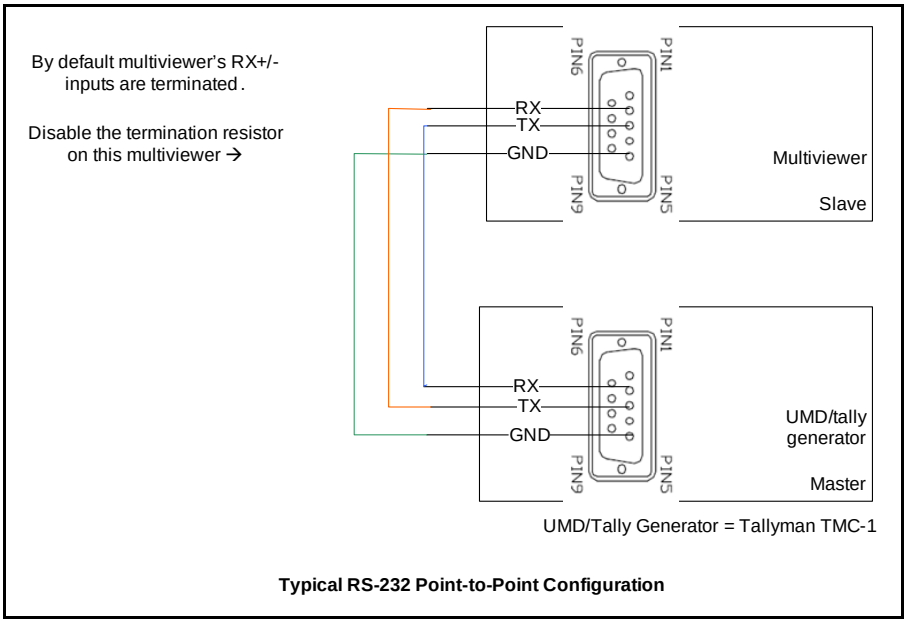


Figure C-4. Typical RS-232 Point-to-Point Configuration

Configuring TSL ASCII UMD Protocol

TSL UMD protocol is configured in the **External Communication** tab of Layout Designer's **Advanced Configuration** dialog box.

1. Under **Type**, choose **TSL Protocol**.
2. Under **Port**, choose the COM Port that TSL communication will be received through.

3. Under COM, make the following selections:
   - **Baud rate**: 38400 bits/second
   - **Data bits**: 8
   - **Parity**: even
   - **Stop** (bits): 1
4. Click **Add**.

Configuring Image Video UMD Protocol

The harris multiviewer supports a core subset of the Image Video Protocol. The TSI-1000 Image Video Tally Controller collects information from signal routing and processing equipment to operate displays and tallies as directed by its internal configuration information.

To activate this option, in the **Advanced Configuration** window of Layout Designer, select the **External Devices** tab.

1. Under **Type**, choose **Image Video Tally**.
2. Under **Port**, choose the COM Port that TSL communication will be received through.
3. Under COM settings, choose communication settings to match the settings on the Image Video unit.

   For RDU-1000 serial format, those settings should be:
   - **Baud rate**: 9600 bits/second
   - **Data bits**: 7
   - **Parity**: Even
   - **Stop bits**: 2

   For RDU-1510 serial format:
   - **Baud rate**: programmable to 300, 600, 1200, 2400, 4800, 9600, 19200, or 38400 baud
   - **Data bits**: 7
   - **Parity**: Even
   - **Stop bits**: 2
4. Click **Add**.

To create labels:

Syntax: %(Addr) D%1S(strings) %Z

#D: 1~255 (UMD Address)

String: <display string up to 17 characters>

5. %Z: Terminator

Table C-1. Color Block Coding

First	Second	Third	Fourth	Fifth
Text color	Set tally 0	Set tally 1	Set tally 2	Set tally 3

Appendix D

Configuring Serial Ports

Overview

To change the mode of Serial Ports 1–4, you need to enter the BIOS. You need a keyboard attached to the multiviewer module to enter the BIOS and make these changes.

Topics described include:

Note

Do not change any other settings in the BIOS.

Entering the BIOS

To configure the mode of serial port 1 or 2:

1. Power cycle your Layout Designer module, or select **Restart System** from the Multiviewer Control Panel. (See "Restarting the Multiviewer Control Panel" on page 54.)
2. As soon as the motherboard starts, press the CTRL+SHIFT+B keys (for the original release BIOS) or B (for the new/current BIOS) on the keyboard.

   The BIOS menu opens.

Figure D-1. BIOS Menu

3. Press the right-arrow key on your keyboard to open the **Advanced** menu.

Figure D-2. Advanced Menu

4. Press the down-arrow key on your keyboard to scroll down to the **SuperIO Configuration** menu, and then press the **Enter** key.

Figure D-3. SuperIO Configuration Menu

Within the SuperIO Configuration section of the BIOS, you can change the mode of the serial port, and the termination type.

Do not change any other settings in the BIOS.

Changing the Serial Port Operation Mode

Within the SuperIO Configuration section of the BIOS, follow these steps to change the mode of serial ports 1 and 2:

1. Scroll down to **COM1 Port Mode Select**.
2. Press the **Enter** key to open the **Options** screen to change between **RS232** and **RS422/485** (default).
3. Scroll down to **COM2 Port Mode Select**.
4. Press the **Enter** key to open the **Options** screen to change between **RS232** and **RS422/485** (default).

   The default for both Serial Ports 1 and 2 is RS422/485.

Note

Serial Ports 3 and 4 are fixed RS-232 ports.

Changing Serial Port Termination

Within the SuperIO Configuration section of the BIOS, follow these steps to change the termination setting of serial ports 1 and 2:

1. Scroll down to the **COM1 RS422/485 120 OHM Termina**.

2. Press the **Enter** key to open the **Options** screen to change between **No Termination** and **With 120 OHM Termination** (default).
3. Scroll down to the **COM2 RS422/485 120 OHM Termina**.
4. Press the **Enter** key to open the **Options** screen to change between **No Termination** and **With 120 OHM Termination** (default).

   The default for both Serial Ports 1 and 2 is With 120 OHM Termination (termination enabled).

Saving your Changes and Exiting the BIOS

After making your changes to Serial Port Operation Mode and Termination, you may want to save your changes.

To exit the BIOS, do one of the following:

- To save your changes and exit the BIOS, press the F10 key.

  The following message appears:

  Save configuration changes and exit setup?

  With the arrow keys, select **Ok** to continue or **Cancel** to go back to the BIOS settings screen.
- To exit the BIOS without saving your changes, press the ESC key.

  The following message appears:

  Discard changes and exit setup?

  With the arrow keys, select **Ok** to continue or **Cancel** to go back to the BIOS settings screen.

Once you exit the BIOS, the multiviewer restarts with the new BIOS settings.

Note

All BIOS configuration changes will be lost when the battery replacement procedure as outlined in “Servicing Instructions” on page 83 is performed.

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